I am pleased to present this 2023 Blue Drop report. I committed the Department to making this the flagship program for the sector, when we relaunched in 2021, and I am glad to report that we have achieved this outcome. We have once again achieved a 100% Blue Drop Audit coverage of Water Services Authorities across South Africa. It was encouraging to see the support from municipalities, water boards and other participants.

We remain committed to ensuring that water service authorities provide our people with access to safe drinking water and to safeguard against the real risk of waterborne diseases. However, there is a concerning decline in the performance of the drinking water systems, and not necessarily in the state of infrastructure, but in the water quality performance since the last report released in 2014 across the country. To arrest and to reverse the decline in municipal water and sanitation services, we must therefore strive for excellence and ensure that we have professionally managed, capable, efficient, and financially viable institutions.

The Blue Drop Certification programme has been at the centre of much of the improvement over the years and has brought about change and reignited the passion and pride of our water sector specialists. At the same time, it embedded the culture of regulatory compliance. It sets the standard requirements and obligations for water services institutions and protects consumers from potentially unsustainable and unsafe services.

As part of this year’s programme, we are once again strengthening our regulatory surveillance programme. Based on this, together with the findings of the Green Drop Report, we have developed an action plan to address issues in municipalities that have performed poorly. The plan covers 30 municipalities in 7 provinces that scored less than 10% in the Green Drop and/or Blue Drop assessments. We are working collaboratively with the Department of Cooperative Governance and Traditional Affairs, the Municipal Infrastructure Agency (MISA), and the National Treasury to support work in these and other municipalities with poor Blue and Green Drop results. There are however, limits to which national government support and intervention can address the decline in services. Municipalities, themselves, need to strengthen capacity, governance, and funding through the sale of water to ensure that these interventions have sustained outcomes. We have repeatedly seen services deteriorate rapidly after either technical or financial support ends.

We have also initiated legislative reforms towards strengthening the regulation of drinking water so that our institutions are efficient, financially viable and deliver services to the required standards. While that is the case, we also need a social compact with communities to ensure that water infrastructure is protected and that services are paid for. Together, we can not only slow the decline in services but start to reverse the trend.

The programme’s historical success is also grounded in the water sector’s support, and this year was no different. It was encouraging to see the support from municipalities, water boards, and other stakeholders who all heeded the call to action. I would like to express my sincere appreciation to all of them, including the researchers, service providers and sector partners, who have collectively taken ownership and made this an internationally recognised programme. We share in the success which forms the core of our endeavour to provide safe drinking water and sanitation.

We move forward knowing that we do not accept ‘being good’ as a norm in the South African water industry instead, we opt for excellence. The Blue Drop Certification programme has become more than just a subject field to its participants – it has become the accolade of water professionals, in and outside of this beautiful country. Let us continue being inspired by the results.

Minister for Water and Sanitation: Mr Senzo Mchunu

Date: 22/11/2023
As a Department, we strive to make a positive impact on our country and its people as custodians of our water and sanitation resources. We undertook to being innovative and committed partners in our pursuit to ensure equitable and sustainable socio-economic development and universal access to water. The Blue, Green and No Drop Programmes have become embodiments of those principles.

This year’s Blue Drop Audit cycle builds on the innovation from the previous cycle. Since inception, we have strived to make the reporting requirements seamless and simple for Water Services Institutions. This year we transitioned to an online Blue Drop scorecard, embedded within the IRIS system. IRIS is a truly world class online auditing and regulatory system and our WSIs continue to gain confidence in using it. We have further built on the “Very Rough Order of Measurement” (VROOM) model developed as part of the Blue Drop Technical Site Assessments. It provides insights on the state of the key elements of the water treatment infrastructure and provides an order of magnitude estimate of cost to return the infrastructure to a functional condition. It is this kind of valuable insight gained from the Blue Drop certification programme that can inform a coordinated response by DWS and other sector players.

Addressing the challenges in the water sector will require all hands-on deck and the Drop programmes has provided the impetus for that. We are now working collaboratively with the Department of Cooperative Governance and Traditional Affairs, MISA, and the National Treasury to implement an action plan to support 30 municipalities with poor Blue and Green Drop results.

We continue to build capacity and share knowledge through the audit process. The consultative auditing approach has received positive responses. Interaction with water treatment specialists has been beneficial to both municipalities and for that matter, our own internal team. As a department, we have continued to build internal regulatory capacity and a diverse pool of lead and assistant assessors. This bodes well for sustainability of the Drop programmes.

I would also like to express my appreciation to all the WSI leaders and their officials who participated in the process. It is only through our combined efforts that we can ensure provision of safe, reliable and affordable water services to our people.

Director-General for Water and Sanitation: Dr Sean Douglas Phillips

Date: 22/11/2023
FOREWORD by the HONOURABLE MINISTER

MESSAGE by the DIRECTOR-GENERAL

1. EXECUTIVE SUMMARY

2. INTRODUCTION

3. BLUE DROP STANDARDS 2022

4. NATIONAL PERFORMANCE OVERVIEW OF MUNICIPAL WATER MANAGEMENT

5. EASTERN CAPE PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE

6. FREE STATE PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE

7. LIMPOPO PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE

8. MPUMALANGA PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE

9. NORTH WEST PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE

10. WESTERN CAPE PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE

INDEX

Nketoana Local Municipality
Nala Local Municipality
Mohokare Local Municipality
Mantsopa Local Municipality
Letsemeng Local Municipality
Dihlabeng Local Municipality
Sunday River Valley Local Municipality
OR Tambo District Municipality
Nelson Mandela Bay Metropolitan Municipality
Ndlambe Local Municipality
Makana Local Municipality
Joe Gqabi District Municipality
Kouga Local Municipality
Koukamma Local Municipality
Makana Local Municipality
Ndlambe Local Municipality
Nelson Mandela Bay Metropolitan Municipality
OR Tambo District Municipality
Sunday River Valley Local Municipality
Bloem Water
Dihlabeng Local Municipality
Kopanong Local Municipality
Letsemeng Local Municipality
Mafube Local Municipality
Maluti-A-Phofung Local Municipality
Mangaung Local Municipality
Mantsopa Local Municipality
Masilonyana Local Municipality
Matjhabeng Local Municipality
Metsimaholo Local Municipality
Mohokare Local Municipality
Moqhaka Local Municipality
Nala Local Municipality
Ngwathe Local Municipality
Nketoana Local Municipality
6.17 Phumelela Local Municipality ................................................................. 145
6.18 Setsoto Local Municipality ........................................................................ 146
6.19 Tokologo Local Municipality ....................................................................... 147
6.20 Tsewopela Local Municipality ................................................................. 148
7. GAUTENG PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE ........................................... 150
7.1 Rand Water ................................................................................................. 173
7.2 Magalies Water ........................................................................................... 175
7.3 City of Ekurhuleni ......................................................................................... 177
7.4 City of Johannesburg Metropolitan Municipality ....................................... 178
7.5 City of Tshwane Metropolitan Municipality .............................................. 179
7.6 Emfuleni Local Municipality ...................................................................... 181
7.7 Lesedi Local Municipality ........................................................................... 182
7.8 Merafong Local Municipality ...................................................................... 183
7.9 Midvaal Local Municipality ........................................................................ 184
7.10 Mogale City Local Municipality .............................................................. 185
7.11 Rand West Local Municipality .................................................................. 186
8. KWAZULU NATAL PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE ...................................... 188
8.1 Umgeni Water ............................................................................................. 213
8.2 uMhlathuze Water ....................................................................................... 215
8.3 uThukela Water .......................................................................................... 217
8.4 Amajuba District Municipality .................................................................... 219
8.5 eThekwini Metropolitan Municipality ....................................................... 220
8.6 Harry Gwala District Municipality ............................................................ 221
8.7 iLembe District Municipality ..................................................................... 224
8.8 King Cetshwayo District Municipality ...................................................... 226
8.9 Msunduzi Local Municipality .................................................................... 228
8.10 Newcastle Local Municipality .................................................................... 229
8.11 Ugu District Municipality .......................................................................... 230
8.12 uMgungundlovu District Municipality ...................................................... 232
8.13 City of uMhlathuze Local Municipality ................................................. 233
8.14 uMkhanyakude District Municipality ....................................................... 234
8.15 uMzinyathi District Municipality .............................................................. 237
8.16 uThukela District Municipality ................................................................. 239
8.17 Zululand District Municipality ................................................................ 241
9. LIMPOPO PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE ........................................ 247
9.1 Lepelle Northern Water ............................................................................. 271
9.2 Bela Bela Local Municipality ..................................................................... 273
9.3 Capricorn District Municipality ................................................................. 274
9.4 Greater Sekhukhune District Municipality .............................................. 275
9.5 Lephalele Local Municipality .................................................................... 278
9.6 Modimolle-Mookgopong Local Municipality ......................................... 279
9.7 Mogalakwena Local Municipality ............................................................. 281
9.8 Mopani District Municipality ................................................................. 282
9.9 Polokwane Local Municipality .............................................................. 285
9.10 Thabazimbi Local Municipality .............................................................. 286
9.11 Vhembe District Municipality ................................................................. 287
10. MPUMALANGA PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE .................................................. 291
10.1 Bushbuckridge Local Municipality ........................................................ 317
10.2 Chief Albert Luthuli Local Municipality .................................................. 319
10.3 Dipaleseng Local Municipality ................................................................. 321
10.4 Dr JS Moroka Local Municipality .......................................................... 322
10.5 Emakhazeni Local Municipality .............................................................. 323
10.6 Emalahleni Local Municipality ............................................................... 324
10.7 Govan Mbeki Local Municipality .......................................................... 325
10.8 Lekwa Local Municipality ...................................................................... 326
10.9 Mbombela Local Municipality ................................................................. 327
10.10 Mkhondo Local Municipality ................................................................. 330
10.11 Msukaligwa Local Municipality ............................................................ 332
10.12 Nkomazi Local Municipality ................................................................. 334
10.13 Pixley ka Seme Local Municipality ....................................................... 336
10.14 Steve Tshwete Local Municipality ......................................................... 337
10.15 Thaba Chweu Local Municipality .......................................................... 338
10.16 Thembisile Hani Local Municipality .................................................... 339
10.17 Victor Khanye Local Municipality ........................................................ 341
11. NORTH WEST PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE ............................................... 343
11.1 Magalies Water ..................................................................................... 368
11.2 Midvaal Water ...................................................................................... 370
11.3 Dr Ruth Segomotsi District Municipality ................................................ 372
11.4 JB Marks Local Municipality .................................................................. 374
11.5 Kgetlengriver Local Municipality ............................................................ 375
11.6 Madibeng Local Municipality ................................................................ 376
11.7 Maquassi Hills Local Municipality ........................................................ 377
11.8 Matlosana Local Municipality ................................................................ 378
11.9 Moretele Local Municipality .................................................................. 379
11.10 Moses Kotane Local Municipality ........................................................ 380
11.11 Ngaka Modiri Molema District Municipality ......................................... 381
11.12 Rustenburg Local Municipality .............................................................. 383
12. NORTHERN CAPE PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE .................................. 385
12.1 Dikgatlong Local Municipality ................................................................. 417
12.2 Dawid Kruiper Local Municipality .......................................................... 418
12.3 Ermelo Local Municipality ...................................................................... 420
12.4 Ga-Segonyana Local Municipality ........................................................ 421
12.5 Gamagama Local Municipality .............................................................. 424
12.6 Hantam Local Municipality .................................................................... 425
INDEX

12.7 Joe Morolong Local Municipality ................................................................. 426
12.8 Kamiesberg Local Municipality .................................................................. 429
12.9 Kareebberg Local Municipality .................................................................. 431
12.10 Karoo Hoogland Local Municipality ......................................................... 432
12.11 Kgatelepele Local Municipality .................................................................. 433
12.12 Khai Ma Local Municipality ....................................................................... 434
12.13 iKai Gari Local Municipality ....................................................................... 435
12.14 iKheis Local Municipality ........................................................................... 437
12.15 Magareng Local Municipality ...................................................................... 439
12.16 Nama Khoi Local Municipality ................................................................. 440
12.17 Phokwane Local Municipality ..................................................................... 442
12.18 Renosterberg Local Municipality ............................................................... 443
12.19 Richtersveld Local Municipality ................................................................. 444
12.20 Siyancuma Local Municipality ..................................................................... 446
12.21 Siyathemba Local Municipality .................................................................. 447
12.22 Sol Plaatje Local Municipality .................................................................... 448
12.23 Thembelihle Local Municipality .................................................................. 449
12.24 Tsantsabane Local Municipality .................................................................. 450
12.25 Ubuntu Local Municipality .......................................................................... 451
12.26 Umsobomvu Local Municipality .................................................................. 452
13. WESTERN CAPE PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE ........................................ 454
13.1 West Coast DM Bulk .................................................................................... 486
13.2 Overberg Water ............................................................................................ 488
13.3 Beaufort West Local Municipality ................................................................ 490
13.4 Berg River Local Municipality ...................................................................... 491
13.5 Bitou West Local Municipality ..................................................................... 492
13.6 Breede Valley Local Municipality .................................................................. 493
13.7 Cape Agulhas Local Municipality .............................................................. 494
13.8 Cederberg Local Municipality ...................................................................... 496
13.9 City of Cape Town Metropolitan Municipality ............................................. 497
13.10 Drakenstein Local Municipality .................................................................. 498
13.11 George Local Municipality .......................................................................... 499
13.12 Hessequ Local Municipality ........................................................................ 500
13.13 Kannaland Local Municipality .................................................................... 502
13.14 Knysna Local Municipality .......................................................................... 503
13.15 Laingsburg Local Municipality .................................................................... 504
13.16 Langeberg Local Municipality .................................................................... 505
13.17 Matzikama Local Municipality .................................................................... 506
13.18 Mossel Bay Local Municipality .................................................................... 507
13.19 Oudtshoorn Local Municipality .................................................................... 508
13.20 Overstrand Local Municipality .................................................................... 509
13.21 Prince Albert Local Municipality ............................................................... 510
1. EXECUTIVE SUMMARY

Blue Drop Certification

Incentive based regulation is an innovative and uniquely South African response to challenges in the water sector. The Blue Drop Certification programme seeks to induce changes in behaviour of individuals and institutions to facilitate continuous improvement and adoption of best practice management of the delivery and distribution networks from abstraction to the water treatment works to the points of use. Consequently, progressive improvement and excellent performance is recognised and rewarded. The 2023 Blue Drop report provides comparative analyses and diagnostics to assist Water Services Institutions (WSIs) to focus on specific areas for improvement and restoring functionality of their water supply systems. The publication of this regulatory report has the additional objective of ensuring that the responsible WSIs are held accountable.

The main outputs from the Blue Drop 2021-22 audit cycle, as published in the 2023 Blue Drop report, are:

- A Blue Drop score for each water supply system (WSS) assessed, which is aggregated into an overall Blue Drop score, expressed as a percentage (%)
- A Blue Drop Risk Rating (BDRR) for each water treatment works, expressed as a percentage (%BDRR/BDRRmax)
- Technical Site Assessment score for selected water treatment works and water supply network inspected, expressed as a percentage (%)
- A singular VROOM cost for all water treatment works where TSAs were conducted, expressed in Rand (R).

Blue Drop Audit Process and Procedure

The Blue Drop audits were conducted during 2022 by 26 audit panels comprising of 2-3 qualified water professionals. Inspectors qualified after attending a Blue Drop short course and achieving the required minimum threshold examination score. The scorecard was designed to consider evidence against 5 Key Performance Areas (KPAs): 1: Capacity Management; 2: Drinking Water Quality Risk Management; 3: Financial Management; 4: Technical Management; and 5: Drinking Water Quality Compliance. Each KPA and its respective sub-criteria carry different weights based on national regulatory priorities. The audit period under review was 1 July 2021 to 30 June 2022, resulting in a Blue Drop score issued in 2023.

A water supply system that achieves ≥95% Blue Drop score, is regarded as excellent and is then allocated the prestigious Blue Drop Certification status. A system that achieved <31% is regarded as dysfunctional and would trigger appropriate regulatory interventions.

A physical Technical Site Assessment is done at 1 to 2 systems to confirm the findings of the desktop audit. The TSA score reflects the physical condition of the raw water handling system (abstraction facility, pumps, and pipelines), the water treatment plant (inlet works to disinfection and sludge treatment), and distribution system (command reservoir, towers, pumpstations and bulk pipelines) [Note: More detailed information on the TSAs can be found in the Blue Drop Watch Report published earlier this year].

Audit coverage

The Blue Drop audit attendance records confirms that 100% of the 144 WSAs participated, covering 958 water supply systems across the country inclusive of 7 bulk water service providers (Water Boards) (9 during the audit period but currently 7 with the merging of Umgeni Water and Mhlathuze Water and disestablishment of Sedibeng Water) and 23 Water Service Providers. These statistics bodes well to affirm commitment to the Blue Drop national incentive-based regulatory programme.

The Blue Drop audit covers the delivery, treatment, and distribution networks to the end user/ consumer, specifically 958 water supply systems, 1,015 water treatment works (including boreholes and springs), 2,693 pump stations, 37,644 km bulk water supply lines, 136,645 km reticulation pipe lines, and 7,159 reservoirs. The data excludes systems where municipalities were unable to provide data. The audit confirmed a total installed design capacity of 17,373,844 kl/d and a total available design capacity of 16,811,479 kl/d with most of this capacity residing in the macro-sized treatment facilities (>25,000 kl/day).

Collectively, the treatment plants produce 12,217,270 kl/d and distributes 12,289,011 kl/d across the water networks, leaving a spare treatment capacity of 4,594,208 kl/d (27%) to meet additional future demands. However, the Regulator is concerned about the poor water use efficiency (ave. 256 l/p/d) compared to the international benchmark of 180 l/p/d. Going forward, water services institutions have to commit significant resources to curb water losses and address non-revenue water.

Summary of Results

The overall performance trend indicates a regression from 2014 to 2023. The Regulator found that 26 water supply systems achieved a Blue Drop score of >95% and thus qualified for the prestigious Blue Drop Certification.
In 2014, 44 water supply systems were awarded Blue Drop status. A total of 277 of 958 (29%) water supply systems were identified to be in a critical state in the country compared with 174 systems in 2014. This negative trajectory reinforces the need for regular audits to ensure timely turnaround and continued improvement.

From a risk perspective, the national Blue Drop Risk Rating (BDRR) improved from 52.3% in 2022 (BD PAT) to 47.15% in 2023. A total of 577 (of 958) water supply systems are situated in the low risk category, 184 WSSs in the medium risk category, 102 WSSs in the high risk category, and 95 WSSs in the critical risk category. The BDRR is however, only a snapshot of specific risk indicators, whilst the BD scores reflect the overall water services business.

The most prominent risks pointed to systems that are vandalised and not operational, boreholes not operational, dysfunctional pumping and treatment infrastructure, equipment failures due to lack of maintenance, lack of flow monitoring, drinking water non-compliance and failure to notify water users of non-compliant water quality. The Blue Drop audit does not verify statistics around interrupted water supply and will need to include the monitoring and quantification of “water shedding” and “dry taps” going forward.

Observations of significance from the Blue Drop audits and technical site inspections are:

- Several institutions have invested in infrastructure upgrades, extensions, and refurbishments via capital funding. However, many of systems were still found to fail the regulatory standards, fail to meet SANS water quality standards, and/or fail acceptable engineering and workmanship standards.
- Non-payment of contractors, laboratories and service providers is widely found, leading to services not being rendered, delayed, or discontinued.
- Vandalism and theft of electrical cables, equipment and civil structures results in systems being inoperable for extended periods, with few WSIs having effective anti-vandalism strategies or contingency plans in place.
- The most vulnerable and concerning area is the overall sub-standard quality of drinking water to the receiving population.
- The majority of municipalities (57%) do not notify water users in the event of water quality being compromised or not monitored, implying low confidence by water users in the quality of water in their taps.
- Technical and management capacity and competency remains a critical driver of performance, with varying reports on access to qualified Managers, Superintendents, Process Controllers, Engineers, Technicians, Technologists, Scientists, and contracted maintenance and laboratory services.
- Several water supply systems are operating close to or beyond their design capacity, whilst a high number of WSIs are unable to verify their SIV, design capacity or operational flow to or from the WTWs. WSIs are thereby limited in their ability to plan to meet medium-term demand projections, or to confirm if spare capacity is available.
- Many municipalities do not have water abstraction authorisation in place, or does not measure its abstraction, or over-abstract the allowed quota. The lack of water abstraction management has a significant impact on water resources planning and preservation for the country as a whole.
- Severe deficiencies were found in the monitoring of operational and compliance parameters.
- The Technical Site Assessments (TSAs) show a highly variable result with respect to process and asset functionality for WTWs across the country. While some water supply systems were excellent, others failed in all respects, with several plants (and boreholes) being abandoned due to vandalism and other challenges.

**Summary of Cases of Decline**

Water systems which failed to achieve the minimum Blue Drop target of 31%, are placed under regulatory focus, which triggers a number of interventions, as discussed in detail under Chapter 15 of this report.

The Regulator requires these WSAs with <31% Blue Drop score, to submit a detailed corrective action plan (CAP) within 20 working days from publishing of this report. A total of 277 of 958 (29%) WSSs received Blue Drop scores below 31% and are placed under regulatory surveillance, in accordance with the Water Services Act (108 Of 1997).

**Way Forward**

The Department of Water and Sanitation is the regulatory authority and custodian of national water resources, and works in collaboration with government partners, to correct cases of failing water supply and water quality. The Blue Drop findings are instrumental to verify drinking water quality compliance and water supply by each municipality and its water service providers, and to identify strengths and failures along with their associated root causes. This report informs future action by implementing appropriate regulatory, financial, capacity building, support and governance interventions by various government departments. The findings of this report is of sufficient concern that water services become a primary focus point on the national water agenda, commanding collaborative action by various sector players.
Moving forward, *infrastructure action* will include the implementation of an action plan developed by DWS together with COGTA and NT which covers municipalities which have drinking water systems which scored less than 10% in Blue Drop assessments (i.e. worst performers). DWS and COGTA are allowing municipalities to use their MIG and WSIG funding for repairs and refurbishment. However, routine maintenance must be funded from municipal revenues, which requires interventions to improve municipal billing and revenue collection and prioritisation of maintenance budgets by municipal leadership.

Budget needs to be coupled with competent people to plan and implement infrastructure projects, and to monitor expenditure and workmanship quality. Therefore, *capacity building actions* takes the form of MISA support through technical skills recruitment and assistance in project management, contract management, asset management practices and funding applications for infrastructure. DWS support will involve Councilor induction programmes, in collaboration with SALGA, and support with water services development plans, five-year reliability plans and water safety plans.

*Financial unsustainability* will be addressed through focused interventions by National Treasury and the appointment of technical/financial advisors to ensure tariffs are cost reflective, improving revenue collection, reconciling the General Valuation Roll to the billing system for completeness of revenue, so that all customers that appear on the General Valuation Roll also appear on the billing system and assist with financial planning and operational procedures. A transversal tender for smart prepaid meters for electricity and water to enable prepayment for water services will be advertised early 2024.

*Legislative amendments* to the Water Services Act with the aim to improve WSA-WSP powers, arrangements and accountability to strengthen the WSA role in municipalities by reviewing operating license systems for WSPs, amending S63 of the Act to enable the Minister, as a last resort, to force separation of the water services function from the municipal administration where there is persistent failure to meet license conditions, and require the WSA to contract a licensed WSP through a S78 Systems Act process.

Furthermore, DWS is in the process of strengthening its regulation function and improving the consistency of its regulatory actions. This includes revising the norms and standards for water services, developing standardised regulatory protocols, publishing a public dashboard of municipal performance against a range of measures of water performance, and linking support and regulatory action to the contents of the dashboard.

*Water Services Institutions are hereby encouraged to commence immediately with the preparation for the next Blue Drop audit process, which will be conducted in 2025, following the Green Drop audits in 2024.*
Greatness is not a function of circumstance. Greatness, it turns out, is largely a matter of conscious choice, and discipline. Jim Collins
2. INTRODUCTION

Purpose and Intent of Blue Drop Certification

The Blue Drop Certification programme seeks to identify and develop the core competencies required for the sector that, if strengthened, will gradually and sustainably improve the level of drinking water management in South Africa. It is a form of regulation that holds the intent to synergise the current goodwill exhibited by municipalities, business, Department of Public Works, as well as existing government support programmes to give the focus, commitment and planning needed to achieve excellence in drinking water management.

The Blue Drop audit is the tool whereby incentive- and risk-based regulation is conducted in South Africa. Regulation is important to ensure effective and efficient delivery of sustainable water services and has been commended by South African authorities and accoladed by international peers. A good regulation approach is characterised by its ability to clarify the requirements and obligations placed on water service institutions, thereby protecting consumers from a potentially unsustainable and unsafe service.

The Blue Drop process has been developed against the philosophy that, if DWS as Regulator can inspire a path whereby disciplined people, disciplined thought, and disciplined action can be measured and reported, that the South African drinking water industry will be building greatness to last.

Understanding Incentive-based Regulation in South Africa: Blue Drop Certification

Incentive-based regulation has gained significant momentum and support in the South African Water Sector, since its inception on 11 September 2008 (Minister of Water Affairs, National Municipal Indaba, Johannesburg). The concept was initially defined by two programmes: Blue Drop Certification for Drinking Water Quality Management Regulation; and Green Drop Certification for Wastewater Quality Management Regulation. This was expanded on with the third programme: No Drop Certification for water conservation and demand management in the water services sector.

The Blue Drop process measures and compares the results of the performance of water service institutions, and subsequently rewards (or penalises) the institution upon evidence of their excellence (or failures) according to the minimum standards or requirements that has been defined. Awareness of this performance is obtained by pressure via consumers, the media, politicians, business and NGOs. The strategy revolves around the identification of mediocre performing water service institutions who consequently correct the identified shortcomings, as well as the introduction of competitiveness amongst the water service institutions and using benchmarking in a market where competition is difficult to implement.

Each Blue Drop audit cycle is marked by incremental change in the audit criteria, guided by the status and priorities of the water services sector. It is therefore important for water service institutions to note that merely maintaining the previous cycle’s Blue Drop evidence and performance will not warrant the same Blue Drop score.

Risk-based Regulation in South Africa: BDRR Profiles

The Blue Drop audit focuses on the entire value chain (abstraction, treatment, distribution) of the drinking water business within the water service institutions, whilst the Blue Drop Risk Rating (BDRR) assessment focuses on critical risk areas within water services provision.
The latter approach is a form of risk-based regulation which allows the water service institution to identify and prioritise the critical risk areas within its drinking water treatment process and to take corrective measures to abate these. Risk analysis is used by the Department of Water and Sanitation to identify, quantify, and manage the corresponding risks according to their potential impact on human health and to ensure a prioritised and targeted regulation of water service institutions with high-risk water supply systems.

The Blue Drop score reflects the status of the whole water business over a period of 12 months based on a comprehensive assessment of all Blue Drop performance areas, whereas the BDRR focuses on specific risk indicators at a specific moment in time (i.e. snapshot view), or over a more prolonged period in time (i.e., the Blue Drop 12-month period). The BDRR:

- Is a concise and focussed benchmarking exercise which extracts some of the key risk areas that would individually and collectively, give a snapshot view of the status of water quality
- Is an indicator of ‘progress or digress’ which can be run efficiently and accurately, annually or at any given time, without having to go through a comprehensive assessment process
- Enables the Water Services Authority to identify, quantify and manage the risks associated with drinking water services provision thereby empowering them to take relevant strategic management and operational decisions to support and improve sustainable water services provision.

The Department of Water and Sanitation integrates risk analysis as part of the audit process with the aim of quantifying, prioritising, and managing the risks to ensure targeted regulation of high-risk water service institutions. The Water Safety Plan (WaSP) is the tool whereby risks are identified and corrected.

Blue Drop Scores

The main outputs from the Blue Drop 2021-22 audit cycle are:

- A Blue Drop score for each water supply system assessed, which is aggregated into an overall municipal score, expressed as a percentage (%). The BD score will incorporate the performance of water services providers or bulk water providers (water boards), where such arrangements are in place
- A Blue Drop Risk Rating for each water supply system, expressed as a percentage (%)
- Technical Site Assessment score for selected water treatment works and water supply network inspected, expressed as a percentage (%)
- A singular VROOM cost for all water treatment works where TSAs were conducted, expressed in Rand (R).

Each indicator and its reference elements, can be described as follows:

**Blue Drop Score:** The Blue Drop IRIS scorecard is a web-enabled audit tool used to collect data and calculate the Blue Drop Scores. This data is collated into the Blue Drop Report outlining the WSIs performance against 5 Key Performance Areas for the water supply systems and water treatment works in South Africa. A Blue Drop % is awarded to an individual water supply system based on the results from the audit process which measures performance against 5 Key Performance Areas (KPA), plus a suite of bonuses and penalties. The individual scores aggregate as a single (weighted) institutional Blue Drop score. The score is weighted against the System Input Volume (SIV) towards the water supply system. This score serves as a Performance Indicator of the capacity, compliance, and good practice that the institution attains against the Blue Drop audit requirements, which again have been derived from national and international standards. A water supply system that achieves ≥95% Blue Drop score, is regarded as excellent. A system that achieved <31% is regarded as a dysfunctional system which would require appropriate interventions. [Note: The audit covers the abstraction, treatment, distribution network to point of use].

The Blue Drop Scores for each water supply system is categorised as following:

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥95-100%</td>
<td>Excellent situation, need to maintain via continued improvement</td>
</tr>
<tr>
<td>&gt;80-&lt;95%</td>
<td>Good performance, some room for improvement</td>
</tr>
<tr>
<td>≥50-&lt;80%</td>
<td>Average performance, ample room for improvement</td>
</tr>
<tr>
<td>≥31-&lt;50%</td>
<td>Very poor performance, need targeted intervention towards gradual sustainable improvement</td>
</tr>
<tr>
<td>0-&lt;31%</td>
<td>Critical state, need urgent intervention for all aspects of the water services business</td>
</tr>
</tbody>
</table>

**Blue Drop Certified:** A water supply system that achieves an overall ≥95% Blue Drop score and “Excellent” microbiological and chemical compliance, is thereby “Blue Drop Certified”.
**Blue Drop PAT:** The Blue Drop Progress Assessment Tool (BDPAT) is a web-enabled assessment tool used to collect risk-associated data and calculate %BDRR. This data is collated into the Blue Drop Progress Report outlining the risk status of water treatment works across South Africa. In order to streamline the process of conducting BDRR assessments, both now and in the future, the BDRR formular was incorporated into the IRIS system. This facilitated capturing of information directly from the IRIS with links to supporting data provided by the WSI for purposes of verification. The BDPAT on the IRIS system has the following functionality:

- Input value for each risk indicator with separate section for comments.
- Resource pack with supporting information for each WSI as submitted on IRIS.
- Some input values are transferred directly from IRIS into the BDPAT: population served, plant design capacity, plant classification, process controller and supervisor classification, water quality compliance and monitoring compliance results.
- Option to create and export results, per supply system or institution with a number of systems.

**Blue Drop Risk Rating:** The updated BDRR formular has an added risk indicator, E: Water Safety Planning, to address the risk assessment requirements outlined in SANS 241. The updated BDRR formular is:

\[
BDRR = (A \times B) + C + D + E
\]

*Where the weighting factor is based on the following five risk indicators*

- A - Design Capacity: Larger plants present a higher risk as they supply water to a larger population
- B - Operational Capacity: Plants operating above its installed capacity present a higher risk as its capability is compromised to deliver safe drinking water
- C - Water Quality Compliance: C1 Microbiological (70%) + C2 Chemical (30%)
- D - Technical Skills: Poor technical, management and maintenance skills base present a collective and individual high risk.
- E - Water Safety Plan: The absence of a WaSP, risk-defined monitoring programme based on full SANS 241 assessment and implementation of actions to reduce risk, would represent a high risk due to non-compliance with SANS 241 requirements and lack of risk-management procedures.

The proportional risk allocation between the components is 35: 35: 20: 10 for A/B: C: D: E.

Therefore, full BDRR formular = (35% (A*B)) + [35% C (70% C1 (Micro compliance X monitoring compliance) + 30% C2 (Chemical compliance x monitoring compliance))] + 20% D + 10% E.

A **BDRR value** is calculated for each water supply system in South Africa, as provided in this Blue Drop Report. The BDRR profiles are usually sent to the respective Executive Mayors from the Minister’s office, to inform the political principals of the facilities that reside in the high and critical risk space.

A **BDRR %deviation** is used throughout the Report and calculated using the following formular:

\[
BDRR\% \text{ deviation} = \frac{BDRR}{BDRR_{max}} \times 100
\]

Where \( BDRR_{max} \) = Maximum BDRR of the water supply system

The **BDRR %deviation** is a calculated unit of measurement of risk which indicate the variance of a BDRR value before it reaches its maximum BDRR value. This unit of measurement allows the Department to compare all sized and types of water treatment plants equally. All water supply systems are categorised according to their risk rating placing them in one of four categories as reflected below.

<table>
<thead>
<tr>
<th>Category</th>
<th>% Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>&lt;50%</td>
</tr>
<tr>
<td>Medium</td>
<td>50%&lt;70%</td>
</tr>
<tr>
<td>High</td>
<td>70% - &lt;90%</td>
</tr>
<tr>
<td>Critical</td>
<td>90% - 100%</td>
</tr>
</tbody>
</table>

Annexure A provides the history and alignment of the BDRR formular, the updated BDRR formular, and its application for multiple water supply systems.
**Technical Site Assessment Score:** A physical inspection is done at 1 to 2 sites to confirm the findings of the desktop audit. These sites are chosen based on their size, technology, and audit findings to best represent the potential state of the remainder of the delivery network, the treatment works and the initial part of the distribution system. The TSA score (%) reflects the physical condition of the raw water handling system (abstraction facility, pumps, and pipelines), the water treatment plant (inlet works to disinfection and sludge treatment), and distribution systems (command reservoir/s, water tower/s including pumpstations and bulk pipelines). The intention of the TSA is to verify the evidence presented and findings of the Blue Drop audit by undertaking a physical inspection of the selected site/s. Such inspections consider the:

- General aspects and the physical appearance of the plant terrain and buildings
- Raw water handling pump stations, pipelines, inlet works and flow splitting
- Chemical dosing and storage
- Functionality and condition of the respective process units – flocculation, phase separation (clarification/settling, dissolved air flotation, sand filtration, membrane filtration, granular activated carbon), and disinfection
- Functionality and condition of the high lift pumpstation, bulk pipelines from plant to command reservoir/s, command reservoir, and booster pumpstation
- Sludge treatment and disposal.

The scoring guide (%) depicted to the top right outlines the scoring criteria used for each TSA assessment element.

**VROOM costing:** The Very Rough Order of Magnitude (VROOM) is an estimation of the funding required to restore existing infrastructure to its original design capacity and operations, by addressing civil, mechanical, and electrical defects. The cost is derived through an algorithm that uses the Blue Drop Inspector’s impression of the condition of the hardware to a singular score for each water supply system inspected. **NOTE:** The VROOM cost does not constitute a specification, schedule of quantities or a definite refurbishment figure, but rather an indicative amount to inform future budget and hardware requirements.

Further terminologies that support the above concepts are as follows:

- **WSI:** A Water Services Institution is defined as “...an entity, utility, or authority that provides water services to consumers or to another water services institution, and thereby is subject to compliance with the water laws of South Africa. WSI also means a Water Services Authority, a Water Services Provider, a Water Board, and a Water Services Committee Entity...”

- **WSA:** A Water Services Authority is any District, Metropolitan or Local Municipality that is responsible for providing water services to end users.

- **WaSP:** A Water Safety Plan is a plan to ensure the safety of drinking water through the use of a comprehensive risk assessment and risk management approach that encompasses all steps in water supply from catchment to consumer. Risk management processes to manage water supply systems effectively were introduced by the World Health Organisation (WHO) in 2004 and described as Water Safety Planning. More than 93 countries have adopted Water Safety Planning as a method for drinking water quality management with more than 70 countries having policies and regulations requiring Water Safety Plans. In South Africa, the WaSP is a requirement for Blue Drop Certification and is also a critical component of drinking water management and forms part of the BDRR calculation.

- **WSP:** A Water Services Provider is a public or private entity that support or provide a service to a WSA. Such service may include operations and maintenance of the water network, treatment, and/or distribution system and depends on the agreement between the WSA and WSP. Waterboards are regarded as WSPs, also known as a Bulk Water Supplier or Provider, and their performance contributes to the overall municipal Blue Drop score. In several instances the WSAs themselves act as water service providers in their own areas and may also be WSPs for other WSAs.

- **Water Delivery Network:** This is where an independent Bulk Water Supplier and/or the WSA abstracts and delivers raw water (via pumps or gravity flow) from various water resources (dams, rivers, boreholes, springs) via pipeline/s to the water treatment works.

- **Water Treatment Works:** A water treatment facility that receives raw water at the inlet works and treats the raw water through a series of process units (flocculation, phase separation, and disinfection), stores and distributes the treated potable water for use by the populations it supplies water to. The treatment technologies available are categorised as conventional technologies, advanced technologies or other.
Water Distribution Network: The distribution of treated potable water from command reservoir/s or tower/s via a network of pipelines to and within towns, cities, or water supply areas (industrial, commercial, and residential) for consumption or use.

Water Use Efficiency: The national scale development and promotion of water conservation and water demand management aimed at the efficient use of the nation’s limited water resources. The National Water Act, 36 of 1998, provides the legal framework for the effective and sustainable management of the country’s water resources and it requires that the nation’s water resources are used efficiently and equitably in a sustainable manner for the benefit of all South Africans. Section 22 states that a person who uses water, may not waste that water. Similarly, the objective of the Water Services Act, 108 of 1997 is to promote water conservation in the provision of water services and requires WSAs to outline measures to conserve water resources and to conserve water as a WSI. The Act and its Regulations enables the implementation of Water Conservation and Water Demand Management (WC/WDM) for the municipal sector, by encouraging the sector to develop Bylaws, WC/WDM plans, WSDPs, etc. WUE is monitored as part of the Blue Drop and No Drop assessments. The international WUE benchmark is 180 l/p/d.

IRIS: The Integrated Regulatory Information System (IRIS) is a web-based application used by the Department of Water and Sanitation to facilitate the relationship between Regulation and Management of water supply and wastewater systems, while also keeping relevant stakeholders informed on compliance trends of registered supply systems. Information is uploaded by the Water Services Institution onto IRIS to allow the Inspector to assess evidence before, during and after the audit event. IRIS contains an inventory of information on all registered water supply systems, tracks historic system performance, and provides the platform to register water treatment works and operations staff.

Diagnostic: A suite of key diagnostic themes in the Blue Drop report that cover a number of strategic areas of importance to the South African water industry. Diagnostics allows deeper examination of the data and a better understanding of the causes of behaviours and patterns, in answering pressing questions of “why did it happen? “and guide recommendations on “what corrections or interventions are needed?”.

DWQ: The drinking water quality is currently reported in accordance with the SANS 241:2015 drinking water quality standards and reflects the Institutional Water Quality Compliance (% Microbiological and % Chemical Qualities) for all the water supply systems assessed as part of the Blue Drop Audit. Systems with no monitoring information are marked with NI (No Information) and a zero compliance allocated. The quality of drinking water drop definitions reflected in the Regulatory Tables per water supply system are indicated in the schematic below (under Blue Drop 2022 standard - Understanding the drop representation for each supply system).

Chemical Compliance: The chemical acute health and chronic health quality is measured against the requirements of SANS 241:2015 and must comply as per the excellent requirements set by the Blue Drop Programme. Acute health determinands pose an immediate unacceptable health risk if present at concentration values exceeding the numerical limits specified in SANS 241. Acute chronic determinands pose an unacceptable health risk if ingested over an extended period if present at concentration values exceeding the numerical limits specified in SANS 241 and is associated with population metrics.

Microbiological compliance: The acute health microbiological quality is measured against the requirements of SANS 241:2015 and is associated with population metrics. Acute health microbiological determinands pose an immediate unacceptable health risk if present at counts or values exceeding the numerical limits specified in SANS 241. Therefore,
the WSI has a regulatory obligation to ensure that quality of water supplied to consumers meet requirements as prescribed by SANS 241.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Blue</td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>≥97%</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>≥96% - &lt;97%</td>
<td></td>
</tr>
<tr>
<td>Unacceptable</td>
<td>&lt;96%</td>
<td></td>
</tr>
</tbody>
</table>

**Regulations 2834 and 3630**: The Blue Drop KPA 1 considered compliance of supervisory, process control and maintenance staff against Regulation 2834 and draft Regulation 813. These regulations have now been formally promulgated as Regulation 3630, in the Government Gazette No. 48865 of 30 June 2023. These regulations are called the Regulations relating to Compulsory National Standards for Process Controller and Water Services Works. R3630 will be implemented in phases over a period of 18 months, whereafter the sector will have 6 months to update their details on IRIS to be aligned with R3630:

- Phase 1 - Comparison study by DWS on the impact of the R3630 on the IRIS profiles and amendment of application/registration/classification forms
- Phase 2 - Sector provincial workshops to communicate the content of the R3630, the findings of the impact study, and how it will affect the IRIS profiles of Water Care Works and Process Controllers
- Phase 3 - Implementation of the R3630 on IRIS
- Phase 4 - Monitoring of compliance (2 years after promulgation).

Note: R3630 will not have an impact on the 2023 Blue Drop scores. Any queries may be directed via e-mail to Mr Lodevikus Nel at nell@dws.gov.za and the IRIS Helpdesk at niemandm@dws.gov.za and mashigo@dws.gov.za.

**Blue Drop Reporting**

This 2023 Blue Drop Report upholds the Minister’s commitment to provide the water sector and its stakeholders with ongoing, current, accurate, verified, and relevant information on the status of water services in South Africa. It follows on a series of Blue Drop Reports from 2009 to 2023, by providing feedback and progress pertaining to the current status of municipal, water boards (bulk suppliers), and DFFE water supply systems and water treatment works.
The 2023 Blue Drop Report provides information on three different levels:

1. **System specific** data and information pertaining to the performance of each drinking water supply system at WSI level.
2. **Province specific** data and information that highlight the strengths, weaknesses, and historic trends for the respective WSIs within a Province.
3. **National overview** that collates the findings from a provincial level to give an aggregated national perspective of water service performance. Historic trends are provided to gain insight into the success of provincial and national strategies to improve water management and to inform future strategies and interventions.

*The final proof of greatness lies in being able to endure criticism without resentment.*

Elbert Hubbard
Saldanha Bay: Withoogte filter gallery – excellent operation and maintenance

JB Marks: Settling tanks in immaculate condition, cleared of solids, delivering SANS241 compliant water
Blue Drop Audit Process and Procedure

Blue Drop Audits were conducted by 26 audit panels comprising of 2-3 qualified water professionals. Inspectors qualified after achieving a threshold examination score. Annexure B provides a flow chart of the 2023 Blue Drop Audit Process and Procedure leading into the publication of 2023 Blue Drop results. WSIs were supported and capacitated through the audit process, as part of the Department’s commitment to a ‘consultative audit process’. Provincial symposia, attended by WSIs from that province, were held prior to the audit to share information on the audit process and criteria. Information was also shared on the role of IRIS and introduction to the IRIS Helpdesk. WSIs were also notified in advance of the audit date, audit criteria and the required portfolio of evidence (PoE) for the audit to assist with their preparation.

The IRIS Scorecard was designed to consider evidence against 5 Key Performance Areas (KPAs):

1. Capacity Management
2. Drinking Water Quality Risk Management
3. Financial Management
4. Technical Management
5. Drinking Water Quality Compliance.

Each KPA and sub-criteria carry a different weighting based on the regulatory priorities. The Blue Drop KPAs, weights, and audit requirements (standards) are summarised in the section below. Each KPA and sub-criteria carry a different weighting and are based on the relative regulatory priorities. Annexure C provides guidance on the format and interpretation of the Report Card.

Blue Drop Audit Period: 1 July 2021 – 30 June 2022

Blue Drop Audit Requirements (Standards)

<table>
<thead>
<tr>
<th>KPAs and Sub-KPAs</th>
<th>Sub-weight</th>
<th>Blue Drop Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KPA 1: CAPACITY MANAGEMENT (15%)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.a) Registration of Water Treatment Plant</td>
<td>20%</td>
<td>The water treatment facility is registered as per the requirements of Regulation 2834 or as per Blue Drop Standard (Draft Regulation 813)</td>
</tr>
<tr>
<td>1.b) Registration of Process Controllers and Supervisor</td>
<td>20%</td>
<td>Process controllers and Supervisors are classified as per Regulation 2834 or Draft Regulation 813. This Requirements will apply for all shifts of a specific WTW. i) Classification certificates of all process controllers and supervisors/superintendents must be available in the IRIS. ii) Compliance with Regulation 2834 coupled with shift details; WSI must indicate shift patterns or measures in place when a shift does not comply with Regulatory Process Control requirements. iii) WSI must indicate process controllers and/or supervisors that are ‘shared’ across different plants/sites.</td>
</tr>
<tr>
<td>1.c) Maintenance Capacity</td>
<td>20%</td>
<td>The Water Treatment and Network must be served by a competent maintenance team (internal or outsourced), executing the maintenance work according to an acceptable maintenance plan/schedule. Evidence of the Maintenance Team as determined by technology used for general maintenance work at the relevant WTWs &amp; distribution network - mechanical, civil and electrical - (Internal or evidence if Outsourced): i) Term Contract (Outsourced) or Organisational Structure (Internal) ii) Proof of team competency (Qualification &amp; Experience &amp; Trade-test) iii) Provide a site specific operation and maintenance schedule) iv) Logbook with maintenance entries as per maintenance plan.</td>
</tr>
<tr>
<td>1.d) Engineering Management Capacity</td>
<td>20%</td>
<td>The WSI must ensure that a competent engineering specialist oversee water treatment and supply operations, maintenance, and general asset management. Number of Engineering Staff available in the WSI taking responsibility for Maintenance Planning and General Asset Management: i) 1 X Engineering Technician, ii) 1 X Engineering Technologist iii) 1 X Engineer, or iv) MISA Appointee: temporary engineering staff</td>
</tr>
<tr>
<td>KPAs and Sub-KPAs</td>
<td>Sub-weight</td>
<td>Blue Drop Requirement</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td><strong>1.e) Scientific Capacity</strong></td>
<td>20%</td>
<td>The WSI must ensure that a suitably qualified professional scientist oversees the implementation of the Operational and Compliance monitoring programme (sample and analyses) Number of Scientific Staff appointed for the management of drinking water quality management, including implementation of the water safety planning process, sampling, and analyses: i) 1 X Candidate Scientist ii) 1 X Professional Scientist</td>
</tr>
<tr>
<td><strong>2.a) Water Safety Planning</strong></td>
<td>40%</td>
<td>The WSI must provide a drinking water risk management plan, which adheres to an internationally recognised standard/best practice such as the WHO/IWA water safety plan framework: i) Team Assembled, ii) System detailed in the Plan, iii) Plan was reviewed in past 3 years, iv) Detailing System-specific Hazard/Risk Assessment, &amp; v) Adequate Control measures identified. i) signature from Technical director/MM ii) Risk prioritisation method iii) Risk assessment of catchment iv) Risk assessment of plant v) Risk Assessment of network vi) Final risk rating vii) Mitigating measures for all high and medium risks viii) Full SANS 241 analysis of raw and final water ix) Identification of risk determinands x) additional risk determinands to monthly compliance monitoring as per SANS 241 - frequency based on category of risk (acute/chronic/aesthetic) xi) proof that &gt;25% of mitigating measures have been implemented – proof in form of purchase order, pictures, water quality results, tender document, etc.</td>
</tr>
<tr>
<td><strong>2.b) Operational Monitoring</strong></td>
<td>10%</td>
<td>Each WTW will have an operational monitoring programme in place which informs the operational treatment efficacy (as per the required frequency) of the treatment facility as per the SANS 241. Details of Operational Monitoring: i) Proof of Operational Monitoring sites, determinands and frequency ii) Samples must include: i) inflow (raw), (ii) pre-filtration, iii) post filtration; (between each unit process clarification, filtration) vi) final iii) Determinands monitored, must at least incl. pH, Turbidity, Free Chlorine (Final) iv) As per Authorisation measure / daily abstraction rates (kl/d)</td>
</tr>
<tr>
<td><strong>2.c) Compliance Monitoring</strong></td>
<td>20%</td>
<td>Each Water Supply System will have a compliance monitoring programme in place (implemented), informed by the Drinking Water Safety Planning process, and SANS 241 requirements, as per the required frequency, determinands and sampling points. Details of Compliance Monitoring Programme: i) Compliance Monitoring informed by water safety planning process, inclusion of identified risk determinands (WSI to provide list of problem determinands, sample points and frequency of monitoring) ii) Required sites monitored: WTW final &amp; distribution network (monitoring programme covering 80% of the supply system) + Frequency of analyses: Final: Weekly for acute health (micro, chemical), Monthly: final and distribution network for all other risk determinands as per SANS 241.</td>
</tr>
<tr>
<td><strong>2.d) Laboratory Credibility</strong></td>
<td>20%</td>
<td>All compliance monitoring samples must be analysed at a credible laboratory (either accredited according to SANAS requirements or participating in a proficiency testing scheme with acceptable z-scores) for the required determinands, with an acceptable turnaround time. i) Certified Data &gt; 80% = 40% ii.a) SANAS Certificate of Accreditation or Methods or Z-scores results (z-scores must be &gt; −2 &amp; &lt; +2 are acceptable) in a recognised Proficiency Testing Scheme = 60%; OR ii.b) Proof of intra- and inter-laboratory proficiency (quality assurance as prescribed in Standard Methods) = 40%</td>
</tr>
<tr>
<td><strong>2.e) Incident Management Protocol</strong></td>
<td>10%</td>
<td>As part of the DWQ Risk Management preparedness the WSI should have an Incident Management Protocol in place and an Incident Register detailing incidents, causes, rectification, and timeframes. The Treatment works will have a WTW Logbook to record all treatment process related incidents. (Feedback to WaSP update!!) i) WSI must have an Incident Management Protocol to guide reaction should there be a failure in DWQ: alert levels, response times, required actions, roles and responsibilities, communication vehicles. ii) A DWQ Incident Register detailing 1) details of Incidents (date, locations, description) 2) Causative factors, 3) Rectification (actions taken) &amp; 4) Timeframes (date of resolution) iii) A WTW Logbook detailing all treatment process related incidents.</td>
</tr>
</tbody>
</table>

**KPA 3: FINANCIAL MANAGEMENT: 15%**

**Water Treatment Operations and Maintenance Cost Determination done:**

i) Determined for the whole Water Supply System; or ii) Determined for part of the system; or iii) Not system specific (Global only); or iv) Not Done at all
<table>
<thead>
<tr>
<th>KPAs and Sub-KPAs</th>
<th>Sub-weight</th>
<th>Blue Drop Requirement</th>
</tr>
</thead>
</table>
| 3.a) Water Supply Operations Cost Determination | 35% | The WSI must determine the actual operations and maintenance cost of water treatment and supply (reticulation) per water supply scheme and express this in R/m³. (This determination should include energy use for treatment and pumping) *Note: This will exclude capital cost for upgrades rehabilitation.  
i) Municipality / WSI must provide evidence of a proper O&M cost determination for the entire water supply system (treatment works, network, pumpstations) This must at least incl:
   a) Energy Consumption  
b) Raw Water Cost  
c) Compensation of Employees  
d) Chemical cost  
e) Maintenance Cost  
ii) Provide an operational cost determination per m³ treated.  
*Note: This will exclude capital cost for upgrades rehabilitation. |
| 3.b) Water Supply Operations & Maintenance Budget | 10% | The WSI must have an annual O&M budget per water supply system, for water treatment and supply / reticulation. The WSI must provide proof of the water supply system Operations & Maintenance Budget per annum (for the audit period) -Including the water treatment works, bulk distribution and reticulation. |
| 3.c) Water Supply Operations & Maintenance Expenditure | 25% | WSI must provide evidence of the water treatment and supply O&M expenditure per annum (to be measured in relation to the original budget).  
O&M Expenditure Within Approved FY budget (88% <= 100%)  
O&M Expenditure That Overspent (>100%) Against Approved Budget  
O&M Expenditure That Underspent (<88%) Against Approved Budget  
No proof = 0% |
| 3.d) Supply Chain Management of Services and Treatment Products | 20% | There must be appropriate supply chain management process in place to ensure continuous availability of treatment chemicals (and related consumables), maintenance and spares.  
The WSI must provide proof of approved contract for outsourced services that cover the BD audit year:  
i) technical services (i.e. maintenance, spares, calibration) and  
ii) supply of chemical, and treatment consumables.  
(Where applicable) |
| 3.e) Capital Budget and Expenditure | 10% | The WSI must provide current (and planned) capital budget (current FY and future) and expenditure for refurbishment and/or upgrades of the specific water treatment and supply system.  
In terms of Refurbishment or Upgrades, the WSI must provide:  
i) Capital budget for both WTW and network  
ii) Expenditure for both WTW and network  
No Proof |

**KPA 4: TECHNICAL MANAGEMENT (15%)**

<table>
<thead>
<tr>
<th>Sub-KPAs</th>
<th>Sub-weight</th>
<th>Blue Drop Requirement</th>
</tr>
</thead>
</table>
| 4.a) WTW Design and Supply Capacity Management | 20% | The WSI must be authorised for a Section 21(a) water use, measure operations (volumes treated per day) accordingly and record for planning and audit purposes. It is also required to have record of the available supply/pumping capacity to convey water to reservoir(s).  
The WSI must provide:  
i) Documented design capacity of the water treatment facility  
ii) Documented daily water treatment volumes (over 12 months of assessed period) in kl/d.  
iii) WSI is required to provide motivation/proof of accuracy of meter readings (calibration or verification) |
| 4.b) Process Audit | 30% | A water treatment facility must be subjected to an annual condition assessment and/or a Process Audit (conducted by a duly qualified professional person) to inform functionality of the infrastructure. Risk findings must be incorporated in the Water Safety Planning process.  
i-a) Condition Assessment report (conducted by a qualified engineering/technical/scientific internal resource). Evidence required of audit findings and recommendations on treatment facility status (Jul '19 - to Sep '22); OR  
i-b) Process Audit report (conducted by a duly qualified independent professional person) to include the (design) capability of the plant to meet compliance standards, as well as actual performance of unit processes (Period: Jul '15 to Sep '22).  
ii) Evidence/plan of implementation of a-1 or a-2 audit recommendations during year(s) following Audit Report  
*Note: Cross-check if findings (risks) and recommendations (corrective measures) have been incorporated in Water Safety Plan (WaSP)  
5% will be deducted if findings not incorporated in the WaSP or Risk Register under crit. (KPA 2a) |
| 4.c) Water Reticulation Inspection | 25% | The WSI shall ensure that the water supply system is subjected to at least an annual inspection to determine asset condition of pump-stations, reservoirs, and the network in general. The results of this inspection must inform the water safety planning process, especially the reservoirs.  
Provide evidence in form of capacity and condition assessment/audit description, findings, and recommendations of system. Report to include a water flow balance that provides an indication of Non-Revenue Water.  
*Note: Cross-check if findings (risks) and recommendations (corrective measures) of Reticulation Inspection Report have been incorporated in WaSP.  
NB! Must report on condition of reservoirs. |
| 4.d) Water Treatment and Supply system Asset Management | 25% | Water Infrastructure must be included in an updated WSI Asset Register (as per AGSA requirements), detailing:  
i) Proof of Asset Register, evidence to be submitted.  
ii) Asset register to include movable equipment & immovable infrastructure / assets with matching detail. The asset register must detail: |
<table>
<thead>
<tr>
<th>KPAs and Sub-KPAs</th>
<th>Sub-weight</th>
<th>Blue Drop Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>a) relevant equipment and infrastructure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) asset description</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c) location</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d) condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>e) remaining useful life</td>
</tr>
<tr>
<td></td>
<td></td>
<td>f) replacement value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>iii). Proof that Asset Register is used to inform Maintenance Plan.</td>
</tr>
</tbody>
</table>

### KPA 5: DRINKING WATER QUALITY COMPLIANCE (35%)

#### 5a) Monitoring Data Submission to DWS
- **10%**
  - A WSI must ensure that all Compliance Monitoring data is submitted on a monthly basis to the Department of Water and Sanitation on the required Regulatory System (IRIS). (12 months). Compliance monitoring is adhering to the water safety planning informed monitoring programme. The WSI should ensure that all DWQ data (compliance incl. risk-based) is submitted to DWS:
  - i) Data submitted for 12 months of the audit period
  - ii) All sampling results submitted as per the WaSP monitoring programme

#### 5b) Acute Health Microbiological Risk Compliance
- **30%**
  - The Acute Health Microbiological Quality of water supply must comply with the South African National Standard (SANS241) as per the Excellent Requirements set by the Blue Drop Programme.

#### 5c) Chemical Compliance
- **20%**
  - The Chemical Quality of water supply must comply with the South African National Standard (SANS241) for both Acute and Chronic health determinands, as per the Excellent Requirements set by the Blue Drop Programme.
    - i) Chemical - Acute Health:
      - Excellent Comp. (97% for <100 000) & (99% for >100 000)
      - Good Compliance (95% for <100 000) & (97% for >100 000)
    - ii) Chemical - Chronic Health:
      - Excellent Compliance (95% for <100 000) & (97% for 100 000)
      - Good Compliance (93% for <100 000) & (95% for 100 000)

#### 5d) Risk Defined Compliance
- **15%**
  - The Compliance of all Determinands identified during the Risk Assessment Process to be included in the risk-defined monitoring programme, must comply with the requirements set in the SANS 241.
    - i) Excellent Compliance (95% for <100 000 & 97% for >100 000)
    - ii) Good Compliance (93% for <100 000 & 95% for >100 000)

#### 5e) Treatment (Operational) Efficiency Index
- **5%**
  - The compliance of operational determinands as monitored at the Final Water sampling point must comply with the SANS 241 Requirements.
    - This is the Works operational determinands compliance and should be calculated manually.
    - **Note:** this is not compliance data that has an operational risk.
      - i) Excellent Compliance (93% for <100 000 & 95% for >100 000)
      - ii) Good Compliance (90% for <100 000 & 93% for >100 000)

### BONUSESSES

#### 6a) Process Control Training
- **25%**
  - i) Process controllers and supervisory staff must be subjected to relevant training over the past 24 months from the date of audit.
  - ii) Cross-pollination and in-house training will be acknowledged as non-accredited capacity building.

#### 6b) Performance Agreements
- **25%**
  - Workplans or Performance Agreements of process controllers and DWQ Management aligned to Water Treatment Operations Requirements and SANS 241 compliance targets.

#### 6c) Publication of Drinking Water Quality Results
- **25%**
  - The WSI takes responsibility to inform the public of quality of drinking water supplied.

#### 6d) Water Demand Management
- **25%**
  - WSI has a water balance of its water supply system in terms of Regulation 10 under Section 9 of the Water Services Act.

### PENALTIES

#### 7a) Data variances and Discrepancies
- **50%**
  - The penalty shall be applied if a selected sample of hardcopy records present differences to what was uploaded onto IRIS or reported to the public.

#### 7b) Non-notification of DWQ Failure
- **50%**
  - Should the WSI fail to present evidence of an Adverse Water Quality Alert Notice (incl. Boil Water Notice) issued for significant (sustained) failures.
Understanding the drop representation for each supply system

<table>
<thead>
<tr>
<th>Colour Drop</th>
<th>Indication of Drop</th>
</tr>
</thead>
</table>
| ![Blue Drop Certified](Image) | Water complied excellently with standard; safe to drink  
Micro >97%  
Chemical >95% |
| ![Green Drop](Image) | Water safe to drink but some chemical parameter compliance required improvement  
Micro >97%  
Chemical <95% (or no information) |
| ![Yellow Drop](Image) | Water generally safe to drink but with recorded some microbiological failures  
Micro <97%  
Chemical >95% |
| ![Red Drop](Image) | Water did not comply according to expected standard targets  
Micro >90% but <95%  
Chemical >90% but <95% |
| ![Red Drop](Image) | Compliance levels too low; there were extended periods when the water did not comply with standard / or no monitoring to confirm actual quality of tap water  
Micro <90%  
Chemical <90% |

“If you are going to achieve excellence in big things, you develop the habit in little matters. Excellence is not an exception; it is a prevailing attitude.”  

Colin Powell
Impedile Town: View from top of reservoir 2, good structural integrity

Mbombela/Umjindi: WRCW WTW raw water meter read daily, calibrated
4. NATIONAL PERFORMANCE OVERVIEW OF MUNICIPAL WATER MANAGEMENT

- 144 WSAs & 958 systems audited
- 7 Water Boards & 23 WSPs
- 26 BD Certifications
- 277 Critical State systems
The nine provinces provide drinking water to a total population of 48,486,577 persons in South Africa.

The Blue Drop audit attendance records confirms that 100% of the 144 WSAs participated, covering 958 water supply systems across the country inclusive of 7 Water Boards (9 during the audit period but now 7) and 23 Water Service Providers. These statistics bodes well to affirm commitment to the Blue Drop national incentive-based regulatory programme.

The Regulator determined that 26 water supply systems scored more than 95% when measured against the Blue Drop standards and thus qualified for the prestigious Blue Drop Certification. In 2014, 44 water supply systems were awarded Blue Drop status.

The nine provinces provide drinking water to a total population of 48,486,577 persons, with significant shortcomings in good management- and risk management practice in their water business. The KPAs that require focused attention are those that that scored below <31% (critical) and between ≥31-<50% (poor).
The national Blue Drop Risk Rating (BDRR) improved from 52.3% in 2022 (BD PAT) to 47.15% in 2023. A total of 577 (of 958) water supply systems are situated in the low risk category, 184 WSSs in the medium risk category, 102 WSSs in the high risk category, and 95 WSSs in the critical risk category. The BDRR is however, only a snapshot of specific risk indicators, whilst the BD scores reflect the overall water services business.

The Regulator is confident that the 2023 Blue Drop report provides the true and verified status of water services in South Africa. Stakeholders will benefit from having an updated baseline to inform new plans and budgets to improve performance and ensure turnaround in municipalities where water services are failing or are following a failure trajectory. Municipalities and service providers are encouraged to start preparation for the next Blue Drop audit cycle, which is planned to cover the financial year 2023/24 and released in 2025. The National 2023 Blue Drop status is summarised in the table below.

### Table 3 - National 2023 Blue Drop Summary

<table>
<thead>
<tr>
<th>Province</th>
<th>2014 BD Report</th>
<th>2023</th>
<th>Names of BD Certified Municipalities and Systems</th>
<th>2014 Critical State WSSs (&lt;31%)</th>
<th>2023 Critical State WSSs (&lt;31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>None</td>
<td>None</td>
<td>City of Johannesburg MM (Rand Water) - Greater Johannesburg WSS</td>
<td>31</td>
<td>77</td>
</tr>
<tr>
<td>Free State</td>
<td>6</td>
<td>None</td>
<td>City of Ekurhuleni MM (Rand Water) – Ekurhuleni</td>
<td>27</td>
<td>None</td>
</tr>
<tr>
<td>Gauteng</td>
<td>9</td>
<td>3</td>
<td>Midvaal LM (Rand Water) - Meyerton</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>8</td>
<td>3</td>
<td>Ilembe DM (Umgeni Water) – Dolphin Coast Ballito - Sembcorp Siza Water</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Limpopo</td>
<td>1</td>
<td>None</td>
<td>Msunduzi LM (Umgeni Water) – Umsunduzi</td>
<td>18</td>
<td>21</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>9</td>
<td>4</td>
<td>uMgungundlovu DM (Umgeni Water) - UW-uMgungundlovu DM</td>
<td>22</td>
<td>26</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>2</td>
<td>None</td>
<td>JB Marks LM – Potchefstroom</td>
<td>23</td>
<td>29</td>
</tr>
<tr>
<td>North West</td>
<td>1</td>
<td>1</td>
<td>Berg Rivier LM (West Coast DM Bulk) – Velddrif</td>
<td>34</td>
<td>123</td>
</tr>
<tr>
<td>Western Cape</td>
<td>8</td>
<td>15</td>
<td>City of Cape Town MM – Cape Town</td>
<td>32</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Drakenstein LM (City of Cape Town MM) – Hermon</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>George LM – George</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Overstrand LM - Baardskeerdersbos; Buffeljags Bay; Buffelsrivier; Greater Gansbaai; Greater Hermanus; Kleinmond; Pearly Beach; Stanford</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Saldanha Bay LM (West Coast DM Bulk) - Hopefield</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Swartland LM (West Coast DM Bulk) - Witbooi</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Theewaterskloof LM – Botrivier</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>44</td>
<td>26</td>
<td></td>
<td>174</td>
<td>277</td>
</tr>
</tbody>
</table>

### Background to Water Delivery and Distribution Infrastructure

The total volume of water treated nationally is 12,217,269 kl/d. 144 WSAs, 7 WBs (current) and 23 WSPs are responsible for water services through a water network comprising of:

- 1,015 WTWs, boreholes and springs and 958 WSSs of which the bulk of the potable water is provided by the respective Water Boards and other water service providers
- 2,693 pump stations, 37,644 km bulk water supply lines, 136,645 km reticulation pipe lines, and 7,159 reservoirs (excluding systems in the various WSAs per province that were unable to provide data).

### Table 4 - National Summary of Capacities, Daily Production and SIV distribution according to plant sizes

<table>
<thead>
<tr>
<th>Micro Size Plants</th>
<th>Small Size Plants</th>
<th>Medium Size Plants</th>
<th>Large Size Plants</th>
<th>Macro Size Plants</th>
<th>Unknown (NI)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of WTWs, Boreholes, Springs</td>
<td>&lt;500 kl/day</td>
<td>500 - &lt;2,000 kl/day</td>
<td>2,000 - &lt;10,000 kl/day</td>
<td>10,000 - &lt;25,000 kl/day</td>
<td>&gt;25,000 kl/day</td>
</tr>
<tr>
<td>220 (22%)</td>
<td>289 (28%)</td>
<td>316 (32%)</td>
<td>104 (10%)</td>
<td>86 (8%)</td>
<td>1,015</td>
</tr>
<tr>
<td>Total Design Capacity (kl/day)</td>
<td>50,641</td>
<td>281,417</td>
<td>1,378,656</td>
<td>1,580,530</td>
<td>14,082,600</td>
</tr>
<tr>
<td>None</td>
<td>17,373,844</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Available Capacity (kl/day)</td>
<td>48,482</td>
<td>280,096</td>
<td>1,327,377</td>
<td>1,514,635</td>
<td>13,640,889</td>
</tr>
<tr>
<td>None</td>
<td>16,811,479</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The audit verified a total installed design capacity of 17,373,844 kl/d and a total available design capacity of 16,811,479 kl/d with most of this capacity residing in the macro-sized water treatment plants.

Collectively, the 1,015 WTWs produce 12,217,269 kl/d and distributes 12,136,050 kl/d across the water networks. By comparing the available treatment capacity with the treated water volume, a spare treatment capacity of 4,594,210 kl/d is available (27%) to meet additional future demands. However, the national WUE is fairly high (ave. 256 l/p/d) compared to the international WUE benchmark of 180 l/p/d, indicating a high ratio between effective water use and actual water abstraction. Going forward, the provinces will have to dedicate significant resources to curb water losses and NRW.

In some cases, a Bulk Water Supplier supplies water across provincial borders and it is difficult to report accurately on design capacity and available capacity at provincial level, as the statistical data may become repetitive. Therefore, the reporting on the total system input volumes (SIV) would provide more accurate figures on the supply of treated water to the various water supply systems. The total SIV nationally 12,136,050 kl/d and the average daily treatment volume is 12,217,269 kl/d, this indicates that the treated volume is more than the total SIV (100.7%) despite the 237 WTWs/boreholes/springs/fountains that are not measuring their average daily treatment volumes. The largest contributors to the total SIV (55%) is Gauteng with 4,274,956 kl/d followed by KwaZulu Natal with 2,576,627 kl/d. Diagnostic no. 2 to follow herein will unpack these statistics in more detail.
The national water distribution infrastructure is summarised in the table below.

**Table 5 - National Summary of Water Distribution Reticulation Infrastructure**

<table>
<thead>
<tr>
<th>Province</th>
<th># WSS with no WSP/WB</th>
<th># WSS with WSP/WB</th>
<th># Pump Stations (#)</th>
<th>Bulk Water Supply Lines (km)</th>
<th>Reticulation pipe lines (km)</th>
<th># Reservoirs/Towers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>136</td>
<td>18</td>
<td>375</td>
<td>3,094</td>
<td>6,357</td>
<td>826</td>
</tr>
<tr>
<td>Free State</td>
<td>57</td>
<td>23</td>
<td>228</td>
<td>1,480</td>
<td>6,172</td>
<td>335</td>
</tr>
<tr>
<td>Gauteng</td>
<td>9</td>
<td>20</td>
<td>211</td>
<td>5,084</td>
<td>38,418</td>
<td>538</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>82</td>
<td>90</td>
<td>816</td>
<td>4,763</td>
<td>37,188</td>
<td>1,975</td>
</tr>
<tr>
<td>Limpopo</td>
<td>55</td>
<td>29</td>
<td>116</td>
<td>3,568</td>
<td>30,105</td>
<td>1,154</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>85</td>
<td>15</td>
<td>272</td>
<td>2,705</td>
<td>9,088</td>
<td>640</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>154</td>
<td>22</td>
<td>150</td>
<td>2,039</td>
<td>764</td>
<td>278</td>
</tr>
<tr>
<td>North West</td>
<td>27</td>
<td>12</td>
<td>177</td>
<td>825</td>
<td>1,989</td>
<td>311</td>
</tr>
<tr>
<td>Western Cape</td>
<td>106</td>
<td>18</td>
<td>348</td>
<td>14,087</td>
<td>6,563</td>
<td>1,102</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>711</strong></td>
<td><strong>247</strong></td>
<td><strong>2,693</strong></td>
<td><strong>37,644</strong></td>
<td><strong>136,645</strong></td>
<td><strong>7,159</strong></td>
</tr>
</tbody>
</table>

**National Blue Drop Analysis**

The 100% response from the 144 WSAs audited demonstrates a firm commitment to progressive water services management in the country. 144 WSAs were audited in 2023 compared to the 152 WSAs in 2014.

**Table 6 - National Blue Drop Comparative Analysis from 2012 to 2023**

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>2012</th>
<th>2014</th>
<th>2023</th>
<th>Performance trend 2014 and 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incentive-based indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WSAs assessed (#)</td>
<td>153 (100%)</td>
<td>152 (100%)</td>
<td>144 (100%)</td>
<td>→</td>
</tr>
<tr>
<td>Water supply systems assessed (#)</td>
<td>931</td>
<td>1036</td>
<td>958</td>
<td>↓</td>
</tr>
<tr>
<td>Blue Drop scores ≥50% (#)</td>
<td>NA</td>
<td>617 (59%)</td>
<td>507 (53%)</td>
<td>↓</td>
</tr>
<tr>
<td>Blue Drop scores &lt;50% (#)</td>
<td>NA</td>
<td>419 (41%)</td>
<td>451 (47%)</td>
<td>↓</td>
</tr>
<tr>
<td>Blue Drop Certifications (#)</td>
<td>98</td>
<td>44</td>
<td>26</td>
<td>↓</td>
</tr>
<tr>
<td>Lowest Technical Site Assessment Score (%)</td>
<td>NA</td>
<td>NA</td>
<td>39%</td>
<td></td>
</tr>
<tr>
<td>Highest Technical Site Assessment Score (%)</td>
<td>NA</td>
<td>NA</td>
<td>93%</td>
<td></td>
</tr>
</tbody>
</table>

NA = Not Applied    NI = No Information

↑ = improvement, ↓ = regress, → = no change

**Figure 2** - Blue Drop trend analysis over the period 2012 to 2023, indicating the percentage BD scores above and below 50%
The trend analysis indicates that:

- The no. of systems audited has decreased from the last BD audit in 2014
- The no. of systems with BD scores of ≥50% decreased from 617 (59%) in 2014 to 507 (53%) in 2023
- This trend was reversed with no. of systems with a BD score of ≤50% increasing from 419 (41%) in 2014 to 451 (47%) in 2023
- Blue Drop Certifications decreased from 44 awards in 2014 to 26 awards in 2023
- The overall performance trend indicates a regression from 2014 to 2023
- This negative trajectory reinforces the need for regular audits to ensure timely turnaround and continued improvement
- The negative trend also implies that performance has declined in the absence of regulatory engagement of the BD audits between 2014 to 2023.

![Figure 3 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right)](image)

<table>
<thead>
<tr>
<th>Figure 3 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right)</th>
</tr>
</thead>
</table>

### Table 7 - National Blue Drop Scores Performance Categories from 2014 and 2023

<table>
<thead>
<tr>
<th>Province</th>
<th>2014 BD Report Scores</th>
<th>2023 BD Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≥95–100% Excellent</td>
<td>≥80–&lt;95% Good</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>0</td>
<td>39</td>
</tr>
<tr>
<td>Free State</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Gauteng</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Limpopo</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>North West</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Western Cape</td>
<td>8</td>
<td>19</td>
</tr>
<tr>
<td>Totals</td>
<td>44</td>
<td>129</td>
</tr>
</tbody>
</table>

Comparative analysis of the 2014 and 2023 blue drop scores, indicates that most of the system scores are in the ≥50–<80% (Average Performance) category, with the <31% (Critical State) being the next largest category. It is concerning that 277 systems in 2023 reside in Critical State (<31%).

In summary, trend analysis since 2014 to 2023 indicate as follows:

- Systems in a ‘critical state’ increased from 174 systems to 277 systems
- Systems in a ‘poor state’ decreased from 245 systems to 174 systems
- Systems in an ‘average state’ decreased from 444 systems to 373 systems
- Systems in the ‘good state’ decreased from 129 systems to 108 systems
- Systems in the ‘excellent state’ decreased from 44 systems to 26 systems.

### National BDRR Analysis

The Blue Drop Risk Rating (BDRR) analysis assesses the risk across the entire water supply network. The BDRR formular was updated in 2021 to include an added risk indicator, i.e. ‘E: Water Safety Plans’, to address the risk assessment requirements outlined in SANS 241 of 2015. The BDRR now contains 5 risk indicators, i.e. design capacity (A), operational capacity (B), water quality compliance (C), technical capacity (D), and water safety plans (E). The results from the BDRR analyses are summarised in the table and figure following.

---

**NATIONAL PERFORMANCE OVERVIEW**
Table 8 - National BDRR/BDRRmax Comparative Analysis from 2022 and 2023

<table>
<thead>
<tr>
<th>Province</th>
<th># WSSs</th>
<th>2022 BD PAT</th>
<th>2023 BD Audit</th>
<th>Performance Trend 2022 and 2023</th>
<th>BDRR Risk Category Split</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>154</td>
<td>51.60%</td>
<td>46.10%</td>
<td>↑</td>
<td>98</td>
</tr>
<tr>
<td>Free State</td>
<td>80</td>
<td>61.90%</td>
<td>57.10%</td>
<td>↑</td>
<td>34</td>
</tr>
<tr>
<td>Gauteng</td>
<td>29</td>
<td>40.60%</td>
<td>34.60%</td>
<td>↑</td>
<td>36</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>172</td>
<td>50.40%</td>
<td>45.54%</td>
<td>↑</td>
<td>113</td>
</tr>
<tr>
<td>Limpopo</td>
<td>84</td>
<td>61.60%</td>
<td>52.84%</td>
<td>↑</td>
<td>42</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>100</td>
<td>54.80%</td>
<td>53.99%</td>
<td>↑</td>
<td>52</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>176</td>
<td>51.50%</td>
<td>62.83%</td>
<td>↓</td>
<td>71</td>
</tr>
<tr>
<td>North West</td>
<td>39</td>
<td>63.50%</td>
<td>43.93%</td>
<td>↑</td>
<td>26</td>
</tr>
<tr>
<td>Western Cape</td>
<td>124</td>
<td>34.80%</td>
<td>27.40%</td>
<td>↑</td>
<td>115</td>
</tr>
<tr>
<td>Totals</td>
<td>958</td>
<td>52.30%</td>
<td>47.15%</td>
<td>↑</td>
<td>577</td>
</tr>
</tbody>
</table>

↑ = improvement, ↓ = regress, ➔ = no change

Figure 4 - a) WSS risk distribution and trends for 2022 and 2023; b) Colour legend

Trend analysis of the BDRR ratings for 2022 and 2023 indicates that:

- The 2023 audit cycle highlighted a slightly progressive shift with an increase in the no. of low risk WSSs (548 to 577), an increase in the medium risk WSSs (168 to 184), a marginal increase in the high risk WSSs (101 to 102), and a decrease in the critical risk WSSs (100 to 95).

Regulatory Enforcement

Water supply systems which fail to achieve the minimum Blue Drop target of 31%, are placed under regulatory focus. The Regulator requires these WAs to submit a detailed corrective action plan (CAP) within 20 working days from publishing of this report. 277 of 958 (29%) WSSs received Blue Drop scores below 31%, and are hence placed under regulatory surveillance, in accordance with the Water Services Act (108 of 1997). DWS together with COGTA will, through the grant allocation systems ensure priority is given to application of grants to rectify/restore the water services treatment and supply shortcomings identified in this report.

Table 9 - WSSs with <31% Blue Drop scores

<table>
<thead>
<tr>
<th>Province</th>
<th>WSA Name</th>
<th>2023 BD Score</th>
<th># WSSs</th>
<th>WSS Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>Alfred Nzo DM</td>
<td>54.80%</td>
<td>1</td>
<td>Kinira</td>
</tr>
<tr>
<td></td>
<td>Chris Hani DM</td>
<td>45.30%</td>
<td>3</td>
<td>Farms &amp; Rural, Hofmeyer and Tarkastad</td>
</tr>
<tr>
<td></td>
<td>Dr Beyers Naude LM</td>
<td>24.20%</td>
<td>10</td>
<td>Aberdeen, Graaff-Reinet, Jansenville, Klipplaat, Nieu-Bethesda, Rietbron, Steytlerville, Waterford, Willowmore and Wolwefontein</td>
</tr>
<tr>
<td></td>
<td>Koukamma LM</td>
<td>24.10%</td>
<td>11</td>
<td>Blikkiesdorp, Clarkson, Coldstream, Joubetina, Kareedouw, Krakeel, Louterwater, Misgund, Sanddrif, Storms River and Woodlands</td>
</tr>
<tr>
<td>Free State</td>
<td>Sundays River Valley LM</td>
<td>25.60%</td>
<td>2</td>
<td>Addo and Kirkwood</td>
</tr>
<tr>
<td></td>
<td>Mangaung</td>
<td>62.80%</td>
<td>1</td>
<td>Soutpan Krugersdrift Dam</td>
</tr>
<tr>
<td></td>
<td>Setzoto LM</td>
<td>43.30%</td>
<td>2</td>
<td>Clocolan, Senekal</td>
</tr>
<tr>
<td></td>
<td>Mantsopa LM</td>
<td>42.30%</td>
<td>3</td>
<td>Hobhouse, Thaba Phatchoa, Tweespruit</td>
</tr>
<tr>
<td></td>
<td>Ngwathe LM</td>
<td>36.20%</td>
<td>4</td>
<td>Parys, Vredefort, Koppies, Edenville boreholes</td>
</tr>
<tr>
<td>Province</td>
<td>WSA Name</td>
<td>2023 BD Score</td>
<td># WSSs</td>
<td>WSS Names</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------</td>
<td>---------------</td>
<td>--------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>Moqhaka LM</td>
<td>36.10%</td>
<td>1</td>
<td>Steynsrus, Smithfield, Zastron</td>
</tr>
<tr>
<td></td>
<td>Mohokare LM</td>
<td>27.60%</td>
<td>3</td>
<td>Rouxville, Smithfield, Zastron</td>
</tr>
<tr>
<td></td>
<td>Masilonyana LM</td>
<td>25.50%</td>
<td>4</td>
<td>Brandfort, Theunissen, Verkeerdevlei, Winburg</td>
</tr>
<tr>
<td></td>
<td>Tokolomo LM</td>
<td>24.80%</td>
<td>2</td>
<td>Boshof, Dealesville</td>
</tr>
<tr>
<td></td>
<td>Maluti-a-Phofung LM</td>
<td>17.70%</td>
<td>8</td>
<td>Bluegumbosch, Kestell, Harankopane, Mphatilalatsane, Greater Qwaqwa, Makwane, Harrismith, Tshiamo</td>
</tr>
<tr>
<td>Limpopo</td>
<td>Mafube LM</td>
<td>4.30%</td>
<td>3</td>
<td>Frankfort, Tweeling, Villiers</td>
</tr>
<tr>
<td></td>
<td>Harry Gwala DM</td>
<td>66.18%</td>
<td>2</td>
<td>Machunwini, Chibini</td>
</tr>
<tr>
<td></td>
<td>Zululand DM</td>
<td>43.93%</td>
<td>5</td>
<td>Coronation, eMondlo, Hilobane, Louwsberg, Vryheid</td>
</tr>
<tr>
<td></td>
<td>King Cetshwayo DM</td>
<td>40.70%</td>
<td>2</td>
<td>Khombe, Pikiyiyeza</td>
</tr>
<tr>
<td></td>
<td>Umzinyathi DM</td>
<td>31.95%</td>
<td>12</td>
<td>12 of 13 WSSs</td>
</tr>
<tr>
<td></td>
<td>Bela-Bela LM</td>
<td>60.30%</td>
<td>2</td>
<td>Radium, Rapotokwane</td>
</tr>
<tr>
<td></td>
<td>Mopani DM</td>
<td>56.10%</td>
<td>1</td>
<td>Drakensig</td>
</tr>
<tr>
<td></td>
<td>Modimolle/Mookgophong LM</td>
<td>51.10%</td>
<td>4</td>
<td>Mookgophong, Mabaling, Mabatlane and Roedtan</td>
</tr>
<tr>
<td></td>
<td>Thabazimbi LM</td>
<td>47.50%</td>
<td>2</td>
<td>Leepoort and Rooiberg</td>
</tr>
<tr>
<td></td>
<td>Greater Sekhukhune DM</td>
<td>39.60%</td>
<td>13</td>
<td>Flag Boshielo, Kutullo, Magukubjane, Mahlokoena, Mapodile, Marishane, Masemola, Ngwaabe, Nkosini, Penge, Steelpoort, Tsakane and Vergelegen</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>Capricorn DM</td>
<td>38.10%</td>
<td>4</td>
<td>Alldays, Botlokwa, Mogwadi and Senwabarwana</td>
</tr>
<tr>
<td></td>
<td>Thembisile LM</td>
<td>75.30%</td>
<td>1</td>
<td>Langkloof</td>
</tr>
<tr>
<td></td>
<td>Mbombela/Umjindi</td>
<td>69.30%</td>
<td>12</td>
<td>Elandshoek, Haziyview, White River, White River Country &amp; Golf Estates, Mjindini Trust-Madakwa, Rimmers-Suid Kaap, Sheba, Mjejane, Legogote, Nyongane River, Dwaleni, Mshadza</td>
</tr>
<tr>
<td></td>
<td>Mkhondo LM</td>
<td>54.50%</td>
<td>1</td>
<td>Rural WSS</td>
</tr>
<tr>
<td></td>
<td>Emakhazeni LM</td>
<td>31.20%</td>
<td>2</td>
<td>Belfast, Dullstroom</td>
</tr>
<tr>
<td></td>
<td>Musikaliga LM</td>
<td>21.60%</td>
<td>5</td>
<td>Breynet, Davel, Douglas dam, Lothair, South works (noitgedacht farm)</td>
</tr>
<tr>
<td></td>
<td>Albert Luthuli LM</td>
<td>19.10%</td>
<td>8</td>
<td>All 8 WSSs</td>
</tr>
<tr>
<td></td>
<td>Thaba Chweu LM</td>
<td>8.20%</td>
<td>4</td>
<td>Coromandel, Graskop, Lydenburg, Sabie</td>
</tr>
<tr>
<td></td>
<td>Dipsaleng LM</td>
<td>7.00%</td>
<td>1</td>
<td>Greater Dipsaleng</td>
</tr>
<tr>
<td></td>
<td>Tsantsabane LM</td>
<td>56.00%</td>
<td>1</td>
<td>Skyefontein</td>
</tr>
<tr>
<td></td>
<td>Gamagara LM</td>
<td>54.71%</td>
<td>1</td>
<td>Dibeng</td>
</tr>
<tr>
<td></td>
<td>Siyathemba LM</td>
<td>46.26%</td>
<td>1</td>
<td>Marydale</td>
</tr>
<tr>
<td></td>
<td>Nama Khoi LM</td>
<td>36.61%</td>
<td>6</td>
<td>Buffelsrivier, Carolusberg, Goodhouse, Kommagaz, Rooiwal, Vioolsdrift</td>
</tr>
<tr>
<td></td>
<td>I!Kheis LM</td>
<td>29.31%</td>
<td>3</td>
<td>Gariep, Grootsdrink, Wegdraai</td>
</tr>
<tr>
<td></td>
<td>Kgatelopele PE</td>
<td>27.60%</td>
<td>1</td>
<td>Danielskuil</td>
</tr>
<tr>
<td></td>
<td>Magareng LM</td>
<td>26.45%</td>
<td>1</td>
<td>Warrenton</td>
</tr>
<tr>
<td></td>
<td>Siyancuma LM</td>
<td>26.38%</td>
<td>4</td>
<td>All 4 WSSs</td>
</tr>
<tr>
<td></td>
<td>Ga-Segonyana LM</td>
<td>25.92%</td>
<td>23</td>
<td>23 of 24 WSSs</td>
</tr>
<tr>
<td></td>
<td>Umsobomvu LM</td>
<td>24.17%</td>
<td>3</td>
<td>All 3 WSSs</td>
</tr>
<tr>
<td></td>
<td>Richtersveld LM</td>
<td>21.94%</td>
<td>5</td>
<td>All 5 WSSs</td>
</tr>
<tr>
<td></td>
<td>Karoo Hoogland LM</td>
<td>21.62%</td>
<td>3</td>
<td>All 3 WSSs</td>
</tr>
<tr>
<td></td>
<td>Phokwane LM</td>
<td>19.85%</td>
<td>2</td>
<td>Hartwater, Jan Kempdorp</td>
</tr>
<tr>
<td></td>
<td>Dikgatlong LM</td>
<td>18.73%</td>
<td>2</td>
<td>Barkley West, Windsorton</td>
</tr>
<tr>
<td></td>
<td>Kareeberg LM</td>
<td>18.42%</td>
<td>3</td>
<td>All 3 WSSs</td>
</tr>
<tr>
<td></td>
<td>Joe Morolong LM</td>
<td>17.57%</td>
<td>17</td>
<td>17 of 18 WSSs</td>
</tr>
<tr>
<td></td>
<td>!Kai Garib LM</td>
<td>16.20%</td>
<td>16</td>
<td>All 16 WSSs</td>
</tr>
<tr>
<td></td>
<td>Khai-Ma LM</td>
<td>15.19%</td>
<td>4</td>
<td>All 4 WSSs</td>
</tr>
<tr>
<td></td>
<td>Ubuntu LM</td>
<td>14.17%</td>
<td>5</td>
<td>All 5 WSSs</td>
</tr>
<tr>
<td></td>
<td>Emthanjeni LM</td>
<td>11.94%</td>
<td>3</td>
<td>All 3 WSSs</td>
</tr>
<tr>
<td></td>
<td>Renosterberg LM</td>
<td>9.20%</td>
<td>3</td>
<td>All 3 WSSs</td>
</tr>
<tr>
<td></td>
<td>Karbonsberg LM</td>
<td>8.02%</td>
<td>16</td>
<td>All 16 WSSs</td>
</tr>
<tr>
<td>North West</td>
<td>Ngaka Modiri Molema DM</td>
<td>36.74%</td>
<td>1</td>
<td>Ratlo: Kraaiapan Cluster B/H</td>
</tr>
<tr>
<td></td>
<td>Dr. Ruth S Mompati DM</td>
<td>31.47%</td>
<td>4</td>
<td>Bogosing, Majeakgoro, Pudimoe, Schweizer Reneke</td>
</tr>
<tr>
<td></td>
<td>Kgatlengrivier LM</td>
<td>21.60%</td>
<td>2</td>
<td>Koster, Swartruggens</td>
</tr>
<tr>
<td></td>
<td>Beaufort West LM</td>
<td>53.00%</td>
<td>2</td>
<td>Murraysburg, Nelspoort</td>
</tr>
<tr>
<td></td>
<td>Hessequa LM</td>
<td>50.10%</td>
<td>1</td>
<td>Jongensfontein</td>
</tr>
<tr>
<td></td>
<td>Kannaland LM</td>
<td>25.80%</td>
<td>3</td>
<td>Ladismith, Van Wykspoord, Zoar</td>
</tr>
<tr>
<td></td>
<td>Prince Albert LM</td>
<td>28.20%</td>
<td>2</td>
<td>Klarstroom, Prince Albert</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td>277</td>
</tr>
</tbody>
</table>

The following WSAs and their associated water treatment systems are in high and/or critical BDRR risk positions, which means that some or all the risk indicators are in a precarious state, i.e. operational capacity, design capacity utilisation, water quality compliance, technical capacity, and water safety plans. WTWs in high risk and critical risk positions pose a serious risk to public health. The following WSAs will be required to assess their risk contributors and to provide corrective measures in the above mentioned action plans to mitigate these risks.
### Table 10 - %BDRR/BDRR\textsubscript{max} scores and WSSs in critical and high-risk space

<table>
<thead>
<tr>
<th>Province</th>
<th>WSA Name</th>
<th>2023 Average %BDRR/BDRR\textsubscript{max}</th>
<th>WSSs in critical and high-risk space</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>WSS Names</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Critical Risk (90-100%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>Alfred Nzo DM</td>
<td>35.6%</td>
<td>Kinira</td>
</tr>
<tr>
<td></td>
<td>OR Tambo DM</td>
<td>46.5%</td>
<td>Mhlanga, Umzimvubu</td>
</tr>
<tr>
<td></td>
<td>Dr Beyers Naude LM</td>
<td>47.6%</td>
<td>Jansenville</td>
</tr>
<tr>
<td></td>
<td>Amatole DL</td>
<td>53.5%</td>
<td>Xhosa</td>
</tr>
<tr>
<td></td>
<td>Makana LM</td>
<td>55.5%</td>
<td>Alicedale</td>
</tr>
<tr>
<td></td>
<td>Koukamma LM</td>
<td>62.8%</td>
<td>Clarkson, Joubetina, Kraekel, Migund, Storms River</td>
</tr>
<tr>
<td>Free State</td>
<td>Sundays River Valley LM</td>
<td>64.3%</td>
<td>Kirkewood</td>
</tr>
<tr>
<td></td>
<td>Mangaung</td>
<td>36.4%</td>
<td>Soutpan (Krugersdrift Dam)</td>
</tr>
<tr>
<td></td>
<td>Ngwathe LM</td>
<td>42.6%</td>
<td>Parry, Vrededor</td>
</tr>
<tr>
<td></td>
<td>Setzoto LM</td>
<td>50.4%</td>
<td>Senekal</td>
</tr>
<tr>
<td></td>
<td>Phumelela LM</td>
<td>61.0%</td>
<td>Memel</td>
</tr>
<tr>
<td></td>
<td>Tokologo LM</td>
<td>64.6%</td>
<td>Boshof, Dealesville</td>
</tr>
<tr>
<td></td>
<td>Masilonyana LM</td>
<td>79.5%</td>
<td>Theunissen, Winsburg, Verkeerdevlei</td>
</tr>
<tr>
<td></td>
<td>Maluti-a-Phofung LM</td>
<td>94.3%</td>
<td>HaRankoane, Makhwane, Mphatlatslane</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>Mafube LM</td>
<td>98.9%</td>
<td>Frankfort, Tweeling, Villiers</td>
</tr>
<tr>
<td></td>
<td>iLembe DM</td>
<td>32.0%</td>
<td>Lambothi, WaterFall</td>
</tr>
<tr>
<td></td>
<td>Umkhanyakude DM</td>
<td>36.3%</td>
<td>Hlabisa, Hluhluwe Ph 2, Manguzi</td>
</tr>
<tr>
<td></td>
<td>Harry Gwala DM</td>
<td>36.7%</td>
<td>Mangwaneni, Mqumeni, Rietvlei</td>
</tr>
<tr>
<td></td>
<td>King Cetshwayo DM</td>
<td>55.7%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Umnzinyathi DM</td>
<td>59.5%</td>
<td></td>
</tr>
<tr>
<td>Limpopo</td>
<td>Zululand DM</td>
<td>65.3%</td>
<td>Coronation, eMondl0 Town, Hlobane, Louwsberg, Vryheid</td>
</tr>
<tr>
<td></td>
<td>Bela-Bela LM</td>
<td>34.1%</td>
<td>Raptotokwane</td>
</tr>
<tr>
<td></td>
<td>Mopani DM</td>
<td>42.9%</td>
<td>The Oaks</td>
</tr>
<tr>
<td></td>
<td>Lephalale LM</td>
<td>46.2%</td>
<td></td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>Modimolle/Mookgophong LM</td>
<td>47.9%</td>
<td>Mookgophong, Mabaleng, Mabatlane and Roedtan</td>
</tr>
<tr>
<td></td>
<td>Greater Sekhukhune DM</td>
<td>49.8%</td>
<td>Mahlokoena, Steeampoort</td>
</tr>
<tr>
<td></td>
<td>Capricorn DM</td>
<td>56.1%</td>
<td>Senwabarwana</td>
</tr>
<tr>
<td></td>
<td>Thabazimbi LM</td>
<td>69.5%</td>
<td>Leeupoort and Rooiberg</td>
</tr>
<tr>
<td></td>
<td>Thembisile LM</td>
<td>42.5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mbombela/Umjindi</td>
<td>47.4%</td>
<td>Mjejane, Legopotse, Nyongane River Scheme, Dwaleni, Mshadza, Sheba</td>
</tr>
<tr>
<td></td>
<td>Emakhazeni LM</td>
<td>54.6%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pixley Ka Seme LM</td>
<td>56.8%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Musukaligwa LM</td>
<td>76.3%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Albert Luthuli LM</td>
<td>78.5%</td>
<td>Rudimentary Boreholes</td>
</tr>
<tr>
<td></td>
<td>Lekwa LM</td>
<td>80.9%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thaba Chweu LM</td>
<td>86.5%</td>
<td>Coromandel</td>
</tr>
<tr>
<td></td>
<td>Dipaleseng LM</td>
<td>100.0%</td>
<td>The Greater Dipaleseng LM</td>
</tr>
<tr>
<td></td>
<td>Gamagara LM</td>
<td>40.4%</td>
<td>Dibeng</td>
</tr>
<tr>
<td></td>
<td>Tsantsabane LM</td>
<td>41.4%</td>
<td>Skeyfontein</td>
</tr>
<tr>
<td></td>
<td>Dawid Kruper LM</td>
<td>45.9%</td>
<td>Vanderkloof, Sanddrift</td>
</tr>
<tr>
<td></td>
<td>Richtersveld LM</td>
<td>46.6%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ga-Segonyana LM</td>
<td>47.9%</td>
<td>Lokaleng, Thamoyanche</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>Nama Khoi LM</td>
<td>48.1%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phokwane LM</td>
<td>51.4%</td>
<td>Hartwater, Jan Kempdorp</td>
</tr>
<tr>
<td></td>
<td>!Kheis LM</td>
<td>51.7%</td>
<td>Wegdraai</td>
</tr>
<tr>
<td></td>
<td>Karoo Hoogland LM</td>
<td>53.0%</td>
<td>Sutherland</td>
</tr>
<tr>
<td></td>
<td>Siyancuma LM</td>
<td>56.6%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>!Kai Garib LM</td>
<td>69.4%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ubuntu LM</td>
<td>71.7%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dikgatlong LM</td>
<td>72.6%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Magareng LM</td>
<td>75.7%</td>
<td></td>
</tr>
</tbody>
</table>
### Provincial Water Safety Plan (WaSP) Performance

<table>
<thead>
<tr>
<th>Province</th>
<th>WSA Name</th>
<th>2023 Average %BDRR/BDRRmax</th>
<th>WSSs in critical and high-risk space</th>
<th># WSSs</th>
<th>WSS Names</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Critical Risk (90-100%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>High Risk (70-&lt;90%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td></td>
<td>84.2%</td>
<td>17</td>
<td></td>
<td>Bothetelets, Bothithong, Churchill, Dithakong, Gasehunelo, Gasese, Heilo, Kikahela, Laxey, Maipeng, Mamatwan/Hotazel, Manyeding, Manyeding Lower, Metsetswaneng, Tseng, Van Zylsrs, Ward 1 Heuningvlei</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td></td>
<td>85.5%</td>
<td>3</td>
<td></td>
<td>Onseepkans (Melkobsrand), Onseepkans (RK), Witbank</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td></td>
<td>94.6%</td>
<td>16</td>
<td></td>
<td>Garies, Hondeklipbaai, Kamassies, Kamieskroon, Kharkams, Kheis, Klipfontein, Koingnaas, Leliefontein, Lepelfontein, Nourviev, Paulshoek, Rooffontein, Soebatsfontein, Spoegrivier, Tweekrivier</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td></td>
<td>94.6%</td>
<td>2</td>
<td></td>
<td>Philliptown, Vanderkloof</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td></td>
<td>99.4%</td>
<td>3</td>
<td></td>
<td>Brittstown, De Aar, Hanover</td>
</tr>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td></td>
<td>48.1%</td>
<td></td>
<td>2</td>
<td>Bogosing, Schweizer Reneke</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td></td>
<td>62.2%</td>
<td></td>
<td>3</td>
<td>Mafikeng, Ramotshere Moloa: Motswedi + Gopane, Ratlou</td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td></td>
<td>90.2%</td>
<td>1</td>
<td></td>
<td>Koster</td>
</tr>
<tr>
<td>Western Cape</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Swartruggens</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td>95</td>
<td>102</td>
</tr>
</tbody>
</table>

Good practice risk management requires that the Water Safety Plans (WaSPs) are informed by meaningful Process and Condition Audits, supported by zealous implementation of corrective measures and ongoing monitoring of risk movement. 95 water supply systems are in critical risk space and 102 water supply systems are in the high risk position – a total of 197 of 958 (21%) systems.

### Performance Barometer

The **Blue Drop Performance Barometer** presents the provincial Blue Drop Score categories, which essentially reflects the level of mastery that each province has achieved in terms of its overall water services business. The bar chart below compares the 2023 BD scores against the scoring categories. The most BD certifications were achieved by 15 WSS in the Western Cape province whilst the Eastern Cape, Free State, Limpopo, and Northern Cape did not achieve any BD certifications in 2023. The Northern Cape have 123 of 277 (44%) systems in the critical state (<31%). The Gauteng, KwaZulu Natal, Mpumalanga, North West and Western Cape provinces are commended for achieving BD certifications in 2023.

![Figure 5 - 2023 Blue Drop score categories per Province](image-url)
The BDRR Risk Barometer expresses the level of risk that a WSA poses in respect of its water supply system. The schematic below presents the provincial 2023 %BDRR/BDRR\textsubscript{max} risk categories. The analysis reveals that there are 381 medium, high, or critical risk WSSs nationally. 577 WSSs are situated in the low risk positions. The Western Cape province has the highest number of low risks WSSs (115) followed by the KwaZulu Natal province with 113 WSSs. Similarly, the Northern Cape province has the highest number of critical risks WSSs (48) followed by Free State with 11 WSSs. The Gauteng province has no WSSs in high or critical risk positions, and the Western Cape province has no critical risk WSSs and only 1 WSS in the high risk position.

Figure 6 - 2023 %BDRR/BDRR\textsubscript{max} Risk Performance Barometer per Province
The BD audit process collects a vast amount of data that yield valuable insight into the state of the water services delivery and water quality in each province. Five focus areas or ‘diagnostics’ have been configured from the 2021/22 audit data and are discussed below.

Table 11 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs

<table>
<thead>
<tr>
<th>Diagnostic #</th>
<th>Diagnostic Description</th>
<th>Diagnostic Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical Competence</td>
<td>KPA 1, 2 &amp; Bonus</td>
</tr>
<tr>
<td>2</td>
<td>Treatment Capacity and Flow Distribution</td>
<td>KPA 4 &amp; Generic Audit data set</td>
</tr>
<tr>
<td>3</td>
<td>Drinking Water Quality (DWQ) Monitoring and Compliance</td>
<td>KPA 2 &amp; 4 &amp; Bonus</td>
</tr>
<tr>
<td>4</td>
<td>Technical Site Assessments</td>
<td>TSA and 2023 Blue Drop Watch Report</td>
</tr>
<tr>
<td>5</td>
<td>Operation, Maintenance and Refurbishment of Assets</td>
<td>KPA 3 &amp; 4</td>
</tr>
</tbody>
</table>

Diagnostic 1: Technical Competence

**Aim:** This focus area assesses the technical human resources capacity that is available to manage and operate water treatment processes and maintain the related water infrastructure. Theory advocates that a correlation exists between human resources capacity and capability (sufficient number of appropriately qualified staff) and a WSI’s performance. Thus, it is hypothesised that high HR capacity would translate to compliant water treatment plants and functional water supply network. Blue Drop assesses technical compliance on two levels: i) WTW plant supervision and process control staff and ii) Technical, scientific and maintenance staff.

(i) Plant Supervisors and Process Controllers

**Findings:** According to regulations, water treatment plants are classified as Class A, B, C, D or E plants. Similarly, Process Controllers and Plant Supervisors are registered as Class I, II, III, IV, V or VI Process Controllers. Higher classed plants require a higher level of Process Controllers due to technology complexity and strict water quality standards. Technical compliance of PCs and Supervisors is determined against the Blue Drop standards, as defined by Reg. 2834 of the Water Act 1956 (Act 54 of 1956) for the erection, enlargement, operation, and registration of water care works and draft Reg. 813 of the Water Services Act (No 108 of 1997). Regulation 2834 has been replaced by Regulation 3630 in 2023 but will only come in effect during the next Blue Drop audit cycle.

Table 12 - National Summary of the no. compliant versus shortfall in Supervisor and Process Controller staff

<table>
<thead>
<tr>
<th>Province</th>
<th># WTWs</th>
<th># WSSs</th>
<th># Available Compliant Staff</th>
<th>Staff Shortfall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PCs</td>
<td>Supervisor</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>222</td>
<td>154</td>
<td>293</td>
<td>265</td>
</tr>
<tr>
<td>Free State</td>
<td>75</td>
<td>80</td>
<td>154</td>
<td>58</td>
</tr>
<tr>
<td>Gauteng</td>
<td>19</td>
<td>29</td>
<td>128</td>
<td>42</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>190</td>
<td>172</td>
<td>294</td>
<td>143</td>
</tr>
<tr>
<td>Limpopo</td>
<td>85</td>
<td>84</td>
<td>235</td>
<td>35</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>107</td>
<td>100</td>
<td>319</td>
<td>143</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>158</td>
<td>176</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>North West</td>
<td>33</td>
<td>39</td>
<td>79</td>
<td>29</td>
</tr>
<tr>
<td>Western Cape</td>
<td>126</td>
<td>124</td>
<td>272</td>
<td>230</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>1,015</td>
<td>958</td>
<td>1,826</td>
<td>997</td>
</tr>
</tbody>
</table>

**Note:** The Supervisor totals will be inflated as it is not possible to differentiate between which Supervisors are shared/roaming with other Class C to E WTWs.

**NB:** "Compliant staff" means qualified and registered staff that meets the BD standard for a particular Class Works. "Staff shortfall" means staff that do not meet the BD standard for a particular Class of works (+1 for a shift) and/or staffing gaps exist at the respective WTWs.

Competent human resources are vital enablers in ensuring efficient and sustainable management of water services and delivery of safe water quality to consumers.

**Plant Supervisors:** The pie charts on the following page indicate that 91% (997 of 1,100) of Plant Supervisors complies with the Blue Drop standard, with 103 shortfalls with the highest shortfalls in the Northern Cape, Free State and Western Cape provinces. There are no shortfalls in the Gauteng province.
Process Controllers: Similarly, 53% (1,826 of 3,440) of the PC staff complies with the required standards. There is a 47% (1,614 of 3,440) shortfall in Process Controllers with the highest shortfall in the Eastern Cape, KwaZulu Natal and Northern Cape provinces.

Figure 7 - Schematic illustration of compliant and shortfall of Supervisors (a) and Process Controllers (b)

Blue Drop standards require of Class A and B plants to employ dedicated Supervisors per WTW and Process Controllers per shift per works, whereas Class C to E plants may share Supervisory staff across works. Shifts have been introduced to ensure optimal operations while addressing security risks, particularly as it relates to theft and vandalism. Telemetry also reduces the requirement for on-site staff during night shifts, but these relaxations have to be done within the DWS regulatory guidelines.

(ii) Technical, Scientific and Maintenance staff

In addition to operational capacity (above), good management practice also requires access to qualified engineers, technicians, technologists, MISA appointees, scientists, and maintenance capability (below). Such competencies could reside in-house or accessible through term contracts and external specialists.

Table 13 - National Summary of the no. qualified and shortfall of Engineering, Technical and Scientific staff

<table>
<thead>
<tr>
<th>Province</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Technicians</th>
<th>Technologists</th>
<th>Engineers</th>
<th>MISA appointees</th>
<th>Total</th>
<th>Technical Shortfall (#)</th>
<th>Qualified Scientists (#)</th>
<th>Scientists Shortfall (#)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>222</td>
<td>154</td>
<td>30</td>
<td>40</td>
<td>8</td>
<td>3</td>
<td>81</td>
<td>15</td>
<td>26</td>
<td>16</td>
</tr>
<tr>
<td>Free State</td>
<td>75</td>
<td>80</td>
<td>29</td>
<td>33</td>
<td>5</td>
<td>0</td>
<td>67</td>
<td>29</td>
<td>3</td>
<td>35</td>
</tr>
<tr>
<td>Gauteng</td>
<td>19</td>
<td>29</td>
<td>25</td>
<td>44</td>
<td>20</td>
<td>0</td>
<td>89</td>
<td>8</td>
<td>40</td>
<td>8</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>190</td>
<td>172</td>
<td>35</td>
<td>41</td>
<td>23</td>
<td>3</td>
<td>102</td>
<td>11</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Limpopo</td>
<td>85</td>
<td>84</td>
<td>13</td>
<td>14</td>
<td>8</td>
<td>0</td>
<td>35</td>
<td>21</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>107</td>
<td>100</td>
<td>46</td>
<td>55</td>
<td>17</td>
<td>3</td>
<td>121</td>
<td>20</td>
<td>7</td>
<td>27</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>158</td>
<td>176</td>
<td>14</td>
<td>34</td>
<td>7</td>
<td>0</td>
<td>55</td>
<td>62</td>
<td>5</td>
<td>49</td>
</tr>
<tr>
<td>North West</td>
<td>33</td>
<td>39</td>
<td>13</td>
<td>18</td>
<td>6</td>
<td>0</td>
<td>37</td>
<td>15</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Western Cape</td>
<td>126</td>
<td>124</td>
<td>51</td>
<td>61</td>
<td>39</td>
<td>7</td>
<td>158</td>
<td>22</td>
<td>39</td>
<td>30</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>1,015</td>
<td>958</td>
<td>256</td>
<td>340</td>
<td>133</td>
<td>16</td>
<td>745</td>
<td>203</td>
<td>160</td>
<td>197</td>
</tr>
</tbody>
</table>

Note 1: “Qualified Technical Staff” means staff appointed in positions to support water services, and who has the required qualifications. “Technical Shortfall” is calculated based on a minimum requirement of at least 3 Engineers or more than 1 of each of Engineers, Technologists & Technicians; and at least one 1 Candidate Scientist and 1 Professional Scientist per WSI.

Note 2: “Qualified Scientists” means professional registered scientists (SACNASP) and candidate scientists appointed in positions to support water services. “Scientists shortfall” means that the WSA does not have at least one qualified SACNASP registered scientist and at least one 1 candidate scientist in their employ or contracted.

In general, the national summary of the qualified professional technical staff is as follows:

- A total of 745 qualified staff comprised of 133 Engineers, 340 Technologists, 256 Technicians, 16 MISA appointees (qualified); and 160 SACNASP registered scientists
- A total shortfall of 400 qualified persons is identified, consisting of 203 technical staff and 197 scientists
- The highest shortfall of qualified technical staff is in the Northern Cape, Free State, Western Cape and Limpopo provinces
The Water Boards, WSPs and WSAs predominantly have access to credible laboratories that comply with the Blue Drop standards.

Overall, the results highlight the inter-dependency between technical capacity and performance. One of the options to enhance operational capacity is through dedicated training programmes. The Blue Drop audit incentivises training of operational staff over the 2-year period prior to the audit date. The results are summarised as follows:

Table 14 - National Summary no. of WTWs with operational staff sent on training over the past 2 years and vice versa

<table>
<thead>
<tr>
<th>Province</th>
<th># WTWs</th>
<th># WTW staff attending training</th>
<th># WTW without training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>222</td>
<td>66</td>
<td>156</td>
</tr>
<tr>
<td>Free State</td>
<td>75</td>
<td>19</td>
<td>56</td>
</tr>
<tr>
<td>Gauteng</td>
<td>19</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>190</td>
<td>71</td>
<td>119</td>
</tr>
<tr>
<td>Limpopo</td>
<td>85</td>
<td>21</td>
<td>64</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>107</td>
<td>45</td>
<td>62</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>158</td>
<td>10</td>
<td>148</td>
</tr>
<tr>
<td>North West</td>
<td>33</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Western Cape</td>
<td>126</td>
<td>78</td>
<td>48</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>1,015</td>
<td>330 (33%)</td>
<td>685 (67%)</td>
</tr>
</tbody>
</table>

The results confirm that the Water Boards, WSPs and WSAs had their operational staff attend training over the past 2 years. 330 of 1,015 WTWs, springs, fountains and boreholes had their operational staff attend training over the past 2 years. Investment in human capital through technical skills development is likely to mitigate some of the water quality failures and lower performances noted, and municipalities and water boards should prioritise ongoing skills development of technical staff and appointment of qualified staff that are legible for registration.

Diagnostic 2: Treatment Capacity and Flow Distribution

**Aim:** Diagnostic 2 deals with design and flow related dynamics, comprising of: i) design capacity and operational flow, ii) raw water abstraction, and iii) WUE and SIV.

**(i) Design Capacity and Operational Flow**

This diagnostic assesses the status of plant design capacity and daily water production at the WTWs, as well as SIVs as measured at the outflow from the WTW or inflow to the water distribution network. A capable WTW requires adequate installed design capacity and functional equipment to operate optimally. If the WTW design capacity is exceeded by the average daily production (treatment) volume, the WTW will not be able to deliver SANS compliant water quality. The available design capacity is typically exceeded when the water demand exceeds the installed design capacity, or when unit processes or equipment are dysfunctional, or when electrical supply problems render treatment and pumping of water defective. Typically, the production volume and SIV is the same if 1 WTW supplies 1 WSS, but different if multiple supply systems are feeding from a singular WTW.
Findings: Analysis of the design capacity and average daily production/treatment volume indicate a total design capacity of 17,373,844 kl/d for the country, with a total average daily treatment (operational) volume of 12,217,270 kl/d. Theoretically, this implies that 70% of the design capacity is used with 30% available to meet additional water demand. However, the full 17,373,844 kl/d is not available as some infrastructure is dysfunctional, leaving 16,811,479 kl/d available. The reduced capacity means that the country is closer to its total available capacity (73%) with a 27% surplus available. The capacity differential (difference between the installed and available capacity) will not constrain or impede any further social and economic development in the drainage areas.

Table 15 - National Summary of WTWs design & available capacities, average daily production, % available capacity & total SIV

<table>
<thead>
<tr>
<th>Province</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Design Capacity (kl/d)</th>
<th>Available Design Capacity (kl/d)</th>
<th>Average Daily Production (kl/d)</th>
<th>Available Variance* (kl/d)</th>
<th>% Use Available Capacity</th>
<th>Total SIV towards the WSS (kl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>222</td>
<td>154</td>
<td>1,397,705</td>
<td>1,361,225</td>
<td>785,210</td>
<td>576,015</td>
<td>58%</td>
<td>859,852</td>
</tr>
<tr>
<td>Free State</td>
<td>75</td>
<td>80</td>
<td>1,318,086</td>
<td>1,272,308</td>
<td>788,990</td>
<td>483,318</td>
<td>62%</td>
<td>791,643</td>
</tr>
<tr>
<td>Gauteng</td>
<td>19</td>
<td>29</td>
<td>5,823,906</td>
<td>5,831,157</td>
<td>4,923,288</td>
<td>907,869</td>
<td>84%</td>
<td>4,274,956</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>190</td>
<td>172</td>
<td>2,933,898</td>
<td>2,894,541</td>
<td>2,284,424</td>
<td>610,117</td>
<td>79%</td>
<td>2,576,627</td>
</tr>
<tr>
<td>Limpopo</td>
<td>85</td>
<td>84</td>
<td>846,081</td>
<td>840,841</td>
<td>654,176</td>
<td>186,665</td>
<td>78%</td>
<td>713,694</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>107</td>
<td>100</td>
<td>1,072,939</td>
<td>1,027,176</td>
<td>713,159</td>
<td>314,017</td>
<td>69%</td>
<td>1,033,257</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>158</td>
<td>176</td>
<td>570,646</td>
<td>539,520</td>
<td>338,721</td>
<td>200,799</td>
<td>63%</td>
<td>318,060</td>
</tr>
<tr>
<td>North West</td>
<td>33</td>
<td>39</td>
<td>956,151</td>
<td>881,167</td>
<td>566,880</td>
<td>314,287</td>
<td>64%</td>
<td>504,171</td>
</tr>
<tr>
<td>Western Cape</td>
<td>126</td>
<td>124</td>
<td>2,454,432</td>
<td>2,163,544</td>
<td>1,162,422</td>
<td>1,001,122</td>
<td>54%</td>
<td>1,216,751</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>1,015</td>
<td>958</td>
<td>17,373,844</td>
<td>16,811,479</td>
<td>12,217,270</td>
<td>4,594,208</td>
<td>73%</td>
<td>12,289,011</td>
</tr>
</tbody>
</table>

* Difference between the available design capacity and the average daily production.

Figure 10 - Design and available capacity, average daily production, available variance and total SIV for the WTWs
(ii) Raw Water Abstraction

This diagnostic takes a snapshot view of the status of water abstraction authorisations from natural water resources across the country. As per the National Water Act (Act no 36 of 1998), Water Use Authorisation (WUA) mandate the maximum abstraction volumes of raw water, and the installation and monitoring of abstraction, inflow, and outflow meters, whilst the BD audit requires WSAs to report the flows on IRIS and to calibrate meters annually. Any defects in terms of abstracting water from a resource without an authorisation, or exceeding the authorised volume, or reporting inaccurate volumes, or not monitoring abstraction against authorised volumes, are considered to be a regulatory risk and contravention of the law.

Findings: Data pertaining to the daily abstraction volumes (kl/d) (Authorised), average daily treatment volumes (kl/d), the names of the WTWs exceeding/with no Daily Abstraction Volumes (Authorised) and Average Daily Treatment Volumes (Authorised) is captured in the tables below.

### Table 16 - National Summary: Abstraction Volumes (Authorised), Ave. Daily Treatment Volumes, Variances & WTWs listed for Enforcement Action

<table>
<thead>
<tr>
<th>Province</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Daily Abstraction Volumes (Authorised) (kl/d)</th>
<th>Average Daily Treatment Volume (kl/d)</th>
<th>Average Variance (kl/d) [+ or Minus]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>222</td>
<td>154</td>
<td>685,227</td>
<td>785,210</td>
<td>-99,983</td>
</tr>
<tr>
<td>Free State</td>
<td>75</td>
<td>80</td>
<td>740,748</td>
<td>788,990</td>
<td>-48,242</td>
</tr>
<tr>
<td>Gauteng</td>
<td>19</td>
<td>29</td>
<td>5,050,036</td>
<td>4,923,288</td>
<td>126,748</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>190</td>
<td>172</td>
<td>2,108,866</td>
<td>2,284,424</td>
<td>-175,558</td>
</tr>
<tr>
<td>Limpopo</td>
<td>85</td>
<td>84</td>
<td>509,047</td>
<td>654,176</td>
<td>-145,129</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>107</td>
<td>100</td>
<td>612,188</td>
<td>713,159</td>
<td>-100,971</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>158</td>
<td>176</td>
<td>208,033</td>
<td>338,721</td>
<td>-130,688</td>
</tr>
<tr>
<td>North West</td>
<td>33</td>
<td>39</td>
<td>707,041</td>
<td>566,880</td>
<td>140,161</td>
</tr>
<tr>
<td>Western Cape</td>
<td>126</td>
<td>124</td>
<td>1,239,829</td>
<td>1,162,422</td>
<td>77,407</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>1,015</strong></td>
<td><strong>958</strong></td>
<td><strong>11,861,015</strong></td>
<td><strong>12,217,270</strong></td>
<td><strong>-356,255</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Province</th>
<th>WTW exceeding the Daily Abstraction Volumes (Authorised)</th>
<th>WTW with no Daily Abstraction Volumes (Authorised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>12</td>
<td>168</td>
</tr>
<tr>
<td>Free State</td>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>Gauteng</td>
<td>None</td>
<td>2</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>14</td>
<td>129</td>
</tr>
<tr>
<td>Limpopo</td>
<td>4</td>
<td>61</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>7</td>
<td>143</td>
</tr>
<tr>
<td>North West</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Western Cape</td>
<td>12</td>
<td>54</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>74</strong></td>
<td><strong>655</strong></td>
</tr>
</tbody>
</table>
WTWs that exceed the Daily Abstraction Volumes (Authorised) and WTWs with no Daily Abstraction Volumes (Authorised) are reflected in the 2nd table above. WTWs that are not complying with the regulations will be required to show correction in the next Blue Drop audit cycle. The results conclude that 74 WTWs are exceeding the permitted abstraction limits and 311 WTWs provided authorised water use abstraction volumes. The Daily Abstraction Volumes (Authorised) are not known for 655 water treatment systems resulting in negative average variances that skew the data sets, and this can also be attributed to over abstraction. For future BD audits, WSA/WSPs will be required to provide ‘actual’ abstraction volumes so that a comparative analysis can be undertaken of the ‘actual’ abstraction volume versus the authorised water use abstraction volumes (maximum). This would require that the WSAs and WSPs/WBs monitor and record all critical path flows (abstraction, raw and final).

(iii) Water Use Efficiency and System Input Value

The Department is committed to consider issues related to water scarcity and security, aiming to ensure there is sufficient water for the population, the economy, and the environment by increasing water use efficiency across all sectors. Water use for services sectors is specifically dealing with the quantity of water used directly by the consumer through the public distribution network and industries connected to the network. This diagnostic assesses the water use efficiency (i.e., the average daily consumption in litres per person per day) and the individual and collective performance of the water supply systems. WUE indicates how effective water is used by consumers, i.e. the process between effective water use and actual water abstraction. This concept is closely related to the Department’s No Drop Certification assessment, whereby WUE, NRW and water losses are targeted as part of Water Conservation and Water Demand Management strategies by municipalities.

Findings: Both the Blue Drop audit and No Drop audit requires an IWA water balance to determine the SIV into each water supply system, and to identify and quantify possible losses from abstraction to the end-of-use point. 295 systems have full water balances in place. 320 WSSs have partial water balances in place, and 343 WSSs do not have water balances in place.

WUE is calculated based on the SIV contributions, population served, and the average daily consumption, as summarised in the following table.

Table 17 - National Summary of total SIV, total population served, average daily consumption, WUE status and performance trend

<table>
<thead>
<tr>
<th>Province</th>
<th># WSSs</th>
<th>Total Population</th>
<th>Total SIV (kl/d)</th>
<th>2023 WUE (l/p/d)</th>
<th>2023 Blue Drop WUE Range and Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>154</td>
<td>5,001,573</td>
<td>859,852</td>
<td>172</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Free State</td>
<td>80</td>
<td>3,028,741</td>
<td>791,643</td>
<td>261</td>
<td>&gt;250-300</td>
</tr>
<tr>
<td>Gauteng</td>
<td>29</td>
<td>13,928,777</td>
<td>4,274,956</td>
<td>316</td>
<td>&gt;300</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>172</td>
<td>8,787,506</td>
<td>2,576,627</td>
<td>253</td>
<td>&gt;250-300</td>
</tr>
<tr>
<td>Limpopo</td>
<td>84</td>
<td>3,391,492</td>
<td>713,694</td>
<td>210</td>
<td>&gt;200-250</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>100</td>
<td>4,770,957</td>
<td>1,033,257</td>
<td>231</td>
<td>&gt;200-250</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>176</td>
<td>1,129,644</td>
<td>318,060</td>
<td>392</td>
<td>&gt;300</td>
</tr>
</tbody>
</table>

Figure 12 - Abstraction Volumes (Authorised), Average Daily Treatment Volumes, and Variances
Province | # WSSs | Total Population | Total SIV (kl/d) | 2023 WUE (l/p/d) | 2023 Blue Drop WUE Range and Performance
--- | --- | --- | --- | --- | ---
North West | 39 | 2,206,785 | 504,171 | 228 | >200-250 Average
Western Cape | 124 | 6,241,092 | 1,063,791 | 243 | >200-250 Average
Totals | 958 | 48,486,567 | 12,136,050 | 256 | >250-300 Poor

WUE (l/cap/day) performance categories

<table>
<thead>
<tr>
<th>Colour</th>
<th>WUE Range</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>&gt;300</td>
<td>Extremely high per capita water use</td>
</tr>
<tr>
<td>Orange</td>
<td>&gt;250-300</td>
<td>Poor per capita water use</td>
</tr>
<tr>
<td>Dark yellow</td>
<td>&gt;200-250</td>
<td>Average per capita water use with potential for marked improvement</td>
</tr>
<tr>
<td>Yellow</td>
<td>&gt;150-200</td>
<td>Good per capita water use but some improvement may be possible subject to economic benefits</td>
</tr>
<tr>
<td>Light yellow</td>
<td>&lt;150</td>
<td>Excellent per capita water use management</td>
</tr>
</tbody>
</table>

For the country, 12,136,050 kl/d water is supplied to 48,486,567 consumers. Comparatively, the Gauteng and KwaZulu Natal provinces distribute 56% of the total SIV with 6,851,583 kl/d. An average 256 litre of water is used per person per day, which implies a poor per capita water use. Results from the diagnostic data show that the Gauteng and Northern Cape provinces has WUEs of more than 300 l/c/d, which is regarded as extremely high according to national benchmarks. 2 provinces have a WUE between 250–300 l/c/d, which is regarded as poor. No Drop Certification is specifically tasked with plans to curb water losses and improve NRW through water accounting assessments and water conservation and demand management.

**Diagnostic 3: Drinking Water Quality (DWQ) Monitoring and Compliance**

**Aim:** Blue Drop audits values the principles of “To measure is to know” and “To know is to manage”. The primary objective of a water treatment plant is to produce final water quality that is safe for human consumption at the end of the distribution network. This standard can only be measured and achieved if operational and compliance monitoring and DWQ compliance is executed at the correct frequency, sample point, and determinand type. This diagnostic assesses the i) operational and compliance monitoring status, ii) drinking water quality compliance, and iii) risk defined compliance and laboratory credibility.
(i) Drinking water operational and compliance monitoring

**Findings:** A minimum level of 90% operational monitoring compliance is applied as benchmark, to give weight to the importance of sampling and monitoring of the raw water, process unit water, and final water across the treatment stream. Compliance monitoring is also informed by SANS 241:2015 and the requirement for risk-informed monitoring through the WaSP process at both the WTW final and distribution network. DWQ compliance is calculated against the population size and the mandatory limits set by SANS 241:2015 and the Blue Drop standards, as calculated and reported from data loaded in the IRIS.

Table 18 - National Summary of the KPA 2 WTW operational and WSS compliance monitoring status

<table>
<thead>
<tr>
<th>Province</th>
<th># WTWs</th>
<th># WSSs</th>
<th>WTW Operational monitoring [KPA 2 sub-KPA 2.b]</th>
<th>WSS Compliance monitoring [KPA 2 sub-KPA 2.c]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Satisfactory [BD score &gt;90%] Not Satisfactory [BD score &lt;90%]</td>
<td>Satisfactory [BD score &gt;90%] Not Satisfactory [BD score &lt;90%]</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>222</td>
<td>154</td>
<td>99 123</td>
<td>61 93</td>
</tr>
<tr>
<td>Free State</td>
<td>75</td>
<td>80</td>
<td>26 49</td>
<td>2 78</td>
</tr>
<tr>
<td>Gauteng</td>
<td>19</td>
<td>29</td>
<td>10 9</td>
<td>16 13</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>190</td>
<td>172</td>
<td>104 86</td>
<td>97 75</td>
</tr>
<tr>
<td>Limpopo</td>
<td>85</td>
<td>84</td>
<td>35 50</td>
<td>2 82</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>107</td>
<td>100</td>
<td>59 48</td>
<td>38 62</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>158</td>
<td>176</td>
<td>21 137</td>
<td>10 166</td>
</tr>
<tr>
<td>North West</td>
<td>33</td>
<td>39</td>
<td>13 20</td>
<td>7 32</td>
</tr>
<tr>
<td>Western Cape</td>
<td>126</td>
<td>124</td>
<td>62 64</td>
<td>47 77</td>
</tr>
<tr>
<td>Totals</td>
<td>1,015</td>
<td>958</td>
<td>429 (42%) 586 (58%)</td>
<td>280 (29%) 678 (71%)</td>
</tr>
</tbody>
</table>

The performance recorded in the table above stems from performance data as measured against the Blue Drop Standard expressed in KPA 2 and sub-KPAs 2.b) and 2.c). Overall, an unsatisfactory sampling and analysis regime is observed for both operational (58%) and compliance (71%) monitoring.

The data indicates that 429 of 1,015 WTWs (42%) are on par with good practice for operational monitoring of the raw and final water and the respective process units at the WTW. In terms of compliance monitoring, 280 WSSs (29%) are on par with good compliance monitoring practices, and 678 WSSs (71%) are failing the Blue Drop standard.

The latter observation is noted with deepening concern. Compliance monitoring is a legal requirement and the only means to measure the DWQ performance of a water supply system. Operational monitoring is the cornerstone of day-to-day process adjustments and optimisation to ensure that the water treatment is efficient and delivers quality final water. The results indicate that 586 WTWs and 678 WSSs are not achieving regulatory and industry standards.

(ii) Drinking water quality compliance

**Findings:** DWQ compliance is measured against the requirements of SANS 241:2015 under KPA 5 of the Blue Drop audit. The tables following summarise the provincial results of the DWQ status for Microbiological and Chemical Compliance, which also carries the highest Blue Drop score weighting of 35%.

Table 19 - National Summary of the DWQ Status for Microbiological Compliance

<table>
<thead>
<tr>
<th>Province</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Micro Compliance</th>
<th>DWQ Microbiological Compliance [Delivery and Distribution Networks]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td># Excellent % Excellent # Good % Good # Unacceptable* % Unacceptable*</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>154</td>
<td>5,001,573</td>
<td>86.49%</td>
<td>55 36% 8 5% 91 59%</td>
</tr>
<tr>
<td>Free State</td>
<td>80</td>
<td>3,028,741</td>
<td>76.52%</td>
<td>32 40% 3 4% 45 56%</td>
</tr>
<tr>
<td>Gauteng</td>
<td>29</td>
<td>13,928,777</td>
<td>98.70%</td>
<td>23 79% 0 0% 6 21%</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>172</td>
<td>8,787,506</td>
<td>92.65%</td>
<td>93 54% 9 5% 70 41%</td>
</tr>
<tr>
<td>Limpopo</td>
<td>84</td>
<td>3,391,492</td>
<td>81.62%</td>
<td>59 70% 7 8% 18 21%</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>100</td>
<td>4,770,957</td>
<td>71.08%</td>
<td>35 35% 1 1% 64 64%</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>176</td>
<td>1,129,644</td>
<td>72.26%</td>
<td>62 35% 10 6% 104 59%</td>
</tr>
<tr>
<td>North West</td>
<td>39</td>
<td>2,206,785</td>
<td>88.13%</td>
<td>18 46% 4 10% 17 44%</td>
</tr>
<tr>
<td>Western Cape</td>
<td>124</td>
<td>6,241,092</td>
<td>96.89%</td>
<td>90 73% 7 6% 27 22%</td>
</tr>
<tr>
<td>Totals</td>
<td>958</td>
<td>48,486,567</td>
<td>84.93%</td>
<td>467 49% 49 5% 442 46%</td>
</tr>
</tbody>
</table>
Monitoring as a matter of urgency

Treatment plant or at specific end use points are required to develop a monitoring programme and resume with compliance and chemistry knowledge, and several other root causes. WSIs that are not monitoring the final water quality at the outlet of operations, defective infrastructure, inadequate dosing rates, absence of disinfection chemicals, lack of monitoring, lack of health risk whilst 442 Out of 4,426 systems, 39% of systems have acceptable microbiological quality, 49 (5%) systems have acceptable microbiological water quality status. The water in these systems pose a serious acute health risk to the community. Failure to produce water that meets microbiological compliance standards can be linked back to poor operations, defective infrastructure, inadequate dosing rates, absence of disinfection chemicals, lack of monitoring, lack of operating and chemistry knowledge, and several other root causes. WSIs that are not monitoring the final water quality at the outlet of the treatment plant or at specific end use points are required to develop a monitoring programme and resume with compliance monitoring as a matter of urgency.

**Figure 15 - National Microbiological Drinking Water Quality Status**

Out of the 958 WSSs, 467 (49%) systems achieved excellent microbiological quality, 49 (5%) systems have good microbiological quality, whilst 442 (46%) systems have an unacceptable microbiological water quality status. The water in these systems pose a serious acute health risk to the community. Failure to produce water that meets microbiological compliance standards can be linked back to poor operations, defective infrastructure, inadequate dosing rates, absence of disinfection chemicals, lack of monitoring, lack of operating and chemistry knowledge, and several other root causes. WSIs that are not monitoring the final water quality at the outlet of the treatment plant or at specific end use points are required to develop a monitoring programme and resume with compliance monitoring as a matter of urgency.

**Table 20 - National Summary of the DWQ Status for Chemical Acute Health and Chronic Health Compliance**

*Note: A number of factors impact on the acute health and chronic health chemical compliance numbers and percentages above:

1) Reflects drinking water quality monitoring at both the delivery and distribution networks;
2) Based on acute health and chronic health chemical failures, as well as where no monitoring is taking place or where limited/insufficient monitoring has been undertaken (predominantly in the distribution network as per the requirements of SANS 241:2015);
3) Where monitoring results have not been uploaded on IRIS (DWS issues notices on a bi-weekly basis through an auto reminder to remind WSAs to upload data on IRIS); and
4) Reflects only results submitting before the critical close-out date of the BD audit, i.e. one week after the Confirmation Audit.

---

**NATIONAL PERFORMANCE OVERVIEW**

Page 34
Chemical acute health compliance shows that 528 (55%) systems have excellent, and 7 (1%) systems have good water quality, whilst 423 (44%) systems have an unacceptable chemical acute health compliance. Chemical chronic health compliance shows that 716 (75%) systems have excellent, and 13 (1%) systems have good water quality, whilst 229 (24%) systems have an unacceptable chemical chronic health compliance.

The Water Services Act upholds standards regarding the monitoring and reporting on drinking water quality and issuance of advisory notices to the public when significant DWQ failures are observed. The audit process applies a penalty when DWQ failures are noticed without issuing such Water Quality Alert Notices to forewarn consumers of the status of (unsafe) water quality and to advise communities to source alternative water sources or methods to disinfect water used for drinking water purposes.

The following table reflects the compliance status of the WSAs as regards the issuing of these notices for DWQ failures.

<table>
<thead>
<tr>
<th>Province</th>
<th># WSS</th>
<th>No Penalty Applied</th>
<th>Partial Penalty Applied</th>
<th>Full Penalty Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>154</td>
<td>31</td>
<td>99</td>
<td>24</td>
</tr>
<tr>
<td>Free State</td>
<td>80</td>
<td>26</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>Gauteng</td>
<td>29</td>
<td>24</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>172</td>
<td>79</td>
<td>76</td>
<td>17</td>
</tr>
<tr>
<td>Limpopo</td>
<td>84</td>
<td>56</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>100</td>
<td>33</td>
<td>45</td>
<td>22</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>176</td>
<td>50</td>
<td>68</td>
<td>58</td>
</tr>
<tr>
<td>North West</td>
<td>39</td>
<td>21</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Western Cape</td>
<td>124</td>
<td>96</td>
<td>21</td>
<td>7</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>958</strong></td>
<td><strong>416</strong></td>
<td><strong>365</strong></td>
<td><strong>177</strong></td>
</tr>
</tbody>
</table>

No penalties were applied to 416 (43%) WSSs. Partial penalties were applied to 365 (38%) WSSs and full penalties were applied to 177 (18%) WSSs.

(iii) Risk defined compliance and laboratory credibility

**Findings:** Risk-defined compliance standards aim to determine the compliance (to SANS 241) of those parameters that have been found to pose a risk in a specific WSS and need to be included in the routine monitoring programme or frequency as prescribed by SANS 241. The country achieved an average Annual Risk Defined Compliance of 80.1%. Excellent risk defined compliance was achieved by 240 (25%) systems, good compliance for 70 (7%) systems and bad compliance for 648 (68%) systems with most of these systems residing in the Eastern Cape, KwaZulu Natal and Northern Cape provinces.
The aim of operational determinand compliance is to determine the efficiency of the water treatment process, by monitoring those parameters which are used to control the treatment process. Although not necessarily a health risk, these parameters provide information on the integrity of the WTW. The country achieved an average % Actual Operational Determinand Compliance of 47.3%. Excellent operational determinand compliance was achieved by 198 (20%) WTWs, good compliance for 76 (7%) WTWs and bad compliance for 741 (73%) WTWs with most of these systems residing in the Eastern Cape, KwaZulu Natal and Northern Cape provinces.

### Table 22 - National Summary of the DWQ Compliance for Risk Defined Compliance

<table>
<thead>
<tr>
<th>Province</th>
<th># WSSs</th>
<th>Population</th>
<th>Ave. % Risk Defined Compliance</th>
<th># WSSs Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>154</td>
<td>5,371,573</td>
<td>81.09%</td>
<td>24</td>
</tr>
<tr>
<td>Free State</td>
<td>80</td>
<td>3,028,741</td>
<td>71.68%</td>
<td>15</td>
</tr>
<tr>
<td>Gauteng</td>
<td>29</td>
<td>13,928,777</td>
<td>97.17%</td>
<td>21</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>172</td>
<td>8,787,506</td>
<td>85.64%</td>
<td>33</td>
</tr>
<tr>
<td>Limpopo</td>
<td>84</td>
<td>3,391,492</td>
<td>70.73%</td>
<td>25</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>100</td>
<td>4,770,957</td>
<td>70.95%</td>
<td>22</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>176</td>
<td>1,129,644</td>
<td>70.30%</td>
<td>39</td>
</tr>
<tr>
<td>North West</td>
<td>39</td>
<td>2,206,785</td>
<td>81.67%</td>
<td>7</td>
</tr>
<tr>
<td>Western Cape</td>
<td>124</td>
<td>6,241,092</td>
<td>91.6%</td>
<td>54</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>958</td>
<td>48,856,567</td>
<td>80.10%</td>
<td>240</td>
</tr>
</tbody>
</table>

The data confirms that all of the Water Boards and WSPs and most of WSAs in the country have access to credible laboratories for compliance and operational analysis. These in-house or contracted laboratories are accredited with SANAS or have Proficiency Testing Schemes with SABS or have inter-laboratory quality checks in place to ensure that suitable analytical methods are applied and that quality assurance processes are followed to ensure credible water quality results. The country is predominantly meeting the regulatory expectation for the WSIs having access to credible analytical services for compliance and operational monitoring.

### Diagnostic 4: Technical Site Assessments

**Aim:** The Blue Drop process makes provision for a Technical Site Assessment (TSA) in order to verify the desktop evidence through field-based inspections. This assessment includes a physical inspection of the entire water treatment plant with all its process units, as well as the reservoir and spot checks of a pumpstation and pipelines. The technical assessment is coupled with an asset condition check to determine an approximate cost (VROOM) to restore existing infrastructure to functional status for the treatment facility (only).

**Findings:** The national results of the country’s TSAs are summarised in the table below. A deviation of 10% between the BD and TSA score indicate a misalignment between the administrative aspects and the work on the ground. The Regulator regards a WTW with a TSA score of >80% to have an acceptable level of process control and functional equipment, and a TSA score of 90% as an excellent system that complies with most of the Blue Drop TSA standards. A TSA score of <30% indicates that the treatment facility and network fails in most regards, and is evident of dysfunctional infrastructure, failed process control, absence of record keeping and monitoring, and poor water quality.

The VROOM cost presents a “Very Rough Order of Measurement “cost to return a WTWs functionality to its original design. More detail can be found in the Blue Drop Watch Report 2023.
For the individual WTWs assessed in the country, a total budget of R1.781b is estimated, with the bulk of the work (85%) going towards restoration of mechanical equipment (51%) and civil infrastructure (34%).

**Diagnostic 5: Operation, Maintenance and Refurbishment of Assets**

**Aim:** Insufficient financial resources are often cited as a root cause to dysfunctional or non-compliant water treatment works and water networks. Knowledge and monitoring of fiscal spending are therefore a critical part of water services management and municipal governance of public assets. This diagnostic investigates the status of financial information as pertaining to O&M budgets and expenditure, asset figures, and capital funding.

**Findings:** A substantial amount of financial information was presented during the audit process. Unfortunately, the evidence was presented in different formats, levels of detail, or absent for some WSAs. It was observed that WSA teams with financial officials that were present during the audits performed better and had a better understanding of the water services challenges experienced by their technical peers.

Discrepancies observed included amongst others - generic or non-ringfenced budgets, contract lump sums for service providers presented as budgets, outdated or incomplete asset registers, and some cost drivers which were lacking. As data credibility presents a significant challenge, the Regulator grouped data into different certainty levels, as summarised at the end of this Diagnostic.

The result of each financial portfolio is discussed hereunder.

NOTE: The Regulator regards the financial and asset information with low confidence. Not all WSAs submitted verifiable information or complete financial data sets for the audit year in question.

**Capital, O&M Budget and Actual, and Asset Value**

The capital budgets, O&M budgets, O&M actual expenditure, and current asset values are summarised below.

**Table 25 - National Summary of the capital budgets, O&M budgets, O&M actual expenditure, and current asset values**

<table>
<thead>
<tr>
<th>Province</th>
<th>Capital budget available (R)</th>
<th>O&amp;M budget (R) (2021/22)</th>
<th>O&amp;M expended (R) (2021/22)</th>
<th>% Expended</th>
<th>Total Current Asset Value (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>R804,176,520</td>
<td>R3,196,598,632</td>
<td>R2,037,975,049</td>
<td>64%</td>
<td>R15,970,603,048</td>
</tr>
<tr>
<td>Free State</td>
<td>R1,303,269,737</td>
<td>R2,484,550,302</td>
<td>R3,006,156,655</td>
<td>121%</td>
<td>R8,398,685,321</td>
</tr>
<tr>
<td>Gauteng</td>
<td>R4,915,672,139</td>
<td>R22,009,084,001</td>
<td>R21,927,384,803</td>
<td>100%</td>
<td>R95,440,360,730</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>R2,055,616,027</td>
<td>R9,342,698,273</td>
<td>R9,186,348,546</td>
<td>98%</td>
<td>R33,032,215,222</td>
</tr>
<tr>
<td>Limpopo</td>
<td>R1,433,958,976</td>
<td>R809,513,999</td>
<td>R719,410,880</td>
<td>89%</td>
<td>R11,952,268,344</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>R707,256,169</td>
<td>R2,303,939,872</td>
<td>R2,090,957,148</td>
<td>91%</td>
<td>R23,933,935,871</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>R140,108,460</td>
<td>R711,831,973</td>
<td>R685,269,386</td>
<td>96%</td>
<td>R3,768,919,880</td>
</tr>
<tr>
<td>North West</td>
<td>R603,251,101</td>
<td>R3,532,061,302</td>
<td>R2,873,738,524</td>
<td>81%</td>
<td>R7,076,863,608</td>
</tr>
<tr>
<td>Western Cape</td>
<td>R1,258,393,555</td>
<td>R3,794,544,112</td>
<td>R3,659,893,775</td>
<td>96%</td>
<td>R17,763,315,836</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>R13,221,702,684</strong></td>
<td><strong>R48,184,822,466</strong></td>
<td><strong>R46,187,134,766</strong></td>
<td><strong>96%</strong></td>
<td><strong>R217,337,167,861</strong></td>
</tr>
</tbody>
</table>

The Regulatory Comments following in this Chapter list the capital projects with secured funding for each province. The capital lists are deemed to be a definitive means to address water service inadequacies and ensuring water infrastructure investment. A total capital budget of R13.2b has been reported for the refurbishment and upgrades of water supply system infrastructure in the country.
The largest capital budgets are observed for Gauteng (R4.9b), KwaZulu Natal (R2.06b), Limpopo (R1.43b), Free State (R1.3b) and Western Cape (R1.26b).

For the 2021/22 fiscal year, the total O&M budget reported for the country was R48.185b, of which R46.187b (96%) has been expended. The highest over-expenditure of 126% by the Free State province and the lowest under expenditure by the Eastern Cape (64%) was observed. The national figures exclude the WSAs who had no and partial financial information.

The total current asset value for water infrastructure (networks, pump stations, treatment plants) is reportedly R217.34b (excluding those WSAs that submitted no information). The highest asset values are observed for KwaZulu Natal (R33.03b), Mpumalanga (R23.93b), Western Cape (R17.76b) and Eastern Cape (R15.97b).

**Figure 17 - Total current asset value reported**

**O&M Cost Benchmarking**

By combining the SALGA and WRC WATCOST models, an estimation of the maintenance cost required per asset type can be done, i.e. civil, buildings, pipelines, mechanical, electrical, and instrumentation.

**Table 26 - National SALGA-WRC annual maintenance budget guideline and cost estimation**

<table>
<thead>
<tr>
<th>Description</th>
<th>% of Current Asset Value</th>
<th>Asset Value Estimate</th>
<th>Modified SALGA Maintenance Guideline</th>
<th>Annual Maintenance Budget Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Asset Value estimate</td>
<td>100%</td>
<td>R217,337,167,861</td>
<td>15.75%</td>
<td>R4,694,482,826</td>
</tr>
<tr>
<td>Broken down into:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Civil Structures</td>
<td>46%</td>
<td>R99,975,097,216</td>
<td>0.50%</td>
<td>R499,875,486</td>
</tr>
<tr>
<td>2. Buildings</td>
<td>3%</td>
<td>R6,520,115,036</td>
<td>1.50%</td>
<td>R97,801,726</td>
</tr>
<tr>
<td>3. Pipelines</td>
<td>6%</td>
<td>R13,040,230,072</td>
<td>0.75%</td>
<td>R97,801,726</td>
</tr>
<tr>
<td>4. Mechanical Equipment</td>
<td>30%</td>
<td>R65,201,150,358</td>
<td>4.00%</td>
<td>R2,608,046,014</td>
</tr>
<tr>
<td>5. Electrical Equipment</td>
<td>11%</td>
<td>R23,907,088,465</td>
<td>4.00%</td>
<td>R956,283,539</td>
</tr>
<tr>
<td>6. Instrumentation</td>
<td>4%</td>
<td>R8,693,486,714</td>
<td>5.00%</td>
<td>R434,674,336</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>100%</td>
<td><strong>R217,337,167,861</strong></td>
<td>15.75%</td>
<td><strong>R4,694,482,826</strong></td>
</tr>
</tbody>
</table>

The model estimates that R4.694b (2.16%) is required per year to maintain the assets valued at R217.34b. Notably, this maintenance estimate assumes that all assets are functional. In cases where Blue Drop Certification is not being achieved, it can be assumed that some form of inefficiency or constraint is being experienced, and national benchmarks closer to 7% of the asset value is advocated (R15.21b).

The table below indicates the SALGA maintenance cost estimation in relation to the O&M budget, and O&M actual expended.

**Table 27 - National O&M cost estimates by the SALGA versus actual budget and expenditure figures**

<table>
<thead>
<tr>
<th>Cost Reference</th>
<th>O&amp;M Cost Estimate</th>
<th>Period</th>
<th>% of Asset Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified SALGA</td>
<td>R4,694,482,826</td>
<td>Annually, estimation</td>
<td>2.16%</td>
</tr>
<tr>
<td>O&amp;M Budget</td>
<td>R48,184,822,466</td>
<td>Actual for 2021/22</td>
<td>22.2%</td>
</tr>
<tr>
<td>O&amp;M Spend</td>
<td>R46,187,134,766</td>
<td>Actual for 2021/22</td>
<td>21.3%</td>
</tr>
</tbody>
</table>
From the tables above, the cost dynamics can be summarised as follows:

- The SALGA estimations for maintenance budgets is about 9.7% (Modified SALGA divided by O&M Budget) of the actual reported budgets for the 2021/22 fiscal year.
- The actual O&M budget (22.2%) appears to be more than adequate when compared with the SALGA guideline (2.16%) or with the government benchmark (7%).
- These figures were impacted by many WSAs who did not provide budget and expenditure figures, and by some inaccurate asset values and where no asset values were provided for.
- Lastly, the WSAs in each province presented budget and expenditure data at different levels (see tables in the respective provincial chapters) i.e. financial figures are not always ringfenced per water supply system – thus rendering the provincial and national summaries to be indicative.
Piketberg reservoir secured with routine inspection regime

Impala reservoir secured, sign posted, neat terrain
Eastern Cape: Blue Drop Scores 2023 per WSA

- 14 WSAs & 154 systems audited
- 1 Water Board
- 79.2% ave. TSA score
- 46.1% BDRR - Low risk
- No BD Certifications
- 27 Critical State systems
**Provincial Synopsis**

The Eastern Cape province provides drinking water to a total population of 5,001,573 persons in South Africa.

An audit attendance record of 100% of the 14 WSAs, with 154 water supply systems across the province and 1 Water Board Amatola Water affirms the province’s commitment to the Blue Drop national incentive-based regulatory programme. The main Bulk Water Suppliers are Amatola Water who supplies potable water via nine water treatment works to 12 water supply systems in Amathole DM, Buffalo City LM and Ndlambe LM, and Nelson Mandela Bay MM also supplies potable water via 3 water treatment systems to 5 water supply systems in Kouga LM.

The Regulator determined that no water supply system score more than 95% when measured against the Blue Drop standards and thus do not qualify for the prestigious Blue Drop Certification. In 2014, no water supply systems were awarded Blue Drop status. Using the 2014 audit results as comparative baseline, the province shows no achievement of excellence in 2023. Six (6) of 14 WSAs improved on their 2014 scores, namely Blue Crane Route LM, Buffalo City LM, Kouga LM, Ndlambe LM, Nelson Mandela MM and OR Tambo DM. The remaining 8 WSAs regressed to lower Blue Drop scores compared to their 2014 baselines. The Nelson Mandela MM, Buffalo City LM, and Kouga LM are the best performing WSAs in the province. The Blue Drop scores of these top WSA performers were supported by excellent technical site assessment scores of 92% for the Cannon Rocks/Bokwe WTW, followed by the Jeffreys Bay WTW with a TSA score of 91%. 27 water supply systems were identified to be in a critical state in the province compared with 31 water supply systems in 2014.

The province’s overall Blue Drop performance is characterised by particular strengths when measured against the KPAs. Nelson Mandela MM and Buffalo City LM stand out for its compliance, good practice and risk management practices that are well embedded in the water supply business. The KPAs that require attention and are reflecting scores below 50% are KPA 4 Technical Management (32.4%) and KPA 5 Drinking Water Quality Compliance (41.5%).

The provincial Blue Drop Risk Rating (BDRR) improved from 51.6% in 2022 (BD PAT) to 46.1% in 2023. 98 (of 154) water supply systems are situated in the low risk category, 42 WSSs in the medium risk category, 7 WSSs in the high risk category, and 7 WSSs in the critical risk category.

The Regulator is optimistic that the 2023 Blue Drop report provides an updated residual basis from where a positive trajectory for water services delivery and improved performance will follow in the next BD audit. Municipalities and their service providers are encouraged to start preparation for the next Blue Drop audit cycle, which is planned to cover the financial year 2023/24 and released in 2025. The 2023 Blue Drop status for WSAs in the province are summarised in the table below.

**Table 28 - 2023 Blue Drop Summary**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2014 BD Score (%)</th>
<th>2023 BD Score (%)</th>
<th>2023 BD Certified ≥95%</th>
<th>2023 Critical State (&lt;31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfred Nzo DM</td>
<td>62.9%</td>
<td>54.8%↓</td>
<td></td>
<td>Kinira</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>80.2%</td>
<td>59.5%↓</td>
<td></td>
<td>Farms &amp; Rural, Hofmeyer and Tarkastad</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>35.1%</td>
<td>37.4%↑</td>
<td></td>
<td>Aberdeen, Graaff-Reinet, Jansenville, Klipplaat, Nieu-Bethesda, Rietbron, Steytlerville, WaterFord, Willowmore and Wolwefontein</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>72.8%</td>
<td>83.5%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>83.4%</td>
<td>45.3%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>61.1%</td>
<td>24.2%↓</td>
<td></td>
<td>Aberdeen, Graaff-Reinet, Jansenville, Klipplaat, Nieu-Bethesda, Rietbron, Steytlerville, WaterFord, Willowmore and Wolwefontein</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>74.7%</td>
<td>56.0%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kouga LM</td>
<td>51.8%</td>
<td>64.6%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>25.8%</td>
<td>24.1%↓</td>
<td></td>
<td>Blikkiesdorp, Clarkson, Coldstream, Joubetina, Kareedouw, Krakeel, Louterwater, Misgund, Sanddriif, Storms River and Woodlands</td>
</tr>
<tr>
<td>Makana LM</td>
<td>70.8%</td>
<td>32.5%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ndlambe LM</td>
<td>49.5%</td>
<td>57.6%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>72.4%</td>
<td>85.0%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>41.2%</td>
<td>56.7%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>36.0%</td>
<td>25.6%↓</td>
<td></td>
<td>Addo and Kirkwood</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>27</td>
</tr>
</tbody>
</table>

↑= improvement, ↓= regress, →= no change

The Department of Water and Sanitation acknowledges the excellence in water services management achieved for the Blue Drop Audit year of 2021-22. No Blue Drop Certificates are awarded in the Eastern Cape Province.
Background to Water Delivery and Distribution Infrastructure

The total volume of water treated in the province is 785,210 kl/d. Fourteen (14) WSAs, 1 Water Board and one bulk water supplier in the Nelson Mandela MM are responsible for water services through a water network comprising of:

- 222 WTWs and boreholes with the bulk of the water treated and supplied by the 22 WTWs of Nelson Mandela MM, Buffalo City LM and Amatola Water with a total Average Daily Production of 496,289 kl/d
- 154 WSSs of which 23 WSSs in 5 WSAs are provided with potable water from Nelson Mandela MM, Buffalo City LM and Amatola Water
- 375 pump stations, 3,094 km bulk water supply lines, 6,357 km reticulation pipe lines, and 826 reservoirs/towers (excluding many systems that were unable to provide data).

Table 29 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes

<table>
<thead>
<tr>
<th>Table 29 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Micro Size Plants</strong></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>No. of WTWs, Boreholes, Springs</td>
</tr>
<tr>
<td>Total Design Capacity (kl/day)</td>
</tr>
<tr>
<td>Total Available Capacity (kl/day)</td>
</tr>
<tr>
<td>Average Daily Treatment Volume (kl/day)</td>
</tr>
<tr>
<td>Total SIV (kl/day)</td>
</tr>
<tr>
<td>Design Capacity Utilisation (%)</td>
</tr>
<tr>
<td>Available Capacity Utilisation (%)</td>
</tr>
</tbody>
</table>

* "Unknown" means the number of WTWs with NI (No Information) on design capacity or available capacity or SIV

The audit verified a total installed design capacity of 1,397,705 kl/d and a total available design capacity of 1,361,225 kl/d with most of this capacity residing in the medium to macro-sized water treatment plants.

Collectively, the 222 WTWs produce 785,210 kl/d and distributes 859,852 kl/d across the water networks. By comparing the available treatment capacity with the treated water volume, a spare treatment capacity of 576,015 kl/d is available (42%) to meet additional future demands. The WUE for the province is good (ave. 172 l/p/d) compared to the international WUE benchmark of 180 l/p/d, indicating a good ratio between effective water use and actual water abstraction.

![Diagram](a Capacities, Daily Production and SIV)
In some cases, a Bulk Water Supplier supplies water across provincial borders and it is difficult to report accurately on design capacity and available capacity at provincial level, as the statistical data may become repetitive. Therefore, the reporting on the total system input volumes (SIV) would provide more accurate figures on the supply of treated water to the various water supply systems.

The total SIV in the province is 859,852 kl/d and the average daily treatment volume is 785,210 kl/d and this indicates that the treated volume is less than the total SIV (91%) as 81 WTWs/boreholes are not measuring their average daily treatment volumes. The largest contributors to the total SIV for 23 WSSs from Nelson Mandela MM, Buffalo City LM and Amatola Water with a total SIV contribution of 496,289 kl/d (58%). Diagnostic no. 2 to follow herein will unpack these statistics in more detail.

The data shows that 8 WTWs daily average treatment volume exceeds the available design capacity. 10 WTWs have daily production volumes that exceed the authorised daily abstraction volumes.

The water distribution infrastructure is summarised in the table below.

### Table 30 - Summary of Water Distribution Reticulation Infrastructure

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSS with no WSP/WB</th>
<th># WSS with WSP/WB</th>
<th># Pump Stations (#)</th>
<th>Bulk Water Supply Lines (km)</th>
<th>Reticulation pipe lines (km)</th>
<th># Reservoirs/ Towers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amatola Water</td>
<td>12</td>
<td>16</td>
<td>16</td>
<td>711</td>
<td>NI</td>
<td>164</td>
</tr>
<tr>
<td>Alfred Nzo DM</td>
<td>7</td>
<td>18</td>
<td>18</td>
<td>13</td>
<td>NI</td>
<td>46</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>30</td>
<td>7</td>
<td>2</td>
<td>NI</td>
<td>NI</td>
<td>6</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>3</td>
<td>8</td>
<td>8</td>
<td>NI</td>
<td>NI</td>
<td>12</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>5</td>
<td>5</td>
<td>8</td>
<td>609</td>
<td>NI</td>
<td>-8</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>22</td>
<td>47</td>
<td>47</td>
<td>36</td>
<td>NI</td>
<td>113</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>10</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>3</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>14</td>
<td>17</td>
<td>17</td>
<td>190</td>
<td>401</td>
<td>93</td>
</tr>
<tr>
<td>Kouga LM</td>
<td>3</td>
<td>5</td>
<td>108</td>
<td>281</td>
<td>204</td>
<td>92</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>11</td>
<td>71</td>
<td>71</td>
<td>NI</td>
<td>NI</td>
<td>8</td>
</tr>
<tr>
<td>Makana LM</td>
<td>3</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>8</td>
</tr>
<tr>
<td>Ndlimbe LM</td>
<td>4</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>NI</td>
<td>2</td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>1</td>
<td>54</td>
<td>54</td>
<td>462</td>
<td>3,999</td>
<td>72</td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>20</td>
<td>17</td>
<td>17</td>
<td>788</td>
<td>1,753</td>
<td>209</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>NI</td>
<td>NI</td>
<td>14</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>136</strong></td>
<td><strong>375</strong></td>
<td><strong>3,094</strong></td>
<td><strong>6,357</strong></td>
<td><strong>826</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Provincial Blue Drop Analysis**

The 100% response from the 14 WSAs audited demonstrates a firm commitment to progressive water services management in the province. Local Government reforms resulted in the merging of Baviaans LM, Camdeboo LM and Ikwezi LM into Dr Beyers Naude LM. Therefore, 14 WSAs were audited in 2023 compared to the 16 WSAs in 2014.
**Table 31 - Blue Drop Comparative Analysis from 2012 to 2023**

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>2012</th>
<th>2014</th>
<th>2023</th>
<th>Performance trend 2014 and 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incentive-based indicators</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WSAs assessed (#)</td>
<td>16 (100%)</td>
<td>16 (100%)</td>
<td>14 (100%)</td>
<td>→</td>
</tr>
<tr>
<td>Water supply systems assessed (#)</td>
<td>158</td>
<td>155</td>
<td>154</td>
<td>→</td>
</tr>
<tr>
<td>Blue Drop scores ≥50% (#)</td>
<td>96 (61%)</td>
<td>92 (59%)</td>
<td>94 (61%)</td>
<td>↑</td>
</tr>
<tr>
<td>Blue Drop scores &lt;50% (#)</td>
<td>62 (39%)</td>
<td>63 (41%)</td>
<td>60 (39%)</td>
<td>↑</td>
</tr>
<tr>
<td>Blue Drop Certifications (#)</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>→</td>
</tr>
<tr>
<td>Lowest Technical Site Assessment Score (%)</td>
<td>23%</td>
<td>32%</td>
<td>50%</td>
<td>↑</td>
</tr>
<tr>
<td>Highest Technical Site Assessment Score (%)</td>
<td>93%</td>
<td>92%</td>
<td>92%</td>
<td>↑</td>
</tr>
</tbody>
</table>

NA = Not Applied   NI = No Information  ↑= improvement,  ↓= regress,  →= no change

**Figure 19 - Blue Drop trend analysis over the period 2012 to 2023, indicating the percentage BD scores above and below 50%**

The trend analysis indicates that:

- The no. of systems audited has increased from the last BD audit in 2014
- The no. of systems with BD scores of ≥50% increased from 92 (59%) in 2014 to 94 (61%) in 2023
- This trend was reversed with no. of systems with a BD score of ≤50% decreasing from 63 (41%) in 2014 to 60 (39%) in 2023
- Blue Drop Certifications remained unchanged with no awards in 2014 and in 2023
- The lowest TSA score increased from 32% in 2014 to 50% in 2023, with the highest TSA score remaining the same with 92% in 2014 and 2023
- The overall performance trend indicates some progress from 2014 to 2023
- Despite this the trajectory still reinforces the need for regular audits to ensure timely turnaround and continued improvement
- The trend also implies that the performance has not shown significant improvement in the absence of regulatory engagement of the BD audits between 2014 to 2023.

**Figure 20 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right)**

Comparative analysis of the 2014 and 2023 blue drop scores, indicates that most of the system scores are in the >50-<80% (Average Performance) category, with the >31-<50% (Poor Performance) being the next largest category. It is concerning that 27 systems in 2023 reside in Critical State (<31%).

In summary, trend analysis since 2014 to 2023 indicate as follows:

- Systems in a ‘critical state’ decreased from 31 systems to 27 systems
- Systems in a ‘poor state’ increased slightly from 32 systems to 33 systems
- Systems in an ‘average state’ increased from 53 systems to 88 systems
- Systems in the ‘good state’ decreased from 39 systems to 6 systems
- Systems in the ‘excellent’ remained the same with zero systems.
Provincial BDRR Analysis

The Blue Drop Risk Rating (BDRR) analysis assesses the risk across the entire water supply network. The BDRR formulation was updated in 2021 to include an added risk indicator, i.e. ‘E: Water Safety Plans’, to address the risk assessment requirements outlined in SANS 241 of 2015. The BDRR now contains 5 risk indicators, i.e. design capacity (A), operational capacity (B), water quality compliance (C), technical capacity (D), and water safety plans (E). The results from the BDRR analyses are summarised in the table and figure following.

**Table 32 - Municipal BDRR/BDRRmax Comparative Analysis from 2022 and 2023**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th># WBs/WSPs</th>
<th>2022 (BD PAT)</th>
<th>2023 (BD Audit)</th>
<th>Performance Trend 2022 and 2023</th>
<th>BDRR Risk Category Split</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfred Nzo DM</td>
<td>7</td>
<td></td>
<td>47.1%</td>
<td>35.6%</td>
<td>↑</td>
<td>0-&lt;50% 50-&lt;70% 70-&lt;90% 90-100%</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>37</td>
<td>7</td>
<td>53.2%</td>
<td>53.5%</td>
<td>↓</td>
<td>25 11 1</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>3</td>
<td></td>
<td>54.3%</td>
<td>53.0%</td>
<td>↑</td>
<td>1 2</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>10</td>
<td>5</td>
<td>31.6%</td>
<td>41.7%</td>
<td>↓</td>
<td>7 3</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>22</td>
<td></td>
<td>35.6%</td>
<td>39.0%</td>
<td>↓</td>
<td>14 8</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>10</td>
<td></td>
<td>59.2%</td>
<td>47.6%</td>
<td>↑</td>
<td>5 3 1 1</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>14</td>
<td></td>
<td>35.0%</td>
<td>35.9%</td>
<td>↓</td>
<td>12 2</td>
</tr>
<tr>
<td>Kouga LM</td>
<td>8</td>
<td>5</td>
<td>39.9%</td>
<td>28.5%</td>
<td>↑</td>
<td>8</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>11</td>
<td></td>
<td>65.7%</td>
<td>62.8%</td>
<td>↑</td>
<td>5 1 5</td>
</tr>
<tr>
<td>Makana LM</td>
<td>3</td>
<td></td>
<td>89.1%</td>
<td>55.5%</td>
<td>↑</td>
<td>1 1 1</td>
</tr>
<tr>
<td>Ndamba LMF</td>
<td>5</td>
<td>1</td>
<td>57.0%</td>
<td>34.9%</td>
<td>↑</td>
<td>4 1</td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>1</td>
<td></td>
<td>31.9%</td>
<td>45.9%</td>
<td>↓</td>
<td>1</td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>20</td>
<td></td>
<td>52.6%</td>
<td>46.5%</td>
<td>↑</td>
<td>9 9 2</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>3</td>
<td></td>
<td>67.8%</td>
<td>64.3%</td>
<td>↑</td>
<td>1 1 1</td>
</tr>
<tr>
<td><strong>Totals &amp; %BDRR/BDRRmax</strong></td>
<td><strong>154</strong></td>
<td><strong>18</strong></td>
<td><strong>51.6%</strong></td>
<td><strong>46.1%</strong></td>
<td>↑</td>
<td><strong>98 42 7 7</strong></td>
</tr>
</tbody>
</table>

↑ = improvement, ↓ = regress, → = no change

**Figure 21** - a) WSS risk distribution and trends for 2022 and 2023; b) Colour legend

Trend analysis of the BDRR ratings for 2022 and 2023 indicates that:

- The 2023 audit cycle highlighted a slightly progressive shift with an increase in the no. of low risk WSSs (89 to 98), an increase in the medium risk WSSs (36 to 42), a decrease in the high risk WSSs (16 to 7), and the critical risks WSSs remained the same (7 each).

**Regulatory Enforcement**

Water supply systems which fail to achieve the minimum Blue Drop target of 31%, are placed under regulatory focus. The Regulator requires these WSAs to submit a detailed corrective action plan (CAP) within 20 working days from publishing of this report. 27 WSSs received Blue Drop scores below 31%, and hence are placed under regulatory surveillance, in accordance with the Water Services Act (108 of 1997). DWS together with COGTA will, through the grant allocation systems ensure priority is given to application of grants to rectify/restore the water services treatment and supply shortcomings identified in this report.
Table 33 - WSSs with <31% Blue Drop scores

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 BD Score</th>
<th>WSSs with &lt;31% score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfred Nzo DM</td>
<td>54.8%</td>
<td>Kinira</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>45.3%</td>
<td>Farms &amp; Rural, Hofmeyer and Tarkastad</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>24.2%</td>
<td>Aberdeen, Graaff-Reinet, Jansenville, Kliplaat, Nieu-Bethesda, Rietbron, Steytlerville, WaterFord, Willowmore and Wolwefontein</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>24.1%</td>
<td>Blikkiesdorp, Clarkson, Coldstream, Joubetina, Kareedouw, Krakeel, Louterwater, Misgund, Sanddrif, Storms River and Woodlands</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>25.6%</td>
<td>Addo and Kirkwood</td>
</tr>
</tbody>
</table>

The following WSAs and their associated water treatment systems are in high and/or critical BDRR risk positions, which means that some or all the risk indicators are in a precarious state, i.e. operational capacity, design capacity utilisation, water quality compliance, technical capacity, and water safety plans. WTWs in high risk and critical risk positions pose a serious risk to public health. The following WSAs will be required to assess their risk contributors and to provide corrective measures in the above mentioned action plans to mitigate these risks.

Table 34 - %BDRR/BDRR_{max} scores and WSSs in critical and high-risk space

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 Average %BDRR/BDRR_{max}</th>
<th>WSSs in critical and high-risk space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfred Nzo DM</td>
<td>35.6%</td>
<td>Kinira</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>53.5%</td>
<td>Xhora</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>47.6%</td>
<td>Waterford</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>62.8%</td>
<td>Clarkson, Joubetina, Krakeel, Misgund, Storms River</td>
</tr>
<tr>
<td>Makana LM</td>
<td>55.5%</td>
<td>Alickedale</td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>46.5%</td>
<td>Mhlanga, Umzimvubu</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>64.3%</td>
<td>Kirkwood</td>
</tr>
</tbody>
</table>

Totals 7 of 154 (5%) 7 of 154 (5%)

Good practice risk management requires that the Water Safety Plans (WaSPs) are informed by meaningful Process and Condition Audits, supported by zealous implementation of corrective measures and ongoing monitoring of risk movement. With the exception of 14 water supply systems in the 7 WSAs above, the remaining water supply systems are in the low and medium risk positions.

**Performance Barometer**

The Blue Drop Performance Barometer presents the individual WSA Blue Drop Scores, which essentially reflects the level of mastery that a WSA has achieved in terms of its overall water services business. The bar chart below compares the 2014 and 2023 BD scores, ranked from highest to lowest performing WSA in 2023. The Nelson Mandela MM and Buffalo City LM are commended moving from an average performance in 2014 to a good performance in 2023 whilst the reverse is the case for Amatole DM and Chris Hani DM. The remaining 8 WSAs regressed to lower Blue Drop scores compared to their 2014 baselines.

**Figure 22 - a) Blue Drop scores 2014 (bar left) and 2023 (bar right); b) Colour legend**
The BDRR Risk Barometer expresses the level of risk that a WSA poses in respect of its water supply system. The schematic below presents the BDRR in ascending order – with the low-risk WSAs on the left and higher risk WSAs to the far right. The analysis reveals that there are 5 medium risk WSAs in the province. 9 WSAs are situated in the low risk positions.

**Figure 23 -** a) $\%\text{BDRR}/\%\text{BDRR}_{\text{max}}$ Risk Performance Profile/Log 2023; b) Colour legend

### Provincial Best Performers

The **Nelson Mandela Bay Metropolitan Municipality** is the **BEST PERFORMING WSA** in the province, based on the following record of excellence:

- 2023 Blue Drop Score of 85.0%
- 2014 Blue Drop Score of 72.4%
- No improvement on the BDRR from 31.9% in 2022 to 45.9% in 2023
- 1 system (100%) in the low risk position
- TSA score of 87% for Linton WTW

The **Buffalo City Local Municipality (Amatola Water)** is the second-best scoring WSA:

- 2023 Blue Drop Score of 83.5%
- 2014 Blue Drop Score of 72.8%
- No improvement on the BDRR from 31.6% in 2022 to 41.7% in 2023
- 7 systems (70%) in low risk position
- TSA score of 85% for Umzonyana WTW

The **Kouga Local Municipality (NMB MM)** is the third-best scoring WSA:

- 2023 Blue Drop Score of 64.6%
- 2014 Blue Drop Score of 51.8%
- Improvement on the BDRR from 39.9% in 2022 to 28.5% in 2023
- 8 systems (100%) in low risk positions
- TSA score 91% for Jeffreys Bay WTW
The BD audit process collects a vast amount of data that yield valuable insight into the state of the water services delivery and water quality in each province. Five focus areas or ‘diagnostics’ have been configured from the 2021/22 audit data and are discussed below.

Table 35 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs

<table>
<thead>
<tr>
<th>Diagnostic #</th>
<th>Diagnostic Description</th>
<th>Diagnostic Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical Competence</td>
<td>KPA 1, 2 &amp; Bonus</td>
</tr>
<tr>
<td>2</td>
<td>Treatment Capacity and Flow Distribution</td>
<td>KPA 4 &amp; Generic Audit data set</td>
</tr>
<tr>
<td>3</td>
<td>Drinking Water Quality (DWQ) Monitoring and Compliance</td>
<td>KPA 2 &amp; 4 &amp; Bonus</td>
</tr>
<tr>
<td>4</td>
<td>Technical Site Assessments</td>
<td>TSA and 2023 Blue Drop Watch Report</td>
</tr>
<tr>
<td>5</td>
<td>Operation, Maintenance and Refurbishment of Assets</td>
<td>KPA 3 &amp; 4</td>
</tr>
</tbody>
</table>

Diagnostic 1: Technical Competence

**Aim:** This focus area assesses the technical human resources capacity that is available to manage and operate water treatment processes and maintain the related water infrastructure. Theory advocates that a correlation exists between human resources capacity and capability (sufficient number of appropriately qualified staff) and a WSI’s performance. Thus, it is hypothesised that high HR capacity would translate to compliant water treatment plants and functional water supply network. Blue Drop assesses technical compliance on two levels: i) WTW plant supervision and process control staff and ii) Technical, scientific and maintenance staff.

**Findings:** According to regulations, water treatment plants are classified as Class A, B, C, D or E plants. Similarly, Process Controllers and Plant Supervisors are registered as Class I, II, III, IV, V or VI Process Controllers. Higher classed plants require a higher level of Process Controllers due to technology complexity and strict water quality standards. Technical compliance of PCs and Supervisors is determined against the Blue Drop standards, as defined by Reg. 2834 of the Water Act 1956 (Act 54 of 1956) for the erection, enlargement, operation, and registration of water care works and draft Reg. 813 of the Water Services Act (No 108 of 1997). Regulation 2834 has been replaced by Regulation 3630 in 2023 but will only come into effect during the next Blue Drop audit cycle.

Table 36 - No. compliant versus shortfall in Supervisor and Process Controller staff

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th># Available Compliant Staff</th>
<th>Staff Shortfall</th>
<th>Ratio*</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PCs</td>
<td>Supervisor**</td>
<td>Total</td>
<td>PCs</td>
</tr>
<tr>
<td>Amatola Water</td>
<td>9</td>
<td>12</td>
<td>38</td>
<td>14</td>
<td>52</td>
<td>3</td>
</tr>
<tr>
<td>Alfred Nzo DM</td>
<td>7</td>
<td>7</td>
<td>9</td>
<td>4</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>30</td>
<td>37</td>
<td>94</td>
<td>44</td>
<td>138</td>
<td>8</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>4</td>
<td>3</td>
<td>9</td>
<td>3</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>6</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>84</td>
<td>22</td>
<td>31</td>
<td>72</td>
<td>103</td>
<td>221</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>11</td>
<td>10</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>26</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>16</td>
<td>14</td>
<td>26</td>
<td>55</td>
<td>81</td>
<td>23</td>
</tr>
<tr>
<td>Kouga LM</td>
<td>5</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>11</td>
<td>11</td>
<td>21</td>
<td>9</td>
<td>30</td>
<td>4</td>
</tr>
<tr>
<td>Makana LM</td>
<td>4</td>
<td>3</td>
<td>13</td>
<td>4</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>Ndiambe LM</td>
<td>5</td>
<td>5</td>
<td>8</td>
<td>8</td>
<td>16</td>
<td>7</td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>8</td>
<td>1</td>
<td>14</td>
<td>34</td>
<td>48</td>
<td>14</td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>20</td>
<td>20</td>
<td>15</td>
<td>9</td>
<td>24</td>
<td>56</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

**Ratio** depicts the no. of qualified staff divided by the no. of WTWs operated by this no. of staff. E.g., Alfred Nzo DM has 13 compliant Sups + PCs, divided by 7 WTWs = 1.9 qualified staff per WTW

**NB:** The Supervisor totals will be inflated as it is not possible to differentiate between which Supervisors are shared/roaming with other Class C to E WTWs.

Note: "Compliant staff" means qualified and registered staff that meets the BD standard for a particular Class Works. "Staff shortfall" means staff that do not meet the BD standard for a particular Class of works (+1 for a shift) and/or staffing gaps exist at the respective WTWs.
Competent human resources are vital enablers in ensuring efficient and sustainable management of water services and delivery of safe water quality to consumers. For the province in general, the operational competencies are found to be excellent for the Supervisory staff of Amatola Water and 9 of the 14 WSAs but the same cannot be said for the PC staff with the exception for Makana LM, as illustrated in the table above.

![Pie charts showing compliant and shortfall percentages for Supervisors and Process Controllers](image)

Figure 24 - Schematic illustration of compliant and shortfall of Supervisors (a) and Process Controllers (b)

**Plant Supervisors:** The pie charts indicate that 96% (265 of 276) of Plant Supervisors complies with the Blue Drop standard, with 11 shortfalls.

**Process Controllers:** Similarly, 42% (293 of 700) of the PC staff complies with the required standards, noting a zero shortfall for Makana LM only. There is a 58% (407 of 700) shortfall in Process Controllers with the highest shortfall in the Chris Hani DM and OR Tambo DM, Joe Gqabi DM, and Dr Beyers Naude LM.

Blue Drop standards require of Class A and B plants to employ dedicated Supervisors per WTW and Process Controllers per shift per works, whereas Class C to E plants may share Supervisory staff only across works. Shifts have been introduced to ensure optimal operations while addressing security risks, particularly as it relates to theft and vandalism. Telemetry also reduces the requirement for on-site staff during night shifts, but these relaxations have to be done within the DWS regulatory guidelines.

The Regulator expects correlation between the competence of an operational team and the performance of a WTW, as measured by the BD score. The data indicates as follows:

- All the WSAs have qualified PCs in place. However, Amatola Water and all the WSAs have shortfalls with the exception of Makana LM.
- All the WSAs have qualified Supervisors in place with the exception of Kouga LM and Sundays River Valley LM. It must be noted that the Supervisor totals are inflated as it is not possible to differentiate between which Supervisors are shared/roaming with other Class C to E WTWs

It is expected that a correlation would exist between the competence of an operational team and the performance of a water treatment works, as measured by the BD score. The results from the ratio analysis indicate high ratios (>3.0) for Amatola Water and 7 WSAs with WTWs.

Overall, the comparative bar chart on the following page confirms a reasonably close correlation between Amatola Water and the WSAs from Nelson Mandela MM to Ndlambe LM with high ratios (ranging from 3.2 to 6.0) and average to high BD scores (ranging from 56% to 85%) with the anomaly being Makana LM who had no qualified Supervisor and PC staff shortages. Other variations are noted for Alfred Nzo DM, OR Tambo DM and Kouga LM when comparing the ratios against the BD scores respectively.
(ii) Technical, Scientific and Maintenance staff

In addition to operational capacity (above), good management practice also requires access to qualified engineers, technicians, technologists, MISA appointees, scientists, and maintenance capability (below). Such competencies could reside in-house or accessible through term contracts and external specialists.

Table 37 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Maintenance Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amatola Water</td>
<td>9</td>
<td>12</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Alfred Nzo DM</td>
<td>7</td>
<td>7</td>
<td>Internal+Term Contract, Internal Team (Only)</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>30</td>
<td>37</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>4</td>
<td>3</td>
<td>Internal+Term Contract, Internal Team (Only), Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>5</td>
<td>10</td>
<td>Internal Team (Only), Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>84</td>
<td>22</td>
<td>Partially Capacitated, Internal+Term Contract, Internal Team (Only), Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>11</td>
<td>10</td>
<td>Internal+Term Contract, Internal Team (Only)</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>16</td>
<td>14</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Kouga LM</td>
<td>5</td>
<td>8</td>
<td>Internal+Term Contract, Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>11</td>
<td>11</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Makana LM</td>
<td>4</td>
<td>3</td>
<td>Internal Team (Only)</td>
</tr>
<tr>
<td>Ndlambe LM</td>
<td>5</td>
<td>5</td>
<td>Internal+Term Contract, Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>8</td>
<td>1</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>20</td>
<td>20</td>
<td>Internal+Term Contract, Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>3</td>
<td>3</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>222</td>
<td>154</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Qualified Technical Staff (#)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amatola Water</td>
<td>9</td>
<td>12</td>
<td>1 3 1 0 5 2 0 1 2 0 4 63.76% ave</td>
</tr>
<tr>
<td>Alfred Nzo DM</td>
<td>7</td>
<td>7</td>
<td>2 1 1 0 3 1 1 0 1 2 54.8%</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>30</td>
<td>37</td>
<td>1 1 1 0 3 2 1 1 1 1 3 59.5%</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>4</td>
<td>3</td>
<td>1 1 0 0 2 0 2 0 2 78.3%</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>5</td>
<td>10</td>
<td>3 9 1 0 3 1 1 3 0 1 13 83.5%</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>84</td>
<td>22</td>
<td>8 7 0 0 8 1 3 0 7 45.3%</td>
</tr>
</tbody>
</table>
In terms of maintenance capacity, all the municipalities in the province have a reasonable contingent of qualified technical and maintenance staff. The maintenance staff comprises of a collective of in-house, contracted, or outsourced personnel. The data indicates that:

- Amatola Water has internal maintenance teams supplement with specific outsourced services
- 6 of 14 (43%) WSAs have in-house maintenance teams
- 8 of 14 (57%) WSAs have internal maintenance teams supplemented with term contracts
- 10 of 14 (71%) WSAs have internal maintenance teams supplement with specific outsourced services.

In general, the province presents a strong case for qualified professional technical staff as follows:

- A total of 81 qualified staff comprised of 8 Engineers, 40 Technologists, 30 Technicians, 3 MISA appointees (qualified); and 26 SACNASP registered scientists are assigned to Amatola Water and 7 WSAs
- A total shortfall of 31 persons is identified, consisting of 15 technical staff and 16 scientists
- 10 WSAs have a total shortfall of 15 qualified technical staff with the highest indicated for Koukamma LM (3), and Blue Crane LM, Joe Gqabi DM, and Sundays River Valley LM (2 each)
- Amatola Water and all 14 WSAs have access to credible laboratories that comply with the Blue Drop standards, but 2 non-accredited laboratories are operating in 2 WSAs for some of their systems.

![Diagram](image)

**Figure 26 - Graphic illustration of the number and %: a) qualified engineering/technical staff; b) professional scientists; c) access to credible laboratory services that complies with Blue Drop standards**

Ratio analysis has been done to determine the number of qualified technical and scientific staff assigned per WSS. It is expected that a higher ratio would correspond with well-performing and maintained water supply systems, as represented by the BD score.
The schematic above does show a strong correlation between high ratios (≥1.0) and average to high BD scores for Kouga LM to Nelson Mandela MM (ranging from 65% to 80%) with the anomaly being Makana LM. With some exceptions, no firm correlation can be drawn between technical capacity and water supply performance, mostly as result of the complexity of the WSA/Bulk Water Provider arrangement.

Overall, the results highlight the inter-dependency between technical capacity and performance. One of the options to enhance operational capacity is through dedicated training programmes. The Blue Drop audit incentivises training of operational staff over the 2-year period prior to the audit date. The results are summarised as follows:

Table 38 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WTW staff attending training</th>
<th># WTW without training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amatola Water</td>
<td>9</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Alfred Nzo DM</td>
<td>7</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>30</td>
<td>23</td>
<td>7</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>5</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>84</td>
<td>5</td>
<td>79</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>11</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>16</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Kouga LM</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>11</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Makana LM</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Ndlambe LM</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>8</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>20</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>222</strong></td>
<td><strong>66 (30%)</strong></td>
<td><strong>156 (70%)</strong></td>
</tr>
</tbody>
</table>

The results confirm that Amatola Water and 9 WSAs had their operational staff attend training over the past 2 years. 66 of 222 WTWs and boreholes had their operational staff attend training over the past 2 years. Investment in human capital through technical skills development is likely to mitigate some of the water quality failures and lower performances noted, and municipalities and water boards should prioritise ongoing skills development of technical staff and appointment of qualified staff that are legible for registration.
Diagnostic 2: Treatment Capacity and Flow Distribution

**Aim:** Diagnostic 2 deals with design and flow related dynamics, comprising of: i) design capacity and operational flow, ii) raw water abstraction, and iii) WUE and SIV.

**(I) Design Capacity and Operational Flow**

This diagnostic assesses the status of plant design capacity and daily water production at the WTWs, as well as SIVs as measured at the outflow from the WTW or inflow to the water distribution network. A capable WTW requires adequate installed design capacity and functional equipment to operate optimally. If the WTW design capacity is exceeded by the average daily production (treatment) volume, the WTW will not be able to deliver SANS compliant water quality. The available design capacity is typically exceeded when the water demand exceeds the installed design capacity, or when unit processes or equipment are dysfunctional, or when electrical supply problems render treatment and pumping of water defective. Typically, the production volume and SIV is the same if 1 WTW supplies 1 WSS, but different if multiple supply systems are feeding from a singular WTW.

**Findings:** Analysis of the design capacity and average daily production/ treatment volume indicate a total design capacity of 1,397,705 kl/d for the province, with a total average daily treatment (operational) volume of 785,210 kl/d. Theoretically, this implies that 56% of the design capacity is used with 44% available to meet additional water demand. However, the full 1,397,705 kl/d is not available as some infrastructure is dysfunctional, leaving 1,361,225 kl/d available. The reduced capacity means that the province is closer to its total available capacity (58%) with a 42% surplus available. The capacity differential (difference between the installed and available capacity) will not constrain or impede any further social and economic development in the drainage areas. WSAs do report and have knowledge of their installed and available capacities, and a higher figure than 42% surplus available cannot be expected.

Most of the WSAs have their full installed capacity available. For the province in general, 214 WTWs are operating within their design capacities with the exception of 8 WTWs that exceeds their total design capacity (4%). This risk is currently mitigated through operational optimisation and preventative maintenance regimes.

#### Table 39 - Summary of WTWs design and available capacities, average daily production, % available capacity, and total SIV towards the WSSs

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Design Capacity (kl/d)</th>
<th>Available Design Capacity (kl/d)</th>
<th>Average Daily Production (kl/d)</th>
<th>Available Variance* (kl/d)</th>
<th>% Use Available Capacity</th>
<th>Total SIV towards the WSS (kl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amatola Water</td>
<td>9</td>
<td>12</td>
<td>110,200</td>
<td>110,200</td>
<td>89,140</td>
<td>21,060</td>
<td>81%</td>
<td>92,679</td>
</tr>
<tr>
<td>Alfred Nzo DM</td>
<td>7</td>
<td>7</td>
<td>54,120</td>
<td>53,720</td>
<td>33,361</td>
<td>20,359</td>
<td>62%</td>
<td>33,361</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>30</td>
<td>37</td>
<td>90,504</td>
<td>71,276</td>
<td>42,758</td>
<td>28,518</td>
<td>60%</td>
<td>42,680</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>4</td>
<td>3</td>
<td>8,700</td>
<td>8,700</td>
<td>7,996</td>
<td>704</td>
<td>92%</td>
<td>7,996</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>5</td>
<td>10</td>
<td>133,021</td>
<td>133,122</td>
<td>122,252</td>
<td>10,870</td>
<td>92%</td>
<td>122,252</td>
</tr>
<tr>
<td>Chris Hanl DM</td>
<td>84</td>
<td>22</td>
<td>162,293</td>
<td>162,295</td>
<td>108,486</td>
<td>33%</td>
<td>80,564</td>
<td></td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>11</td>
<td>10</td>
<td>29,990</td>
<td>26,480</td>
<td>11,446</td>
<td>15,034</td>
<td>43%</td>
<td>12,493</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>16</td>
<td>14</td>
<td>64,405</td>
<td>61,323</td>
<td>35,650</td>
<td>25,673</td>
<td>58%</td>
<td>35,694</td>
</tr>
<tr>
<td>Kouga LM</td>
<td>5</td>
<td>8</td>
<td>11,700</td>
<td>11,700</td>
<td>10,400</td>
<td>1,300</td>
<td>89%</td>
<td>37,900</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>11</td>
<td>11</td>
<td>6,013</td>
<td>3,029</td>
<td>4,565</td>
<td>-1,536</td>
<td>151%</td>
<td>4,642</td>
</tr>
<tr>
<td>Makana LM</td>
<td>4</td>
<td>3</td>
<td>20,600</td>
<td>20,600</td>
<td>9,780</td>
<td>10,820</td>
<td>47%</td>
<td>17,780</td>
</tr>
<tr>
<td>Ndlambe LM</td>
<td>5</td>
<td>5</td>
<td>12,150</td>
<td>11,930</td>
<td>5,222</td>
<td>6,708</td>
<td>44%</td>
<td>5,221</td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>8</td>
<td>1</td>
<td>555,750</td>
<td>555,750</td>
<td>281,350</td>
<td>274,400</td>
<td>51%</td>
<td>281,358</td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>20</td>
<td>20</td>
<td>121,900</td>
<td>119,600</td>
<td>61,532</td>
<td>58,068</td>
<td>51%</td>
<td>73,732</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>3</td>
<td>3</td>
<td>16,359</td>
<td>11,500</td>
<td>15,949</td>
<td>-4,449</td>
<td>139%</td>
<td>11,500</td>
</tr>
</tbody>
</table>

* Difference between the available design capacity and the average daily production
Figure 29 - Design and available capacity, average daily production, available variance and total SIV for the WTWs

Figure 30 - % available capacity
(ii) Raw Water Abstraction

This diagnostic takes a snapshot view of the status of water abstraction authorisations from natural water resources across the province. As per the National Water Act (Act no 36 of 1998), Water Use Authorisation (WUA) mandate the maximum abstraction volumes of raw water, and the installation and monitoring of abstraction, inflow, and outflow meters, whilst the BD audit requires WSAs to report the flows on IRIS and to calibrate meters annually. Any defects in terms of abstracting water from a resource without an authorisation, or exceeding the authorised volume, or reporting inaccurate volumes, or not monitoring abstraction against authorised volumes, are considered to be a regulatory risk and contravention of the law.

**Findings:** Data pertaining to the daily abstraction volumes (kl/d) (Authorised), average daily treatment volumes (kl/d), the names of the WTWs exceeding/with no Daily Abstraction Volumes (Authorised) and Average Daily Treatment Volumes (Authorised) is captured in the tables below.

**Table 40 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances & WTWs listed For Enforcement Action**

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Daily Abstraction Volumes (Authorised) (kl/d)</th>
<th>Average Daily Treatment Volume (kl/d)</th>
<th>Average Variance (kl/d) [+ or Minus]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amatola Water</td>
<td>9</td>
<td>12</td>
<td>75,807</td>
<td>89,140</td>
<td>-13,333</td>
</tr>
<tr>
<td>Alfred Nzo DM</td>
<td>7</td>
<td>7</td>
<td>1,522</td>
<td>33,361</td>
<td>-31,839</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>30</td>
<td>37</td>
<td>21,606</td>
<td>42,758</td>
<td>-21,153</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>7,996</td>
<td>-7,996</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>5</td>
<td>10</td>
<td>0</td>
<td>122,252</td>
<td>-122,252</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>84</td>
<td>22</td>
<td>8,350</td>
<td>53,809</td>
<td>-45,459</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>11</td>
<td>10</td>
<td>0</td>
<td>11,446</td>
<td>-11,446</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>16</td>
<td>14</td>
<td>3,836</td>
<td>35,650</td>
<td>-31,815</td>
</tr>
<tr>
<td>Kouga LM</td>
<td>5</td>
<td>8</td>
<td>6,659</td>
<td>10,400</td>
<td>-3,741</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>11</td>
<td>11</td>
<td>0</td>
<td>4,565</td>
<td>-4,565</td>
</tr>
<tr>
<td>Makana LM</td>
<td>4</td>
<td>3</td>
<td>10,200</td>
<td>9,780</td>
<td>420</td>
</tr>
<tr>
<td>Ndlambe LM</td>
<td>5</td>
<td>5</td>
<td>4,870</td>
<td>5,222</td>
<td>-352</td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>8</td>
<td>1</td>
<td>365,975</td>
<td>281,350</td>
<td>84,625</td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>20</td>
<td>20</td>
<td>186,403</td>
<td>61,532</td>
<td>124,871</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>15,949</td>
<td>-15,949</td>
</tr>
<tr>
<td>Amatola Water</td>
<td>9</td>
<td>12</td>
<td>75,807</td>
<td>89,140</td>
<td>-13,333</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>222</td>
<td>154</td>
<td>685,227</td>
<td>785,210</td>
<td>-99,983</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>WTW exceeding the Daily Abstraction Volumes (Authorised)</th>
<th>WTW with no Daily Abstraction Volumes (Authorised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfred Nzo DM</td>
<td>1 WTW</td>
<td>4 WTW</td>
</tr>
<tr>
<td>Amatola DM</td>
<td>4 WTWs</td>
<td>19 WTWs</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>4 WTWs</td>
<td></td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>2 WTWs</td>
<td>6 WTWs</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>1 WTW</td>
<td>82 WTWs</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>11 WTWs</td>
<td></td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>2 WTWs</td>
<td>11 WTWs</td>
</tr>
<tr>
<td>Kouga LM</td>
<td>2 WTWs</td>
<td>2 WTWs</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>11 WTWs</td>
<td></td>
</tr>
<tr>
<td>Makana LM</td>
<td>3 WTWs</td>
<td></td>
</tr>
<tr>
<td>Ndlambe LM</td>
<td>3 WTWs</td>
<td></td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>9 WTWs</td>
<td></td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>3 WTWs</td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>12</td>
<td>168</td>
</tr>
</tbody>
</table>
WTWs that exceed the Daily Abstraction Volumes (Authorised) and WTWs with no Daily Abstraction Volumes (Authorised) are reflected in the 2nd table above. WTWs that are not complying with the regulations will be required to show correction in the next Blue Drop audit cycle. The results conclude that 12 WTWs are exceeding the permitted abstraction limits and 54 WTWs provided authorised water use abstraction volumes. The Daily Abstraction Volumes (Authorised) are not known for 168 water treatment systems resulting in negative average variances that skew the data sets. Negative average variances could also be attributed to over abstraction.

For future BD audits, WSA/WSPs will be required to provide ‘actual’ abstraction volumes so that a comparative analysis can be undertaken of the ‘actual’ abstraction volume versus the authorised water use abstraction volumes (maximum). This would require that the WSAs and WSPs/WBs monitor and record all critical path flows (abstraction, raw and final).

(iii) Water Use Efficiency and System Input Value

The Department is committed to consider issues related to water scarcity and security, aiming to ensure there is sufficient water for the population, the economy, and the environment by increasing water use efficiency across all sectors. Water use for services sectors is specifically dealing with the quantity of water used directly by the consumer through the public distribution network and industries connected to the network.

This diagnostic assesses the water use efficiency (i.e., the average daily consumption in litres per person per day) and the individual and collective performance of the water supply systems. WUE indicates how effective water is used by consumers, i.e. the process between effective water use and actual water abstraction. This concept is closely related to the Department’s No Drop Certification assessment, whereby WUE, NRW and water losses are targeted as part of Water Conservation and Water Demand Management strategies by municipalities.
Findings: Both the Blue Drop audit and No Drop audit require an IWA water balance to determine the SIV into each water supply system, and to identify and quantify possible losses from abstraction to the end-of-use point. Amatola Water and 7 WSA s have full water balances in place for 62 WSSs in total. 54 WSSs in 5 WSAs have partial water balances in place, and 8 WSAs with a total of 38 WSSs do not have water balances in place.

WUE is calculated based on the SIV contributions, population served, and the average daily consumption, as summarised in the following table.

Table 41 - Summary of total SIV, total population served, average daily consumption, WUE status and performance trend

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WSSs</th>
<th>Total Population</th>
<th>Total SIV (kl/d)</th>
<th>2023 WUE (l/p/d)</th>
<th>2023 Blue Drop WUE Range and Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfred Nzo DM</td>
<td>7</td>
<td>286,714</td>
<td>33,361</td>
<td>116</td>
<td>&lt;150 - Excellent</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>37</td>
<td>896,207</td>
<td>66,793</td>
<td>75</td>
<td>&lt;150 - Excellent</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>3</td>
<td>33,600</td>
<td>7,996</td>
<td>238</td>
<td>&gt;200-250 - Average</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>10</td>
<td>857,000</td>
<td>186,884</td>
<td>218</td>
<td>&gt;200-250 - Average</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>22</td>
<td>475,610</td>
<td>80,564</td>
<td>169</td>
<td>&gt;150-200 - Good</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>10</td>
<td>70,578</td>
<td>12,493</td>
<td>177</td>
<td>&gt;150-200 - Good</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>14</td>
<td>320,917</td>
<td>35,694</td>
<td>111</td>
<td>&lt;150 - Excellent</td>
</tr>
<tr>
<td>Kouga LM</td>
<td>8</td>
<td>97,596</td>
<td>37,900</td>
<td>388</td>
<td>&gt;300 - Extremely High</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>11</td>
<td>28,582</td>
<td>6,202</td>
<td>217</td>
<td>&gt;150-200 - Good</td>
</tr>
<tr>
<td>Makana LM</td>
<td>3</td>
<td>139,600</td>
<td>17,780</td>
<td>127</td>
<td>&lt;150 - Excellent</td>
</tr>
<tr>
<td>Ndlambe LM</td>
<td>5</td>
<td>60,517</td>
<td>6,667</td>
<td>110</td>
<td>&lt;150 - Excellent</td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>1</td>
<td>1,100,000</td>
<td>281,358</td>
<td>256</td>
<td>&gt;250-300 - Poor</td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>20</td>
<td>568,688</td>
<td>73,768</td>
<td>130</td>
<td>&lt;150 - Excellent</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>3</td>
<td>65,964</td>
<td>11,500</td>
<td>174</td>
<td>&gt;150-200 - Good</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>154</strong></td>
<td><strong>5,001,573</strong></td>
<td><strong>858,960</strong></td>
<td><strong>172</strong></td>
<td></td>
</tr>
</tbody>
</table>

WUE (l/cap/day) performance categories

<table>
<thead>
<tr>
<th>Colour</th>
<th>WUE Range</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>&gt;300</td>
<td>Extremely high per capita water use</td>
</tr>
<tr>
<td>Orange</td>
<td>&gt;250-300</td>
<td>Poor per capita water use</td>
</tr>
<tr>
<td>Yellow</td>
<td>&gt;200-250</td>
<td>Average per capita water use with potential for marked improvement</td>
</tr>
<tr>
<td>Green</td>
<td>&gt;150-200</td>
<td>Good per capita water use but some improvement may be possible subject to economic benefits</td>
</tr>
<tr>
<td>Light Green</td>
<td>&lt;150</td>
<td>Excellent per capita water use management</td>
</tr>
</tbody>
</table>

Figure 32 - Total SIV towards the WSSs

Figure 33 - Total Population served
For the province, 858,960 kl/d water is supplied to 5,001,573 consumers. Comparatively, Nelson Mandela MM distributes 33% of the total provincial SIV, followed by Buffalo City LM (22%). An average 172 litre of water is used per person per day, which implies a good per capita water use. Results from the diagnostic data show that the Kouga LM has a WUE of more than 300 l/c/d, which is regarded as extremely high according to national benchmarks. Only Nelson Mandela MM has a WUE between 250–300 l/c/d, which is regarded as poor. No Drop Certification is specifically tasked with plans to curb water losses and improve NRW through water accounting assessments and water conservation and demand management.

Diagnostic 3: Drinking Water Quality (DWQ) Monitoring and Compliance

**Aim:** Blue Drop audits values the principles of “To measure is to know” and “To know is to manage”. The primary objective of a water treatment plant is to produce final water quality that is safe for human consumption at the end of the distribution network. This standard can only be measured and achieved if operational and compliance monitoring and DWQ compliance is executed at the correct frequency, sample point, and determinand type. This diagnostic assesses the i) operational and compliance monitoring status, ii) drinking water quality compliance, and iii) risk defined compliance and laboratory credibility.

(i) Drinking water operational and compliance monitoring

**Findings:** A minimum level of 90% operational monitoring compliance is applied as benchmark, to give weight to the importance of sampling and monitoring of the raw water, process unit water, and final water across the treatment stream. Compliance monitoring is also informed by SANS 241:2015 and the requirement for risk-informed monitoring through the WaSP process at both the WTW and final distribution network. DWQ compliance is calculated against the population size and the mandatory limits set by SANS 241:2015 and the Blue Drop standards, as calculated and reported from data loaded in the IRIS.

| Table 42 - Summary of the KPA 2 WTW operational and WSS compliance monitoring status |
|---------------------------------|-----------|-----------------|-------------|-----------------|-----------------|-------------|
| WSA & WB Name                   | # WTWs   | # WSSs          | WTW Operational monitoring [KPA 2 sub-KPA 2.b)] | WSS Compliance monitoring [KPA 2 sub-KPA 2.c)] |
|                                 |          |                 | Satisfactory [BD score ≥90%] | Not Satisfactory [BD score <90%] | Satisfactory [BD score ≥90%] | Not Satisfactory [BD score <90%] |
| Amatola Water                   | 9        | 12              | 9                           |                               | 12                           |                               |
| Alfred Nzo DM                   | 7        | 7               | 6                           | 1                             |                               | 7                           |
| Amatole DM                      | 30       | 37              | 30                          |                               |                               | 27                          |
| Blue Crane Route LM            | 4        | 3               | 1                           | 3                             |                               | 3                           |
| Buffalo City LM                | 5        | 10              | 3                           | 2                             | 5                            | 5                           |
| Chris Hani DM                  | 84       | 22              | 9                           | 75                            | 1                            | 21                          |
| Dr Beyers Naude LM             | 11       | 10              | 11                          |                               |                               | 10                          |
| Joe Gqabi DM                   | 16       | 14              | 13                          | 3                             |                               | 14                          |
| Kouga LM                       | 5        | 8               | 2                           | 3                             | 5                            | 3                           |
| Koukamma LM                    | 11       | 11              | 11                          |                               |                               | 11                          |
| Makana LM                      | 4        | 3               | 3                           | 1                             |                               | 3                           |
| Ndiamo LM                      | 5        | 5               | 4                           | 1                             |                               | 5                           |
| Nelson Mandela MM              | 8        | 1               | 6                           | 2                             |                               | 1                           |
| Or Tambo DM                    | 20       | 20              | 13                          | 7                             | 19                           | 1                           |
| Sundays River Valley LM        | 3        | 3               | 3                           |                               |                               | 3                           |
| Totals                         | 222      | 154             | 99 (45%)                    | 123 (55%)                     | 61 (40%)                     | 93 (60%)                    |

The performance recorded in the table above stems from performance data as measured against the Blue Drop Standard expressed in KPA 2 and sub-KPAs 2.b) and 2.c). Overall, an unsatisfactory sampling and analysis regime is observed for both operational (55%) and compliance (60%) monitoring.

The data indicates that 99 of 222 WTWs (45%) are on par with good practice for operational monitoring of the raw and final water and the respective process units at the WTW. Amatola Water, Alfred Nzo DM and Amathole DM are doing exceptionally well, whilst the remaining WSAs fail to meet the Blue Drop standard. In terms of compliance monitoring, 61 WSSs (40%) are on par with good compliance monitoring practices, and 93 WSSs (60%) are failing the Blue Drop standard.

The latter observation is noted with deepening concern. Compliance monitoring is a legal requirement and the only means to measure the DWQ performance of a water supply system. Operational monitoring is the cornerstone of day-to-day process adjustments and optimisation to ensure that the water treatment is efficient and delivers quality final water. The results indicate that 123 WTWs and 93 WSSs are not achieving regulatory and industry standards.
(ii) Drinking water quality compliance

**Findings:** DWQ compliance is measured against the requirements of SANS 241:2015 under KPA 5 of the Blue Drop audit. The tables following summarises the results of the DWQ status for Microbiological and Chemical Compliance, which also carries the highest Blue Drop score weighting of 35%.

<table>
<thead>
<tr>
<th>Table 43 - Provincial Summary of the DWQ Status for Microbiological Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WSA Name</strong></td>
</tr>
<tr>
<td>Alfred Nzo DM</td>
</tr>
<tr>
<td>Amatole DM</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
</tr>
<tr>
<td>Buffalo City LM</td>
</tr>
<tr>
<td>Chris Hani DM</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
</tr>
<tr>
<td>Kouga LM</td>
</tr>
<tr>
<td>Koukamma LM</td>
</tr>
<tr>
<td>Makana LM</td>
</tr>
<tr>
<td>Ndlambe LM</td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
</tr>
<tr>
<td>OR Tambo DM</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
</tr>
</tbody>
</table>

![Figure 34 - Provincial Microbiological Drinking Water Quality Status](image)

Out of the 154 WSSs, 63 (41%) systems achieved excellent and good microbiological quality, whilst 91 (59%) systems have an unacceptable microbiological water quality status. The water in these systems pose a serious acute health risk to the community. Failure to produce water that meets microbiological compliance standards can be linked back to poor operations, defective infrastructure, inadequate dosing rates, absence of disinfection chemicals, lack of monitoring, lack of operating and chemistry knowledge, and several other root causes. WSIs that are not monitoring the final water quality at the outlet of the treatment plant or at specific end use points are required to develop a monitoring programme and resume with compliance monitoring as a matter of urgency.

<table>
<thead>
<tr>
<th>Table 44 - Provincial Summary of the DWQ Status for Chemical Acute Health and Chronic Health Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WSA Name</strong></td>
</tr>
<tr>
<td>Alfred Nzo DM</td>
</tr>
<tr>
<td>Amatole DM</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
</tr>
</tbody>
</table>
Chemical acute health compliance shows that 69 (45%) systems have excellent water quality, whilst 85 (55%) systems have an unacceptable chemical acute health compliance. Chemical chronic health compliance shows that 122 (79%) systems have excellent and 5 (3%) systems have good water quality, whilst 27 (18%) systems have an unacceptable chemical chronic health compliance. The Water Services Act upholds standards regarding the monitoring and reporting on drinking water quality and issuance of advisory notices to the public when significant DWQ failures are observed.
The audit process applies a penalty when DWQ failures are noticed without issuing such Water Quality Alert Notices to forewarn consumers of the status of (unsafe) water quality and to advise communities to source alternative water sources or methods to disinfect water used for drinking water purposes. The following table reflects the compliance status of the WSAs as regards the issuing of these notices for DWQ failures.

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSS</th>
<th># WSS No Penalty Applied</th>
<th># WSS Partial Penalty Applied</th>
<th>WSS Names Partial Penalty</th>
<th># WSS Full Penalty Applied</th>
<th>WSS Names Full Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfred Nzo DM</td>
<td>7</td>
<td>2</td>
<td>Nomlaku, Ntabankulu</td>
<td>5</td>
<td>5 of 7 WSSs</td>
<td></td>
</tr>
<tr>
<td>Amatole DM</td>
<td>37</td>
<td>1</td>
<td>35 of 37 WSSs</td>
<td>1</td>
<td>Xhosa</td>
<td></td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>10</td>
<td>2</td>
<td>8</td>
<td>8 of 10 WSSs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>22</td>
<td>14</td>
<td>8</td>
<td>8 of 22 WSSs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>10</td>
<td>9</td>
<td>9</td>
<td>9 of 10 WSSs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>14</td>
<td>4</td>
<td>9</td>
<td>9 of 14 WSSs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kouga LM</td>
<td>8</td>
<td>1</td>
<td>5</td>
<td>5 of 8 WSSs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>11</td>
<td>2</td>
<td>Grahamstown, Riebeeck East</td>
<td>1</td>
<td>Alicedale</td>
<td></td>
</tr>
<tr>
<td>Makana LM</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>5 of 5 WSSs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ndiambe LM</td>
<td>5</td>
<td>5</td>
<td>5 of 5 WSSs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>20</td>
<td>4</td>
<td>12 of 20 WSSs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>Enon/Bersheba, Kirkwood</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>154</strong></td>
<td><strong>31</strong></td>
<td><strong>99</strong></td>
<td><strong>24</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No penalties were applied to 31 (20%) WSSs in 9 WSAs. 99 partial penalties and 24 full penalties were applied to 123 (80%) WSSs in 11 WSAs and 8 WSAs respectively.

(iii) Risk defined compliance and laboratory credibility

**Findings:** Risk-defined compliance standards aim to determine the compliance (to SANS 241) of those parameters that have been found to pose a risk in a specific WSS and need to be included in the routine monitoring programme or frequency as prescribed by SANS 241. The province achieved an average Annual Risk Defined Compliance of 81.21, with the best performances coming from Alfred Nzo DM, and the worst performances coming from Amatole DM, Chris Hani DM, Joe Gqabi DM, Koukamma LM and OR Tambo DM. Excellent risk defined compliance was achieved by 24 (16%) systems, good compliance for 8 (5%) systems and bad compliance for 122 (79%) systems.

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>Ave. % Risk Defined Compliance</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfred Nzo DM</td>
<td>7</td>
<td>286,714</td>
<td>84.94%</td>
<td>Excellent 6</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>37</td>
<td>896,207</td>
<td>84.69%</td>
<td>Good 1</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>3</td>
<td>33,600</td>
<td>83.46%</td>
<td>Good 2</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>10</td>
<td>857,000</td>
<td>89.40%</td>
<td>Good 1</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>22</td>
<td>475,610</td>
<td>89.69%</td>
<td>Bad 5</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>10</td>
<td>70,578</td>
<td>77.82%</td>
<td>Bad 2</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>14</td>
<td>320,917</td>
<td>87.33%</td>
<td>Good 3</td>
</tr>
<tr>
<td>Kouga LM</td>
<td>8</td>
<td>97,596</td>
<td>95.18%</td>
<td>Good 3</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>11</td>
<td>28,582</td>
<td>39.90%</td>
<td>Bad 11</td>
</tr>
<tr>
<td>Makana LM</td>
<td>3</td>
<td>139,600</td>
<td>76.10%</td>
<td>Bad 3</td>
</tr>
<tr>
<td>Ndiambe LM</td>
<td>5</td>
<td>60,517</td>
<td>86.38%</td>
<td>Bad 1</td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>1</td>
<td>1,100,000</td>
<td>86.18%</td>
<td>Bad 1</td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>20</td>
<td>568,688</td>
<td>73.25%</td>
<td>Bad 19</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>3</td>
<td>65,964</td>
<td>80.98%</td>
<td>Bad 1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>154</strong></td>
<td><strong>5,001,573</strong></td>
<td><strong>81.09%</strong></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>

The aim of operational determinand compliance is to determine the efficiency of the water treatment process, by monitoring those parameters which are used to control the treatment process. Although not necessarily a health risk, these parameters provide good information on the integrity of the WTW. The province achieved an average % Actual Operational Determinand Compliance of 47%. Excellent operational determinand compliance was achieved by 27 (12%) WTWs, good compliance for 19 (9%) WTWs and bad compliance for 176 (79%) WTWs with most of these WTWs residing in Amatole DM, Chris Hani DM, Koukamma LM & OR Tambo DM.
The data confirms that all the 14 (100%) WSAs in the province have access to credible laboratories for compliance and operational analysis with exception of some systems in 2 WSAs that are monitored by non-accredited laboratories. These in-house or contracted laboratories are accredited with SANAS or have Proficiency Testing Schemes with SABS or have inter-laboratory quality checks in place to ensure that suitable analytical methods are applied and that quality assurance processes are followed to ensure credible water quality results. The province is meeting the regulatory expectation for the WSIs having access to credible analytical services for compliance and operational monitoring.

**Diagnostic 4: Technical Site Assessments**

**Aim:** The BD process makes provision for a Technical Site Assessment (TSA) in order to verify the desktop evidence through field-based inspections. This assessment includes a physical inspection of the entire water treatment plant with all its process units, as well as the reservoir and spot checks of a pumpstation and pipelines. The technical assessment is coupled with an asset condition check to determine an approximate cost (VROOM) to restore existing infrastructure to functional status for the treatment facility (only).

**Findings:** The results of the province’s TSAs are summarised in the table below. A deviation of 10% between the BD and TSA score indicate a misalignment between the administrative aspects and the work on the ground. The Regulator regards a WTW with a TSA score of >80% as an excellent system that complies with most of the Blue Drop TSA standards. A TSA score of <30% indicates that the treatment facility and network performance status is coupled with an asset condition check to determine an approximate cost (VROOM) to restore existing infrastructure to functional status for the treatment facility (only).

**Table 48 - %TSA and %BD score, and VROOM cost estimates total and split for civil, mechanical, and electrical**

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th>Population</th>
<th>Ave. % Actual Operational Determinand Compliance</th>
<th>%TSA</th>
<th>2023 BD Score (%)</th>
<th>Civil cost estimate</th>
<th>Mechanical cost estimate</th>
<th>Electrical &amp; C&amp;I cost estimate</th>
<th>Total VROOM cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amatola Water (BC LM)</td>
<td>9</td>
<td>658,320</td>
<td>76%</td>
<td>86%</td>
<td>83.5%</td>
<td>674,000</td>
<td>539,200</td>
<td>134,800</td>
<td>1,348,000</td>
</tr>
<tr>
<td>Alfred Nzo DM</td>
<td>7</td>
<td>286,714</td>
<td>77%</td>
<td>79%</td>
<td>54.8%</td>
<td>19,800,000</td>
<td>55,440,000</td>
<td>3,960,000</td>
<td>79,200,000</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>30</td>
<td>896,207</td>
<td>84%</td>
<td>79%</td>
<td>59.5%</td>
<td>1,125,600</td>
<td>750,400</td>
<td>0</td>
<td>1,876,000</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>4</td>
<td>33,600</td>
<td>0%</td>
<td>79%</td>
<td>37.4%</td>
<td>1,892,800</td>
<td>582,400</td>
<td>436,800</td>
<td>2,912,000</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>5</td>
<td>857,000</td>
<td>71%</td>
<td>85%</td>
<td>83.5%</td>
<td>5,952,000</td>
<td>1,488,000</td>
<td>0</td>
<td>7,440,000</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>5</td>
<td>97,596</td>
<td>19%</td>
<td>85%</td>
<td>45.3%</td>
<td>16,742,000</td>
<td>2,092,750</td>
<td>2,092,750</td>
<td>20,927,500</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>11</td>
<td>70,578</td>
<td>13%</td>
<td>85%</td>
<td>24.2%</td>
<td>160,000</td>
<td>160,000</td>
<td>1,280,000</td>
<td>1,600,000</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>16</td>
<td>320,917</td>
<td>78%</td>
<td>85%</td>
<td>20%</td>
<td>4,386,000</td>
<td>3,494,400</td>
<td>436,800</td>
<td>4,368,000</td>
</tr>
<tr>
<td>Kouga LM</td>
<td>5</td>
<td>97,596</td>
<td>19%</td>
<td>85%</td>
<td>24.1%</td>
<td>1,296,000</td>
<td>907,200</td>
<td>388,800</td>
<td>2,592,000</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>11</td>
<td>28,582</td>
<td>0%</td>
<td>85%</td>
<td>32.5%</td>
<td>6,380</td>
<td>51,040</td>
<td>6,380</td>
<td>63,800</td>
</tr>
<tr>
<td>Makana LM</td>
<td>5</td>
<td>60,517</td>
<td>70%</td>
<td>85%</td>
<td>83.5%</td>
<td>5,952,000</td>
<td>1,488,000</td>
<td>0</td>
<td>7,440,000</td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>8</td>
<td>1,100,000</td>
<td>88%</td>
<td>85%</td>
<td>43.6%</td>
<td>3,494,400</td>
<td>436,800</td>
<td>436,800</td>
<td>4,368,000</td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>20</td>
<td>568,688</td>
<td>54%</td>
<td>85%</td>
<td>43.6%</td>
<td>1,296,000</td>
<td>907,200</td>
<td>388,800</td>
<td>2,592,000</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>3</td>
<td>65,964</td>
<td>0%</td>
<td>85%</td>
<td>25.6%</td>
<td>1,149,280</td>
<td>2,204,496</td>
<td>944,784</td>
<td>6,298,560</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>222</td>
<td>5,001,573</td>
<td>47%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>176</td>
</tr>
</tbody>
</table>

% Split of Cost Items

| Total VROOM cost | R53,650,290 | R77,712,876 | R111,150,794 | R142,513,960 |

### EASTERN CAPE
A deviation of >10% between the BD and TSA score is noted for 12 WSAs with the exception of Amatola Water, Buffalo City LM and Nelson Mandela MM. A deviation of >20% between the BD and TSA score is noted for 11 WSAs. For the individual WTWs assessed in the province, a total budget of R142.5m is estimated, with the bulk of the work (92%) going towards restoration of mechanical equipment (54%) and civil infrastructure (38%).

**Diagnostic 5: Operation, Maintenance and Refurbishment of Assets**

**Aim:** Insufficient financial resources are often cited as a root cause to dysfunctional or non-compliant water treatment works and water networks. Knowledge and monitoring of fiscal spending are therefore a critical part of water services management and municipal governance of public assets. This diagnostic investigates the status of financial information as pertaining to O&M budgets and expenditure, asset figures, and capital funding.

**Findings:** A substantial amount of financial information was presented during the audit process. Unfortunately, the evidence was presented in different formats, levels of detail, or absent for some WSAs. It was observed that WSA teams with financial officials that were present during the audits performed better and had a better understanding of the water services challenges experienced by their technical peers.

Discrepancies observed included amongst others - generic or non-ringfenced budgets, contract lump sums for service providers presented as budgets, outdated or incomplete asset registers, and some cost drivers which were lacking. As data credibility presents a significant challenge, the Regulator grouped data into different certainty levels, as summarised at the end of this Diagnostic.

The result of each financial portfolio is discussed hereunder.

NOTE: The Regulator regards the financial and asset information with low confidence. Not all WSAs submitted verifiable information or complete financial data sets for the audit year in question.

**Capital, O&M Budget and Actual, and Asset Value**

The capital budgets, O&M budgets, O&M actual expenditure, and current asset values are summarised below.

*Table 49 - Summary of the capital budgets, O&M budgets, O&M actual expenditure, and current asset values*

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Capital budget available (R)</th>
<th>O&amp;M budget (R) (2021/22)</th>
<th>O&amp;M expended (R) (2021/22)</th>
<th>% Expended</th>
<th>Total Current Asset Value (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amatola Water</td>
<td>NI</td>
<td>R67,695,098</td>
<td>R58,120,136</td>
<td>86%</td>
<td>R1,689,523,428</td>
</tr>
<tr>
<td>Alfred Nzo DM</td>
<td>20,270,187</td>
<td>R48,685,324</td>
<td>R34,279,987</td>
<td>70%</td>
<td>R2,673,154,323</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>22,000,000</td>
<td>R300,392,758</td>
<td>R294,340,523</td>
<td>98%</td>
<td>R1,141,411,000</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>129,837,677</td>
<td>R65,637,904</td>
<td>R61,382,839</td>
<td>94%</td>
<td>NI</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>NI</td>
<td>R1,308,257,000</td>
<td>R870,763,000</td>
<td>67%</td>
<td>R8,985,000</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>124,117,464</td>
<td>R8,184,764</td>
<td>R6,043,299</td>
<td>74%</td>
<td>R492,072,658</td>
</tr>
<tr>
<td>Kouga LM</td>
<td>NI</td>
<td>R10,963,000</td>
<td>R9,189,000</td>
<td>84%</td>
<td>R3,097,876,752</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>NI</td>
<td>R2,279,000</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Makana LM</td>
<td>NI</td>
<td>R172,875,000</td>
<td>R76,621,000</td>
<td>44%</td>
<td>NI</td>
</tr>
<tr>
<td>Ndlambe LM</td>
<td>128,593,405</td>
<td>R78,989,682</td>
<td>R89,798,650</td>
<td>114%</td>
<td>NI</td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>300,000,000</td>
<td>R587,069,000</td>
<td>R535,317,000</td>
<td>NI</td>
<td>R3,096,788,850</td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>79,357,787</td>
<td>R544,270,102</td>
<td>NI</td>
<td>NI</td>
<td>R4,770,791,037</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>NI</td>
<td>R1,300,000</td>
<td>R2,120,615</td>
<td>163%</td>
<td>NI</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>804,176,520</strong></td>
<td><strong>3,196,598,632</strong></td>
<td><strong>2,037,975,049</strong></td>
<td><strong>63.8%</strong></td>
<td><strong>R15,970,603,048</strong></td>
</tr>
</tbody>
</table>

The Regulatory Comments following in this Chapter list the capital projects with secured funding for each municipality and/or its bulk water provider (WSP). The capital lists are deemed to be a definitive means to address water service inadequacies and ensuring water infrastructure investment. A total capital budget of R804m has been reported for the refurbishment and upgrades of water supply system infrastructure for most of the WSAs. The largest capital budgets are observed for Nelson Mandela MM (R300m), Buffalo City LM (R130m), Ndlambe LM (R129m), and Joe Gqabi DM (R124m).

For the 2021/22 fiscal year, the total O&M budget reported for the province was R3.2b, of which R2.04b (64%) has been expended. The highest over-expenditure of 163% by Sundays River Valley LM and the lowest under expenditure by Makana LM (44%) was observed. The provincial figures exclude 9 WSAs who had no and partial financial information.
The total current asset value for water infrastructure (networks, pump stations, treatment plants) is reportedly R15.97b (excluding 7 WSAs with no information). The highest asset values are observed for OR Tambo DM (R4.77b), followed by Kouga LM (R3.1b), Nelson Mandela MM (R3.1b) and Alfred Nzo DM (R2.67b).

**O&M Cost Benchmarking**

By combining the SALGA and WRC WATCOST models, an estimation of the maintenance cost required per asset type can be done, i.e. civil, buildings, pipelines, mechanical, electrical, and instrumentation.

*Table 50 - SALGA-WRC annual maintenance budget guideline and cost estimation*

<table>
<thead>
<tr>
<th>Description</th>
<th>% of Current Asset Value</th>
<th>Asset Value Estimate</th>
<th>Modified SALGA Maintenance Guideline</th>
<th>Annual Maintenance Budget Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Asset Value estimate</td>
<td>100%</td>
<td>R15,970,603,048</td>
<td>15.75%</td>
<td>R344,965,026</td>
</tr>
<tr>
<td>Broken down into:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Civil Structures</td>
<td>46%</td>
<td>R7,346,477,402</td>
<td>0.50%</td>
<td>R36,732,387</td>
</tr>
<tr>
<td>2. Buildings</td>
<td>3%</td>
<td>R479,118,091</td>
<td>1.50%</td>
<td>R7,186,771</td>
</tr>
<tr>
<td>3. Pipelines</td>
<td>6%</td>
<td>R958,236,183</td>
<td>0.75%</td>
<td>R7,186,771</td>
</tr>
<tr>
<td>4. Mechanical Equipment</td>
<td>30%</td>
<td>R4,791,180,914</td>
<td>4.00%</td>
<td>R191,647,237</td>
</tr>
<tr>
<td>5. Electrical Equipment</td>
<td>11%</td>
<td>R1,756,766,335</td>
<td>4.00%</td>
<td>R70,270,653</td>
</tr>
<tr>
<td>6. Instrumentation</td>
<td>4%</td>
<td>R638,824,122</td>
<td>5.00%</td>
<td>R31,941,206</td>
</tr>
<tr>
<td>Totals</td>
<td>100%</td>
<td>R15,970,603,048</td>
<td>15.75%</td>
<td>R344,965,026</td>
</tr>
</tbody>
</table>

Minus 20% P&Gs and 10% Installation: R103,489,508
Total: R241,475,518

The model estimates that R345m (2.16%) is required per year to maintain the assets valued at R15.97b. Notably, this maintenance estimate assumes that all assets are functional. In cases where Blue Drop Certification is not being achieved, it can be assumed that some form of inefficiency or constraint is being experienced, and national benchmarks closer to 7% of the asset value is advocated (R1.12b).

The table below indicates the SALGA maintenance cost estimation in relation to the O&M budget, and O&M actual expended.

*Table 51 - O&M cost estimates by the SALGA versus actual budget and expenditure figures*

<table>
<thead>
<tr>
<th>Cost Reference</th>
<th>O&amp;M Cost Estimate</th>
<th>Period</th>
<th>% of Asset Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified SALGA</td>
<td>344,965,026</td>
<td>Annually</td>
<td>2.16%</td>
</tr>
<tr>
<td>O&amp;M Budget</td>
<td>3,196,598,632</td>
<td>Actual for 2021/22</td>
<td>20.0%</td>
</tr>
<tr>
<td>O&amp;M Spend</td>
<td>2,037,975,049</td>
<td>Actual for 2021/22</td>
<td>12.8%</td>
</tr>
</tbody>
</table>

In addition, the table below indicates the Blue Drop audit findings on the water supply operations cost determination and water supply O&M budget status.
### Table 52 - BD Audit Water Supply Operations Cost Determination and Water Supply O&M Budget status

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Water Supply Operations Cost Determination</th>
<th>Water Supply O&amp;M Budget status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amatola Water</td>
<td>DETERMINED OF THE WHOLE SYSTEM, DETERMINED FOR PART OF SYSTEM, NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>SYSTEM SPECIFIC BUDGET, WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Alfred Nzo DM</td>
<td>NO PROOF (0% SCORE); DETERMINED OF THE WHOLE SYSTEM</td>
<td>NO PROOF; SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Amatole DM</td>
<td>NO PROOF (0% SCORE); DETERMINED OF THE WHOLE SYSTEM</td>
<td>NO PROOF; SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Blue Crane Route LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Buffalo City LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM; DETERMINED FOR PART OF SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Chris Hani DM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Dr Beyers Naude LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Joe Gqabi DM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET; WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Kouga LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL); DETERMINED OF THE WHOLE SYSTEM</td>
<td>BUDGET IS NOT RINGFENCED FOR WATER ONLY; SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Koukamma LM</td>
<td>NOT SYSTEM SPECIFIC BUDGET; NO PROOF (0% SCORE)</td>
<td>BUDGET IS NOT RINGFENCED FOR WATER ONLY; NO PROOF</td>
</tr>
<tr>
<td>Makana LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Ndlambe LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL); DETERMINED OF THE WHOLE SYSTEM; DETERMINED FOR PART OF SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY; SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Nelson Mandela MM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>OR Tambo DM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Sundays River Valley LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>NO PROOF</td>
</tr>
</tbody>
</table>

From the tables above, the cost dynamics can be summarised as follows:

- The SALGA estimations for maintenance budgets is about 10.8% (Modified SALGA divided by O&M Budget) of the actual reported budgets for the 2021/22 fiscal year.
- The actual O&M budget (20%) appears to be more than adequate when compared with the SALGA guideline (2.16%) or with the government benchmark (7%).
- These figures are impacted by some of the WSAs who did not provide budget and expenditure figures, and by some inaccurate asset values and where no asset values were provided for.
- Lastly, the municipalities presents budget and expenditure data at different levels (table above) i.e. financial figures are not always ringfenced per water supply system – thus rendering provincial summaries to be indicative.
5.1 Amatola Water

Introduction

Amatola Water is an essential services utility operating in the water sector in the Eastern Cape providing water services as mandated by government. The utility serves the following municipalities

1. Amathole District Municipality
2. Buffalo City Metropolitan Municipality
3. Ndlambe Local Municipality

Amatola Water has an Operation and Maintenance agreement with the Department of Water and Sanitation (DWS) to manage the 21 dams under the custodianship of the department and acts in the role of implementing agent for infrastructure construction projects or where emergency interventions were required due to drought, floods, or gross water quality negligence.

Amathole District Municipality

Amatola Water provides bulk raw and potable water services to the Amathole District Municipality (ADM) through a negotiated three-year bulk supply agreement that was further extended by two years to 2022.

Buffalo City Metropolitan Municipality

Amatola Water has a 30-year bulk supply contract with the Buffalo City Metropolitan Municipality which is valid until 30 May 2028.

Ndlambe Local Municipality

Amatola Water has a 20 year bulk water supply agreement with the Ndlambe Local Municipality to supply the Kenton-on-Sea and Bushmans River areas with potable water which runs until July 2030.

Amatola Water plants are all supplied from dams within the Amathole and Keiskamma Water Supply Systems apart from the Albany Coast RO plant that treats sea water from the Boesmansriviermond.

The water abstracted from various sources is treated at individual water treatment plants and distributed from command reservoirs.

Regulatory comment

The AWB was comprehensively represented at the site audit by the officials ranging from plant supervisors to executive directors. Interaction with the audit team during and after the site visit was excellent and every attempt was made to provide all necessary information.

The AWB WaSP presented was significantly outdated (Last reviewed 2011) and no evidence of adoption was provided. A detailed risk assessment was carried out using assessment forms, but this appeared to be a desktop study. No photographic or other evidence of site inspections was provided. The WaSP refers to critical control monitoring, but no analysis data (hazard risk assessment) was incorporated. The WaSP was well constructed and the AWB is encouraged to review and update this plan.

An internal process audit report was presented which provided a graph of the calculated performance of each of process units in Ml/d vs design capacity, however no detail of the basis of these calculations or design was provided. The AWB is encouraged to perform detailed process audits for each of their treatment plants.

The following capital projects were implemented:

- Upgrade of the Debe Water Supply Scheme including plant, storage, and distribution system.
- Upgrade of the Binfield Water Supply Scheme including plant, storage, and distribution system.
- Upgrade of the Masincedane Water Supply Scheme including plant, storage, and distribution system.
- Construction of reservoirs for the Sandile Water Supply Scheme.

Blue Drop Findings

All the systems owned and operated by Amatola Water Board achieved scores in the region of 60%.

1. Treatment plants were well operated and capacitated in accordance with regulatory requirements.
2. The Water Safety Plan was outdated, but well-structured, and provides a good framework for future updates.
3. Inadequate compliance monitoring was implemented, and the drinking water quality (DWQ) compliance was generally poor.
4. Maintenance is well managed and effective. Asset management is good and there is a maintenance programme in place which is adequately implemented and linked to the asset register.
5. Financials are appropriately managed and operational and maintenance costs are known and understood.

Some recommendations for improvement include:

- The WaSP needs to be updated and implemented.
- Detailed process audits and network inspection reports are required.
- Full SANS analysis data needs to be interpreted and used to develop a risk informed monitoring programme which then needs to be actively implemented in conjunction with the incident management protocol to ensure the ongoing provision of quality drinking water.

**Technical Site Inspection**

The Na hoax water supply system is well maintained, with functional treatment processes and competent staff and achieved a TSA score of 86%. Operational monitoring is taking place and abstraction, and production flows are recorded. Chlorine stock on site was low at the time of inspection due to a nationwide shortage of chlorine gas. Provision should be made for a alternative disinfectant. Concrete structures are in good condition (except for some leakages at the command reservoir) and mechanical equipment is well maintained.
### 5.2 Alfred Nzo District Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>54.82%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>62.87%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>64.38%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>52.54%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Kinira</th>
<th>Belfort</th>
<th>Matatiele</th>
<th>Nomlacu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>11.60%</td>
<td>52.43%</td>
<td>63.21%</td>
<td>55.48%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>NI</td>
<td>63.90%</td>
<td>61.16%</td>
<td>72.74%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>NI</td>
<td>67.08%</td>
<td>65.31%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>NI</td>
<td>49.92%</td>
<td>52.89%</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 000</td>
<td>20 000</td>
<td>3 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 000</td>
<td>20 000</td>
<td>20 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 000</td>
<td>1 123</td>
<td>1 800</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>5.62%</td>
<td>60.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Kinira</td>
<td>Belford dam</td>
<td>Mountain view dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>92.05%</td>
<td>18.54%</td>
<td>23.39%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>NI</td>
<td>29.30%</td>
<td>27.50%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Ntabankulu</th>
<th>Kwabhaca</th>
<th>Mount Ayliff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>55.22%</td>
<td>66.14%</td>
<td>65.59%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>47.80%</td>
<td>57.31%</td>
<td>60.97%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>NI</td>
<td>64.11%</td>
<td>62.94%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>NI</td>
<td>56.94%</td>
<td>47.98%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>720</td>
<td>6 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>720</td>
<td>6 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>962</td>
<td>3 456</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>133.61%</td>
<td>57.60%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Ntabankulu Dam</td>
<td>Ntenetyana Dam</td>
<td>Mzintlava River; Nkanji River and Sgidini River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>37.07%</td>
<td>34.78%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>68.30%</td>
<td>54.20%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Mount Ayliff WTW - 79%**

The Regulator notes the dire state of management and drinking water quality in the Kinira water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
## 5.3 Amathole District Municipality

### Municipal Blue Drop Score

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>59.49%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>80.24%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>74.62%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>65.21%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Binfield</th>
<th>Debe Nek</th>
<th>Glenmore</th>
<th>Masincedane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Amatola Water</td>
<td>Amatola Water</td>
<td>Amatola Water</td>
<td>Amatola Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>59.39%</td>
<td>59.65%</td>
<td>69.91%</td>
<td>50.33%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>88.62%</td>
<td>72.46%</td>
<td>77.61%</td>
<td>82.34%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>73.92%</td>
<td>77.50%</td>
<td>73.70%</td>
<td>81.85%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>83.80%</td>
<td>75.20%</td>
<td>68.54%</td>
<td>85.33%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>4 800</td>
<td>5 000</td>
<td>1 000</td>
<td>6 400</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>4 800</td>
<td>5 000</td>
<td>1 000</td>
<td>6 400</td>
</tr>
<tr>
<td>System Input Value</td>
<td>4 724</td>
<td>969</td>
<td>615</td>
<td>3 489</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>98.42%</td>
<td>19.38%</td>
<td>61.50%</td>
<td>54.52%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Binfield Park Dan (Tyume River)</td>
<td>Debe Dam (Debe River)</td>
<td>Boyd Dam (Great Fish River)</td>
<td>Mnyameni Dam (Keiskamma)</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>53.42%</td>
<td>69.01%</td>
<td>29.93%</td>
<td>52.34%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>82.10%</td>
<td>67.10%</td>
<td>100.00%</td>
<td>91.00%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Peddie</th>
<th>Sandile</th>
<th>Upper Mnyameni</th>
<th>Amahlathi LM - Cathcart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Amatola Water</td>
<td>Amatola Water</td>
<td>Amatola Water</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>64.96%</td>
<td>60.62%</td>
<td>54.23%</td>
<td>61.74%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>78.30%</td>
<td>81.69%</td>
<td>73.19%</td>
<td>84.70%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>62.89%</td>
<td>50.01%</td>
<td>70.72%</td>
<td>81.71%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>69.16%</td>
<td>84.56%</td>
<td>66.85%</td>
<td>82.64%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>6 500</td>
<td>18 000</td>
<td>6 400</td>
<td>2 450</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>6 500</td>
<td>18 000</td>
<td>6 400</td>
<td>1 440</td>
</tr>
<tr>
<td>System Input Value</td>
<td>2 575</td>
<td>8 252</td>
<td>3 489</td>
<td>559</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>109.58%</td>
<td>110.11%</td>
<td>54.52%</td>
<td>38.82%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Craighead Weir (Keiskamma River)</td>
<td>Sandile Dam (Keiskamma)</td>
<td>Mnyameni Dam (Keiskamma)</td>
<td>Sam Meyer Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>55.01%</td>
<td>67.43%</td>
<td>51.64%</td>
<td>33.89%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>82.10%</td>
<td>91.00%</td>
<td>66.10%</td>
<td>46.30%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Key Performance Area Weight

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Mbhashe LM - Dutuwa</th>
<th>Mbhashe LM - Dwesa</th>
<th>Mbhashe LM - Elliotdale</th>
<th>Mbhashe LM - Mbhashe North</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Design Capacity kL/d</td>
<td>2 600</td>
<td>600</td>
<td>700</td>
<td>3 800</td>
</tr>
<tr>
<td>System Available Capacity kL/d</td>
<td>1 322</td>
<td>600</td>
<td>576</td>
<td>3 800</td>
</tr>
<tr>
<td>System Input Value kL/d</td>
<td>634</td>
<td>114</td>
<td>209</td>
<td>276</td>
</tr>
<tr>
<td>Capacity Utilisation %</td>
<td>47.96%</td>
<td>19.00%</td>
<td>36.28%</td>
<td>7.26%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Mgwali River</td>
<td>Mgwali River</td>
<td>Xhora River</td>
<td>Mgwali River</td>
</tr>
<tr>
<td>BDRR 2023 %</td>
<td>33.89%</td>
<td>33.28%</td>
<td>43.42%</td>
<td>28.46%</td>
</tr>
<tr>
<td>BDRR 2022 %</td>
<td>86.80%</td>
<td>72.60%</td>
<td>22.60%</td>
<td>21.20%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Mbhashe LM - Mendu</th>
<th>Mbhashe LM - Mncwasa</th>
<th>Mbhashe LM - Nqadu</th>
<th>Mbhashe LM - Qwaninga</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023 %</td>
<td>76.17%</td>
<td>53.72%</td>
<td>56.52%</td>
<td>69.02%</td>
</tr>
<tr>
<td>Blue Drop Score 2014 %</td>
<td>84.51%</td>
<td>NI</td>
<td>83.18%</td>
<td>68.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2012 %</td>
<td>82.38%</td>
<td>NI</td>
<td>45.26%</td>
<td>52.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2011 %</td>
<td>61.41%</td>
<td>NI</td>
<td>41.41%</td>
<td>76.06%</td>
</tr>
<tr>
<td>System Design Capacity kL/d</td>
<td>300</td>
<td>2 500</td>
<td>720</td>
<td>864</td>
</tr>
<tr>
<td>System Available Capacity kL/d</td>
<td>300</td>
<td>806</td>
<td>720</td>
<td>860</td>
</tr>
<tr>
<td>System Input Value kL/d</td>
<td>87</td>
<td>239</td>
<td>102</td>
<td>0</td>
</tr>
<tr>
<td>Capacity Utilisation %</td>
<td>29.00%</td>
<td>29.65%</td>
<td>14.17%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Nqabarha River</td>
<td>Mndwaka Dam</td>
<td>Qwaninga River</td>
<td>Qwaninga River</td>
</tr>
<tr>
<td>BDRR 2023 %</td>
<td>22.98%</td>
<td>63.68%</td>
<td>45.81%</td>
<td>29.90%</td>
</tr>
<tr>
<td>BDRR 2022 %</td>
<td>52.90%</td>
<td>74.30%</td>
<td>51.10%</td>
<td>42.90%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023 %</td>
<td>59.67%</td>
<td>48.65%</td>
<td>55.87%</td>
<td>59.79%</td>
</tr>
<tr>
<td>Blue Drop Score 2014 %</td>
<td>83.42%</td>
<td>NI</td>
<td>77.17%</td>
<td>80.27%</td>
</tr>
<tr>
<td>Blue Drop Score 2012 %</td>
<td>67.37%</td>
<td>NI</td>
<td>61.93%</td>
<td>72.33%</td>
</tr>
<tr>
<td>Blue Drop Score 2011 %</td>
<td>61.02%</td>
<td>NI</td>
<td>64.18%</td>
<td>63.77%</td>
</tr>
<tr>
<td>System Design Capacity kL/d</td>
<td>720</td>
<td>7 200</td>
<td>24 000</td>
<td>4 500</td>
</tr>
<tr>
<td>System Available Capacity kL/d</td>
<td>720</td>
<td>7 200</td>
<td>14 000</td>
<td>4 500</td>
</tr>
<tr>
<td>System Input Value kL/d</td>
<td>186</td>
<td>1 032</td>
<td>12 487</td>
<td>958</td>
</tr>
<tr>
<td>Capacity Utilisation %</td>
<td>25.83%</td>
<td>14.33%</td>
<td>89.19%</td>
<td>21.29%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Nqadu River</td>
<td>Xora River</td>
<td>Xilinxa Dam, Toluene Dam</td>
<td>Xilinxa Dam</td>
</tr>
<tr>
<td>BDRR 2023 %</td>
<td>58.34%</td>
<td>78.88%</td>
<td>60.44%</td>
<td>45.28%</td>
</tr>
<tr>
<td>BDRR 2022 %</td>
<td>27.80%</td>
<td>NI</td>
<td>56.60%</td>
<td>24.40%</td>
</tr>
</tbody>
</table>
### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Mnquma LM - Nqamakwe</th>
<th>Mnquma LM - Qolorha</th>
<th>Mnquma LM - Tholeni</th>
<th>Nkonkobe LM - Alice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>62.42%</td>
<td>61.09%</td>
<td>59.67%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>80.92%</td>
<td>76.96%</td>
<td>64.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>67.40%</td>
<td>62.69%</td>
<td>67.49%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>74.48%</td>
<td>58.76%</td>
<td>57.40%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>100</td>
<td>300</td>
<td>2 800</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>100</td>
<td>300</td>
<td>1 680</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>96</td>
<td>155</td>
<td>438</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>96.00%</td>
<td>51.67%</td>
<td>26.07%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Ngculu Dam</td>
<td>Borehole</td>
<td>Qolora River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>34.75%</td>
<td>40.71%</td>
<td>56.68%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>37.70%</td>
<td>38.30%</td>
<td>68.10%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Nkonkobe LM - Fort Beaufort</th>
<th>Nkonkobe LM - Hogsback</th>
<th>Nkonkobe LM - Seymour</th>
<th>Nxuba LM - Adelaide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>58.14%</td>
<td>66.37%</td>
<td>60.47%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>87.71%</td>
<td>83.29%</td>
<td>71.51%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>75.02%</td>
<td>75.54%</td>
<td>78.78%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>61.78%</td>
<td>62.43%</td>
<td>63.96%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>8 200</td>
<td>780</td>
<td>640</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>8 200</td>
<td>780</td>
<td>640</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>5 728</td>
<td>195</td>
<td>448</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>69.85%</td>
<td>25.00%</td>
<td>70.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Kat River Barrage (Burls Dam - holding dam)</td>
<td>Plaatjieskraal Dam</td>
<td>Kat River Dam (Lei Dam - Balancing)</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>50.71%</td>
<td>35.67%</td>
<td>38.39%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>52.60%</td>
<td>58.60%</td>
<td>40.70%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Nxuba LM - Bedford</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
</tr>
</tbody>
</table>

*Technical Site Assessment: Morgans Bay WTW - 80%*
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>37.39%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>35.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>59.05%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>39.51%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Cookhouse</th>
<th>Pearston</th>
<th>Sommerset East</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>31.90%</td>
<td>47.05%</td>
<td>36.61%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>39.68%</td>
<td>30.16%</td>
<td>35.21%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>61.24%</td>
<td>42.63%</td>
<td>61.16%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>46.13%</td>
<td>28.94%</td>
<td>38.84%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 000</td>
<td>1 500</td>
<td>5 200</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 000</td>
<td>1 500</td>
<td>5 200</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 000</td>
<td>1 500</td>
<td>4 496</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>89.85%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Klein - Vis</td>
<td>5 Boreholes</td>
<td>Klein - Vis</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>62.90%</td>
<td>39.24%</td>
<td>53.11%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>61.10%</td>
<td>44.50%</td>
<td>53.20%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Orange Fish WTW (Somerset East) – 64%**
### 5.5 Buffalo City Metropolitan Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>83.48%</td>
</tr>
<tr>
<td>2014</td>
<td>72.79%</td>
</tr>
<tr>
<td>2012</td>
<td>92.55%</td>
</tr>
<tr>
<td>2011</td>
<td>91.28%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Laing</th>
<th>Peddie</th>
<th>Sandile</th>
<th>Mdantsane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Amatola Water</td>
<td>Amatola Water</td>
<td>Amatola Water</td>
<td>Amatola Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>68.96%</td>
<td>78.14%</td>
<td>73.48%</td>
<td>68.21%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>71.34%</td>
<td>67.58%</td>
<td>77.99%</td>
<td>83.37%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>95.13%</td>
<td>76.42%</td>
<td>95.38%</td>
<td>81.97%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>92.44%</td>
<td>89.34%</td>
<td>81.97%</td>
<td>81.97%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>33 000</td>
<td>6 500</td>
<td>18 000</td>
<td>66 700</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>33 000</td>
<td>6 500</td>
<td>18 000</td>
<td>66 700</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>22 665</td>
<td>4 598</td>
<td>11 567</td>
<td>28 290</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>73.60%</td>
<td>109.58%</td>
<td>110.11%</td>
<td>78.81%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Laing Dam, Buffalo River</td>
<td>Craighead Weir (Keiskamma River). Released from Sandile Dam</td>
<td>Sandile Dam</td>
<td>Nahoon Dam &amp; River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>49.61%</td>
<td>49.47%</td>
<td>56.59%</td>
<td>53.52%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>49.70%</td>
<td>50.70%</td>
<td>52.40%</td>
<td>52.80%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Kei Road</th>
<th>King Williams Town</th>
<th>Umzonyana (East London)</th>
<th>Kidds Beach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Amatole D</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>75.31%</td>
<td>91.56%</td>
<td>91.03%</td>
<td>81.66%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>19.53%</td>
<td>82.82%</td>
<td>70.30%</td>
<td>45.07%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>7.43%</td>
<td>95.00%</td>
<td>95.06%</td>
<td>61.16%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>64.58%</td>
<td>96.57%</td>
<td>95.29%</td>
<td>56.06%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>4 700</td>
<td>12 500</td>
<td>120 000</td>
<td>259</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>3 400</td>
<td>12 500</td>
<td>120 000</td>
<td>260</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>195</td>
<td>9 000</td>
<td>110 000</td>
<td>180</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>78.91%</td>
<td>72.00%</td>
<td>91.67%</td>
<td>69.23%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Wriggleswade Dam (Kumasi River)</td>
<td>Rooikrantz Dam (Buffalo River)</td>
<td>Briddle Drift, Buffalo River</td>
<td>Boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>50.88%</td>
<td>25.09%</td>
<td>31.75%</td>
<td>25.17%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>49.70%</td>
<td>28.90%</td>
<td>31.00%</td>
<td>29.80%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Majali</td>
<td>Siyathemba</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>--------</td>
<td>------------</td>
<td>------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>82.00%</td>
<td>83.84%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>82.00%</td>
<td>83.84%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>48.82%</td>
<td>NI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>20.25%</td>
<td>NI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>224</td>
<td>38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>324</td>
<td>38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>359</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>110.80%</td>
<td>78.95%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Boreholes</td>
<td>Boreholes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>27.67%</td>
<td>19.51%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>25.50%</td>
<td>37.40%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Technical Site Assessment: Umzonyana WTW - 85%*
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>45.27%</td>
<td>83.42%</td>
<td>75.23%</td>
<td>73.47%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>EMALAHLENI - Indwe Supply System</th>
<th>EMALAHLENI - Machubeni Supply System</th>
<th>EMALAHLENI - Dordrecht Supply System</th>
<th>ENGOBO - Engcobo Town Supply System</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>33.85%</td>
<td>48.40%</td>
<td>35.90%</td>
<td>66.15%</td>
</tr>
</tbody>
</table>

|                      |        | 86.50%                           | 88.35%                            | 86.08%                              | 89.47%                            |
|                      |        | 84.35%                           | 87.84%                            | 84.49%                              | 90.77%                            |
|                      |        | 79.35%                           | 83.08%                            | 68.46%                              | 54.09%                            |

|                      |        | 12 000                            | 3 400                              | 2 000                               | 1 800                              |
|                      |        | 12 000                            | 3 400                              | 2 000                               | 1 800                              |

|                      |        | 1 137                             | 1 770                              | 1 343                               | 1 008                              |
|                      |        | 9.48%                             | 52.06%                             | 67.15%                              | 56.00%                             |

|                      |        | Doring River                      | Machubeni Dam                      | Munnik Dam, Anderson Dam            | Xuka River, Cefane River, Ngcotyana Stream |

|                      |        | 39.70%                            | 42.21%                             | 37.26%                              | 18.42%                             |
|                      |        | 18.20%                            | 28.50%                             | 22.70%                              | 25.70%                             |

### Resource Abstracted From

|                      |        | Nkonbongo River                   | Stormbergspruit                    | Canvin Estates                      | Norca Dam                          |

|                      |        | 54.63%                            | 47.10%                             | 42.45%                              | 43.88%                             |

|                      |        | 84.88%                            | 86.04%                             | 87.42%                              | N/A                                |
|                      |        | 88.47%                            | 95.20%                             | 71.75%                              | N/A                                |
|                      |        | 56.12%                            | 60.85%                             | 59.86%                              | N/A                                |

|                      |        | 720                               | 2 856                              | 2 388                               | 5 000                              |
|                      |        | 720                               | 2 856                              | 2 388                               | 5 000                              |

|                      |        | 270                               | 1 435                              | 2 073                               | 5 000                              |
|                      |        | 50.21%                            | 59.10%                             | NI                                  | NI                                 |

<p>|                      |        | Nkonbongo River                   | Stormbergspruit                    | Canvin Estates                      | Norca Dam                          |
|                      |        | 32.54%                            | 49.08%                             | 53.04%                              | 57.22%                             |
|                      |        | 33.00%                            | 29.30%                             | 30.90%                              | 19.70%                             |</p>
<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>ENTSA YETHU - Tsojana Supply System</th>
<th>ENTSA YETHU - Tsomo Service System</th>
<th>INXUBA YETHEMBA - Cradock Supply System</th>
<th>INXUBA YETHEMBA - Middelburg supply system-treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>[Image]</td>
<td>[Image]</td>
<td>[Image]</td>
<td>[Image]</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>52.43%</td>
<td>56.05%</td>
<td>48.33%</td>
<td>44.92%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>81.64%</td>
<td>83.34%</td>
<td>88.80%</td>
<td>74.96%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>92.82%</td>
<td>N/A</td>
<td>71.14%</td>
<td>66.39%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>82.80%</td>
<td>68.03%</td>
<td>82.34%</td>
<td>56.22%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>5 000</td>
<td>25 000</td>
<td>24 000</td>
<td>8 928</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>5 000</td>
<td>25 000</td>
<td>24 000</td>
<td>8 930</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>3 204</td>
<td>341</td>
<td>13 168</td>
<td>8 928</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>64.06%</td>
<td>1.36%</td>
<td>54.87%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Tsojana</td>
<td>Tsomo</td>
<td>Groot - Vis</td>
<td>Grootfontein Boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>41.17%</td>
<td>29.41%</td>
<td>27.76%</td>
<td>51.05%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>33.00%</td>
<td>20.90%</td>
<td>27.50%</td>
<td>39.90%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>LUKHANJI - Queenstown Supply System</th>
<th>LUKHANJI - Whittlesea Supply System</th>
<th>SAKHISIZWE - Cala Supply System</th>
<th>SAKHISIZWE - (Farms &amp; Rural - Treated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>[Image]</td>
<td>[Image]</td>
<td>[Image]</td>
<td>[Image]</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>49.00%</td>
<td>49.15%</td>
<td>44.20%</td>
<td>29.05%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>92.80%</td>
<td>56.89%</td>
<td>81.71%</td>
<td>35.71%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>87.23%</td>
<td>90.95%</td>
<td>83.89%</td>
<td>2.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>84.49%</td>
<td>73.29%</td>
<td>55.67%</td>
<td>42.83%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>40 000</td>
<td>11 250</td>
<td>4 716</td>
<td>422</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>40 000</td>
<td>11 250</td>
<td>4 716</td>
<td>422</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>20 835</td>
<td>4 796</td>
<td>2 441</td>
<td>422</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>52.09%</td>
<td>42.63%</td>
<td>1.66%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Bonkolo, Xonxa</td>
<td>Water Down Dam located on the Klipplaat River</td>
<td>Tsomo River, Zindlwana spring</td>
<td>Borehole</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>45.44%</td>
<td>35.15%</td>
<td>30.56%</td>
<td>67.13%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>40.30%</td>
<td>24.20%</td>
<td>62.90%</td>
<td>54.50%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>SAKHISIZWE - Elliot Supply System</th>
<th>SAKHISIZWE- Xhalunga Supply System</th>
<th>SAKHISIZWE-Cala Package System</th>
<th>TSOLWANA: Hofmeyer supply system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>[Image]</td>
<td>[Image]</td>
<td>[Image]</td>
<td>[Image]</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>47.34%</td>
<td>42.43%</td>
<td>34.85%</td>
<td>28.82%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>81.51%</td>
<td>N/A</td>
<td>N/A</td>
<td>74.38%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>81.89%</td>
<td>N/A</td>
<td>N/A</td>
<td>73.97%</td>
</tr>
</tbody>
</table>
**Key Performance Area** | **Weight** | **SAKHISIZWE - Elliot Supply System** | **SAKHISIZWE - Xhalanga Supply System** | **SAKHISIZWE - Cala Package System** | **TSOLWANA: Hofmeyer supply system**
--- | --- | --- | --- | --- | ---
Blue Drop Score 2011 | % | 51.24% | N/A | N/A | N/A
System Design Capacity | kL/d | 4 049 | 1 | 242 | 1 379
System Available Capacity | kL/d | 4 049 | 1 | 242 | 1 379
System Input Value | kL/d | 2 845 | 1 | 37 | 1 379
Capacity Utilisation | % | 63.60% | N/A | N/A | 0.00%
Resource Abstracted From | | Thomson dam | Cala, Tsomo | Tsomo river | Borehole
BDRR 2023 | % | 48.63% | 22.18% | 45.79% | 57.17%
BDRR 2022 | % | 25.70% | 19.10% | 62.90% | 22.10%

---

**Key Performance Area** | **Weight** | **TSOLWANA: Ntabathemba supply system** | **TSOLWANA: Tarkastad Supply System**
--- | --- | --- | ---
Bulk/WSP | | - | -
Blue Drop Score 2023 | % | 32.20% | 21.02%
Blue Drop Score 2014 | % | 68.81% | 72.71%
Blue Drop Score 2012 | % | 71.38% | 76.22%
Blue Drop Score 2011 | % | N/A | N/A
System Design Capacity | kL/d | 5 328 | 1 814
System Available Capacity | kL/d | 5 328 | 1 814
System Input Value | kL/d | 6 317 | 1 814
Capacity Utilisation | % | 5.19% | 0.00%
Resource Abstracted From | | Borehole | Game Reserve Borehole
BDRR 2023 | % | 20.04% | 62.58%
BDRR 2022 | % | 52.60% | 59.20%

**Technical Site Assessment: Tsomo WTW - 85%**

The Regulator notes the dire state of management and drinking water quality in the Farms & Rural, Hofmeyer and Tarkastad water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
## Dr Beyers Naude Local Municipality

### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>24.19</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>61.05</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>51.65</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>32.95</td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberdeen</td>
<td></td>
</tr>
<tr>
<td>Graaff-Reinet</td>
<td></td>
</tr>
<tr>
<td>Jansenville</td>
<td></td>
</tr>
<tr>
<td>Klipplaat</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>29.78</td>
<td>29.60</td>
</tr>
<tr>
<td>2014</td>
<td>42.08</td>
<td>68.20</td>
</tr>
<tr>
<td>2012</td>
<td>42.11</td>
<td>53.49</td>
</tr>
<tr>
<td>2011</td>
<td>33.38</td>
<td>32.81</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Quality</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>Aberdeen boreholes</td>
<td>53.79</td>
</tr>
<tr>
<td>2014</td>
<td>Nqweba Dam of Sundays River, Northern Groundwater, Southwestern Newfare, Momes Groundwater</td>
<td>48.14</td>
</tr>
<tr>
<td>2012</td>
<td>Jansenville Borehole scheme</td>
<td>75.00</td>
</tr>
<tr>
<td>2011</td>
<td>Heeningklip river at Klipfontein dam</td>
<td>20.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>46.10</td>
</tr>
<tr>
<td>2014</td>
<td>45.00</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>Area</th>
<th>Capacity</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberdeen</td>
<td>3 400</td>
<td></td>
</tr>
<tr>
<td>Graaff-Reinet</td>
<td>16 000</td>
<td></td>
</tr>
<tr>
<td>Jansenville</td>
<td>2 000</td>
<td></td>
</tr>
<tr>
<td>Klipplaat</td>
<td>2 000</td>
<td></td>
</tr>
</tbody>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>Area</th>
<th>Capacity</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberdeen</td>
<td>3 400</td>
<td></td>
</tr>
<tr>
<td>Graaff-Reinet</td>
<td>12 000</td>
<td></td>
</tr>
<tr>
<td>Jansenville</td>
<td>2 000</td>
<td></td>
</tr>
<tr>
<td>Klipplaat</td>
<td>2 000</td>
<td></td>
</tr>
</tbody>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>Area</th>
<th>Value</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberdeen</td>
<td>1 829</td>
<td>5 777</td>
</tr>
<tr>
<td>Graaff-Reinet</td>
<td></td>
<td>1 500</td>
</tr>
<tr>
<td>Jansenville</td>
<td></td>
<td>400</td>
</tr>
</tbody>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>Area</th>
<th>Utilisation</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberdeen</td>
<td>53.79</td>
<td></td>
</tr>
<tr>
<td>Graaff-Reinet</td>
<td>48.14</td>
<td></td>
</tr>
<tr>
<td>Jansenville</td>
<td>75.00</td>
<td></td>
</tr>
<tr>
<td>Klipplaat</td>
<td>20.00</td>
<td></td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th>Year</th>
<th>Resource</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>Aberdeen boreholes</td>
<td>46.10</td>
</tr>
<tr>
<td>2014</td>
<td>Nqweba Dam of Sundays River, Northern Groundwater, Southwestern Newfare, Momes Groundwater</td>
<td>45.00</td>
</tr>
<tr>
<td>2012</td>
<td>Jansenville Borehole scheme</td>
<td>45.00</td>
</tr>
<tr>
<td>2011</td>
<td>Heeningklip river at Klipfontein dam</td>
<td>45.00</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nieu-Bethesda</td>
<td></td>
</tr>
<tr>
<td>Rietbron</td>
<td></td>
</tr>
<tr>
<td>Steytlerville</td>
<td></td>
</tr>
<tr>
<td>WaterFord</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>14.85</td>
<td>15.73</td>
</tr>
<tr>
<td>2014</td>
<td>34.93</td>
<td>24.90</td>
</tr>
<tr>
<td>2012</td>
<td>42.86</td>
<td>33.04</td>
</tr>
<tr>
<td>2011</td>
<td>43.28</td>
<td>14.13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Quality</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>Nieu-Bethesda Fountain and groundwater</td>
<td>26.51</td>
</tr>
<tr>
<td>2014</td>
<td>Rietbron Borehole Scheme</td>
<td>90.40</td>
</tr>
<tr>
<td>2012</td>
<td>Erasmuskloof Rivier and Steytlerville borehole scheme</td>
<td>40.88</td>
</tr>
<tr>
<td>2011</td>
<td>Groundwater</td>
<td>NI</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>63.01</td>
</tr>
<tr>
<td>2014</td>
<td>72.50</td>
</tr>
<tr>
<td>2012</td>
<td>42.94</td>
</tr>
<tr>
<td>2011</td>
<td>45.00</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Graaf Reinet WTW - 80%**

The Regulator notes the dire state of management and drinking water quality in the Aberdeen, Graaff-Reinet, Jansenville, Klipplaat, Nieu-Bethesda, Rietbron, Steytlerville, WaterFord, Willowmore and Wolwefontein water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
## Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>55.99%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>74.69%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>85.18%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>83.49%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Maclear</th>
<th>Ugie</th>
<th>Mount Fletcher</th>
<th>Barkly East</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>50.97%</th>
<th>50.69%</th>
<th>55.74%</th>
<th>63.63%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>63.70%</td>
<td>86.08%</td>
<td>65.56%</td>
<td>78.62%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>63.47%</td>
<td>97.10%</td>
<td>NI</td>
<td>84.95%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>78.81%</td>
<td>95.05%</td>
<td>NI</td>
<td>85.95%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kL/d</th>
<th>1 750</th>
<th>6 000</th>
<th>6 500</th>
<th>4 800</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 720</td>
<td>6 000</td>
<td>6 500</td>
<td>4 800</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 011</td>
<td>2 862</td>
<td>3 300</td>
<td>3 283</td>
</tr>
</tbody>
</table>

### Capacity Utilisation

| % | 165.76% | 47.70% | 55.00% | 68.40% |

### Resource Abstracted From

- Mooi River, Mountain springs feeding Maclear dam, groundwater (baseflows) feeding Aucamp dam
- Wildebeest River
- Tina River
- Langkloofspruit River

### BDRR 2023

<table>
<thead>
<tr>
<th>%</th>
<th>60.77%</th>
<th>33.85%</th>
<th>41.22%</th>
<th>27.86%</th>
</tr>
</thead>
</table>

### BDRR 2022

| % | 17.10% | 30.00% | 19.10% | 21.00% |

## Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Lady Grey</th>
<th>Rhodes</th>
<th>Jozana</th>
<th>Rossouw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>62.25%</th>
<th>67.83%</th>
<th>43.88%</th>
<th>40.40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>59.64%</td>
<td>76.26%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>69.01%</td>
<td>61.03%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>66.71%</td>
<td>77.66%</td>
<td>NI</td>
<td>47.68%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kL/d</th>
<th>4 800</th>
<th>500</th>
<th>1 080</th>
<th>75</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>3 840</td>
<td>500</td>
<td>1 080</td>
<td>43</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>1 393</td>
<td>113</td>
<td>704</td>
<td>43</td>
</tr>
</tbody>
</table>

### Capacity Utilisation

| % | 36.28% | 22.60% | 65.20% | NI |

### Resource Abstracted From

- Wilgespruit River
- Bell River
- Jozana Dam
- Groundwater via Rossouw Boreholes

### BDRR 2023

<table>
<thead>
<tr>
<th>%</th>
<th>22.69%</th>
<th>13.69%</th>
<th>37.22%</th>
<th>36.59%</th>
</tr>
</thead>
</table>

### BDRR 2022

| % | 17.10% | 30.00% | 19.10% | 21.00% |
### Key Performance Area

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Sterkspruit</th>
<th>Aliwal North</th>
<th>Burgersdorp</th>
<th>Jamestown</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td>49.15%</td>
<td>64.30%</td>
<td>51.05%</td>
<td>63.71%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2014</strong></td>
<td>%</td>
<td>83.85%</td>
<td>77.10%</td>
<td>81.69%</td>
<td>64.41%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2012</strong></td>
<td>%</td>
<td>95.90%</td>
<td>83.00%</td>
<td>85.25%</td>
<td>76.92%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2011</strong></td>
<td>%</td>
<td>95.02%</td>
<td>84.93%</td>
<td>64.19%</td>
<td>64.55%</td>
</tr>
<tr>
<td><strong>System Design Capacity</strong></td>
<td>kL/d</td>
<td>12 000</td>
<td>14 400</td>
<td>4 800</td>
<td>1 200</td>
</tr>
<tr>
<td><strong>System Available Capacity</strong></td>
<td>kL/d</td>
<td>12 000</td>
<td>14 400</td>
<td>4 400</td>
<td>1 440</td>
</tr>
<tr>
<td><strong>System Input Value</strong></td>
<td>kL/d</td>
<td>6 138</td>
<td>8 095</td>
<td>3 117</td>
<td>355</td>
</tr>
<tr>
<td><strong>Capacity Utilisation</strong></td>
<td>%</td>
<td>51.15%</td>
<td>56.21%</td>
<td>70.84%</td>
<td>24.65%</td>
</tr>
<tr>
<td><strong>Resource Abstracted From</strong></td>
<td></td>
<td>Jozana Dam</td>
<td>Orange River</td>
<td>J.L. De Bruin and Stormbergspruit River</td>
<td>Skulpspruit</td>
</tr>
<tr>
<td><strong>BDRR 2023</strong></td>
<td>%</td>
<td>47.96%</td>
<td>30.97%</td>
<td>37.21%</td>
<td>18.69%</td>
</tr>
<tr>
<td><strong>BDRR 2022</strong></td>
<td>%</td>
<td>38.20%</td>
<td>35.40%</td>
<td>35.70%</td>
<td>23.50%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Oviston</th>
<th>Steynsburg</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td>50.84%</td>
<td>56.24%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2014</strong></td>
<td>%</td>
<td>79.54%</td>
<td>68.22%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2012</strong></td>
<td>%</td>
<td>78.19%</td>
<td>NI</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2011</strong></td>
<td>%</td>
<td>82.03%</td>
<td>NI</td>
</tr>
<tr>
<td><strong>System Design Capacity</strong></td>
<td>kL/d</td>
<td>4 500</td>
<td>2 000</td>
</tr>
<tr>
<td><strong>System Available Capacity</strong></td>
<td>kL/d</td>
<td>2 600</td>
<td>2 000</td>
</tr>
<tr>
<td><strong>System Input Value</strong></td>
<td>kL/d</td>
<td>2 480</td>
<td>1 800</td>
</tr>
<tr>
<td><strong>Capacity Utilisation</strong></td>
<td>%</td>
<td>95.38%</td>
<td>90.00%</td>
</tr>
<tr>
<td><strong>Resource Abstracted From</strong></td>
<td></td>
<td>Gariep Dam</td>
<td>Gariep Dam</td>
</tr>
<tr>
<td><strong>BDRR 2023</strong></td>
<td>%</td>
<td>37.21%</td>
<td>26.59%</td>
</tr>
<tr>
<td><strong>BDRR 2022</strong></td>
<td>%</td>
<td>33.30%</td>
<td>32.70%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Barkley East water system – 83%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>64.59</td>
<td>51.83</td>
<td>60.69</td>
<td>74.93</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th></th>
<th>Hankey</th>
<th>Humansdorp</th>
<th>Jeffreys Bay</th>
<th>Loerie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Hankey</th>
<th>Humansdorp</th>
<th>Jeffreys Bay</th>
<th>Loerie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>53.59%</td>
<td>73.12%</td>
<td>70.96%</td>
<td>65.31%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>33.49%</td>
<td>58.85%</td>
<td>59.86%</td>
<td>52.36%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>52.86%</td>
<td>58.66%</td>
<td>73.17%</td>
<td>89.04%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>45.67%</td>
<td>44.93%</td>
<td>68.68%</td>
<td>82.30%</td>
</tr>
</tbody>
</table>

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>System Design Capacity</td>
<td>2 000</td>
<td>202 500</td>
<td>204 500</td>
<td>100 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>2 000</td>
<td>102 500</td>
<td>104 500</td>
<td>100 000</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

- Gamtoos
- Churchill, Springs north of Humansdorp
- Boreholes, Churchill Dam- Purchase water
- Loerie

<table>
<thead>
<tr>
<th></th>
<th>Gamtoos</th>
<th>Churchill, Springs north of Humansdorp</th>
<th>Boreholes, Churchill Dam- Purchase water</th>
<th>Loerie</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023 %</td>
<td>26.40%</td>
<td>37.75%</td>
<td>25.85%</td>
<td>23.86%</td>
</tr>
<tr>
<td>BDRR 2022 %</td>
<td>21.70%</td>
<td>39.10%</td>
<td>29.50%</td>
<td>54.90%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Jefferies Bay WTW - 91%
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Period</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>24.05%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>25.77%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>5.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>14.36%</td>
</tr>
</tbody>
</table>

### Key Performance Area

#### Weight

<table>
<thead>
<tr>
<th>Area</th>
<th>Blikkiesdorp</th>
<th>Clarkson</th>
<th>Coldstream</th>
<th>Joubetina</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>27.70%</td>
<td>26.68%</td>
<td>30.40%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>0.00%</td>
<td>26.47%</td>
<td>22.84%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>Ni</td>
<td>3.39%</td>
<td>6.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>Ni</td>
<td>13.11%</td>
<td>11.55%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>80</td>
<td>345</td>
<td>79</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>0</td>
<td>0</td>
<td>290</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>80</td>
<td>360</td>
<td>79</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>Ni</td>
<td>Ni</td>
<td>27.24%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDWR 2023</td>
<td>%</td>
<td>44.46%</td>
<td>90.14%</td>
<td>41.94%</td>
</tr>
<tr>
<td>BDWR 2022</td>
<td>%</td>
<td>39.10%</td>
<td>74.90%</td>
<td>18.70%</td>
</tr>
</tbody>
</table>

#### Resource Abstracted From

- Boreholes- 1 Northern side of settlements- Elevated storage tanks
- Boreholes and weirs
- Lottering river
- Joubertina Dam

### Key Performance Area

#### Weight

<table>
<thead>
<tr>
<th>Area</th>
<th>Kareedouw</th>
<th>Krakeel</th>
<th>Louterwater</th>
<th>Misgund</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>28.40%</td>
<td>24.90%</td>
<td>12.70%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>27.83%</td>
<td>19.78%</td>
<td>20.56%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>3.39%</td>
<td>3.39%</td>
<td>24.39%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>13.30%</td>
<td>6.06%</td>
<td>30.84%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 400</td>
<td>404</td>
<td>720</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 777</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 400</td>
<td>404</td>
<td>720</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>47.27%</td>
<td>Ni</td>
<td>Ni</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDWR 2023</td>
<td>%</td>
<td>38.75%</td>
<td>90.14%</td>
<td>88.64%</td>
</tr>
<tr>
<td>BDWR 2022</td>
<td>%</td>
<td>72.20%</td>
<td>88.80%</td>
<td>85.90%</td>
</tr>
</tbody>
</table>

---

**EASTERN CAPE**

Page 86
<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Sanddrif</th>
<th>Storms River</th>
<th>Woodlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>24.70%</td>
<td>25.08%</td>
<td>23.78%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>26.03%</td>
<td>19.78%</td>
<td>27.20%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>3.09%</td>
<td>3.39%</td>
<td>5.64%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>11.68%</td>
<td>11.57%</td>
<td>13.32%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>360</td>
<td>288</td>
<td>360</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>0</td>
<td>0</td>
<td>62</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>360</td>
<td>288</td>
<td>360</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>480.65%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Mountain stream-</td>
<td>Witklip River</td>
<td>Mountain Spring and boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>41.94%</td>
<td>91.40%</td>
<td>41.03%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>76.80%</td>
<td>38.50%</td>
<td>36.30%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Kareedouw WTW - 50%**

The Regulator notes the dire state of management and drinking water quality in the Blikkiesdorp, Clarkson, Coldstream, Joubetina, Kareedouw, Krakeel, Louterwater, Misgund, Sanddrif, Storms River and Woodlands water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
## Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>32.46%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>70.83%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>71.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>55.07%</td>
</tr>
</tbody>
</table>

## Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Grahamstown</th>
<th>Alicedale</th>
<th>Riebeeck East</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>32.41%</td>
<td>31.55%</td>
<td>36.65%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>70.64%</td>
<td>68.59%</td>
<td>83.04%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>71.86%</td>
<td>72.11%</td>
<td>75.09%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>55.77%</td>
<td>48.03%</td>
<td>63.62%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>18 000</td>
<td>1 600</td>
<td>1 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>18 000</td>
<td>1 600</td>
<td>1 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>17 000</td>
<td>480</td>
<td>300</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>47.65%</td>
<td>30.00%</td>
<td>30.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Glem Melville Dam; Howiesonspoort Dam</td>
<td>Boreholes</td>
<td>6 Boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>53.85%</td>
<td>84.42%</td>
<td>38.48%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>95.00%</td>
<td>47.80%</td>
<td>48.70%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: James Kleynhans WTW - 68%**
### 5.12 Ndlambe Local Municipality

#### Municipal Blue Drop Score

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 57.55%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 49.47%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 42.37%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% 20.93%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Albany Coast</th>
<th>Cannon Rock</th>
<th>Port Alfred</th>
<th>Bathurst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Amatola Water</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 57.27%</td>
<td>71.85%</td>
<td>57.53%</td>
<td>55.98%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 69.27%</td>
<td>43.46%</td>
<td>26.65%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 23.40%</td>
<td>46.00%</td>
<td>25.60%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% 43.86%</td>
<td>20.68%</td>
<td>15.77%</td>
<td>15.39%</td>
</tr>
</tbody>
</table>

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>System Design Capacity</td>
<td>kL/d 1 800</td>
<td>650</td>
<td>10 000</td>
<td>500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d 1 800</td>
<td>500</td>
<td>10 000</td>
<td>430</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d 1 446</td>
<td>184</td>
<td>4 427</td>
<td>367</td>
</tr>
</tbody>
</table>

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Utilisation</td>
<td>% 80.33%</td>
<td>36.80%</td>
<td>46.66%</td>
<td>85.42%</td>
</tr>
</tbody>
</table>

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Abstracted From</td>
<td>Boreholes</td>
<td>Boreholes</td>
<td>Kowie River &amp; Sea water &amp; Boreholes</td>
<td>Golden Ridge Dam, Mansfield Dam, Boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>% 54.63%</td>
<td>18.60%</td>
<td>31.61%</td>
<td>40.17%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>% 73.10%</td>
<td>23.90%</td>
<td>60.30%</td>
<td>49.40%</td>
</tr>
</tbody>
</table>

#### Technical Site Assessment: Cannon Rocks-Boknes WTW - 92%
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>Blue Drop Score 2014</th>
<th>%</th>
<th>Blue Drop Score 2012</th>
<th>%</th>
<th>Blue Drop Score 2011</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nelson Mandela MM</strong></td>
<td></td>
<td></td>
<td><strong>Whole system</strong></td>
<td></td>
<td><strong>Nelson Mandela MM</strong></td>
<td></td>
<td><strong>Whole system</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Key Performance Area</strong></td>
<td></td>
<td></td>
<td><strong>Weight</strong></td>
<td></td>
<td><strong>Weight</strong></td>
<td></td>
<td><strong>Weight</strong></td>
<td></td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 85.03%</td>
<td></td>
<td>Blue Drop Score 2014</td>
<td>% 72.43%</td>
<td>Blue Drop Score 2012</td>
<td>% 90.04%</td>
<td>Blue Drop Score 2011</td>
<td>% 90.11%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d 555 750</td>
<td></td>
<td>System Available Capacity</td>
<td>kL/d 555 750</td>
<td>System Input Value</td>
<td>kL/d 281 358</td>
<td>Capacity Utilisation</td>
<td>% 61.82%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>% 45.87%</td>
<td></td>
<td>BDRR 2022</td>
<td>% 31.90%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Linton WTW - 87%**
### 5.14 OR Tambo District Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>56.66%</td>
</tr>
<tr>
<td>2014</td>
<td>41.18%</td>
</tr>
<tr>
<td>2012</td>
<td>22.70%</td>
</tr>
<tr>
<td>2011</td>
<td>43.69%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Butongweni</th>
<th>Coffee Bay</th>
<th>Corana</th>
<th>Flagstaff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.98%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2014</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI</td>
<td>40.11%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2012</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI</td>
<td>28.35%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2011</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI</td>
<td>37.66%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butongweni</td>
<td>1 000</td>
</tr>
<tr>
<td>Coffee Bay</td>
<td>3 000</td>
</tr>
<tr>
<td>Corana</td>
<td>3 500</td>
</tr>
<tr>
<td>Flagstaff</td>
<td>1 200</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Available Capacity</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butongweni</td>
<td>0</td>
</tr>
<tr>
<td>Coffee Bay</td>
<td>3 000</td>
</tr>
<tr>
<td>Corana</td>
<td>3 500</td>
</tr>
<tr>
<td>Flagstaff</td>
<td>1 200</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Input Value</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butongweni</td>
<td>0</td>
</tr>
<tr>
<td>Coffee Bay</td>
<td>1 231</td>
</tr>
<tr>
<td>Corana</td>
<td>3 500</td>
</tr>
<tr>
<td>Flagstaff</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capacity Utilisation</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butongweni</td>
<td>NI</td>
</tr>
<tr>
<td>Coffee Bay</td>
<td>41.03%</td>
</tr>
<tr>
<td>Corana</td>
<td>NI</td>
</tr>
<tr>
<td>Flagstaff</td>
<td>NI</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Butongweni</td>
<td>Mthakatya River</td>
</tr>
<tr>
<td>Coffee Bay</td>
<td>Mtata River</td>
</tr>
<tr>
<td>Corana</td>
<td>Gunyeni River</td>
</tr>
<tr>
<td>Flagstaff</td>
<td>Gadu River</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BDRR 2023</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>52.57%</td>
<td>37.83%</td>
</tr>
<tr>
<td>56.98%</td>
<td>53.64%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BDRR 2022</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI</td>
<td>48.80%</td>
</tr>
<tr>
<td>21.50%</td>
<td>80.40%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Lusikisiki</th>
<th>Mangxamfu</th>
<th>Mdlankala</th>
<th>Mhlahlane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>50.53%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2014</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>34.99%</td>
<td>NI</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2012</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>28.14%</td>
<td>NI</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2011</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>42.16%</td>
<td>NI</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lusikisiki</td>
<td>2 800</td>
</tr>
<tr>
<td>Mangxamfu</td>
<td>1 000</td>
</tr>
<tr>
<td>Mdlankala</td>
<td>2 200</td>
</tr>
<tr>
<td>Mhlahlane</td>
<td>4 500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Available Capacity</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lusikisiki</td>
<td>2 800</td>
</tr>
<tr>
<td>Mangxamfu</td>
<td>0</td>
</tr>
<tr>
<td>Mdlankala</td>
<td>2 000</td>
</tr>
<tr>
<td>Mhlahlane</td>
<td>4 500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Input Value</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lusikisiki</td>
<td>2 680</td>
</tr>
<tr>
<td>Mangxamfu</td>
<td>0</td>
</tr>
<tr>
<td>Mdlankala</td>
<td>510</td>
</tr>
<tr>
<td>Mhlahlane</td>
<td>234</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capacity Utilisation</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lusikisiki</td>
<td>95.71%</td>
</tr>
<tr>
<td>Mangxamfu</td>
<td>NI</td>
</tr>
<tr>
<td>Mdlankala</td>
<td>25.50%</td>
</tr>
<tr>
<td>Mhlahlane</td>
<td>5.20%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lusikisiki</td>
<td>Xurha River</td>
</tr>
<tr>
<td>Mangxamfu</td>
<td>Xilinx River and Hlabathi River</td>
</tr>
<tr>
<td>Mdlankala</td>
<td>Mntafufu</td>
</tr>
<tr>
<td>Mhlahlane</td>
<td>Mtata River at Mabaleni Dam</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BDRR 2023</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>66.05%</td>
<td>44.72%</td>
</tr>
<tr>
<td>58.99%</td>
<td>32.40%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BDRR 2022</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>48.80%</td>
<td>NI</td>
</tr>
<tr>
<td>48.80%</td>
<td>41.60%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Mhlanga</th>
<th>Mqanduli</th>
<th>Mvumelwano</th>
<th>Ngqeleni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Mhlanga</td>
<td>Mqanduli</td>
<td>Mvumelwano</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------</td>
<td>---------</td>
<td>----------</td>
<td>------------</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>53.48%</td>
<td>46.63%</td>
<td>62.41%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>35.10%</td>
<td>29.60%</td>
<td>43.56%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>27.09%</td>
<td>21.99%</td>
<td>21.86%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>38.96%</td>
<td>51.94%</td>
<td>37.16%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 000</td>
<td>1 000</td>
<td>2 400</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 000</td>
<td>1 000</td>
<td>2 400</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 000</td>
<td>1 000</td>
<td>867</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>36.13%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Mhlanga River</td>
<td>Manqondo River</td>
<td>Itsitsa River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>72.33%</td>
<td>49.76%</td>
<td>37.03%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>60.50%</td>
<td>41.10%</td>
<td>58.70%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Ngqonweni</th>
<th>Port St Johns</th>
<th>Rosedale</th>
<th>Sidwadweni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>48.13%</td>
<td>53.76%</td>
<td>61.60%</td>
<td>66.03%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>50.07%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>47.54%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>53.46%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 100</td>
<td>6 000</td>
<td>1 500</td>
<td>1 800</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 100</td>
<td>6 000</td>
<td>1 500</td>
<td>1 800</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>72</td>
<td>5 918</td>
<td>161</td>
<td>1 800</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>3.44%</td>
<td>98.63%</td>
<td>10.73%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Ngqongweni River</td>
<td>Mngaza River at Bulolo Dam</td>
<td>Mtata River</td>
<td>Nqadu dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>38.87%</td>
<td>54.65%</td>
<td>27.20%</td>
<td>29.50%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>NI</td>
<td>54.24%</td>
<td>NI</td>
<td>56.14%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Thornhill</th>
<th>Tsolo</th>
<th>Umzimvubu</th>
<th>Upper Chulunca</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>58.29%</td>
<td>56.04%</td>
<td>43.03%</td>
<td>53.05%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>39.35%</td>
<td>50.03%</td>
<td>NI</td>
<td>32.31%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>27.51%</td>
<td>35.44%</td>
<td>NI</td>
<td>27.59%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>53.14%</td>
<td>51.14%</td>
<td>NI</td>
<td>40.41%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>80 000</td>
<td>1 400</td>
<td>2 500</td>
<td>2 500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>80 000</td>
<td>1 400</td>
<td>2 500</td>
<td>2 500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>48 724</td>
<td>1 400</td>
<td>2 500</td>
<td>989</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>60.91%</td>
<td>NI</td>
<td>NI</td>
<td>39.56%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Thornhill</td>
<td>Tsolo</td>
<td>Umzimvubu</td>
<td>Upper Chulunca</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
<td>----------</td>
<td>------</td>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Mtata River and Mtata dam</td>
<td>Xhokonxa River</td>
<td>Mngaza River</td>
<td>Cengcane Dam (surface runoff)</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>43.19%</td>
<td>48.27%</td>
<td>75.27%</td>
<td>35.76%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>52.50%</td>
<td>35.46%</td>
<td>52.70%</td>
<td>35.46%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Thornhill WTW - 86%**
## Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>25.60%</td>
<td>35.96%</td>
<td>25.37%</td>
<td>35.55%</td>
</tr>
</tbody>
</table>

## Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Addo WTW</th>
<th>Enon-Bersheba WTW</th>
<th>Kirkwood WTW</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>23.83%</td>
<td>34.98%</td>
<td>21.20%</td>
<td></td>
</tr>
</tbody>
</table>

## System Design Capacity

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>Addo WTW</th>
<th>Enon-Bersheba WTW</th>
<th>Kirkwood WTW</th>
</tr>
</thead>
<tbody>
<tr>
<td>kL/d</td>
<td>7 776</td>
<td>3 456</td>
<td>5 127</td>
</tr>
</tbody>
</table>

## System Available Capacity

<table>
<thead>
<tr>
<th>System Available Capacity</th>
<th>Addo WTW</th>
<th>Enon-Bersheba WTW</th>
<th>Kirkwood WTW</th>
</tr>
</thead>
<tbody>
<tr>
<td>kL/d</td>
<td>3 500</td>
<td>3 000</td>
<td>5 000</td>
</tr>
</tbody>
</table>

## System Input Value

<table>
<thead>
<tr>
<th>System Input Value</th>
<th>Addo WTW</th>
<th>Enon-Bersheba WTW</th>
<th>Kirkwood WTW</th>
</tr>
</thead>
<tbody>
<tr>
<td>kL/d</td>
<td>3 500</td>
<td>3 000</td>
<td>5 000</td>
</tr>
</tbody>
</table>

## Capacity Utilisation

<table>
<thead>
<tr>
<th>Capacity Utilisation</th>
<th>Addo WTW</th>
<th>Enon-Bersheba WTW</th>
<th>Kirkwood WTW</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>222.17%</td>
<td>101.53%</td>
<td>102.54%</td>
</tr>
</tbody>
</table>

## Resource Abstracted From

- Gariep Dam and Water Irrigation Board Cannel
- Canal from Gariep dam - Payment made to irrigation board
- Gariep Dam Canal

## BDRR 2023

<table>
<thead>
<tr>
<th></th>
<th>Addo WTW</th>
<th>Enon-Bersheba WTW</th>
<th>Kirkwood WTW</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>65.00%</td>
<td>44.74%</td>
<td>76.40%</td>
</tr>
</tbody>
</table>

## BDRR 2022

<table>
<thead>
<tr>
<th></th>
<th>Addo WTW</th>
<th>Enon-Bersheba WTW</th>
<th>Kirkwood WTW</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>96.70%</td>
<td>45.40%</td>
<td>40.10%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Addo Nomathamsanqa WTW - 63%

The Regulator notes the dire state of management and drinking water quality in the Addo and Kirkwood water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
Vaal Marina WTW: daily operational monitoring to ensure high quality water

Firlands raw water pump station in excellent condition
6. FREE STATE PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE

- 19 WSAs & 80 systems audited
- 3 Water Boards & 1 WSP
- 63.1% TSA score
- 57.1% BDRR - Medium risk
- No BD Certifications
- 31 Critical State systems
Provincial Synopsis

The Free State province provides drinking water to a total population of 3,028,741 persons in South Africa.

An audit attendance record of 100% of the 19 WSAs with 80 water supply systems across the province, 3 Water Boards (Bloem Water, Rand Water and Sedibeng Water) and MaP Water affirms the province’s commitment to the Blue Drop national incentive-based regulatory programme. Bloem Water has taken over the Sedibeng Water supply systems and water treatment systems in the Free State and Northern Cape. It must be noted that Sedibeng Water was still in operation during the blue drop audit period and Bloom Water was not responsible for the respective systems over the audit period. Bloem Water has recently undergone a name change to Vaal Central Water (Government Gazette no. 48954 dated 13 July 2023). The main Bulk Water Supplier is Bloom Water who supplies potable water to 14 water supply systems in Mangaung MM and Kopanong LM and is followed by Sedibeng Water who supplies potable water to 7 water supply systems in Matjhabeng LM and Nala LM, and Rand Water who supplies potable water to 2 water supply systems in Metsimaholo LM and Ngwathe LM. The Regulator determined that no water supply system scored more than 95% when measured against the Blue Drop standards and thus did not qualify for the prestigious BD Certification. In 2014, 6 water supply systems were awarded Blue Drop status. Using the 2014 audit results as comparative baseline, the province shows a decline in excellence for 2023.

Only three (3) of 19 WSAs improved on their 2014 scores, namely Dihlabeng LM, Setsoto LM and Tswelopele LM. The remaining 16 WSAs regressed to lower Blue Drop scores compared to their 2014 baselines. The Metsimaholo LM (84.2%), Dihlabeng LM (76.6%) and Tswelopele LM (73.8%) are the best performing WSAs in the province. The Blue Drop scores of these top WSA performers were supported by technical site assessment scores of 82% for the Hoopstad WTW in Tswelopele LM, 68% for the Clares and Foursieburg WTWs in Dihlabeng LM, followed by the Denysville WTW in Metsimaholo LM with a TSA score of 73%. 31 water supply systems were identified to be in a critical state in the province compared with 5 water supply systems in 2014.

The province’s overall Blue Drop performance is characterised by particular strengths in none of the KPAs provincial averages <50% (KPAs 2 to 5) and 53.3% (KPA 1), with the exception of only 2 water supply systems that performed well with BD scores >80%, confirming that the combined with risk management practices are not well embedded in the water supply business. The KPAs that require attention and are reflecting scores below 50% are KPA 2 DWQ Risk Management (37.6%), KPA 3 Financial Management (49.3%), KPA 4 Technical Management (28.1%) and KPA 5 Drinking Water Quality Compliance (39.5%). The provincial Blue Drop Risk Rating (BDRR) remained in the average risk category but improved slightly from 61.9% in 2022 (BD PAT) to 57.1% in 2023. 34 (of 80) water supply systems are situated in the low risk category, 22 WSSs in the medium risk category, 13 WSSs in the high risk category, and 11 WSSs in the critical risk category.

The Regulator is optimistic that the 2023 Blue Drop report provides an updated residual basis from where a positive trajectory for water services delivery and improved performance will follow in the next BD audit. Municipalities and their service providers are encouraged to start preparation for the next Blue Drop audit cycle, which is planned to cover the financial year 2023/24 and released in 2025. The 2023 Blue Drop status for WSAs in the province are summarised in the table below.

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2014 BD Score (%)</th>
<th>2023 BD Score (%)</th>
<th>2023 BD Certified ≥95%</th>
<th>2023 Critical State (&lt;31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dihlabeng LM</td>
<td>61.6%</td>
<td>76.6%↑</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Kopanong LM</td>
<td>67.3%</td>
<td>57.9%↓</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td>62.6%</td>
<td>32.9%↓</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>28.8%</td>
<td>4.3%↓</td>
<td>None</td>
<td>Frankfort, Tweeling, Villiers</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>97.7%</td>
<td>17.7%↓</td>
<td>None</td>
<td>Bluegumbosch, Kestell, Harankopane, Mphatlalatsane, Greater Qwaqwa, Makwane, Harrismith, Tshiamè</td>
</tr>
<tr>
<td>Mangaung</td>
<td>77.5%</td>
<td>62.8%↓</td>
<td>None</td>
<td>Soutpan Krugersdift Dam</td>
</tr>
<tr>
<td>Matsopoa LM</td>
<td>52.8%</td>
<td>42.3%↓</td>
<td>None</td>
<td>Hobhouse, Tweespruit</td>
</tr>
<tr>
<td>Masilonyana LM</td>
<td>29.6%</td>
<td>25.5%↓</td>
<td>None</td>
<td>Brandfort, Theunissen, Verkeerdevlei, Winburg</td>
</tr>
<tr>
<td>Matjhabeng LM</td>
<td>93.6%</td>
<td>55.6%↓</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td>84.5%</td>
<td>84.2%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>65.3%</td>
<td>27.6%↓</td>
<td>None</td>
<td>Rouxville, Smithfield, Zastron</td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td>60.2%</td>
<td>36.1%↓</td>
<td>None</td>
<td>Steynsrus</td>
</tr>
<tr>
<td>Nala LM</td>
<td>81.3%</td>
<td>52.3%↓</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Ngwathe LM</td>
<td>55.4%</td>
<td>36.2%↓</td>
<td>None</td>
<td>Parys, Vrededorp, Koppies, Edenville boreholes</td>
</tr>
<tr>
<td>Nketoana LM</td>
<td>71.4%</td>
<td>45.6%↓</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>61.3%</td>
<td>41.3%↓</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Setsoto LM</td>
<td>42.2%</td>
<td>43.3%↑</td>
<td>None</td>
<td>Clocolan, Senekal</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>56.8%</td>
<td>24.8%↓</td>
<td>None</td>
<td>Boshof, Dealesville</td>
</tr>
<tr>
<td>Tswelopele LM</td>
<td>70.1%</td>
<td>73.8%↑</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

↑= improvement, ↓= regress, = no change

| Totals        | -                 | -                 | 0                      | 31                           |

FREE STATE  
Page 97
The Department of Water and Sanitation acknowledges the excellence in water services management achieved for the Blue Drop Audit year of 2021-22. No Blue Drop Certificates are awarded in the Free State Province.

Background to Water Delivery and Distribution Infrastructure

The total volume of water treated in the province is 788,990 kL/d. Nineteen (19) WSAs, 3 WBs (Bloem Water, Rand Water and Sedibeng Water) and MaP Water are responsible for water services through a water network comprising of:

- 75 WTWs, boreholes and dams with the bulk of the water treated and supplied by the Mangaung MM (Bloem Water) and Matjhabeng LM WTWs with a total Average Daily Production of 238,530 kL/d and 292,000 kL/d respectively
- 23 (of 80) WSSs in 6 WSAs are provided with bulk potable water from Bloem Water, Rand Water and Sedibeng Water
- 228 pump stations, 1,480 km bulk water supply lines (10 of 19 WSAs), 6,172 km reticulation pipe lines (8 of 19 WSAs), and 335 reservoirs/towers.

Table 54 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes

<table>
<thead>
<tr>
<th>Micro Size Plants</th>
<th>Small Size Plants</th>
<th>Medium Size Plants</th>
<th>Large Size Plants</th>
<th>Macro Size Plants</th>
<th>Unknown (NI)*</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;500 kL/day</td>
<td>5 (7%)</td>
<td>18 (24%)</td>
<td>34 (45%)</td>
<td>8 (11%)</td>
<td>10 (13%)</td>
<td>75</td>
</tr>
<tr>
<td>No. of WTWs, Boreholes, Springs</td>
<td>1,657</td>
<td>18,161</td>
<td>141,868</td>
<td>101,400</td>
<td>1,055,000</td>
<td>None</td>
</tr>
<tr>
<td>Total Design Capacity (kL/day)</td>
<td>1,518</td>
<td>19,821</td>
<td>139,914</td>
<td>89,730</td>
<td>1,021,325</td>
<td>None</td>
</tr>
<tr>
<td>Average Daily Treatment Volume (kL/day)</td>
<td>1,217</td>
<td>9,637</td>
<td>72,355</td>
<td>55,180</td>
<td>650,601</td>
<td>12 Ni</td>
</tr>
<tr>
<td>Total SIV (kL/day)</td>
<td>1,217</td>
<td>11,970</td>
<td>106,010</td>
<td>79,798</td>
<td>592,648</td>
<td>791,643</td>
</tr>
<tr>
<td>Design Capacity Utilisation (%)</td>
<td>73%</td>
<td>53%</td>
<td>51%</td>
<td>54%</td>
<td>62%</td>
<td>60%</td>
</tr>
<tr>
<td>Available Capacity Utilisation (%)</td>
<td>80%</td>
<td>49%</td>
<td>52%</td>
<td>61%</td>
<td>64%</td>
<td>62%</td>
</tr>
</tbody>
</table>

* “Unknown” means the number of WTWs with NI (No Information) on design capacity or available capacity or SIV

The audit verified a total installed design capacity of 1,318,086 kL/d and a total available design capacity of 1,272,308 kL/d with most of this capacity residing in the macro-sized water treatment plants.

Collectively, the 75 WTWs produce 788,990 kL/d and distributes 791,643 kL/d across the water networks. By comparing the available treatment capacity with the treated water volume, a spare treatment capacity of 483,318 kL/d is available (38%) to meet additional future demands. However, the WUE for the province is high (ave. 261 l/p/d) compared to the international WUE benchmark of 180 l/p/d, indicating a high ratio between effective water use and actual water abstraction. Going forward, the province will have to dedicate significant resources to curb water losses and NRW.

(a) Capacities, Daily Production and SIV
In some cases, a Bulk Water Supplier supplies water across provincial borders and it is difficult to report accurately on design capacity and available capacity at provincial level, as the statistical data may become repetitive. Therefore, the reporting on the total system input volumes (SIV) would provide more accurate figures on the supply of treated water to the various water supply systems.

The total SIV in the province is 791,643 kl/d and the average daily treatment volume is 788,990 kl/d and this indicates that the treated volume is nominally less than the total SIV (99.7%). The reasons for this could be that 18 WTWs/boreholes/etc are not measuring their average daily treatment volumes, and Rand Water (from its two WTWs) are distributing water to 2 WSSs in the Metsimaholo LM and Ngwathe LM from the Gauteng province to the Free State province. The largest contributors to the total SIV are from the Mangaung MM (Bloem Water) and Matjhabeng LM WTWs with a total SIV contribution of 405,203 kl/d (51%). Diagnostic no. 2 to follow herein will unpack these statistics in more detail.

The water distribution infrastructure is summarised in the table below.

Table 55 - Summary of Water Distribution Infrastructure

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSS with no WSP/WB</th>
<th># WSS with WSP/WB</th>
<th># Pump Stations (#)</th>
<th>Bulk Water Supply Lines (km)</th>
<th>Reticulation pipe lines (km)</th>
<th># Reservoirs/ Towers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dihlabeng LM</td>
<td>3</td>
<td></td>
<td>13</td>
<td>49</td>
<td>611</td>
<td>27</td>
</tr>
<tr>
<td>Kopano LM</td>
<td>8</td>
<td></td>
<td>9</td>
<td>94</td>
<td>348</td>
<td>17</td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td>5</td>
<td></td>
<td>14</td>
<td>74</td>
<td>161</td>
<td>20</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>3</td>
<td></td>
<td>8</td>
<td>NI</td>
<td>NI</td>
<td>8</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>8</td>
<td></td>
<td>19</td>
<td>NI</td>
<td>NI</td>
<td>28</td>
</tr>
<tr>
<td>Mangaung LM</td>
<td>2</td>
<td>5</td>
<td>17</td>
<td>854</td>
<td>2,861</td>
<td>40</td>
</tr>
<tr>
<td>Mantsope LM</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>NI</td>
<td>302</td>
<td>21</td>
</tr>
<tr>
<td>Masilonyana LM</td>
<td>4</td>
<td></td>
<td>2</td>
<td>NI</td>
<td>NI</td>
<td>9</td>
</tr>
<tr>
<td>Matjhabeng LM</td>
<td>6</td>
<td></td>
<td>11</td>
<td>60</td>
<td>1,700</td>
<td>14</td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td>2</td>
<td>1</td>
<td>13</td>
<td>NI</td>
<td>NI</td>
<td>14</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>3</td>
<td></td>
<td>0</td>
<td>209</td>
<td>NI</td>
<td>10</td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td>3</td>
<td></td>
<td>17</td>
<td>NI</td>
<td>NI</td>
<td>19</td>
</tr>
<tr>
<td>Nala LM</td>
<td>1</td>
<td>2</td>
<td></td>
<td>NI</td>
<td>NI</td>
<td>4</td>
</tr>
<tr>
<td>Ngwathe LM</td>
<td>4</td>
<td>1</td>
<td>8</td>
<td>NI</td>
<td>NI</td>
<td>25</td>
</tr>
<tr>
<td>Niketo LM</td>
<td>4</td>
<td></td>
<td>11</td>
<td>71</td>
<td>NI</td>
<td>16</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>3</td>
<td></td>
<td>9</td>
<td>11</td>
<td>NI</td>
<td>16</td>
</tr>
<tr>
<td>Setsoto LM</td>
<td>4</td>
<td>1</td>
<td>11</td>
<td>11</td>
<td>19</td>
<td>12</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>3</td>
<td>64</td>
<td></td>
<td>NI</td>
<td>NI</td>
<td>27</td>
</tr>
<tr>
<td>Tswelepele LM</td>
<td>2</td>
<td></td>
<td>8</td>
<td>48</td>
<td>170</td>
<td>8</td>
</tr>
</tbody>
</table>

Totals            | 57                   | 23                | 228                | 1,480                         | 6,172                         | 335                |
Provincial Blue Drop Analysis

The 100% response from the 19 WSAs audited demonstrates a firm commitment to water services management in the province. Local Government reforms resulted in the merging of Naledi LM into Mangaung Metro. Therefore, 19 WSAs were audited in 2023 compared to the 20 WSAs in 2014.

Table 56 - Blue Drop Comparative Analysis from 2012 to 2023

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>2012</th>
<th>2014</th>
<th>2023</th>
<th>Performance trend 2014 and 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSAs assessed (#)</td>
<td>20 (100%)</td>
<td>20 (100%)</td>
<td>19 (100%)</td>
<td>→</td>
</tr>
<tr>
<td>Water supply systems assessed (#)</td>
<td>79</td>
<td>79</td>
<td>80</td>
<td>↑</td>
</tr>
<tr>
<td>Blue Drop scores ≥50% (#)</td>
<td>45 (57%)</td>
<td>54 (68%)</td>
<td>33 (41%)</td>
<td>↓</td>
</tr>
<tr>
<td>Blue Drop scores &lt;50% (#)</td>
<td>34 (43%)</td>
<td>25 (32%)</td>
<td>47 (59%)</td>
<td>↓</td>
</tr>
<tr>
<td>Blue Drop Certifications (#)</td>
<td>7</td>
<td>6</td>
<td>0</td>
<td>↓</td>
</tr>
<tr>
<td>Lowest Technical Site Assessment Score (%)</td>
<td>9%</td>
<td>30%</td>
<td>28%</td>
<td>↓</td>
</tr>
<tr>
<td>Highest Technical Site Assessment Score (%)</td>
<td>98%</td>
<td>91%</td>
<td>95%</td>
<td>↑</td>
</tr>
</tbody>
</table>

NA = Not Applied  NI = No Information  ↑= improvement,  ↓= regress,  →= no change

Figure 38 - Blue Drop trend analysis over the period 2012 to 2023, indicating the percentage BD scores above and below 50%

The trend analysis indicates that:

- The no. of systems audited has increased from 79 in 2014 to 80 in 2023
- The no. of systems with BD scores of ≥50% decreased from 54 (68%) in 2014 to 33 (41%) in 2023
- This trend was reversed with no. of systems with a BD score of ≤50% increasing from 25 (32%) in 2014 to 47 (59%) in 2023
- Blue Drop Certifications decreased from 6 awards in 2014 to 0 awards in 2023
- The lowest TSA score decreased from 30% in 2014 to 28% in 2023, with the highest TSA score increasing from 91% in 2014 to 95% in 2023
- An overall performance trend analyses indicates a regression in drinking water services from 2014 to 2023
- This negative trajectory reinforces the need for regular audits to ensure timely turnaround and continued improvement
- The negative trend also implies that performance has declined in the absence of regulatory engagement of the BD audits between 2014 to 2023.

Figure 39 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right)

Comparative analysis of the 2014 and 2023 blue drop scores indicates that only 2 system scores are in the >80<95% (Good Performance) category, 31 systems reside in the >50<80% (Average Performance) category, and 31 systems reside in the 0<31% (Critical state Performance) category.
In summary, trends over the years 2014 and 2023 indicate as follows:

- 31 Systems in a ‘critical state’
- Systems in a ‘poor state’ decreased from 20 to 16 systems
- Systems in an ‘average state’ decreased from 41 to 31 systems
- Systems in the ‘excellent and good state’ decreased from 13 systems (16%) to 2 systems (2.5%).

**Provincial BDRR Analysis**

The Blue Drop Risk Rating (BDRR) analysis assesses the risk across the entire water supply network. The BDRR formula was updated in 2021 to include an added risk indicator, i.e. ‘E: Water Safety Plans’, to address the risk assessment requirements outlined in SANS 241 of 2015. The BDRR now contains 5 risk indicators, i.e. design capacity (A), operational capacity (B), water quality compliance (C), technical capacity (D), and water safety plans (E). The results from the BDRR analyses are summarised in the table and figure following.

**Table 57 - Municipal BDRR/BDRRmax Comparative Analysis from 2022 and 2023**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th># WBs/ WSPs</th>
<th>2022 (BD PAT)</th>
<th>2023 (BD Audit)</th>
<th>Performance Trend 2022 and 2023</th>
<th>BDRR Risk Category Split</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dihlabeng LM</td>
<td>3</td>
<td>71.8%</td>
<td>30.6%</td>
<td>↑</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Kopanong LM</td>
<td>8</td>
<td>8</td>
<td>36.1%</td>
<td>↑</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td>5</td>
<td>53.1%</td>
<td>55.5%</td>
<td>↓</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>3</td>
<td>95.1%</td>
<td>98.9%</td>
<td>↓</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>8</td>
<td>97.7%</td>
<td>93.4%</td>
<td>↑</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Mangaung</td>
<td>7</td>
<td>72.5%</td>
<td>36.4%</td>
<td>↑</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Mantsope LM</td>
<td>5</td>
<td>47.1%</td>
<td>50.5%</td>
<td>↓</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Masilonyana LM</td>
<td>4</td>
<td>69.0%</td>
<td>79.5%</td>
<td>↓</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Matjhabeng LM</td>
<td>6</td>
<td>29.9%</td>
<td>57.9%</td>
<td>↓</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td>3</td>
<td>26.1%</td>
<td>30.2%</td>
<td>↓</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>3</td>
<td>43.1%</td>
<td>45.6%</td>
<td>↓</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td>3</td>
<td>63.4%</td>
<td>35.7%</td>
<td>↑</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Nala LM</td>
<td>1</td>
<td>45.6%</td>
<td>43.6%</td>
<td>↓</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Ngwathle LM</td>
<td>5</td>
<td>37.0%</td>
<td>42.6%</td>
<td>↓</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Nketoana LM</td>
<td>4</td>
<td>46.3%</td>
<td>48.7%</td>
<td>↓</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>3</td>
<td>96.6%</td>
<td>61.0%</td>
<td>↑</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Setsoto LM</td>
<td>4</td>
<td>58.7%</td>
<td>50.4%</td>
<td>↑</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>3</td>
<td>100.0%</td>
<td>64.6%</td>
<td>↑</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Tswelepele LM</td>
<td>2</td>
<td>43.0%</td>
<td>23.2%</td>
<td>↑</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Totals &amp; %BDRR/BDRRmax</td>
<td>80</td>
<td>23</td>
<td>61.9%</td>
<td>57.1%</td>
<td>↑</td>
<td>34</td>
</tr>
</tbody>
</table>

↑ = improvement, ↓ = regress, → = no change

**Figure 40 - a) WSS risk distribution and trends for 2022 and 2023; b) Colour legend**
The 2023 audit cycle highlighted a slightly progressive shift with an increase in the no. of low risk WSSs (29 to 34) and medium risk WSSs (12 to 22) but a proportional decrease in the high risk WSSs (14 to 13) and the critical risk WSSs (20 to 11).

Regulatory Enforcement

Water supply systems which fail to achieve the minimum Blue Drop target of 31%, are placed under regulatory focus. The Regulator requires these WSAs to submit a detailed corrective action plan (CAP) within 20 working days from publishing of this report. 31 WSSs received Blue Drop scores below 31%, and hence are placed under regulatory surveillance, in accordance with the Water Services Act (108 of 1997). DWS together with COGTA will through the grant allocation systems ensure priority is given to application of grants to rectify/restore the water services treatment and supply shortcomings identified in this report.

### Table 58 - WSSs with <31% Blue Drop scores

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 BD Score</th>
<th>WSSs with &lt;31% score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mangaung</td>
<td>62.8%</td>
<td>Soutpan Krugersdrift Dam</td>
</tr>
<tr>
<td>Setsoto LM</td>
<td>43.3%</td>
<td>Clocolan, Senekal</td>
</tr>
<tr>
<td>Mantsope LM</td>
<td>42.3%</td>
<td>Hobhouse, Thaba Phatchoa, Tweespruit</td>
</tr>
<tr>
<td>Ngwatre LM</td>
<td>36.2%</td>
<td>Parys, Vredefort, Koppies, Edenville boreholes</td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td>36.1%</td>
<td>Steynsrus</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>27.6%</td>
<td>Rouxville, Smithfield, Zastron</td>
</tr>
<tr>
<td>Masilionyana LM</td>
<td>25.5%</td>
<td>Brandfort, Theunissen, Verkeerdevlei, Winburg</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>24.8%</td>
<td>Boshof, Dealesville</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>17.7%</td>
<td>Bluegumbosch, Kestell, Harankopane, Mphatlaletsane, Greater Qwaqwa, Makwane, Harrismith, Tshiame</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>4.3%</td>
<td>Frankfort, Tweeling, Villiers</td>
</tr>
</tbody>
</table>

The following WSAs and their associated water treatment systems are in high and/or critical BDRR risk positions, which means that some or all the risk indicators are in a precarious state, i.e. operational capacity, design capacity utilisation, water quality compliance, technical capacity, and water safety plans. WTWs in high risk and critical risk positions pose a serious risk to public health. The following WSAs will be required to assess their risk contributors and to provide corrective measures in the above mentioned action plans to mitigate these risks.

### Table 59 - %BDRR/BDRR\text{max} scores and WSSs in critical and high-risk space

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 Average %BDRR/BDRR\text{max}</th>
<th>WSSs in critical and high-risk space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mafube LM</td>
<td>98.9%</td>
<td>Frankfort, Tweeling, Villiers</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>93.4%</td>
<td>Bluegumbosch, Greater Qwaqwa, Harrismith, Kestell, Tshiame</td>
</tr>
<tr>
<td>Mangaung</td>
<td>36.4%</td>
<td>Soutpan (Krugersdrift Dam)</td>
</tr>
<tr>
<td>Masilionyana LM</td>
<td>79.5%</td>
<td>Brandfort, Theunissen, Winburg, Verkeerdevlei</td>
</tr>
<tr>
<td>Ngwatre LM</td>
<td>42.6%</td>
<td>Parys, Vredefort, Memel</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>61.0%</td>
<td>Edenville (Boreholes), Koppies</td>
</tr>
<tr>
<td>Setsoto LM</td>
<td>50.4%</td>
<td>Senekal</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>64.6%</td>
<td>Boshof, Dealesville</td>
</tr>
</tbody>
</table>

Good practice risk management requires that the Water Safety Plans (WaSPs) are informed by meaningful Process and Condition Audits, supported by zealous implementation of corrective measures and ongoing monitoring of risk movement. With the exception of 56 water supply systems situated in the low and medium risk positions, the remaining 24 water supply systems are situated in the high and critical risk positions.

### Performance Barometer

The **Blue Drop Performance Barometer** presents the individual WSA Blue Drop Scores, which essentially reflects the level of mastery that a WSA has achieved in terms of its overall water services business. The bar chart below compares the 2014 and 2023 BD scores, ranked from lowest to highest performing WSA in 2023. The Metsimaholo LM is commended for maintaining good performance. 6 WSAs have achieved average performance and 7 WSAs have achieved poor performance. The remaining 5 WSAs are in critical state and are therefore placed under regulatory focus.
The **BDRR Risk Barometer** expresses the level of risk that a WSA poses in respect of its water supply system. The schematic below presents the BDRR in ascending order – with the low-risk WSAs on the left and higher risk WSAs to the far right. The analysis reveals that there are 6 medium, 1 high and 2 critical risk WSAs in the province. 10 WSAs are situated in the low risk positions.
Provincial Best Performers

The **Metsimaholo Municipality** is the **BEST PERFORMING WSA** in the province, based on the following record of excellence attributed mainly to the Sasolburg supply system supplied by Rand Water:
- 2023 Blue Drop Score of 84.2%
- 2014 Blue Drop Score of 84.5%
- All 3 systems (100%) in the low risk position
- TSA score of 73% for the Denysville WTW.

The **Dihlabeng Municipality** is the second-best scoring WSA:
- 2023 Blue Drop Score of 76.6%
- 2014 Blue Drop Score of 61.6%
- All 3 systems (100%) in low risk position
- TSA score of 68% for the Clarens & Fouriesburg WTWs.

The **Tswelelele Municipality** is the third-best scoring WSA:
- 2023 Blue Drop Score of 73.8%
- 2014 Blue Drop Score of 70.1%
- All 2 systems (100%) in low risk positions
- TSA score of 82% for the Hoopstad WTW.
The BD audit process collects a vast amount of data that yield valuable insight into the state of the water services delivery and water quality in each province. Five focus areas or ‘diagnostics’ have been configured from the 2021/22 audit data and are discussed below.

### Table 60 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs

<table>
<thead>
<tr>
<th>Diagnostic #</th>
<th>Diagnostic Description</th>
<th>Diagnostic Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical Competence</td>
<td>KPA 1, 2 &amp; Bonus</td>
</tr>
<tr>
<td>2</td>
<td>Treatment Capacity and Flow Distribution</td>
<td>KPA 4 &amp; Generic Audit data set</td>
</tr>
<tr>
<td>3</td>
<td>Drinking Water Quality (DWQ) Monitoring and Compliance</td>
<td>KPA 2 &amp; 4 &amp; Bonus</td>
</tr>
<tr>
<td>4</td>
<td>Technical Site Assessments</td>
<td>TSA and 2023 Blue Drop Watch Report</td>
</tr>
<tr>
<td>5</td>
<td>Operation, Maintenance and Refurbishment of Assets</td>
<td>KPA 3 &amp; 4</td>
</tr>
</tbody>
</table>

### Diagnostic 1: Technical Competence

**Aim:** This focus area assesses the technical human resources capacity that is available to manage and operate water treatment processes and maintain the related water infrastructure. Theory advocates that a correlation exists between human resources capacity and capability (sufficient number of appropriately qualified staff) and a WSI’s performance. Thus, it is hypothesised that high HR capacity would translate to compliant water treatment plants and functional water supply network. Blue Drop assesses technical compliance on two levels: i) WTW plant supervision and process control staff and ii) Technical, scientific and maintenance staff.

(i) **Plant Supervisors and Process Controllers**

**Findings:** According to regulations, water treatment plants are classified as Class A, B, C, D or E plants. Similarly, Process Controllers and Plant Supervisors are registered as Class I, II, III, IV, V or VI Process Controllers. Higher classed plants require a higher level of Process Controllers due to technology complexity and strict water quality standards. Technical compliance of PCs and Supervisors is determined against the Blue Drop standards, as defined by Reg. 2834 of the Water Act 1956 (Act 54 of 1956) for the erection, enlargement, operation, and registration of water care works and draft Reg. 813 of the Water Services Act (No 108 of 1997). Regulation 2834 has been replaced by Regulation 3630 in 2023 but will only come in effect during the next Blue Drop audit cycle.

### Table 61 - No. compliant versus shortfall in Supervisor and Process Controller staff

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th># Available Compliant Staff</th>
<th>Staff Shortfall</th>
<th>Ratio***</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PCs</td>
<td>Supervisor**</td>
<td>Total</td>
<td>PCs</td>
</tr>
<tr>
<td><strong>WSA &amp; WB Name</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water</td>
<td>7</td>
<td>11*</td>
<td>30</td>
<td>9</td>
<td>39</td>
<td>1</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Dihlabeng LM</td>
<td>3</td>
<td>3</td>
<td>13</td>
<td>5</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>Kapanong LM</td>
<td>6</td>
<td>8</td>
<td>25</td>
<td>5</td>
<td>30</td>
<td>2</td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>7</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Mangaung</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Mantsopa LM</td>
<td>4</td>
<td>5</td>
<td>12</td>
<td>5</td>
<td>17</td>
<td>8</td>
</tr>
<tr>
<td>Masilonyana LM</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Matjhabeng LM</td>
<td>None</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td>3</td>
<td>3</td>
<td>11</td>
<td>2</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>Nala LM</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ngwathe LM</td>
<td>4</td>
<td>5</td>
<td>11</td>
<td>1</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>Nketoana LM</td>
<td>4</td>
<td>4</td>
<td>18</td>
<td>8</td>
<td>26</td>
<td>0</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>4</td>
<td>3</td>
<td>10</td>
<td>0</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Setsoto LM</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Tswelopele LM</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

**Note:** Nala LM and Matjhabeng LM have no WTWs of their own. Water is supplied by the previously Sedibeng owned WTWs.
* Bloem Water supplies water to 14 WSSs. However, Bloem Water owns 7 WTWs that supply water to 11 of the 14 WSSs in the province.

** NB: The Supervisor totals will be inflated as it is not possible to differentiate between which Supervisors are shared/roaming with other Class C to E WTWs.

*** Ratio depicts the no. of qualified staff divided by the no. of WTWs operated by this no. of staff. E.g., Dihlabeng has 18 compliant Sups + PCs, divided by 3 WTWs = 6 qualified staff per WTW.

Note: “Compliant staff” means qualified and registered staff that meets the BD standard for a particular Class Works. “Staff shortfall” means staff that do not meet the BD standard for a particular Class of works (+1 for a shift) and/or staffing gaps exist at the respective WTWs.

Competent human resources are vital enablers in ensuring efficient and sustainable management of water services and delivery of safe water quality to consumers. For the province in general, the operational competencies are found to be excellent for the Supervisory staff in Bloem Water (now VCW) and 11 municipalities and excellent for the PCs in Bloem Water (now VCW) and only 2 of 17 municipalities (excluding Matjhabeng LM and Nala LM), as illustrated in the table above.

![Figure 43 - Schematic illustration of compliant and shortfall of Supervisors (a) and Process Controllers (b)](image)

**Plant Supervisors:** The pie charts indicate that 81% (58 of 72) of Plant Supervisors complies with the Blue Drop standard with a shortfall of 19% (14 of 72) for 7 WSAs. The highest shortfall is for the Masilonyana LM.

**Process Controllers:** Similarly, 56% (154 of 276) of the PC staff complies with the required standards, with a shortfall of 44% (122 of 276) for all the WSAs with the exception of Moqhaka LM and Nketoana LM. The highest shortfall (ranging from 5 to 12 PCs) are for 13 of the WSAs.

Blue Drop standards require of Class A and B plants to employ dedicated Supervisors per WTW and Process Controllers per shift per works, whereas Class C to E plants may share Supervisory staff across works. Shifts have been introduced to ensure optimal operations while addressing security risks, particularly as it relates to theft and vandalism. Telemetry also reduces the requirement for on-site staff during night shifts, but these relaxations have to be done within the DWS regulatory guidelines.

The Regulator expects correlation between the competence of an operational team and the performance of a WTW, as measured by the BD score. The data indicates as follows:

- 15 WSAs have some qualified PCs in place, with the exception of Setsoto LM, Tokologo LM and Mangaung MM (excluding Bloem Water) WTWs
- 12 WSAs have qualified Supervisors in place. It was not clear for roaming Supervisors linked to Class C to E WTWs
- 6 WSAs have shortfalls in Supervisors and 15 WSAs have shortfalls in qualified Process Controllers.

It is expected that a correlation would exist between the competence of an operational team and the performance of a water treatment works, as measured by the BD score. The results from the ratio analysis indicate high ratios (>3.0) for 8 WSAs.

Overall, the comparative bar chart does not provide a close correlation between the ratios (ranging from 3.0 to 5.5) and the BD scores as they appear to be too erratic with exceptions for Dihlabeng LM, Kopanong LM, Mangaung MM and Tswelopele LM. The anomalies are for Matjhabeng LM because of the Balkfontein WTW that has a huge shortfall in PC staff and for Metsimaholo LM Sasolburg WSS that receives water from Rand Water.
(ii) Technical, Scientific and Maintenance staff

In addition to operational capacity (above), good management practice also requires access to qualified engineers, technicians, technologists, MISA appointees, scientists, and maintenance capability (below). Such competencies could reside in-house or accessible through term contracts and external specialists.

### Table 62 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Maintenance Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water</td>
<td>7</td>
<td>11*</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>2</td>
<td>7</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Dihlabeng LM</td>
<td>3</td>
<td>3</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Kapanong LM</td>
<td>6</td>
<td>8</td>
<td>Internal+Specific Outsourcing; Partially Capacitated</td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td>5</td>
<td>5</td>
<td>Partially Capacitated</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>3</td>
<td>3</td>
<td>Internal Team (only); No Capacity</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>4</td>
<td>8</td>
<td>Internal Team (only); Partially Capacitated</td>
</tr>
<tr>
<td>Mangaung</td>
<td>7</td>
<td>7</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Mantsopa LM</td>
<td>4</td>
<td>5</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Masilonyana LM</td>
<td>4</td>
<td>4</td>
<td>Inadequate Capacity</td>
</tr>
<tr>
<td>Matjhabeng LM</td>
<td>None</td>
<td>6</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td>2</td>
<td>3</td>
<td>Internal+Term Contract; Internal+Specific Outsourcing (Rand Water)</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>3</td>
<td>3</td>
<td>Internal Team (only)</td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td>3</td>
<td>3</td>
<td>Internal Team (only)</td>
</tr>
<tr>
<td>Nala LM</td>
<td>None</td>
<td>1</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Ngwathe LM</td>
<td>4</td>
<td>5</td>
<td>Internal+Specific Outsourcing (Rand Water); Inadequate Capacity</td>
</tr>
<tr>
<td>Niketoana LM</td>
<td>4</td>
<td>4</td>
<td>Internal Team (only)</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>4</td>
<td>3</td>
<td>Internal+Term Contract; Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Setsoto LM</td>
<td>4</td>
<td>3</td>
<td>Inadequate Capacity</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>4</td>
<td>2</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Tswelepele LM</td>
<td>2</td>
<td>2</td>
<td>Internal+Term Contract</td>
</tr>
</tbody>
</table>

**Totals** | 75 | 80

*Note: Nala LM and Matjhabeng LM have no WTWs of their own. Water is supplied by the previously Sedibeng owned WTWs.

*Bloem Water supplies water to 14 WSSs. However, Bloem Water owns 7 WTWs that supply water to 11 of the 14 WSSs in the province*
In general, the province presents a strong case for qualified professional technical staff as follows:

- A total of 67 qualified staff comprised of 5 Engineers, 33 Technologists, 29 Technicians, No MISA appointees (qualified); and 3 SACNASP registered scientists are assigned to the Water Boards and 19 WSAs
- A total shortfall of 64 persons is identified, consisting of 29 technical staff and 35 scientists
- 15 WSAs have a total shortfall of 29 qualified technical staff with the highest indicated for Ngwathe LM (4 no.), Mafube LM and Moqhaka LM (3), and 7 other WSAs (2)
- The Water Boards and 15 WSAs have access to credible laboratories that comply with the Blue Drop standards.

### Table: Qualified Technical Staff

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Technicians</th>
<th>Technologists</th>
<th>Engineers</th>
<th>MISA appointees</th>
<th>Total Shortfall (#)</th>
<th>Qualified Scientists (#)</th>
<th>Scientists Shortfall (#)</th>
<th>Ratio*</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water</td>
<td>7</td>
<td>11</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>2</td>
<td>7</td>
<td>4</td>
<td>10</td>
<td>2</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td>Dihlabeng LM</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>Kopanong LM</td>
<td>6</td>
<td>8</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>Mangaung</td>
<td>7</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Mantsopa LM</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Masilonyana LM</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Matjhabeng LM*</td>
<td>None</td>
<td>6</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>Nala LM*</td>
<td>None</td>
<td>1</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Ngwathe LM</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0.0</td>
</tr>
<tr>
<td>Nketoana LM</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>Setsoto LM</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Tswelopele LM</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Totals: 75 80 29 33 5 0 67 29 3 35

Note: Nala LM and Matjhabeng LM have no WTWs of their own. Water is supplied by the previously Sedibeng owned WTWs

* The single number ratio depicts the no. of qualified technical staff divided by the no. of WSSs that have access to the staff. E.g., Dihlabeng has 5 qualified staff, divided by 3 WSSs = 1.7 qualified staff per WSS

Note 1: “Qualified Technical Staff” means staff appointed in positions to support water services, and who has the required qualifications. “Technical Shortfall” is calculated based on a minimum requirement of at least 3 Engineers or more than 1 of each of Engineers, Technologists & Technicians; and at least one 1 Candidate Scientist and 1 Professional Scientist per WSI.

Note 2: “Qualified Scientists” means professional registered scientists (SACNASP) and candidate scientists appointed in positions to support water services. “Scientists shortfall” means that the WSA does not have at least one qualified SACNASP registered scientist and at least one 1 candidate scientist in their employ or contracted.

In terms of maintenance capacity, all the municipalities in the province have a reasonable contingent of qualified technical and maintenance staff. The maintenance staff comprises of a collective of in-house, contracted, or outsourced personnel. The data indicates that:

- 3 of 19 (16%) WSAs have in-house maintenance teams only
- 5 of 19 (26%) WSAs have internal maintenance teams supplemented with term contracts
- 8 of 19 (42%) WSAs have internal maintenance teams supplement with specific outsourced services
- 7 of 19 (37%) WSAs as a whole or in part are partially capacitated, inadequately capacitated, and have no capacity.

In general, the province presents a strong case for qualified professional technical staff as follows:

- A total of 67 qualified staff comprised of 5 Engineers, 33 Technologists, 29 Technicians, No MISA appointees (qualified); and 3 SACNASP registered scientists are assigned to the Water Boards and 19 WSAs
- A total shortfall of 64 persons is identified, consisting of 29 technical staff and 35 scientists
- 15 WSAs have a total shortfall of 29 qualified technical staff with the highest indicated for Ngwathe LM (4 no.), Mafube LM and Moqhaka LM (3), and 7 other WSAs (2)
- The Water Boards and 15 WSAs have access to credible laboratories that comply with the Blue Drop standards.
Figure 45 - Graphic illustration of the number and %: a) qualified engineering/technical staff; b) professional scientists; c) access to credible laboratory services that complies with Blue Drop standards

Ratio analysis has been done to determine the number of qualified technical and scientific staff assigned per WSS. It is expected that a higher ratio would correspond with well-performing and maintained water supply systems, as represented by the BD score.

![Figure 45 - Graphic illustration of the number and %: a) qualified engineering/technical staff; b) professional scientists; c) access to credible laboratory services that complies with Blue Drop standards](image)

Figure 46 - Ratio of compliant technical staff to no. of WSSs and Comparison of Ratios with BD scores

The schematic above does show some correlation between medium ratios (≥ 1.0) and average BD scores with 3 WSA anomalies with <31% BD scores. Metsimaholo LM has a high BD score because of the Sasolburg system that receives water from Rand Water. Unlike the Green Drop 2022 diagnostics, no firm correlation can be drawn between technical capacity and water supply performance, mostly as result of the complexity of the WSA/Bulk Water Provider arrangement.

Overall, the results highlight the inter-dependency between technical capacity and performance. One of the options to enhance operational capacity is through dedicated training programmes. The Blue Drop audit incentivises training of operational staff over the 2-year period prior to the audit date. The results are summarised as follows:
Table 63 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WTW staff attending training</th>
<th># WTW without training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water</td>
<td>7</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Dihlabeng LM</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Kopanong LM</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Mafube LM</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Mangaung</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Mantsopa LM</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Masilonyana LM</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Matjhabeng LM</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Nala LM</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ngwathe LM</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Nketoana LM</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Setso LM</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Tswelepele LM</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>75</td>
<td>19 (25%)</td>
<td>56 (75%)</td>
</tr>
</tbody>
</table>

Figure 47 - %WTWs that have trained operational staff over the past two years

The results confirm that only staff members from 6 WSAs had staff attend training for 19 WTWs over the past 2 years. Overall, only 25% of operational staff attended safety and technical training, with the balance of 75% not partaking in any skills development initiatives. Investment in human capital through technical skills development is likely to mitigate some of the water quality failures and lower performances noted, and municipalities and water boards should prioritise ongoing skills development of technical staff and appointment of qualified staff that are eligible for registration.

**Diagnostic 2: Treatment Capacity and Flow Distribution**

**Aim:** Diagnostic 2 deals with design and flow related dynamics, comprising of: i) design capacity and operational flow, ii) raw water abstraction, and iii) WUE and SIV.

**(i) Design Capacity and Operational Flow**

This diagnostic assesses the status of plant design capacity and daily water production at the WTWs, as well as SIVs as measured at the outflow from the WTW or inflow to the water distribution network. A capable WTW requires adequate installed design capacity and functional equipment to operate optimally. If the WTW design capacity is exceeded by the average daily production (treatment) volume, the WTW will not be able to deliver SANS compliant water quality. The available design capacity is typically exceeded when the water demand exceeds the installed design capacity, or when unit processes or equipment are dysfunctional, or when electrical supply problems render treatment and pumping of water defective. Typically, the production volume and SIV is the same if 1 WTW supplies 1 WSS, but different if multiple supply systems are feeding from a singular WTW.

**Findings:** Analysis of the design capacity and average daily production/ treatment volume indicate a total design capacity of 1,318,086 kl/d for the province, with a total average daily treatment (operational) volume of 788,990 kl/d. Theoretically, this implies that 60% of the design capacity is used with 40% available to meet additional water demand. However, the full 1,318,086 kl/d is not available as some infrastructure is dysfunctional, leaving 1,272,308 kl/d available. The capacity differential (difference between the installed and available capacity) means that the province is closer to its total available capacity (62%) with a 38% surplus available. This capacity differential will not constrain or impede any further social and economic development in the drainage areas. 5 WSAs do not report or have not knowledge of their available capacities, and a lower figure than 38% surplus available can be expected.
Table 64 - Summary of WTWs design and available capacities, average daily production, % available capacity, and total SIV towards the WSSs

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Design Capacity (kl/d)</th>
<th>Available Design Capacity (kl/d)</th>
<th>Average Daily Production (kl/d)</th>
<th>Available Variance** (kl/d)</th>
<th>% Use Available Capacity</th>
<th>Total SIV towards the WSS (kl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water</td>
<td>7</td>
<td>11*</td>
<td>269,423</td>
<td>269,423</td>
<td>204,469</td>
<td>64,954</td>
<td>76%</td>
<td>191,867</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>2</td>
<td>7</td>
<td>480,000</td>
<td>480,000</td>
<td>292,000</td>
<td>188,000</td>
<td>61%</td>
<td>208,758</td>
</tr>
<tr>
<td>Dihlabeng LM</td>
<td>3</td>
<td>3</td>
<td>46,185</td>
<td>46,188</td>
<td>31,867</td>
<td>14,321</td>
<td>69%</td>
<td>31,867</td>
</tr>
<tr>
<td>Kopano LM</td>
<td>6</td>
<td>8</td>
<td>16,371</td>
<td>16,216</td>
<td>3,644</td>
<td>12,572</td>
<td>22%</td>
<td>3,372</td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td>5</td>
<td>5</td>
<td>12,057</td>
<td>13,710</td>
<td>3,210</td>
<td>10,500</td>
<td>23%</td>
<td>9,782</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>3</td>
<td>3</td>
<td>21,400</td>
<td>13,350</td>
<td>0</td>
<td>13,350</td>
<td>0%</td>
<td>21,400</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>4</td>
<td>8</td>
<td>67,200</td>
<td>67,400</td>
<td>77,064</td>
<td>-9,664</td>
<td>11%</td>
<td>76,443</td>
</tr>
<tr>
<td>Mangaung</td>
<td>7</td>
<td>7</td>
<td>138,800</td>
<td>138,800</td>
<td>36,723</td>
<td>102,077</td>
<td>26%</td>
<td>24,465</td>
</tr>
<tr>
<td>Mantsopa LM</td>
<td>4</td>
<td>5</td>
<td>15,160</td>
<td>14,690</td>
<td>10,355</td>
<td>4,335</td>
<td>70%</td>
<td>10,913</td>
</tr>
<tr>
<td>Masilonyana LM</td>
<td>4</td>
<td>4</td>
<td>18,948</td>
<td>18,948</td>
<td>10,650</td>
<td>8,298</td>
<td>56%</td>
<td>10,650</td>
</tr>
<tr>
<td>Matjhabeng LM</td>
<td>None</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td>2</td>
<td>3</td>
<td>12,490</td>
<td>12,490</td>
<td>7,300</td>
<td>5,190</td>
<td>58%</td>
<td>49,071</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>3</td>
<td>3</td>
<td>9,124</td>
<td>9,124</td>
<td>6,297</td>
<td>2,827</td>
<td>69%</td>
<td>6,296</td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td>3</td>
<td>3</td>
<td>69,800</td>
<td>46,900</td>
<td>31,104</td>
<td>15,796</td>
<td>66%</td>
<td>38,904</td>
</tr>
<tr>
<td>Nala LM*</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nketoana LM</td>
<td>4</td>
<td>4</td>
<td>22,000</td>
<td>17,500</td>
<td>3,700</td>
<td>13,800</td>
<td>21%</td>
<td>14,700</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>4</td>
<td>3</td>
<td>13,000</td>
<td>13,000</td>
<td>0</td>
<td>13,000</td>
<td>0%</td>
<td>13,000</td>
</tr>
<tr>
<td>Setsoto LM</td>
<td>4</td>
<td>4</td>
<td>48,550</td>
<td>48,550</td>
<td>24,812</td>
<td>23,738</td>
<td>51%</td>
<td>26,360</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>4</td>
<td>3</td>
<td>9,894</td>
<td>9,894</td>
<td>9,894</td>
<td>0</td>
<td>100%</td>
<td>9,894</td>
</tr>
<tr>
<td>Tswelopele LM</td>
<td>2</td>
<td>2</td>
<td>14,800</td>
<td>14,800</td>
<td>12,913</td>
<td>1,887</td>
<td>87%</td>
<td>12,913</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>** Totals</td>
<td>75</td>
<td>80</td>
<td>1,318,086</td>
<td>1,272,308</td>
<td>788,990</td>
<td>483,318</td>
<td>62%</td>
<td>791,643</td>
</tr>
</tbody>
</table>

Note: Nala LM and Matjhabeng LM have no WTWs of their own. Water is supplied by the previously Sedibeng owned WTWs.

** Difference between the available design capacity and the average daily production.

Figure 48 - Design and available capacity, average daily production, available variance and total SIV for the WTWs
Note: Maluti- Maluti-a-Phofung LM has 2 WTWs where the average daily production is exceeding the available capacity.

Figure 49 - % available capacity

In sum, all WSAs have knowledge of their WTW installed design and available capacities. The average daily production is not known for 12 WTWs somewhat skewing the WSA data sets and for the province overall. The % use of installed and available capacity is not known for 3 WSAs.

(ii) Raw Water Abstraction

This diagnostic takes a snapshot view of the status of water abstraction authorisations from natural water resources across the province. As per the National Water Act (Act no 36 of 1998), Water Use Authorisation (WUA) mandate the maximum abstraction volumes of raw water, and the installation and monitoring of abstraction, inflow, and outflow meters, whilst the BD audit requires WSAs to report the flows on IRIS and to calibrate meters annually. Any defects in terms of abstracting water from a resource without an authorisation, or exceeding the authorised volume, or reporting inaccurate volumes, or not monitoring abstraction against authorised volumes, are considered to be a regulatory risk and contravention of the law.

Findings: Data pertaining to the daily abstraction volumes (kl/d) (Authorised), average daily treatment volumes (kl/d), the names of the WTWs exceeding/with no Daily Abstraction Volumes (Authorised) and Average Daily Treatment Volumes (Authorised) is captured in the tables below.

Table 65 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances & WTWs listed For Enforcement Action

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Daily Abstraction Volumes (Authorised) (kl/d)</th>
<th>Average Daily Treatment Volume (kl/d)</th>
<th>Average Variance (kl/d) [+ or Minus]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water</td>
<td>7</td>
<td>11</td>
<td>217,618</td>
<td>204,469</td>
<td>13,149</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>2</td>
<td>7</td>
<td>353,000</td>
<td>292,000</td>
<td>61,000</td>
</tr>
<tr>
<td>Dihlabeng LM</td>
<td>3</td>
<td>3</td>
<td>5,000</td>
<td>31,867</td>
<td>-26,867</td>
</tr>
<tr>
<td>Kopanong LM</td>
<td>6</td>
<td>8</td>
<td>4,110</td>
<td>3,644</td>
<td>466</td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>3,210</td>
<td>-3,210</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>4</td>
<td>8</td>
<td>29,633</td>
<td>77,064</td>
<td>-47,431</td>
</tr>
<tr>
<td>Mangaung</td>
<td>7</td>
<td>7</td>
<td>41,353</td>
<td>36,723</td>
<td>4,630</td>
</tr>
<tr>
<td>Mangsopa LM</td>
<td>4</td>
<td>5</td>
<td>11,394</td>
<td>10,650</td>
<td>700</td>
</tr>
<tr>
<td>Masilonyana LM</td>
<td>4</td>
<td>4</td>
<td>12,950</td>
<td>10,650</td>
<td>2,300</td>
</tr>
<tr>
<td>Matjhabeng LM</td>
<td>None</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metsimahlo LM</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>7,300</td>
<td>-7,300</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>3</td>
<td>3</td>
<td>6,968</td>
<td>6,297</td>
<td>671</td>
</tr>
<tr>
<td>Moophaka LM</td>
<td>3</td>
<td>3</td>
<td>30,842</td>
<td>31,104</td>
<td>-262</td>
</tr>
<tr>
<td>Nala LM*</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ngwathe LM</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>22,988</td>
<td>-22,988</td>
</tr>
<tr>
<td>Niketoana LM</td>
<td>4</td>
<td>4</td>
<td>4,900</td>
<td>3,700</td>
<td>1,200</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Setsoto LM</td>
<td>4</td>
<td>4</td>
<td>12,456</td>
<td>24,812</td>
<td>-12,356</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>4</td>
<td>3</td>
<td>3,213</td>
<td>9,894</td>
<td>-6,681</td>
</tr>
<tr>
<td>Tswelepele LM</td>
<td>2</td>
<td>2</td>
<td>7,311</td>
<td>12,913</td>
<td>-5,602</td>
</tr>
<tr>
<td>Totals</td>
<td>75</td>
<td>80</td>
<td>740,748</td>
<td>788,990</td>
<td>-48,242</td>
</tr>
</tbody>
</table>

Note: Nala LM and Matjhabeng LM have no WTWs of their own. Water is supplied by the previously Sedibeng owned WTWs.
### Abstraction Volumes (Authorised), Ave. Treatment volumes, and Variances

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>WTW exceeding the Daily Abstraction Volumes (Authorised)</th>
<th>WTW with no Daily Abstraction Volumes (Authorised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water</td>
<td>Virginia</td>
<td>Groothoek, Jagersfontein Boreholes,</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dihlabeng LM</td>
<td></td>
<td>Saulspoort, Clarens</td>
</tr>
<tr>
<td>Kopanong LM</td>
<td></td>
<td>Reddersburg</td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td></td>
<td>All 4 WTWs</td>
</tr>
<tr>
<td>Mafube LM</td>
<td></td>
<td>All 3 WTWs</td>
</tr>
<tr>
<td>Malutia-Phofung LM</td>
<td>Wilge</td>
<td>Fika Patso, Makwane</td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td></td>
<td>Denesysville, Oranjeville</td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td></td>
<td>Steynsrus, Viljoenskroon</td>
</tr>
<tr>
<td>Ngwathe LM</td>
<td></td>
<td>Edenville Boreholes, Koppies, Parys, Vredefort</td>
</tr>
<tr>
<td>Nketoana LM</td>
<td></td>
<td>Reitz</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td></td>
<td>Memel, Vrede, Warden</td>
</tr>
<tr>
<td>Setsoto LM</td>
<td>Ficksburg</td>
<td>Clocolan, Senekal Cyferfontein Old &amp; New, Senekal De Put</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td></td>
<td>Boshof, Dealesville, Hertzogville</td>
</tr>
<tr>
<td>Tsewolopele LM</td>
<td>Bulfontein, Hoopstad</td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>5</strong></td>
<td><strong>33</strong></td>
</tr>
</tbody>
</table>

**Figure 50 - Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances**
WTWs that exceed the Daily Abstraction Volumes (Authorised) and WTWs with no Daily Abstraction Volumes (Authorised) are reflected in the 2nd table above. WTWs that are not complying with the regulations will be required to show correction in the next Blue Drop audit cycle. The results conclude that no WTWs are exceeding the permitted abstraction limits and all WTWs provided authorised water use abstraction volumes. The Daily Abstraction Volumes (Authorised) are not known for 13 water treatment systems resulting in negative average variances that skew the data sets. Only one negative average variance could be clearly attributed to the Tswelopele LM for over abstraction. For future BD audits, WSA/WSPs will be required to provide ‘actual’ abstraction volumes so that a comparative analysis can be undertaken of the ‘actual’ abstraction volume versus the authorised water use abstraction volumes (maximum). This would require that the WSAs and WSPs/WBs monitor and record all critical path flows (abstraction, raw and final).

(iii) Water Use Efficiency and System Input Value

The Department is committed to consider issues related to water scarcity and security, aiming to ensure there is sufficient water for the population, the economy, and the environment by increasing water use efficiency across all sectors. Water use for services sectors is specifically dealing with the quantity of water used directly by the consumer through the public distribution network and industries connected to the network. This diagnostic assesses the water use efficiency (i.e., the average daily consumption in litres per person per day) and the individual and collective performance of the water supply systems. WUE indicates how effective water is used by consumers, i.e. the process between effective water use and actual water abstraction. This concept is closely related to the Department’s No Drop Certification assessment, whereby WUE, NRW and water losses are targeted as part of Water Conservation and Water Demand Management strategies by municipalities.

**Findings:** Both the Blue Drop audit and No Drop audit requires an IWA water balance to determine the SIV into each water supply system, and to identify and quantify possible losses from abstraction to the end-of-use point. Bloem Water now Vaal Central Water, Kopanong LM and Mangaung MM (15 WSSs) and a few random systems in 3 other WSAs (3 WSSs) have full water balances in place for 18 WSSs in total. 26 WSSs in 6 WSAs have partial water balances in place, and 10 WSAs with a total of 36 WSSs do not have water balances in place.

WUE considers the SIV contributions, population served, and the average daily consumption, as summarised in the following table.

**Table 66 - Summary of total SIV, total population served, average daily consumption, WUE status and performance trend**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Total Population</th>
<th>Total SIV (kl/d)</th>
<th>2023 WUE (l/cap/day)</th>
<th>2023 Blue Drop WUE Range and Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dihlabeng LM</td>
<td>3</td>
<td>122,908</td>
<td>31,867</td>
<td>259</td>
<td>&gt;250-300</td>
</tr>
<tr>
<td>Kopanong LM</td>
<td>8</td>
<td>71,000</td>
<td>8,628</td>
<td>122</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td>5</td>
<td>35,690</td>
<td>9,782</td>
<td>274</td>
<td>&gt;250-300</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>3</td>
<td>62,794</td>
<td>21,400</td>
<td>341</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>8</td>
<td>361,086</td>
<td>76,443</td>
<td>212</td>
<td>&gt;200-250</td>
</tr>
<tr>
<td>Mangaung</td>
<td>7</td>
<td>1,041,632</td>
<td>211,076</td>
<td>203</td>
<td>&gt;200-250</td>
</tr>
<tr>
<td>Mantsopa LM</td>
<td>5</td>
<td>51,691</td>
<td>10,913</td>
<td>211</td>
<td>&gt;200-250</td>
</tr>
<tr>
<td>Masilionyana LM</td>
<td>4</td>
<td>91,134</td>
<td>10,650</td>
<td>117</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Matjhabeng LM</td>
<td>6</td>
<td>365,578</td>
<td>194,127</td>
<td>531</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td>3</td>
<td>149,287</td>
<td>49,071</td>
<td>329</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>3</td>
<td>38,000</td>
<td>6,296</td>
<td>166</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td>3</td>
<td>138,354</td>
<td>38,904</td>
<td>281</td>
<td>&gt;250-300</td>
</tr>
<tr>
<td>Nala LM*</td>
<td>1</td>
<td>104,594</td>
<td>14,631</td>
<td>140</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Ngwate LM</td>
<td>5</td>
<td>112,362</td>
<td>30,988</td>
<td>276</td>
<td>&gt;250-300</td>
</tr>
<tr>
<td>Nketoana LM</td>
<td>4</td>
<td>76,756</td>
<td>14,700</td>
<td>192</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>3</td>
<td>29,694</td>
<td>13,000</td>
<td>438</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Setso LM</td>
<td>4</td>
<td>99,895</td>
<td>26,360</td>
<td>264</td>
<td>&gt;250-300</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>3</td>
<td>28,986</td>
<td>9,894</td>
<td>341</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Tswelopele LM</td>
<td>2</td>
<td>47,300</td>
<td>12,913</td>
<td>273</td>
<td>&gt;250-300</td>
</tr>
<tr>
<td>Totals</td>
<td>80</td>
<td>3,028,741</td>
<td>791,643</td>
<td>261</td>
<td></td>
</tr>
</tbody>
</table>

WUE (l/cap/day) performance categories

<table>
<thead>
<tr>
<th>Colour</th>
<th>WUE Range</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>&gt;300</td>
<td>Extremely high per capita water use</td>
</tr>
<tr>
<td>Yellow</td>
<td>&gt;250-300</td>
<td>Poor per capita water use</td>
</tr>
<tr>
<td>Green</td>
<td>&gt;200-250</td>
<td>Average per capita water use with potential for marked improvement</td>
</tr>
<tr>
<td>Black</td>
<td>&gt;150-200</td>
<td>Good per capita water use but some improvement may be possible subject to economic benefits</td>
</tr>
<tr>
<td>Blue</td>
<td>&lt;150</td>
<td>Excellent per capita water use management</td>
</tr>
</tbody>
</table>

© 2020 - 2023 Mafube Water Services Authority (MWSA) - All Rights Reserved.
For the province, 791,643 kl/d water is supplied to 3,028,741 consumers. Comparatively, Mangaung and Matjhabeng LM distribute 28% of the total provincial SIV, followed by Maluti-a-Phofung LM (10%) and Metsimaholo LM (6%). An average 261 litres of water is used per person per day, which implies a very high (poor) per capita water use. Results from the diagnostic data show that the 5 WSAs have WUEs of more than 300 l/c/d, which is regarded as extremely high according to national benchmarks. 6 WSAs have WUEs between 250–300 l/c/d, which is regarded as poor. No Drop Certification is specifically tasked with plans to curb water losses and improve NRW through water accounting assessments and water conservation and demand management.

Diagnostic 3: Drinking Water Quality (DWQ) Monitoring and Compliance

**Aim:** Blue Drop audits values the principles of “To measure is to know” and “To know is to manage”. The primary objective of a water treatment plant is to produce final water quality that is safe for human consumption at the end of the distribution network. This standard can only be measured and achieved if operational and compliance monitoring and DWQ compliance is executed at the correct frequency, sample point, and determinand type. This diagnostic assesses the i) operational and compliance monitoring status, ii) drinking water quality compliance, and iii) risk defined compliance and laboratory credibility.

(i) Drinking water operational and compliance monitoring

**Findings:** A minimum level of 90% operational monitoring compliance is applied as benchmark, to give weight to the importance of sampling and monitoring of the raw water, process unit water, and final water across the treatment stream. Compliance monitoring is also informed by SANS 241:2015 and the requirement for risk-informed monitoring through the WaSP process at both the WTW final and distribution network. DWQ compliance is calculated against the population size and the mandatory limits set by SANS 241:2015 and the Blue Drop standards, as calculated and reported from data loaded in the IRIS.

### Table 67 - Summary of the KPA 2 WTW operational and WSS compliance monitoring status

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>WTW Operational monitoring [KPA 2 sub-KPA 2.b)]</th>
<th>WSS Compliance monitoring [KPA 2 sub-KPA 2.c)]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Satisfaction [BD score &gt;90%]</td>
<td>Not Satisfaction [BD score &lt;90%]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Satisfaction [BD score &gt;90%]</td>
<td>Not Satisfaction [BD score &lt;90%]</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water</td>
<td>7</td>
<td>11</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>
The performance recorded in the table above stems from performance data as measured against the Blue Drop Standard expressed in KPA 2 and sub-KPAs 2.b) and 2.c). Overall, an unsatisfactory sampling and analysis regime is observed for both operational (65%) and compliance (97%) monitoring.

The data indicates that 26 of 75 WTWs (35%) are on par with good practice for operational monitoring of the raw and final water and the respective process units at the WTW. Dihlabeng and Tswelopele are doing exceptionally well, whilst the remaining WSAs fail in varying degrees to meet the Blue Drop standard. In terms of compliance monitoring, only 2 WSSs (3%) are on par with good compliance monitoring practices, and 78 WSSs (97%) are failing the Blue Drop standard.

The latter observation is noted with deepening concern. Compliance monitoring is a legal requirement and the only means to measure the DWQ performance of a water supply system. Operational monitoring is the cornerstone of day-to-day process adjustments and optimisation to ensure that the water treatment is efficient and delivers quality final water. The results indicate that 49 WTWs and 78 WSSs are not achieving regulatory and industry standards.

(ii) Drinking water quality compliance

Findings: DWQ compliance is measured against the requirements of SANS 241:2015 under KPA 5 of the Blue Drop audit. The tables following summarises the results of the DWQ status for Microbiological and Chemical Compliance, which also carries the highest Blue Drop score weighting of 35%.

Table 68 - Provincial Summary of the DWQ Status for Microbiological Compliance
Out of the 80 WSSs, 32 (40%) systems achieved excellent microbiological quality whilst 45 (56%) systems have an unacceptable microbiological water quality status. The water in these systems pose a serious acute health risk to the community. Failure to produce water that meets microbiological compliance standards can be linked back to poor operations, defective infrastructure, inadequate dosing rates, absence of disinfection chemicals, lack of monitoring, lack of operating and chemistry knowledge, and several other root causes. WSSs that are not monitoring the final water quality at the outlet of the treatment plant or at specific end use points are required to develop a monitoring programme and resume with compliance monitoring as a matter of urgency.

Figure 53 - Provincial Microbiological Drinking Water Quality Status

Table 69 - Provincial Summary of the DWQ Status for Chemical Acute Health and Chronic Health Compliance
Figure 54 - Provincial Chemical Acute Health and Chronic Health Drinking Water Quality Status

Chemical acute health compliance shows that 26 (33%) systems have excellent, and no systems have good water quality, whilst 54 (67%) systems in 13 WSAs have an unacceptable chemical acute health compliance. Chemical chronic health compliance shows that 46 (58%) systems have excellent, and no systems have good water quality, whilst 34 (42%) systems in 8 WSAs have an unacceptable chemical chronic health compliance.

The Water Services Act upholds standards regarding the monitoring and reporting on drinking water quality and issuance of advisory notices to the public when significant DWQ failures are observed. The audit process applies a penalty when DWQ failures are noticed without issuing such Water Quality Alert Notices to forewarn consumers of the status of (unsafe) water quality and to advise communities to source alternative water sources or methods to disinfect water used for drinking water purposes.

The following table reflects the compliance status of the WSAs as regards the issuing of these notices for DWQ failures.

Table 70 - Summary of Penalties Applied to WSSs for not Issuing Advisory Notices

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSS</th>
<th># WSS No Penalty Applied</th>
<th>WSS Names Partial Penalty Applied</th>
<th>WSS Names Partial Penalty</th>
<th># WSS Full Penalty Applied</th>
<th>WSS Names Full Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dihlabeng LM</td>
<td>3</td>
<td>3</td>
<td>Philippolis, Springfontein</td>
<td>Jacobsdal, Koffiefontein</td>
<td>3</td>
<td>Bethulie, Jagersfontein, Trompsburg</td>
</tr>
<tr>
<td>Kopanong LM</td>
<td>8</td>
<td>3</td>
<td></td>
<td></td>
<td>3</td>
<td>Frankfort, Tweening, Villiers</td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td>5</td>
<td>3</td>
<td></td>
<td></td>
<td>3</td>
<td>All 8 Systems</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td>3</td>
<td>Botshabelo, Vanstadensrus, Soutpan, Thaba Nchu</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>8</td>
<td>8</td>
<td></td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Mangaung</td>
<td>7</td>
<td>3</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
No penalties were applied to 26 (33%) WSSs, partial penalties were applied to 22 (27%) WSSs, and full penalties were applied to 32 (40%) WSSs. The names of the WSSs that received partial or full penalties are reflected in the table above.

(iii) Risk defined compliance and laboratory credibility

**Findings**: Risk-defined compliance standards aim to determine the compliance (to SANS 241) of those parameters that have been found to pose a risk in a specific WSS and need to be included in the routine monitoring programme or frequency as prescribed by SANS 241. The province achieved an average Annual Risk Defined Compliance of 71.7%, with the best performances coming from Kopanong LM and Tswelopele LM and the worst performances coming from Maluti-a-Phofung LM, Matjhabeng LM and Mantsopa LM. Excellent risk defined compliance was achieved by 15 (19%) systems, good compliance for 10 (13%) systems and bad compliance for 55 (68%) systems.

### Table 71 - Summary of the DWQ Compliance for Risk Defined Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>Ave. % Risk Defined Compliance</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>Dihlabeng LM</td>
<td>3</td>
<td>122,908</td>
<td>95.60%</td>
<td>1</td>
</tr>
<tr>
<td>Kopanong LM</td>
<td>8</td>
<td>71,000</td>
<td>97.48%</td>
<td>6</td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td>5</td>
<td>35,690</td>
<td>88.50%</td>
<td>1</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>3</td>
<td>62,794</td>
<td>0.00%</td>
<td>3</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>8</td>
<td>361,086</td>
<td>9.87%</td>
<td>8</td>
</tr>
<tr>
<td>Mangaung</td>
<td>7</td>
<td>1,041,632</td>
<td>87.79%</td>
<td>3</td>
</tr>
<tr>
<td>Mantsopa LM</td>
<td>5</td>
<td>51,691</td>
<td>69.78%</td>
<td>5</td>
</tr>
<tr>
<td>Masilonyana LM</td>
<td>4</td>
<td>91,134</td>
<td>58.89%</td>
<td>4</td>
</tr>
<tr>
<td>Matjhabeng LM</td>
<td>6</td>
<td>365,578</td>
<td>58.94%</td>
<td>6</td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td>3</td>
<td>149,287</td>
<td>92.57%</td>
<td>1</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>3</td>
<td>38,000</td>
<td>66.66%</td>
<td>3</td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td>3</td>
<td>138,354</td>
<td>77.46%</td>
<td>3</td>
</tr>
<tr>
<td>Nala LM*</td>
<td>1</td>
<td>104,594</td>
<td>96.87%</td>
<td>1</td>
</tr>
<tr>
<td>Ngwathe LM</td>
<td>5</td>
<td>112,362</td>
<td>19.77%</td>
<td>1</td>
</tr>
<tr>
<td>Nketoana LM</td>
<td>4</td>
<td>76,756</td>
<td>92.57%</td>
<td>1</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>3</td>
<td>29,694</td>
<td>92.14%</td>
<td>1</td>
</tr>
<tr>
<td>Setsoto LM</td>
<td>4</td>
<td>99,895</td>
<td>83.40%</td>
<td>4</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>3</td>
<td>28,986</td>
<td>74.70%</td>
<td>1</td>
</tr>
<tr>
<td>Tswelopele LM</td>
<td>2</td>
<td>47,300</td>
<td>99.00%</td>
<td>2</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>80</strong></td>
<td><strong>3,028,741</strong></td>
<td><strong>71.68%</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

The aim of operational determinand compliance is to determine the efficiency of the water treatment process, by monitoring those parameters which are used to control the treatment process. Although not necessarily a health risk, these parameters provide good information on the integrity of the WTW. The province achieved an average % Actual Operational Determinand Compliance of 43%, the best performance coming from Tswelopele LM only, and the worst performance coming from Kopanong LM. Excellent risk defined compliance was achieved by 15 (20%) systems, good compliance for none of the systems and bad compliance for 60 (80%) systems.
The data further confirms that 15 WSAs in the province have access to credible laboratories for compliance and operational analysis. These in-house or contracted laboratories are accredited with SANAS or have Proficiency Testing Schemes with SABS or have inter-laboratory quality checks in place to ensure that suitable analytical methods are applied and that quality assurance processes are followed to ensure credible water quality results. The province is predominantly meeting the regulatory expectation for the WSIs having access to credible analytical services for compliance and operational monitoring.

**Table 72 - Summary of the Treatment (Operational) Efficiency Index**

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th>Population</th>
<th>Ave. % Actual Operational Determinand Compliance</th>
<th># WTW Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water</td>
<td>7</td>
<td>1,112,095</td>
<td>75%</td>
<td>5</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>2</td>
<td>470,172</td>
<td>93%</td>
<td>1</td>
</tr>
<tr>
<td>Dihlabeng LM</td>
<td>3</td>
<td>122,908</td>
<td>64%</td>
<td>1</td>
</tr>
<tr>
<td>Leopard LM</td>
<td>6</td>
<td>71,000</td>
<td>45%</td>
<td>2</td>
</tr>
<tr>
<td>Letseng LM</td>
<td>5</td>
<td>35,690</td>
<td>6%</td>
<td>5</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>3</td>
<td>62,794</td>
<td>13%</td>
<td>3</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>4</td>
<td>361,086</td>
<td>80%</td>
<td>2</td>
</tr>
<tr>
<td>Mangaung</td>
<td>7</td>
<td>1,041,632</td>
<td>24%</td>
<td>2</td>
</tr>
<tr>
<td>Mantseoa LM</td>
<td>4</td>
<td>51,691</td>
<td>0%</td>
<td>4</td>
</tr>
<tr>
<td>Masingonyana LM</td>
<td>4</td>
<td>91,134</td>
<td>13%</td>
<td>4</td>
</tr>
<tr>
<td>Matjhabeng LM</td>
<td>None</td>
<td>365,578</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td>2</td>
<td>149,287</td>
<td>50%</td>
<td>2</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>3</td>
<td>38,000</td>
<td>22%</td>
<td>3</td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td>3</td>
<td>138,354</td>
<td>0%</td>
<td>3</td>
</tr>
<tr>
<td>Nala LM*</td>
<td>None</td>
<td>104,594</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ngwathe LM</td>
<td>4</td>
<td>112,362</td>
<td>33%</td>
<td>4</td>
</tr>
<tr>
<td>Nketoana LM</td>
<td>4</td>
<td>76,756</td>
<td>78%</td>
<td>4</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>4</td>
<td>29,694</td>
<td>68%</td>
<td>4</td>
</tr>
<tr>
<td>Setso LM</td>
<td>4</td>
<td>99,895</td>
<td>56%</td>
<td>4</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>4</td>
<td>28,986</td>
<td>0%</td>
<td>4</td>
</tr>
<tr>
<td>Tseleopele LM</td>
<td>2</td>
<td>47,300</td>
<td>99%</td>
<td>2</td>
</tr>
<tr>
<td>Totals</td>
<td>75</td>
<td>3,028,741</td>
<td>43%</td>
<td>15</td>
</tr>
</tbody>
</table>

The VROOM cost presents a "Very Rough Order of Measurement" cost to return a WTWs functionality to its original design. More detail can be found in the Blue Drop Watch Report 2023.

**Diagnostic 4: Technical Site Assessments**

**Aim:** The Blue Drop process makes provision for a Technical Site Assessment (TSA) in order to verify the desktop evidence through field-based inspections. This assessment includes a physical inspection of the entire water treatment plant with all its process units, as well as the reservoir and spot checks of a pumpstation and pipelines. The technical assessment is coupled with an asset condition check to determine an approximate cost (VROOM) to restore existing infrastructure to functional status for the treatment facility (only).

**Findings:** The results of the province’s TSAs are summarised in the table below. A deviation of 10% between the BD and TSA score indicate a misalignment between the administrative aspects and the work on the ground. The Regulator regards a WTW with a TSA score of >80% to have an acceptable level of process control and functional equipment, and a TSA score of 90% as an excellent system that complies with most of the Blue Drop TSA standards. A TSA score of <30% indicates that the treatment facility and network fails in most regards, and is evident of dysfunctional infrastructure, failed process control, absence of record keeping and monitoring, and poor water quality.

*Table 73 - %TSA and %BD score, and VROOM cost estimates total and split for civil, mechanical, and electrical*
The capital budgets, O&M budgets, O&M actual expenditure, and current asset values are summarised below.

### Capital, O&M Budget and Actual, and Asset Value

The capital budgets, O&M budgets, O&M actual expenditure, and current asset values are summarised below.

#### Table 74 - Summary of the capital budgets, O&M budgets, O&M actual expenditure, and current asset values

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Capital budget available (R)</th>
<th>O&amp;M budget (R) (2021/22)</th>
<th>O&amp;M expended (R) (2021/22)</th>
<th>% Expended</th>
<th>Total Current Asset Value (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water</td>
<td>NI</td>
<td>R269,165,411</td>
<td>R222,308,651</td>
<td>83%</td>
<td>R611,114,290</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>NI</td>
<td>R78,831</td>
<td>R61,702</td>
<td>78%</td>
<td>R3,004,315,995</td>
</tr>
<tr>
<td>Dihlabeng LM</td>
<td>R17,405,092</td>
<td>R48,937,947</td>
<td>R46,740,423</td>
<td>96%</td>
<td>R533,215,000</td>
</tr>
<tr>
<td>Kopanong LM</td>
<td>R65,000,000</td>
<td>R86,516,134</td>
<td>R63,038,716</td>
<td>73%</td>
<td>R212,964,733</td>
</tr>
<tr>
<td>Letsemeng LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
</tbody>
</table>

A deviation of >10% between the BD and TSA score is noted for 14 of the 21 WTWs assessed, whilst a deviation of >20% between the BD and TSA score is noted for 9 of the 21 WTWs assessed. For the individual WTWs assessed in the province, a total budget of R532.3m is estimated, with the bulk of the work (82%) going towards restoration of mechanical equipment (34%) and civil infrastructure (48%).

### Diagnostic 5: Operation, Maintenance and Refurbishment of Assets

**Aim:** Insufficient financial resources are often cited as a root cause to dysfunctional or non-compliant water treatment works and water networks. Knowledge and monitoring of fiscal spending are therefore a critical part of water services management and municipal governance of public assets. This diagnostic investigates the status of financial information as pertaining to O&M budgets and expenditure, asset figures, and capital funding.

**Findings:** A substantial amount of financial information was presented during the audit process. Unfortunately, the evidence was presented in different formats, levels of detail, or absent for some WSAs. It was observed that WSA teams with financial officials that were present during the audits performed better and had a better understanding of the water services challenges experienced by their technical peers.

Discrepancies observed included amongst others - generic or non-ringfenced budgets, contract lump sums for service providers presented as budgets, outdated or incomplete asset registers, and some cost drivers which were lacking. As data credibility presents a significant challenge, the Regulator grouped data into different certainty levels, as summarised at the end of this Diagnostic.

The result of each financial portfolio is discussed hereunder.

**NOTE:** The Regulator regards the financial and asset information with low confidence. Not all WSAs submitted verifiable information or complete financial data sets for the audit year in question.
<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Capital budget available (R)</th>
<th>O&amp;M budget (R) (2021/22)</th>
<th>O&amp;M expended (R) (2021/22)</th>
<th>% Expended</th>
<th>Total Current Asset Value (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td></td>
<td>NI</td>
</tr>
<tr>
<td>Mangaung</td>
<td>R544,000,000</td>
<td>R115,388,996</td>
<td>R166,002,001</td>
<td>144%</td>
<td>R1,304,529,200</td>
</tr>
<tr>
<td>Mantsopa LM</td>
<td>R150,557,499</td>
<td>R19,955,993</td>
<td>R18,701,592</td>
<td>94%</td>
<td>R176,658,657</td>
</tr>
<tr>
<td>Masilonyana LM</td>
<td>NI</td>
<td>R63,346,637</td>
<td>R29,529,317</td>
<td>47%</td>
<td>R294,895,699</td>
</tr>
<tr>
<td>Matjhabeng LM</td>
<td>R68,000,000</td>
<td>R1,371,408,049</td>
<td>R1,974,278,094</td>
<td>144%</td>
<td>R1,035,973,434</td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td>R19,142,000</td>
<td>NI</td>
<td>NI</td>
<td></td>
<td>R87,850,021</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>R250,100,000</td>
<td>R12,356,671</td>
<td>R24,385,642</td>
<td>101%</td>
<td>R30,041,726</td>
</tr>
<tr>
<td>Moqhaka LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td></td>
<td>NI</td>
</tr>
<tr>
<td>Nala LM*</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td></td>
<td>NI</td>
</tr>
<tr>
<td>Ngwathe LM</td>
<td>R30,987,450</td>
<td>R15,161,744</td>
<td>R15,161,744</td>
<td>49%</td>
<td>R112,496,829</td>
</tr>
<tr>
<td>Nketoana LM</td>
<td>R369,880,178</td>
<td>R323,390,638</td>
<td>R323,390,638</td>
<td>98%</td>
<td>R640,351,705</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>RI12,367,001</td>
<td>NI</td>
<td>NI</td>
<td></td>
<td>R354,278,032</td>
</tr>
<tr>
<td>Setsoto LM</td>
<td>R58,736,154</td>
<td>R18,892,560</td>
<td>R23,839,135</td>
<td>126%</td>
<td>R30,041,726</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>R959,991</td>
<td>R98,519,000</td>
<td>R98,519,000</td>
<td>100%</td>
<td>NI</td>
</tr>
<tr>
<td>Tswelopele LM</td>
<td>R58,736,154</td>
<td>R18,892,560</td>
<td>R23,839,135</td>
<td>126%</td>
<td>R30,041,726</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>R1,303,269,737</td>
<td>R2,484,550,302</td>
<td>R3,006,156,655</td>
<td>121%</td>
<td>R8,398,685,321</td>
</tr>
</tbody>
</table>

The Regulatory Comments following in this Chapter list the capital projects with secured funding for each municipality and/or its bulk water provider. The capital lists are deemed to be a definitive means to address water service inadequacies and ensuring water infrastructure investment. A total capital budget of R1.3b has been reported for the refurbishment and upgrades of water supply system infrastructure for most of the WSAs. The largest capital budgets are observed for Mangaung MM (R544m), Mohokare LM (R250.1m) and Mantsopa LM (R150.6).

For the 2021/22 fiscal year, the total O&M budget reported for the province was R2,485b, of which R3,006b (121%) has been expended. Over-expenditure of 144% by Matjhabeng LM and Mangaung MM respectively and 126% by Tswelopele LM, and under expenditure by Masilonyana LM (47%) and Ngwathe LM (49%) was observed. The provincial figures exclude 9 of the 19 WSAs who had no and partial financial information.

**Figure 55 - Total current asset value reported**

The total current asset value for water infrastructure (networks, pump stations, treatment plants) is reportedly R8.4b (excluding 7 WSAs with no asset value information). The highest asset values are observed for Bloem Water now Vaal Central Water (Sedibeng Water) (R3.0b), followed by Mangaung MM (R1.3b), Matjhabeng LM (R1.04b), Nketoana LM (R640m) and Dhiabeng LM (R533m).

**O&M Cost Benchmarking**

By combining the SALGA and WRC WATCOST models, an estimation of the maintenance cost required per asset type can be done, i.e. civil, buildings, pipelines, mechanical, electrical, and instrumentation.
Table 75 - SALGA-WRC annual maintenance budget guideline and cost estimation

<table>
<thead>
<tr>
<th>Description</th>
<th>% of Current Asset Value</th>
<th>Asset Value Estimate</th>
<th>Modified SALGA Maintenance Guideline</th>
<th>Annual Maintenance Budget Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Asset Value estimate</td>
<td>100%</td>
<td>R8,398,685,321</td>
<td>15.75%</td>
<td>R181,411,603</td>
</tr>
<tr>
<td>Broken down into:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Civil Structures</td>
<td>46%</td>
<td>R3,863,395,248</td>
<td>0.50%</td>
<td>R19,316,976</td>
</tr>
<tr>
<td>2. Buildings</td>
<td>3%</td>
<td>R251,960,560</td>
<td>1.50%</td>
<td>R3,779,408</td>
</tr>
<tr>
<td>3. Pipelines</td>
<td>6%</td>
<td>R503,921,119</td>
<td>0.75%</td>
<td>R3,779,408</td>
</tr>
<tr>
<td>4. Mechanical Equipment</td>
<td>30%</td>
<td>R2,519,605,596</td>
<td>4.00%</td>
<td>R100,784,224</td>
</tr>
<tr>
<td>5. Electrical Equipment</td>
<td>11%</td>
<td>R923,855,385</td>
<td>4.00%</td>
<td>R36,954,215</td>
</tr>
<tr>
<td>6. Instrumentation</td>
<td>4%</td>
<td>R335,947,413</td>
<td>5.00%</td>
<td>R16,797,371</td>
</tr>
<tr>
<td>Totals</td>
<td>100%</td>
<td>R8,398,685,321</td>
<td>15.75%</td>
<td>R181,411,603</td>
</tr>
</tbody>
</table>

The model estimates that R181.4m (2.16%) is required per year to maintain the assets valued at about R8.4b. Notably, this maintenance estimate assumes that all assets are functional. In cases where Blue Drop Certification is not being achieved, it can be assumed that some form of inefficiency or constraint is being experienced, and national benchmarks closer to 7% of the asset value is advocated (R587.9m).

The table below indicates the SALGA maintenance cost estimation in relation to the O&M budget, and O&M actual expended.

Table 76 - O&M cost estimates by the SALGA versus actual budget and expenditure figures

<table>
<thead>
<tr>
<th>Cost Reference</th>
<th>O&amp;M Cost Estimate</th>
<th>Period</th>
<th>% of Asset Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified SALGA</td>
<td>R181,411,603</td>
<td>Annually, estimation</td>
<td>2.16%</td>
</tr>
<tr>
<td>O&amp;M Budget</td>
<td>R2,484,550,302</td>
<td>Actual for 2021/22</td>
<td>29.5%</td>
</tr>
<tr>
<td>O&amp;M Spend</td>
<td>R3,006,156,655</td>
<td>Actual for 2021/22</td>
<td>35.8%</td>
</tr>
</tbody>
</table>

In addition, the table below indicates the Blue Drop audit findings on the water supply operations cost determination and water supply O&M budget status.

Table 77 - BD Audit Water Supply Operations Cost Determination and Water Supply O&M Budget status

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Water Supply Operations Cost Determination</th>
<th>Water Supply O&amp;M Budget status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL), DETERMINED FOR PART OF SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Vaal Central Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bloem Water now</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL), DETERMINED FOR PART OF SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Vaal Central Water (Sedibeng Water)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dihlabeng LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Kopanong LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL), DETERMINED FOR PART OF SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Letsemerg LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Mafube LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Maluti-a-Phofung LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Manganga</td>
<td>DETERMINED FOR PART OF SYSTEM, NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Mantsopa LM</td>
<td>DETERMINED FOR PART OF SYSTEM, NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Masilonyana LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Matjhabeng LM</td>
<td>DETERMINED FOR PART OF SYSTEM, NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Metsimaholo LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL), DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY, SYSTEM SPECIFIC BUDGET (RAND WATER)</td>
</tr>
<tr>
<td>Mohokare LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Mqokha LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Nala LM*</td>
<td>DETERMINED FOR PART OF SYSTEM, NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Ngwathle LM</td>
<td>DETERMINED FOR PART OF SYSTEM, NOT SYSTEM SPECIFIC (GLOBAL), DETERMINED OF THE WHOLE SYSTEM (RAND WATER)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY, SYSTEM SPECIFIC BUDGET (RAND WATER)</td>
</tr>
<tr>
<td>Nketoana LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Phumelela LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>SYSTEM SPECIFIC BUT INCLUDES WATER &amp; SANITATION</td>
</tr>
</tbody>
</table>

FREE STATE

Page 123
<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Water Supply Operations Cost Determination</th>
<th>Water Supply O&amp;M Budget status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setsoto LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Tokologo LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Tswelopele LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
</tbody>
</table>

From the tables above, the cost dynamics can be summarised as follows:

- The SALGA estimations for maintenance budgets is about 7.3% (Modified SALGA divided by O&M Budget) of the actual reported budgets for the 2021/22 fiscal year.
- The actual O&M budget (29.5%) appears to be more than adequate when compared with the SALGA guideline (2.16%) or with the government benchmark (7%).
- These figures may be impacted by some of the smaller WSAs who did not provide budget and expenditure figures, and by some inaccurate asset values and where no asset values were provided for.
- Lastly, the municipalities presents budget and expenditure data at different levels (table above) i.e. financial figures are not always ringfenced per water supply system – thus rendering provincial summaries to be indicative.
6.1 Bloem Water

Introduction

Bloem Water is a Water Board that extends operations to the Free State and Northern Cape areas after incorporation of former Sedibeng Water in August 2022.

It’s customer base includes the following Municipalities: Mangaung Metropolitan, Mantsopa, Kopanong, Matjhabeng, Nala,Nama Khoi, Khai-Ma, Dikatlong, Tsantsabane, Joe Morolong, Phokwane, Gamagara and Ga-Segonyana Local Municipalities, a total of twenty-six (26) Mines in the Free State and Northern Cape Provinces, Six (6) solar generation plants in the Northern Cape, Kalahari East Water Users Association in the Northern Cape and other stakeholders that cannot be serviced by Municipalities within the area of service for the Entity.

Bloem Water executes its operation through the twelve (12) schemes on behalf of DWS with the following treatment works located in Free State and Northern Cape.

<table>
<thead>
<tr>
<th>Province</th>
<th>Region</th>
<th>WTW</th>
<th>Municipalities served as per BD audits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free State</td>
<td>Former Sedibeng</td>
<td>Balkfontein – Bothaville and Virginia</td>
<td>Matjhabeng LM and Nala LM</td>
</tr>
<tr>
<td></td>
<td>Caledon River Region</td>
<td>Welbedacht</td>
<td>Mangaung MM, Kopanong LM, Mantsopa LM (Excelsior system)</td>
</tr>
<tr>
<td></td>
<td>Orange River Region</td>
<td>Bethului; Gariep, Philippolis and Jagersfontein</td>
<td>Kopanong LM</td>
</tr>
<tr>
<td></td>
<td>Modder River Region</td>
<td>Rustfontein and Groothoek</td>
<td>Mangaung MM</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>Former Sedibeng</td>
<td>Vaal Gamagara</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Namakwa</td>
<td>Henkries and Pella drift</td>
<td>Nama Khoi LM</td>
</tr>
</tbody>
</table>

Bloem Water is responsible for bulk water provisions to the municipalities. In some cases, the reservoirs are also part of Bloem Water network whereas in other cases the reservoirs may be operated by the municipality.

Given the large area of supply and dependency of thousands of water users on the continuous supply of high-quality water, the performance of this bulk water utility is critical to the well-being of the people serviced through the bulk supply and municipal water networks.

Regulator’s Comment

Formerly Sedibeng Water

The WSP Bloem Water (former Sedibeng Water) was well prepared for the Blue Drop Audit and acknowledged for an excellent maintenance team and routine maintenance schedules. However, WSP is encouraged to update their current water safety plan to align with Blue Drop requirements, in particular site-specific risk assessment, water quality assessment and development of risk-based monitoring program.

With regards to the Balkfontein and Virginia WTW which were part of the former Sedibeng Water, the WSP is commended for the excellent operations of these two plants. Both treatment plants have functional treatment processes, competent staff, comprehensive operational monitoring, and excellent O&M capabilities which include staff, full mechanical, electrical workshop, and stock room with extensive range of spares with computerised stock control system. However, WSP is encouraged to update their current water safety plan to align with Blue Drop requirements, in particular site-specific risk assessment, water quality assessment and development of risk-based monitoring program.

There are a number of outstanding maintenance issues which have not been addressed since merging with Bloem Water due to insufficient budget. This is partially due to lack of payment by Matjhabeng LM and has negatively impacted on operations, monitoring, and reliability of the water supply. Bloem water must prioritize repairs to critical equipment and ensure there is sufficient budget to maintain the excellent condition and operations of these facilities to ensure they are able to produce reliable supply of safe water at all times. If the problem of funding is not addressed, these two excellent WTW will slide into non-functional state leading to poor water quality and insufficient supply. The Balkfontein WTW is a large bulk regional plant (capacity of 360ML/d): failure of this treatment plant will negatively impact on the health of the large population in the Free State region. Bloem Water should take this opportunity to engage, share and learn from their “Sedibeng Water” colleagues to ensure all plants have excellent systems and procedures that will ensure delivery of reliable supply of safe water to all consumers.
Caledon River

The WSP Bloem Water was well prepared for the Blue Drop Audit and acknowledged for an excellent maintenance team and routine maintenance schedules. However, WSP is encouraged to update their current water safety plan to align with Blue Drop requirements, in particular site-specific risk assessment, water quality assessment and development of risk-based monitoring programs.

Orange River

The Bloem Water team from the Orange River region is commended for their performance during the Blue Drop audits. The team was well represented at both audit and site visit with excellent POE for all criteria which was uploaded on IRIS. The WSP is encouraged to improve their Water Safety Plan and develop risk-based monitoring programs for all treatment plants. The WSP is further encouraged to include Kopanong LM in this exercise as this will support the WSA to implement risk management processes.

Blue Drop Findings

The Regulator summarises the collective recommendations as following:

- Process control staff and operational monitoring in place for all plants.
- Water Safety plan in place for WSP Bloem Water, however compliance monitoring is not risk-based for bulk system.
- Operational budgets and expenditure systems are in place but can be refined to reflect on water services (cost determination per supply system).

Technical Site Inspection

Former Sedibeng Water Plants

The Balkfontein WTW and the Virginia WTW were inspected to verify the Blue Drop audit findings and received a technical site score of 82% (Balkfontein) and 88% (Virginia) respectively. The general impression of both WTW is excellent as both treatment plants have functional treatment processes, competent staff, comprehensive operational monitoring, and excellent O&M capabilities. The potable water produced by both treatment plant complies with microbiological limits.

Due to lack of payment by Matjhabeng LM, supply is restricted to the municipality. The lack of budget has led to a number of outstanding maintenance issues which have not been addressed:

- Repairs to filters and backup pumps at Balkfontein WTW
- back up raw water pumps and repairs to filters at Virginia WTW
- reduced frequency of E. Coli testing due to lack of reagents. This is a high risk as the plant supplies water to a large population including Matjhabeng LM who is currently not conducting compliance monitoring due to budget constraints.

Caledon River

The Welbedacht water treatment plant is in need to maintenance to ensure delivery of safe drinking water.

There is an excellent mechanical workshop fully equipped for manufacture of valves, pipelines, gasket, etc, electrical workshop and fully stocked spares room. However, most unit processes need repairs/refurbishment i.e., clariflocculator is in process of refurbishment, 1 pulsator not working, 2 filters are not working, chemical dosing facility in a very poor state, reservoir lid is rusted, etc. At many processes, standby equipment is removed for repairs. Management must ensure the extensive maintenance resources at the plant are used effectively to ensure all process units are operational at all times with sufficient backup of critical equipment.

Bloem Water is commended for full time SHEQ officer and commitment to OHS. However, several OHS risks were observed on site and there is a lack of safety signs around pulsators and sedimentation tanks.

Acknowledgement is given for the installation of conduit hydropower plant at Brandkop to generate around 800MWH/year which is used to power office and UPS system for telemetry. This excellent initiative should be extended to other reservoirs to generate renewable energy.

DWS is responsible for maintenance of the dam wall. The issue of dam siltation must be addressed as the current dam capacity is estimated at 5% of the total capacity and high silt load has damaged horizontal screens, inlet pumps and leads to blockages of inlet pipeline.
The Bethulie water treatment plant is in excellent condition with all unit processes operating effectively, onsite maintenance teams, competent staff, and dedicated management team. There is excellent housekeeping, operational monitoring, routine maintenance of all equipment and routine inspections of infrastructure.

Installation of safety signs at chlorine room and chemical dosing is excellent but missing at other unit processes.

The plant is however only operating at 18% of design due to restricted flow to the municipality due to lack of payment. This results in water shortages in the municipality with routine water shedding taking place.
### Municipal Blue Drop Score

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>76.62%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>61.59%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>68.59%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>30.76%</td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Bethlehem Water Supply System</th>
<th>Clarens Water Supply System</th>
<th>Fouriesburg Water Supply System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>77.12%</td>
<td>73.98%</td>
<td>73.50%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>66.80%</td>
<td>61.05%</td>
<td>40.18%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>71.74%</td>
<td>60.51%</td>
<td>61.25%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>31.49%</td>
<td>24.40%</td>
<td>27.88%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>40 000</td>
<td>1 001</td>
<td>5 184</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>40 000</td>
<td>1 008</td>
<td>5 180</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>27 325</td>
<td>901</td>
<td>3 641</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>68.31%</td>
<td>89.38%</td>
<td>70.29%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>31.72%</td>
<td>23.28%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>67.80%</td>
<td>47.10%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Clarens WTW – 68%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023 %</th>
<th>2014 %</th>
<th>2012 %</th>
<th>2011 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>57.92%</td>
<td>67.29%</td>
<td>68.70%</td>
<td>43.81%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Bethulie</th>
<th>Fauresmith</th>
<th>Gariep</th>
<th>Jagersfontein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Bloem Water</td>
<td>Bloem Water</td>
<td>Bloem Water</td>
<td>Bloem Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023 %</td>
<td>54.88%</td>
<td>56.75%</td>
<td>62.36%</td>
<td>50.08%</td>
</tr>
<tr>
<td>Blue Drop Score 2014 %</td>
<td>69.31%</td>
<td>61.87%</td>
<td>68.67%</td>
<td>66.08%</td>
</tr>
<tr>
<td>Blue Drop Score 2012 %</td>
<td>72.45%</td>
<td>43.15%</td>
<td>69.32%</td>
<td>47.30%</td>
</tr>
<tr>
<td>Blue Drop Score 2011 %</td>
<td>48.89%</td>
<td>NA</td>
<td>46.17%</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity kL/d</td>
<td>12 000</td>
<td>2 750</td>
<td>2 800</td>
<td>2 120</td>
</tr>
<tr>
<td>System Available Capacity kL/d</td>
<td>12 000</td>
<td>2 750</td>
<td>2 800</td>
<td>2 120</td>
</tr>
<tr>
<td>System Input Value kL/d</td>
<td>1 183</td>
<td>570</td>
<td>789</td>
<td>564</td>
</tr>
<tr>
<td>Capacity Utilisation %</td>
<td>17.88%</td>
<td>62.78%</td>
<td>28.18%</td>
<td>65.20%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Orange</td>
<td>Boreholes</td>
<td>Gariep</td>
<td>Kalkfontein</td>
</tr>
<tr>
<td>BDRR 2023 %</td>
<td>40.46%</td>
<td>32.16%</td>
<td>17.90%</td>
<td>48.08%</td>
</tr>
<tr>
<td>BDRR 2022 %</td>
<td>76.00%</td>
<td>91.60%</td>
<td>78.70%</td>
<td>95.40%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Bethulie WTW - 95%
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% 32.88%</td>
<td>% 62.56%</td>
<td>% 49.98%</td>
<td>% 54.69%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Jacobsdal WTW</th>
<th>Koffiefontein</th>
<th>Luckhoff</th>
<th>Oppermangronde</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 33.80%</td>
<td>% 32.25%</td>
<td>% 32.55%</td>
<td>% 32.55%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 57.76%</td>
<td>% 65.82%</td>
<td>% 42.81%</td>
<td>% 60.53%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 47.24%</td>
<td>% 52.44%</td>
<td>% 47.24%</td>
<td>% 47.24%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% 70.51%</td>
<td>% 50.65%</td>
<td>% 51.00%</td>
<td>% 53.30%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d 4 200</td>
<td>4 500</td>
<td>1 352</td>
<td>720</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d 4 200</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d 1 760</td>
<td>4 500</td>
<td>1 352</td>
<td>720</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>% 41.90%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Kalkfontein Scheme (Riet River)</td>
<td>Kalkfontein scheme (Riet River); also from Orange-Riet during droughts</td>
<td>Oranje-Riet WUA (Vanderkloof Dam)</td>
<td>Oranje-Riet WUA (Vanderkloof Dam)</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>% 44.21%</td>
<td>49.10%</td>
<td>41.25%</td>
<td>56.56%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>% 46.30%</td>
<td>60.90%</td>
<td>46.70%</td>
<td>57.90%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Jacobsdal WTW - 81%

- **Bulk/WSP**
  - Blue Drop Score 2023: % 34.20%
  - Blue Drop Score 2014: % 63.50%
  - Blue Drop Score 2012: % 44.93%
  - Blue Drop Score 2011: % 50.00%
  - System Design Capacity: kl/d 1 285
  - System Available Capacity: kl/d 2 938
  - System Input Value: kl/d 1 450
  - Capacity Utilisation: % NI
  - Resource Abstracted From: Thirteen boreholes
  - BDRR 2023: % 52.98%
  - BDRR 2022: % 31.60%
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>4.25%</td>
</tr>
<tr>
<td>2014</td>
<td>28.75%</td>
</tr>
<tr>
<td>2012</td>
<td>18.16%</td>
</tr>
<tr>
<td>2011</td>
<td>15.25%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Frankfort</th>
<th>Tweeling</th>
<th>Villiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>5.00%</td>
<td>2.70%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>31.84%</td>
<td>21.22%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>18.35%</td>
<td>17.45%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>15.25%</td>
<td>15.25%</td>
</tr>
</tbody>
</table>

| System Design Capacity | kL/d | 14 400 | 2 000 | 5 000 |
| System Available Capacity | kL/d | 7 200 | 2 000 | 4 150 |
| System Input Value | kL/d | 14 400 | 2 000 | 5 000 |
| Capacity Utilisation | % | NI | NI | NI |
| Resource Abstracted From |           | Wilger River | Liebensburgvlei River | Vaal River |
| BDPR 2023 | % | 98.10% | 100.00% | 100.00% |
| BDPR 2022 | % | 95.10% | 94.60% | 95.10% |

### Technical Site Assessment: Frankfort WTW - 44%

The Regulator notes the dire state of management and drinking water quality in the Frankfort, Tweeling and Villiers water supply systems. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score 2023</th>
<th>Score 2014</th>
<th>Score 2012</th>
<th>Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop</td>
<td>17.68%</td>
<td>97.66%</td>
<td>86.00%</td>
<td>88.94%</td>
</tr>
</tbody>
</table>

### Key Performance Area

#### Bluegumbosch
Supply system (Dr Limpho WTW and Fika Patso WTW)

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>19.35%</td>
<td>19.35%</td>
<td>17.60%</td>
<td>17.85%</td>
</tr>
</tbody>
</table>

#### Kestell Supply system (Dr Limpho WTW and Fika Patso WTW)

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
</tr>
</tbody>
</table>

#### HaRankopane Supply System (Fika Patso WTW and Makwane WTW)

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
</tr>
</tbody>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
</tr>
</tbody>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>152.39%</td>
<td>152.39%</td>
<td>108.40%</td>
<td>108.40%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
</tr>
</tbody>
</table>

### BDRR 2023

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>98.37%</td>
<td>98.37%</td>
<td>89.84%</td>
<td>89.84%</td>
</tr>
</tbody>
</table>

### BDRR 2022

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
</tr>
</tbody>
</table>

### Key Performance Area

#### Greater QWAQWA Supply System (Fika - Patso WTW)

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17.60%</td>
<td>14.20%</td>
<td>17.75%</td>
<td>19.35%</td>
</tr>
</tbody>
</table>

### Makwane water supply system

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>97.65%</td>
<td>97.90%</td>
<td>96.32%</td>
<td>Ni</td>
</tr>
</tbody>
</table>

### Harrismith water Supply System (Wilge WTW)

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>82.28%</td>
<td>97.20%</td>
<td>95.74%</td>
<td>Ni</td>
</tr>
</tbody>
</table>

### Tshiame Water Supply System (Dr Limplo Letsela WTW)

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>86.54%</td>
<td>95.74%</td>
<td>95.74%</td>
<td>Ni</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>36 000</td>
<td>10 000</td>
<td>11 200</td>
<td>10 000</td>
</tr>
</tbody>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>36 200</td>
<td>10 000</td>
<td>11 200</td>
<td>10 000</td>
</tr>
</tbody>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>38 406</td>
<td>6 656</td>
<td>15 310</td>
<td>6 121</td>
</tr>
</tbody>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>108.40%</td>
<td>66.56%</td>
<td>142.23%</td>
<td>152.39%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
</tr>
</tbody>
</table>

### BDRR 2023

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>90.59%</td>
<td>87.08%</td>
<td>91.47%</td>
<td>97.93%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Greater QWAQWA Supply System (Fika - Patso WTW)</td>
<td>Makwane water supply system</td>
<td>Harrismith water Supply System (Wilge WTW)</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>98.50%</td>
<td>NI</td>
<td>89.30%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Wilge WTW - 67%**

The Regulator notes the dire state of management and drinking water quality in the Bluegumbosch, Kestell, HaRankopane, Mphatlalatsane, Greater Qwaqwa, Makwane, Harrismith and Tsiame water supply systems. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a **detailed corrective action plan within 20 days** of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
## 6.7 Mangaung Local Municipality

### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>62.82%</td>
</tr>
<tr>
<td>2014</td>
<td>77.47%</td>
</tr>
<tr>
<td>2012</td>
<td>84.45%</td>
</tr>
<tr>
<td>2011</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Bloemfontein</th>
<th>Botshabelo</th>
<th>Dewetsdorp</th>
<th>Soutpan Krugersdrift Dam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Bloem Water</td>
<td>Bloem Water</td>
<td>Bloem Water</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 66.98%</td>
<td>54.35%</td>
<td>67.45%</td>
<td>23.40%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 778.00%</td>
<td>77.46%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% na</td>
<td>71.06%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% na</td>
<td>NA</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d 382 500</td>
<td>100 500</td>
<td>145 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d 382 500</td>
<td>100 500</td>
<td>145 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d 143 609</td>
<td>53 969</td>
<td>2 451</td>
<td>2 160</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>% 69.86%</td>
<td>53.46%</td>
<td>72.43%</td>
<td>216.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Welbedacht Dam, Orange River</td>
<td>Caledon River, Boreholes</td>
<td>Welbedacht Dam, Orange river</td>
<td>Modder dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>% 33.54%</td>
<td>54.40%</td>
<td>30.79%</td>
<td>86.86%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>% 69.60%</td>
<td>93.80%</td>
<td>69.40%</td>
<td>97.20%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Thaba Nchu</th>
<th>Vanstadensrus</th>
<th>Wepener</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Bloem Water</td>
<td>-</td>
<td>Bloem Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 52.71%</td>
<td>26.40%</td>
<td>68.15%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 76.73%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 62.69%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d 118 500</td>
<td>300</td>
<td>145 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d 118 500</td>
<td>0</td>
<td>145 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d 602 943</td>
<td>481</td>
<td>2 367</td>
</tr>
<tr>
<td>Design Capacity Utilisation</td>
<td>% 0.00%</td>
<td>0.00%</td>
<td>72.43%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Groothoek Dam, Caledon River, Boreholes</td>
<td>Boreholes</td>
<td>Welbedacht Dam, Orange River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>% 36.05%</td>
<td>69.51%</td>
<td>29.71%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>% 55.80%</td>
<td>74.40%</td>
<td>80.20%</td>
</tr>
</tbody>
</table>
The Regulator notes the dire state of management and drinking water quality in the Soutpan and Vanstadensrus water supply systems. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a **detailed corrective action plan within 20 days** of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>42.28%</td>
</tr>
<tr>
<td>2014</td>
<td>52.78%</td>
</tr>
<tr>
<td>2012</td>
<td>47.09%</td>
</tr>
<tr>
<td>2011</td>
<td>38.48%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Excelsior</th>
<th>Hobhouse</th>
<th>Ladybrand</th>
<th>Thaba Phatchoa</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Bloem Water</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>50.88%</td>
<td>30.05%</td>
<td>41.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>58.48%</td>
<td>40.99%</td>
<td>54.03%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>79.36%</td>
<td>39.78%</td>
<td>40.98%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>48.25%</td>
<td>30.10%</td>
<td>48.08%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>100 720</td>
<td>1 640</td>
<td>10 800</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>100 720</td>
<td>1 640</td>
<td>10 330</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>910</td>
<td>129</td>
<td>9 291</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>77.25%</td>
<td>7.87%</td>
<td>88.87%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Caledon River</td>
<td>Caledon River</td>
<td>Caledon River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>51.06%</td>
<td>55.38%</td>
<td>47.90%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>53.50%</td>
<td>70.90%</td>
<td>43.10%</td>
</tr>
</tbody>
</table>

### Key Performance Area - Tweespruit

<table>
<thead>
<tr>
<th>Weight</th>
<th>Tweespruit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Genoa WTW - 36%**

The Regulator notes the dire state of management and drinking water quality in the Hobhouse, Thaba Phatchoa and Tweespruit water supply systems. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
6.9 Masilonyana Local Municipality

### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>2023</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>25.52%</td>
</tr>
<tr>
<td>Blue Drop Score</td>
<td>2014</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>29.64%</td>
</tr>
<tr>
<td>Blue Drop Score</td>
<td>2012</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11.40%</td>
</tr>
<tr>
<td>Blue Drop Score</td>
<td>2011</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.49%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Brandfort</th>
<th>Theunissen</th>
<th>Verkeerdevlei</th>
<th>Winburg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score</td>
<td>2023</td>
<td>%</td>
<td>23.90%</td>
<td>25.30%</td>
</tr>
<tr>
<td>Blue Drop Score</td>
<td>2014</td>
<td>%</td>
<td>27.68%</td>
<td>31.59%</td>
</tr>
<tr>
<td>Blue Drop Score</td>
<td>2012</td>
<td>%</td>
<td>11.31%</td>
<td>10.79%</td>
</tr>
<tr>
<td>Blue Drop Score</td>
<td>2011</td>
<td>%</td>
<td>3.88%</td>
<td>7.08%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 400</td>
<td>6 800</td>
<td>7 348</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 400</td>
<td>6 800</td>
<td>7 348</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 500</td>
<td>3 200</td>
<td>1 750</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>104.17%</td>
<td>47.06%</td>
<td>23.82%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Erfenis Dam from Sand Vet channel</td>
<td>Erfenis Dam</td>
<td>4 boreholes</td>
<td>Wolwas Dam 1 and 2, Rietfontein Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>93.46%</td>
<td>82.61%</td>
<td>71.21%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>42.80%</td>
<td>86.90%</td>
<td>24.90%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Winburg WTW - 30%**

The Regulator noted the dire state of management and drinking water quality in the Brandfort, Theunissen, Verkeerdevlei and Winburg water supply systems. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Matjhabeng Local Municipality

#### Municipal Blue Drop Score

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>55.63%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>93.60%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>94.72%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>79.91%</td>
<td></td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Allanridge</th>
<th>Henneman</th>
<th>Odendaalsrus</th>
<th>Ventersburg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
</tr>
<tr>
<td></td>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>54.89%</td>
<td>54.17%</td>
</tr>
<tr>
<td></td>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>92.80%</td>
<td>95.10%</td>
</tr>
<tr>
<td></td>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>95.20%</td>
<td>95.24%</td>
</tr>
<tr>
<td></td>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>78.70%</td>
<td>80.78%</td>
</tr>
<tr>
<td></td>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>360 000</td>
<td>360 000</td>
</tr>
<tr>
<td></td>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>360 000</td>
<td>360 000</td>
</tr>
<tr>
<td></td>
<td>System Input Value</td>
<td>kL/d</td>
<td>3 727</td>
<td>6 100</td>
</tr>
<tr>
<td></td>
<td>Capacity Utilisation</td>
<td>%</td>
<td>58.33%</td>
<td>58.33%</td>
</tr>
<tr>
<td></td>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal River</td>
<td>Vaal</td>
</tr>
<tr>
<td></td>
<td>BDRR 2023</td>
<td>%</td>
<td>57.82%</td>
<td>57.82%</td>
</tr>
<tr>
<td></td>
<td>BDRR 2022</td>
<td>%</td>
<td>29.70%</td>
<td>30.50%</td>
</tr>
</tbody>
</table>

#### Technical Site Assessments

- **Balkfontein WTW - 82%**
- **Virginia WTW - 88%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>84.21%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>84.52%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>89.49%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>48.86%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Denysville</th>
<th>Oranjeville</th>
<th>Sasolburg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>-</td>
<td>-</td>
<td>Rand Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>53.60%</td>
<td>57.90%</td>
<td>89.38%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>72.57%</td>
<td>68.88%</td>
<td>89.11%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>82.06%</td>
<td>79.81%</td>
<td>94.18%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>57.68%</td>
<td>58.10%</td>
<td>43.06%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>9 900</td>
<td>2 590</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>9 900</td>
<td>2 590</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>5 500</td>
<td>1 800</td>
<td>41 771</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>55.56%</td>
<td>69.50%</td>
<td>78.49%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal Dam</td>
<td>Vaal Dam</td>
<td>Vaal Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>43.40%</td>
<td>43.40%</td>
<td>30.18%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>40.20%</td>
<td>39.00%</td>
<td>26.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Denysville WTW - 73%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>Blue Drop Score 2014</th>
<th>%</th>
<th>Blue Drop Score 2012</th>
<th>%</th>
<th>Blue Drop Score 2011</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td></td>
<td>27.58%</td>
<td></td>
<td>65.30%</td>
<td></td>
<td>77.04%</td>
<td></td>
<td>80.10%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Rouxville Conventional Water Treatment Plant</th>
<th>Smithfield Conventional Water Treatment Plant</th>
<th>Zastron Conventional Water Treatment Plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>27.18%</td>
<td>25.05%</td>
<td>30.28%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>67.17%</td>
<td>62.65%</td>
<td>65.62%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>65.63%</td>
<td>82.97%</td>
<td>79.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>80.38%</td>
<td>79.47%</td>
<td>80.28%</td>
</tr>
</tbody>
</table>

### System Design Capacity
- **kL/d**: 2880
- **kL/d**: 3220
- **kL/d**: 3024

### System Available Capacity
- **kL/d**: 2880
- **kL/d**: 3220
- **kL/d**: 3024

### System Input Value
- **kL/d**: 1769
- **kL/d**: 2200
- **kL/d**: 2327

### Capacity Utilisation
- **%**: 61.42%
- **%**: 68.32%
- **%**: 76.98%

### Resource Abstracted From
- **Kalkoenskraal Dam**
- **Caledon River**
- **Montague River**

### BDRR 2023
- **%**: 52.14%
- **%**: 47.80%
- **%**: 36.95%

### BDRR 2022
- **%**: 39.00%
- **%**: 37.80%
- **%**: 52.50%

---

**Technical Site Assessment: Zastron WTW - 40%**

The Regulator notes the dire state of management and drinking water quality in the Rouxville, Smithfield and Zastron water supply systems. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
6.13 Moqhaka Local Municipality

**Municipal Blue Drop Score**

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>36.12%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>60.16%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>54.93%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>21.76%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key Performance Area**

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Kroonstad</th>
<th>Steynsrus</th>
<th>Viljoenskroon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>35.93%</td>
<td>29.58%</td>
<td>39.68%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>59.81%</td>
<td>49.22%</td>
<td>65.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>57.55%</td>
<td>37.86%</td>
<td>38.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>20.91%</td>
<td>16.35%</td>
<td>31.51%</td>
</tr>
</tbody>
</table>

**System Design Capacity**

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kroonstad</td>
<td>60 000</td>
<td>2 900</td>
<td>6 900</td>
<td></td>
</tr>
<tr>
<td>Steynsrus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viljoenskroon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**System Available Capacity**

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kroonstad</td>
<td>38 000</td>
<td>2 900</td>
<td>6 900</td>
<td></td>
</tr>
<tr>
<td>Steynsrus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viljoenskroon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**System Input Value**

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kroonstad</td>
<td>29 104</td>
<td>2 900</td>
<td>6 900</td>
<td></td>
</tr>
<tr>
<td>Steynsrus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viljoenskroon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Capacity Utilisation**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kroonstad</td>
<td>76.59%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steynsrus</td>
<td></td>
<td>100.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viljoenskroon</td>
<td></td>
<td></td>
<td></td>
<td>NI</td>
</tr>
</tbody>
</table>

**Resource Abstracted From**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kroonstad</td>
<td>Vals River</td>
<td>Vals River</td>
<td>Renoster and Vaal Rivers</td>
<td></td>
</tr>
<tr>
<td>Steynsrus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viljoenskroon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BDRR 2023**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kroonstad</td>
<td>33.04%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steynsrus</td>
<td></td>
<td>38.24%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viljoenskroon</td>
<td></td>
<td></td>
<td></td>
<td>46.61%</td>
</tr>
</tbody>
</table>

**BDRR 2022**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kroonstad</td>
<td>65.90%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steynsrus</td>
<td></td>
<td>48.30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viljoenskroon</td>
<td></td>
<td></td>
<td></td>
<td>48.30%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Viljoenskroon WTW - 62%**

The Regulator notes the dire state of management and drinking water quality in the Steynsrus water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>52.30%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>81.29%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>67.23%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>58.90%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Balkfontein (Sedibeng Water)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP Balkfontein (Sedibeng Water)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>52.30%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>81.36%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>67.23%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>58.90%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>360 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>360 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>14 631</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>58.33%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>43.57%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>45.60%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Balkfontein WTW - 82%**
6.15 Ngwathe Local Municipality

### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td></td>
<td>36.16%</td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td>55.43%</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td>20.59%</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td>45.37%</td>
</tr>
</tbody>
</table>

### Key Performance Area Weight

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Parys</th>
<th>Vredefort</th>
<th>Koppies</th>
<th>Edenville (Boreholes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>22.58%</td>
<td>17.20%</td>
<td>15.08%</td>
<td>14.03%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>53.14%</td>
<td>35.71%</td>
<td>53.75%</td>
<td>45.84%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>14.33%</td>
<td>11.20%</td>
<td>11.00%</td>
<td>20.50%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>39.55%</td>
<td>37.86%</td>
<td>24.11%</td>
<td>23.89%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>25 000</td>
<td>3 700</td>
<td>3 800</td>
<td>384</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>13 125</td>
<td>3 600</td>
<td>4 200</td>
<td>400</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>15 000</td>
<td>3 600</td>
<td>4 200</td>
<td>188</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>114.29%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>47.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal River</td>
<td>Vaal River</td>
<td>Renoster River</td>
<td>Groundwater</td>
</tr>
<tr>
<td>BDWR 2023</td>
<td>%</td>
<td>82.69%</td>
<td>86.06%</td>
<td>93.56%</td>
<td>91.90%</td>
</tr>
<tr>
<td>BDWR 2022</td>
<td>%</td>
<td>81.40%</td>
<td>84.70%</td>
<td>88.10%</td>
<td>92.00%</td>
</tr>
</tbody>
</table>

### Key Performance Area Weight

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Heilbron</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Rand Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>81.73%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>77.84%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>54.73%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>68.45%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>8 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>78.49%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal Dam</td>
</tr>
<tr>
<td>BDWR 2023</td>
<td>%</td>
<td>42.31%</td>
</tr>
<tr>
<td>BDWR 2022</td>
<td>%</td>
<td>36.70%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Parys WTW - 36%**

The Regulator notes the dire state of management and drinking water quality in the Parys, Vredefort, Koppies and Edenville (Boreholes) water supply systems. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a **detailed corrective action plan within 20 days** of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
# 6.16 Nketoana Local Municipality

## Municipal Blue Drop Score

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>45.60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>71.40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>18.57%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>6.33%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Reitz</th>
<th>Lindley</th>
<th>Arlington</th>
<th>Petrus Steyn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>43.50%</td>
<td>52.35%</td>
<td>55.70%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>71.49%</td>
<td>68.42%</td>
<td>66.99%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>19.74%</td>
<td>15.43%</td>
<td>13.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>4.77%</td>
<td>10.22%</td>
<td>5.04%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>15 000</td>
<td>4 000</td>
<td>2 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>11 000</td>
<td>3 500</td>
<td>2 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>11 000</td>
<td>2 700</td>
<td>500</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>77.14%</td>
<td>25.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Liebenbergsvlei</td>
<td>Vals</td>
<td>Hamanspruit</td>
<td>Kaloemspruit</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>53.36%</td>
<td>26.72%</td>
<td>19.43%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>48.51%</td>
<td>37.34%</td>
<td>29.60%</td>
</tr>
</tbody>
</table>

*Technical Site Assessment: Reitz WTW – 38%*
6.17 Phumelela Local Municipality

### Municipal Blue Drop Score

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>41.34%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>61.31%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>17.90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>3.82%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Vrede</th>
<th>Warden</th>
<th>Memel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>47.30%</td>
<td>41.30%</td>
<td>31.05%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>62.55%</td>
<td>60.03%</td>
<td>60.75%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>19.58%</td>
<td>11.83%</td>
<td>17.83%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>1.00%</td>
<td>1.00%</td>
<td>9.46%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>3 500</td>
<td>7 500</td>
<td>2 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>3 500</td>
<td>7 500</td>
<td>2 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>3 500</td>
<td>7 500</td>
<td>2 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>0.00%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Venterspruit</td>
<td>Cornelis Dam</td>
<td>Klip River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>37.77%</td>
<td>63.00%</td>
<td>59.42%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>96.30%</td>
<td>97.00%</td>
<td>95.50%</td>
</tr>
</tbody>
</table>

*Technical Site Assessment: Vrede WTW - 55%*
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>43.32%</td>
</tr>
<tr>
<td>2014</td>
<td>42.21%</td>
</tr>
<tr>
<td>2012</td>
<td>89.00%</td>
</tr>
<tr>
<td>2011</td>
<td>88.64%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Clocolan (Clocolan TW)</th>
<th>Ficksburg (Ficksburg TW)</th>
<th>Marquard (Marquard TW)</th>
<th>Senekal (Cyferfontein and De Put TW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>26.28%</td>
<td>50.55%</td>
<td>34.18%</td>
<td>22.43%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>31.49%</td>
<td>49.02%</td>
<td>39.26%</td>
<td>31.49%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>89.47%</td>
<td>90.39%</td>
<td>87.15%</td>
<td>87.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>94.11%</td>
<td>95.20%</td>
<td>91.89%</td>
<td>73.80%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 950</td>
<td>32 000</td>
<td>7 300</td>
<td>9 900</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>5 950</td>
<td>32 000</td>
<td>7 300</td>
<td>6 600</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>1 982</td>
<td>18 083</td>
<td>2 939</td>
<td>3 356</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>33.43%</td>
<td>56.51%</td>
<td>41.95%</td>
<td>50.85%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Caledon River; Lucretia Dam; Moperi Dam (overflow from Lucretia Dam)</td>
<td>Caledon River and Meulspruit</td>
<td>Laaispruit Dam (Laaispruit); Caledon River</td>
<td>Sand River; Sandspruit</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>58.86%</td>
<td>43.85%</td>
<td>40.45%</td>
<td>73.79%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>79.60%</td>
<td>35.80%</td>
<td>95.90%</td>
<td>95.90%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Ficksburg WTW - 81%

The Regulator notes the dire state of management and drinking water quality in the Clocolan and Senekal water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a **detailed corrective action plan within 20 days** of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>24.78%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>56.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>25.46%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>20.35%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Performance Area</th>
<th>Weight</th>
<th>Boshof Water Supply System</th>
<th>Dealesville Water Supply System</th>
<th>Hertzogville Water Supply System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>17.68%</td>
<td>18.33%</td>
<td>31.48%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>57.89%</td>
<td>56.72%</td>
<td>56.08%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>26.19%</td>
<td>24.51%</td>
<td>25.36%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>22.85%</td>
<td>18.85%</td>
<td>18.85%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design Capacity</th>
<th>kl/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Design Capacity</td>
<td>2 972</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>2 972</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Hertzogville Water Purification Plant - 75%

The Regulator notes the dire state of management and drinking water quality in the Boshof and Dealesville water supply systems. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>73.78%</td>
</tr>
<tr>
<td>2014</td>
<td>70.10%</td>
</tr>
<tr>
<td>2012</td>
<td>92.42%</td>
</tr>
<tr>
<td>2011</td>
<td>54.71%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Performance Area</th>
<th>Weight</th>
<th>Bultfontein Supply Zone</th>
<th>Hoopstad Supply Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>73.76%</td>
<td>73.81%</td>
</tr>
<tr>
<td>2014</td>
<td>70.28%</td>
<td>69.82%</td>
</tr>
<tr>
<td>2012</td>
<td>92.97%</td>
<td>91.78%</td>
</tr>
<tr>
<td>2011</td>
<td>62.10%</td>
<td>43.35%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Installation Capacity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Design Capacity</td>
<td>8 800</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>6 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>8 100</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Vet</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>23.66%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>36.80%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Hoopstad WTW - 82%**
JB Marks officials and audit team – satisfied after a Blue Drop audit...

City of Ekurhuleni staff and audit team – still smiling after the audit...!
7. GAUTENG PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE

- 9 WSAs & 29 systems audited
- 2 Water Boards & 1 WSP
- 82% TSA score
- 34.6% BDRR - Low risk
- 3 BD Certifications
- No Critical State systems
Provincial Synopsis

The Gauteng province provides drinking water to the largest population of 13,928,777 persons in South Africa.

An audit attendance record of 100% of the 9 WSAs, 2 Water Boards (Rand Water and Magalies Water) and Johannesburg Water affirms the province’s commitment to the Blue Drop national incentive-based regulatory programme. The main Bulk Water Supplier is Rand Water who supplies potable water to 17 (of 29) water supply systems across 9 municipalities, followed by Magalies Water who supplies potable water to 3 (of 29) water supply systems in the City of Tshwane. In addition to Gauteng, both Rand Water and Magalies Water also supply bulk water to other provinces. Rand Water owns and operates the Vereeniging and Zuikerbosch WTWs and Magalies Water owns and operates Cullinan, Klipdrift and Wallmansthal WTWs (Vaalkop WTW not included under GP as it is located in NW and supplies water to the NW and Limpopo provinces).

The Regulator determined that 3 water supply systems scored more than 95% when measured against the Blue Drop standards and thus qualified for the prestigious Blue Drop Certification. In 2014, 9 water supply systems were awarded Blue Drop status. Using the 2014 audit results as comparative baseline, the province shows a decline in excellence for 2023.

Five (5) of 9 WSAs improved on their 2014 scores, namely City of Ekurhuleni, City of Johannesburg, Merafong LM, Midvaal LM and Mogale City LM. The remaining 4 WSAs regressed to lower Blue Drop scores compared to their 2014 baselines but still retained their good performance status. The City of Johannesburg, City of Ekurhuleni and Midvaal LM are the best performing WSAs in the province, achieving Blue Drop Certifications for 3 water supply systems in total. The Blue Drop scores of these top WSA performers were supported by excellent technical site assessment scores of 97% for the Rand Water Vereeniging WTW linked to all the municipalities, followed by the Magalies Water’s Cullinan WTW with a TSA score of 95%. No water supply system was identified to be in a critical state in the province for both 2014 and 2023.

The province’s overall Blue Drop performance is characterised by particular strengths when measured against the KPAs. Water supply systems operated by Rand Water stand out for its compliance, good practice and risk management practices that are well embedded in the water services business. The predominant KPAs that require attention and that are reflecting scores below 50% are KPA 2 DWQ, Risk Management, KPA 4 Technical Management and KPA 5 Drinking Water Quality Compliance.

The provincial Blue Drop Risk Rating (BDRR) remained in the low risk category but improved from 40.6% in 2022 to 34.6% in 2023. A total of 26 (of 29) WSSs are situated in the low risk category and 3 WSSs in the medium risk category. No WSSs were found in the high and critical risk categories.

The Regulator is optimistic that the 2023 Blue Drop report provides an updated residual basis from where a positive trajectory for water services delivery and improved performance will follow in the next BD audit. Municipalities and their service providers are encouraged to start preparation for the next Blue Drop audit cycle, which is planned to cover the financial year 2023/24 and released in 2025. The 2023 Blue Drop status for WSAs in the province are summarised in the table below.

*Table 78 - 2023 Blue Drop Summary*

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2014 BD Score (%)</th>
<th>2023 BD Score (%)</th>
<th>2023 BD Certified ≥95%</th>
<th>2023 Critical State (&lt;31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Ekurhuleni</td>
<td>96.6%</td>
<td>97.1%↑</td>
<td>Ekurhuleni (Rand Water)</td>
<td>None</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>96.1%</td>
<td>98.1%↑</td>
<td>Greater Johannesburg WSS (Rand Water)</td>
<td>None</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>94.4%</td>
<td>88.2%↓</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>88.2%</td>
<td>85.9%↓</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>87.8%</td>
<td>86.2%↓</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>84.6%</td>
<td>93.2%↑</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>94.7%</td>
<td>94.8%↑</td>
<td>Meyerton (Rand Water)</td>
<td>None</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>88.8%</td>
<td>93.1%↑</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>91.6%</td>
<td>87.2%↓</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Totals</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

↑= improvement, ↓= regress, ➾= no change
The Department of Water and Sanitation acknowledges the excellence in water services management achieved for the Blue Drop Audit year of 2021-22. Three (3) Blue Drop Certificates are awarded in the Gauteng Province to the water supply systems of Ekurhuleni, Greater Johannesburg and Meyerton:

<table>
<thead>
<tr>
<th>Province</th>
<th>2023 Blue Drop Certified Systems</th>
</tr>
</thead>
</table>
| Gauteng  | • City of Ekurhuleni<br>  
|          |   o Ekurhuleni (Rand Water)<br>  
|          | • City of Johannesburg<br>  
|          |   o Greater Johannesburg (Rand Water)<br>  
|          | • Midvaal LM<br>  
|          |   o Meyerton (Rand Water). |

Background to Water Delivery and Distribution Infrastructure

Gauteng province represents the highest volume of potable water treated in South Africa, totalling 4,923,288 kl/d. Nine (9) WSAs, 2 WBs (Rand Water and Magalies Water) and Johannesburg Water are responsible for water services through a water network comprising of:

- 19 WTWs, boreholes and springs with the bulk of the water treated and supplied by the Rand Water Vereeniging and Zuikerbosch WTWs to all 9 municipalities with a total Average Daily Production of 4,681,827 kl/d
- 29 WSSs of which 17 systems receives bulk water from Rand Water and 3 systems from Magalies Water in the City of Tshwane (only)
- 211 pump stations, 5,084 km bulk water supply lines, 38,418 km reticulation pipe lines, and 538 reservoirs/ towers (excluding some of the smaller systems that were unable to provide data).

Table 79 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes

<table>
<thead>
<tr>
<th>Micro Size Plants</th>
<th>Small Size Plants</th>
<th>Medium Size Plants</th>
<th>Large Size Plants</th>
<th>Macro Size Plants</th>
<th>Unknown (NI)*</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;500 kl/day</td>
<td>500 - &lt;2,000 kl/day</td>
<td>2,000 - &lt;10,000 kl/day</td>
<td>10,000 - &lt;25,000 kl/day</td>
<td>&gt;25,000 kl/day</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>No. of WTWs, Boreholes, Springs</td>
<td>1 (5%)</td>
<td>4 (21%)</td>
<td>3 (16%)</td>
<td>4 (21%)</td>
<td>7 (37%)</td>
<td>19</td>
</tr>
<tr>
<td>No. of WSS</td>
<td>1 (3%)</td>
<td>4 (14%)</td>
<td>1 (3%)</td>
<td>4 (14%)</td>
<td>19 (66%)</td>
<td>29</td>
</tr>
<tr>
<td>Total Design Capacity (kl/day)</td>
<td>153</td>
<td>3,753</td>
<td>15,200</td>
<td>51,800</td>
<td>5,753,000</td>
<td>None</td>
</tr>
<tr>
<td>Total Available Capacity (kl/day)</td>
<td>NI</td>
<td>2,587</td>
<td>15,200</td>
<td>70,370</td>
<td>5,743,000</td>
<td>4 boreholes &amp; springs</td>
</tr>
<tr>
<td>Average Daily Treatment Volume (kl/day)</td>
<td>NI</td>
<td>901</td>
<td>7,000</td>
<td>55,284</td>
<td>4,860,103</td>
<td>4 boreholes &amp; springs</td>
</tr>
<tr>
<td>Total SIV (kl/day)</td>
<td>153</td>
<td>901</td>
<td>15,200</td>
<td>55,284</td>
<td>4,203,418</td>
<td>4,274,956</td>
</tr>
<tr>
<td>Design Capacity Utilisation (%)</td>
<td>NI</td>
<td>24%</td>
<td>NI</td>
<td>107%</td>
<td>84%</td>
<td>85%</td>
</tr>
<tr>
<td>Available Capacity Utilisation (%)</td>
<td>NI</td>
<td>35%</td>
<td>NI</td>
<td>79%</td>
<td>85%</td>
<td>84%</td>
</tr>
</tbody>
</table>

* "Unknown" means the number of WTWs with NI (No Information) on design capacity or available capacity or SIV

The audit verified a total installed design capacity of 5,823,906 kl/d and a total available design capacity of 5,831,157 kl/d, with most of this capacity residing in the macro-sized water treatment plants (Note that the total available capacity exceeds the total installed design capacity due to the Pretoria Findley Fountains in the City of Tshwane that has an installed design capacity of 13,800 kl/d and an available design capacity of 32,370 kl/d). Collectively, the 19 WTWs produce 4,923,288 kl/d and distributes 4,274,9576 kl/d across the water networks. By comparing the available treatment capacity with the treated water volume, a spare treatment capacity of 900,618 kl/d is available (18.3%) to meet additional future demands. However, the WUE for the province is high (ave. 316 l/p/d) compared to the international WUE benchmark of 180 l/p/d, indicating a high ratio between effective water use and actual water abstraction. Going forward, the province will have to dedicate significant resources to curb water losses and NRW.
Zero in the graph above reflects NI; Light blue to dark blue represents from left to right design capacity, available capacity, daily production and SIV

Figure 56 - Capacities, Daily Production and SIV Distribution - (a) micro to medium sized WTWs, (b) large WTWs, and (c) macro sized WTWs

In some cases, a Bulk Water Supplier supplies water across provincial borders and it is difficult to report accurately on design capacity and available capacity at provincial level, as the statistical data may become repetitive. Therefore, the reporting on the total system input volumes (SIV) would provide more accurate figures on the supply of treated water to the various water supply systems. The total SIV in the province is 4,274,956 kl/d and the average daily treatment volume is 4,923,288 kl/d. It is expected that the volume of treated water would be close to the volume of water distributed to the consumers. However, the SIV profile indicates that the treated volume is more than the total SIV (87%). Reasons could include data credibility from water balances and flow measurements at the treatment plants, as well as the fact that 3 boreholes/springs/fountains are not measuring their average daily treatment volumes. The largest contributors to the total SIV for 17 WSSs from Rand Water are the Vereeniging and Zuikerbosch WTWs with a total SIV contribution of 4,025,142 kl/d (94% of total SIV). Diagnostic no. 2 to follow herein unpacks these statistics in more detail.

The data shows that the Pretoria Findley upper and lower fountains daily average treatment volume exceeds the available design capacity. No other systems have daily treated volumes that exceed the authorised daily abstraction volumes.

The water distribution infrastructure is summarised in the table below.

<table>
<thead>
<tr>
<th>WSA and WSP Name</th>
<th># WSS with no WSP/WB</th>
<th># WSS with WSP/WB</th>
<th>Water Distribution Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td># Pump Stations (#)</td>
</tr>
<tr>
<td>Rand Water*</td>
<td>-</td>
<td>17***</td>
<td>13</td>
</tr>
<tr>
<td>Magalies Water*</td>
<td>-</td>
<td>3**</td>
<td>4</td>
</tr>
<tr>
<td>City of Ekurhuleni</td>
<td>-</td>
<td>1</td>
<td>52</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>-</td>
<td>1</td>
<td>34</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>7</td>
<td>4</td>
<td>84</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>-</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>-</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>-</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>-</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>** Totals</td>
<td>9</td>
<td>20**</td>
<td>211</td>
</tr>
</tbody>
</table>

* Rand Water and Magalies Water totals for all WSSs in all the provinces - no separation of the figures  
** Rand Water = 17 no. and Magalies Water = 3 no gives total of 20 in GP only

Note: The grey highlight for Rand Water indicates that it is not included in the Total in the table above.
Provincial Blue Drop Analysis

The 100% response from the 9 WSAs audited demonstrates a firm commitment to progressive water services management in the province. Local government reforms resulted in the merging of Randfontein LM and Westonaria LM into Rand West LM. Therefore, 9 WSAs were audited in 2021-22 compared to the 10 WSAs in 2014.

Table 81 - Blue Drop Comparative Analysis from 2012 to 2023

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>2012</th>
<th>2014</th>
<th>2023</th>
<th>Performance trend 2014 and 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incentive-based indicators</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WSAs assessed (#)</td>
<td>10 (100%)</td>
<td>10 (100%)</td>
<td>9 (100%)</td>
<td>→</td>
</tr>
<tr>
<td>Water supply systems assessed (#)</td>
<td>31</td>
<td>29</td>
<td>29</td>
<td>→</td>
</tr>
<tr>
<td>Blue Drop scores ≥50% (#)</td>
<td>30 (97%)</td>
<td>29 (100%)</td>
<td>26 (90%)</td>
<td>↓</td>
</tr>
<tr>
<td>Blue Drop scores &lt;50% (#)</td>
<td>1 (3%)</td>
<td>0 (0%)</td>
<td>3 (10%)</td>
<td>↓</td>
</tr>
<tr>
<td>Blue Drop Certifications (#)</td>
<td>16</td>
<td>9</td>
<td>3</td>
<td>↓</td>
</tr>
<tr>
<td>Lowest Technical Site Assessment Score (%)</td>
<td>NA</td>
<td>63%</td>
<td>53%</td>
<td>↓</td>
</tr>
<tr>
<td>Highest Technical Site Assessment Score (%)</td>
<td>NA</td>
<td>90%</td>
<td>97%</td>
<td>↑</td>
</tr>
</tbody>
</table>

NA = Not Applied  NI = No Information  ↑ = improvement,  ↓ = regress,  → = no change

Figure 57 - Blue drop trend analysis over the period 2012 to 2023, indicating the percentage BD scores above and below 50%

The trend analysis indicates that:

- The no. of systems audited has remained the same from the last BD audit in 2014
- The no. of systems with BD scores ≥50% decreased from 29 (100%) in 2014 to 26 (90%) in 2023
- This trend was reversed with no. of systems with a BD score of ≤50% increasing from none (0%) in 2014 to 3 (10%) in 2023
- Blue Drop Certifications decreased from 9 awards in 2014 to 3 awards in 2023
- The lowest TSA score decreased from 63% in 2014 to 53% in 2023, with the highest TSA score increasing from 90% in 2014 to 97% in 2023
- An overall performance trend analyses indicates a regression in drinking water services from 2014 to 2023
- This negative trajectory reinforces the need for regular audits to ensure timely turnaround and continued improvement
- The negative trend also implies that performance has declined in the absence of regulatory engagement of the BD audits between 2014 to 2023.

Figure 58 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right)

Comparative analysis of the 2014 and 2023 Blue Drop scores indicates that system scores are predominantly in the >80 - <95% (Good Performance) category, with the >50-<80% (Average Performance) being the next largest category. It is concerning that 3 systems in 2023 reside in Poor Performance category. However, what has been maintained is that no systems are in Critical State (<31%). In summary, trend analysis since 2014 to 2023 indicate as follows:
Systems in a ‘critical state’ remains at zero
Systems in a ‘poor state’ increased from 0 to 3 systems
Systems in an ‘average state’ increased from 3 to 8 systems
Systems in the ‘excellent and good state’ decreased from 26 systems (90%) to 18 systems (62%).

Provincial BDRR Analysis

The Blue Drop Risk Rating (BDRR) analysis assesses the risk across the entire water supply network. The BDRR formula was updated in 2021 to include an added risk indicator, i.e. ‘E: Water Safety Plans’, to address the risk assessment requirements outlined in SANS 241 of 2015. The BDRR now contains 5 risk indicators, i.e. design capacity (A), operational capacity (B), water quality compliance (C), technical capacity (D), and water safety plans (E). The results from the BDRR analyses are summarised in the table and figure following.

Table 82 - Municipal BDRR/BDRRmax Comparative Analysis from 2022 and 2023

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th># WBs/ WSPs</th>
<th>2022 (BD PAT)</th>
<th>2023 (BD Audit)</th>
<th>Performance Trend 2022 and 2023</th>
<th>BDRR Risk Category Split</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Ekurhuleni</td>
<td>1</td>
<td>1</td>
<td>33.3%</td>
<td>29.2%</td>
<td>↑ 1</td>
<td>0-50% 50-70% 70-90% 90-100%</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>1</td>
<td>1</td>
<td>34.7%</td>
<td>29.2%</td>
<td>↑ 1</td>
<td>0-50% 50-70% 70-90% 90-100%</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>11</td>
<td>4</td>
<td>35.2%</td>
<td>33.1%</td>
<td>↑ 8</td>
<td>0-50% 50-70% 70-90% 90-100%</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>2</td>
<td>1</td>
<td>86.9%</td>
<td>31.9%</td>
<td>↑ 2</td>
<td>0-50% 50-70% 70-90% 90-100%</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>1</td>
<td>1</td>
<td>35.1%</td>
<td>30.4%</td>
<td>↑ 1</td>
<td>0-50% 50-70% 70-90% 90-100%</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>3</td>
<td>3</td>
<td>37.5%</td>
<td>30.0%</td>
<td>↑ 3</td>
<td>0-50% 50-70% 70-90% 90-100%</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>2</td>
<td>1</td>
<td>33.3%</td>
<td>30.0%</td>
<td>↑ 2</td>
<td>0-50% 50-70% 70-90% 90-100%</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>1</td>
<td>1</td>
<td>37.0%</td>
<td>29.4%</td>
<td>↑ 1</td>
<td>0-50% 50-70% 70-90% 90-100%</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>7</td>
<td>7</td>
<td>35.9%</td>
<td>30.8%</td>
<td>↑ 7</td>
<td>0-50% 50-70% 70-90% 90-100%</td>
</tr>
<tr>
<td><strong>Totals &amp; %BDRR/BDRRmax</strong></td>
<td><strong>29</strong></td>
<td><strong>20</strong></td>
<td><strong>40.6%</strong></td>
<td><strong>34.6%</strong></td>
<td>↑ 26 3 0 0</td>
<td><strong>0-50% 50-70% 70-90% 90-100%</strong></td>
</tr>
</tbody>
</table>

↑ = improvement, ↓ = regress, → = no change

Trend analysis of the BDRR ratings for 2022 and 2023 indicates that:

- The 2023 audit cycle highlighted a slightly progressive shift with an increase in the no. of low risk WSSs (24 to 26) and a decrease in the medium risk WSSs (4 to 3).

Regulatory Enforcement

Water supply systems which fail to achieve the minimum Blue Drop target of 31%, are placed under regulatory focus. The Regulator requires these WSAs to submit a detailed corrective action plan (CAP) within 20 working days from publishing of this report.
For Gauteng, none of the WSSs received Blue Drop scores below 31%, hence no municipalities are placed under regulatory surveillance, in accordance with the Water Services Act (108 of 1997). None of the WSAs and their associated water supply systems are in high and/or critical BDRR risk positions, which implies that all risk indicators fall within reasonable limits, i.e. operational capacity, water quality compliance, technical capacity, and water safety planning. Typically, WSSs in high and critical risk positions pose a serious risk to public health.

**Performance Barometer**

The Blue Drop Performance Barometer presents the individual municipal Blue Drop scores, which essentially reflect the level of mastery that a WSA has achieved in terms of its overall water services business. The bar chart below compares the 2014 and 2023 BD scores, ranked from highest to lowest performing WSA in 2023. The City of Johannesburg and the City of Ekurhuleni are commended for maintaining excellent performance and improvement in their municipal Blue Drop scores. The remaining 5 WSAs have maintained a good performance, with Merafong LM and Mogale City LM having improved on their municipal Blue Drop scores of 2014.

The BDRR Risk Barometer expresses the level of risk that a WSA poses in respect of its water supply system. The schematic below presents the BDRR in ascending order – with the low-risk WSAs on the left and higher risk WSAs to the far right. The analysis reveals that there are no medium, high or critical risk WSAs in the province. All the WSAs are situated in the low risk positions despite 3 (of 11) WSSs that are in medium risk positions in the City of Tshwane.

---

**Gauteng WSA Blue Drop Scores 2014 and 2023**

<table>
<thead>
<tr>
<th>WSA</th>
<th>2014 BD Score (%)</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Johannesburg</td>
<td>96,1%</td>
<td>98,1%</td>
</tr>
<tr>
<td>City of Ekurhuleni</td>
<td>96,6%</td>
<td>97,1%</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>94,7%</td>
<td>94,8%</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>84,6%</td>
<td>93,2%</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>88,8%</td>
<td>93,1%</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>94,4%</td>
<td>88,2%</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>91,6%</td>
<td>87,2%</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>87,8%</td>
<td>86,2%</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>88,2%</td>
<td>85,9%</td>
</tr>
</tbody>
</table>

**Provincial Performance Log 2023**

<table>
<thead>
<tr>
<th>WSA</th>
<th>%BDRR/BDRRmax</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Ekurhuleni</td>
<td>29.2%</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>29.2%</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>29.4%</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>30.0%</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>30.0%</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>30.4%</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>30.8%</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>31.8%</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>33.2%</td>
</tr>
</tbody>
</table>
Provincial Best Performers

The City of Johannesburg Metropolitan Municipality (with Rand Water as WSP) is the BEST PERFORMING WSA in the province, based on the following record of excellence:

- 2023 Blue Drop Score of 98.1%
- 2014 Blue Drop Score of 96.1%
- Improvement on the BDPR from 34.7% in 2022 to 29.2% in 2023
- 1 system (100%) in the low risk position
- TSA score of 97% for Vereeniging WTW (Rand Water).

The City of Ekurhuleni Metropolitan Municipality (with Rand Water as WSP) is the second-best scoring WSA:

- 2023 Blue Drop Score of 97.1%
- 2014 Blue Drop Score of 96.6%
- Improvement on the BDPR from 33.3% in 2022 to 29.2% in 2023
- 1 system (100%) in low risk position
- TSA score of 97% for Vereeniging WTW (Rand Water).

The Midvaal LM (with Rand Water as WSP) is the third-best scoring WSA:

- 2023 Blue Drop Score of 94.8%
- 2014 Blue Drop Score of 94.7%
- Improvement on the BDPR from 33.3% in 2022 to 30.0% in 2023
- 2 systems both in low risk positions
- TSA score of 97% for Vereeniging WTW (Rand Water) and 81% for Vaal Marina WTW.

KPA Diagnostics

The Blue Drop audit process collects a vast amount of data that yield valuable insight into the state of the water services delivery and water quality in each province. Five focus areas or ‘diagnostics’ have been configured from the 2021/22 audit data and are discussed below.

Table 83 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs

<table>
<thead>
<tr>
<th>Diagnostic #</th>
<th>Diagnostic Description</th>
<th>Diagnostic Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical Competence</td>
<td>KPA 1, 2 &amp; Bonus</td>
</tr>
<tr>
<td>2</td>
<td>Treatment Capacity and Flow Distribution</td>
<td>KPA 4 &amp; Generic Audit data set</td>
</tr>
<tr>
<td>3</td>
<td>Drinking Water Quality (DWQ) Monitoring and Compliance</td>
<td>KPA 2 &amp; 4 &amp; Bonus</td>
</tr>
<tr>
<td>4</td>
<td>Technical Site Assessments</td>
<td>TSA and 2023 Blue Drop Watch Report</td>
</tr>
<tr>
<td>5</td>
<td>Operation, Maintenance and Refurbishment of Assets</td>
<td>KPA 3 &amp; 4</td>
</tr>
</tbody>
</table>

Diagnostic 1: Technical Competence

**Aim:** This focus area assesses the technical human resources capacity that is available to manage and operate water treatment processes and maintain the related water infrastructure. Theory advocates that a correlation exists between human resources capacity and capability (sufficient number of appropriately qualified staff) and a WSI’s performance. Thus, it is hypothesised that high HR capacity would translate to compliant water treatment plants and functional water supply network. Blue Drop assesses technical compliance on two levels: i) WTW plant supervision and process control staff and ii) Technical, scientific and maintenance staff.

**(I) Plant Supervisors and Process Controllers**

**Findings:** According to regulations, water treatment plants are classified as Class A, B, C, D or E plants. Similarly, Process Controllers and Plant Supervisors are registered as Class I, II, III, IV, V or VI Process Controllers. Higher classed plants require a higher level of Process Controllers due to technology complexity and strict water quality standards. Technical compliance of PCs and Supervisors is determined against the Blue Drop standards, as defined by Reg. 2834 of the Water Act 1956 (Act 54 of 1956) for the erection, enlargement, operation, and registration of water care works and draft Reg. 813 of the Water Services Act (No 108 of 1997). Regulation 2834 has been replaced by Regulation 3630 in 2023 but will only come in effect during the next Blue Drop audit cycle.
Competent human resources are vital enablers in ensuring efficient and sustainable management of water services and delivery of safe water quality to consumers. For the province in general, the operational competencies are found to be excellent for the PC staff in 7 of the 9 municipalities, with the exceptions being for PC staff shortages in the City of Tshwane, Emfuleni, and the Rand Water Zuikerbosch WTW, as illustrated in the table above.

![Schematic illustration of compliant and shortfall of Supervisors (a) and Process Controllers (b)](image)

**Plant Supervisors:** The pie charts indicate that 100% (42 of 42) of Plant Supervisors complies with the Blue Drop standard, with no shortfalls.

**Process Controllers:** Similarly, 83% (128 of 154) of the PC staff complies with the required standards, noting a zero shortfall for the Rand Water Vereeniging WTW, Magalies Water, and Midvaal. There is a 17% (26 of 154) shortfall in Process Controllers with the highest shortfall in the City of Tshwane.

Blue Drop standards require of Class A and B plants to employ dedicated Supervisors per WTW and Process Controllers per shift per works, whereas Class C to E plants may share staff across works. Shifts have been introduced to ensure optimal operations while addressing security risks, particularly as it relates to theft and vandalism. Telemetry also reduces the requirement for on-site staff during night shifts, but these relaxations have to be done within the DWS regulatory guidelines.

The Regulator expects correlation between the competence of an operational team and the performance of a WTW, as measured by the BD score. The data indicates as follows:

<table>
<thead>
<tr>
<th>WSA and WSP Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th># Available Compliant Staff</th>
<th>Staff Shortfall</th>
<th>Ratio*</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rand Water-Vereeniging &amp; Zuikerbosch</td>
<td>2</td>
<td>17</td>
<td>85</td>
<td>26</td>
<td>111</td>
<td>5 0</td>
</tr>
<tr>
<td>Magalies Water - Cullinan, Klipdrift &amp; Wallmansthal</td>
<td>3</td>
<td>3</td>
<td>14</td>
<td>3</td>
<td>17</td>
<td>0 0</td>
</tr>
<tr>
<td>City of Ekurhuleni</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>12</td>
<td>11</td>
<td>21</td>
<td>9</td>
<td>30</td>
<td>20 0**</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>1 0</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>-</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>8</td>
<td>0 0</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>19</td>
<td>29</td>
<td>128</td>
<td>42</td>
<td>170</td>
<td>26 0</td>
</tr>
</tbody>
</table>

The grey highlights means that this data is not included in the # WSS total at the bottom of the table. Rand Water WTWs supply water to a 17 WSSs in GP and Magalies Water to 3 WSSs in GP.

* Ratio depicts the no. of qualified staff divided by the no. of WTWs operated by this no. of staff. E.g., City of Tshwane has 30 compliant Sups + PCs, divided by 12 WTWs = 2.5 qualified staff per WTW

** There are 4 Supervisors in the City of Tshwane that can do roaming for the other WTWs, boreholes, springs (Class C to E) - so sufficient in number – hence no shortfall in Supervisory staff

*** Average 2023 BD score for Rand Water and Magalies Water in GP

Note: “Compliant staff” means qualified and registered staff that meets the Blue Drop standard for a particular Class of works (+1 for a shift) and/or staffing gaps exist at the respective WTWs.
All WSAs have qualified PCs in place, with the exception of 9 WTWs in the City of Tshwane and 1 WTW in Emfuleni.

All WSAs have qualified Supervisors per WTW, including the City of Tshwane that uses roaming Supervisors at their Class C to E WTWs.

The City of Tshwane and Emfuleni have shortfalls in qualified Process Controllers.

The results from the ratio analysis indicate high ratios for Rand Water, which does not necessarily translate to comparatively higher BD scores. The higher ratio and higher BD performance for Midvaal compares favourably with the slightly lower ratios and BD scores in Emfuleni and Tshwane.

Overall, the comparative bar chart confirms a reasonably close correlation between Rand Water and the WSAs with high ratios and high BD scores (ranging from 85.9% ave. to 94.8%). The anomaly being Magalies Water that has a high ratio but a low BD score on average.

(ii) Technical, Scientific and Maintenance staff

In addition to operational capacity (above), good management practice also requires access to qualified engineers, technicians, technologists, MISA appointees, scientists, and maintenance capability (below). Such competencies could reside in-house or accessible through term contracts and external specialists.

### Table 85 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff

<table>
<thead>
<tr>
<th>WSA and WSP Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Maintenance Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rand Water</td>
<td>2</td>
<td>17</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Magalies Water</td>
<td>3</td>
<td>3</td>
<td>Internal+Term Contract; Internal Team (only)</td>
</tr>
<tr>
<td>City of Ekurhuleni</td>
<td>-</td>
<td>1</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>-</td>
<td>1</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>12</td>
<td>11</td>
<td>Internal+Specific Outsourcing; Internal Team (only)</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>1</td>
<td>2</td>
<td>Internal+Specific Outsourcing; Internal Team (only)</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>-</td>
<td>1</td>
<td>Internal+Specific Outsourcing; Partially capacitated</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>-</td>
<td>3</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>1</td>
<td>2</td>
<td>Internal+Specific Outsourcing; Internal+Term Contract</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>-</td>
<td>1</td>
<td>Internal+Specific Outsourcing; Internal+Term Contract</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>-</td>
<td>7</td>
<td>Internal+Term Contract; Internal Team (only)</td>
</tr>
<tr>
<td>Totals</td>
<td>19</td>
<td>29</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WSA and WSP Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Qualified Technical Staff (#)</th>
<th>Technical Shortfall (#)</th>
<th>Qualified Scientists (#)</th>
<th>Scientists Shortfall (#)</th>
<th>Ratio</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rand Water</td>
<td>2</td>
<td>17</td>
<td>9 7 9 0</td>
<td>25</td>
<td>0</td>
<td>14</td>
<td>0.15</td>
<td>90.1%**</td>
</tr>
<tr>
<td>Magalies Water</td>
<td>3</td>
<td>3</td>
<td>1 5 1 0</td>
<td>7</td>
<td>0</td>
<td>5</td>
<td>2.3</td>
<td>66.2%**</td>
</tr>
<tr>
<td>City of Ekurhuleni</td>
<td>-</td>
<td>1</td>
<td>3 9 4 0</td>
<td>16</td>
<td>0</td>
<td>4</td>
<td>16.0</td>
<td>97.1%</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>-</td>
<td>1</td>
<td>2 7 3 0</td>
<td>12</td>
<td>0</td>
<td>11</td>
<td>12.0</td>
<td>98.1%</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>12</td>
<td>11</td>
<td>1 3 0 0</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>0.4</td>
<td>88.2%</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>1</td>
<td>2</td>
<td>2 1 1 0</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>2.0</td>
<td>85.9%</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>-</td>
<td>1</td>
<td>1 0 0 0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>1.0</td>
<td>86.2%</td>
</tr>
</tbody>
</table>
In terms of maintenance capacity, all the municipalities have a reasonable contingent of qualified technical and maintenance staff. The maintenance staff comprises of a collective of in-house, contracted, or outsourced personnel. The data indicates that:

- Rand Water (Bulk Water Supplier) have internal maintenance teams supplement with specific outsourced services.
- Magalies Water have internal maintenance teams supplemented with term contracts.
- 3 of 9 (33%) WSAs have in-house maintenance teams.
- 5 of 9 (56%) WSAs have internal maintenance teams supplemented with term contracts.
- 7 of 9 (78%) WSAs have internal maintenance teams supplement with specific outsourced services.

In general, the province presents a strong case for qualified professional technical staff as follows:

- A total of 89 qualified staff comprised of 20 Engineers, 44 Technologists, 25 Technicians, 0 MISA appointees (qualified); and 40 SACNASP registered scientists in Rand Water, Magalies Water and 9 WSAs.
- A total shortfall of 16 persons is identified, consisting of 8 technical staff and 8 scientists.
- 5 WSAs have a total shortfall of 9 qualified technical staff with the highest indicated for Lesedi (3), and City Tshwane and Merafong (2 each).
- Rand Water, Magalies Water and all the WSAs have access to credible laboratories that comply with the Blue Drop standards.

Ratio analysis has been done to determine the number of qualified technical and scientific staff assigned per WSS. It is expected that a higher ratio would correspond with well-performing and maintained water supply systems, as represented by the BD score.
The schematic above shows a prominent correlation between high ratios (>5.0) and high BD scores (ranging from 93.1% to 98.1%) for Ekurhuleni, Johannesburg, Midvaal and Mogale City. Lower ratios for Emfuleni, Rand Water and Lesedi (1.0 to 2.0) were associated with lower BD scores (ranging from 86.2% to 90.1%), with the only anomaly being that for Magalies Water that has a much lower BD score (66.2%) but a higher ratio (2.3). In contrast, Merafong, Rand West and the City of Tshwane have the lowest ratios (<1.0) but high BD scores are still being achieved (ranging from 87.2% to 93.2%).

Unlike the Green Drop 2022 diagnostics, no firm correlation can be drawn between technical capacity and water supply performance, mostly as result of the complexity of the WSA/Bulk Water Provider arrangement. However, it is observed that the involvement of Rand Water in all the 9 WSAs has a significant (positive) impact on the municipal BD scores particularly in the case of the City of Tshwane.

Overall, the results highlight the inter-dependency between technical capacity and performance. One of the options to enhance operational capacity is through dedicated training programmes. The Blue Drop audit incentivises training of operational staff over the 2-year period prior to the audit date. The results are summarised as follows:

Table 86 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa

<table>
<thead>
<tr>
<th>WSA and WSP Name</th>
<th># WTWs</th>
<th># WTW staff attending training</th>
<th># WTW without training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rand Water</td>
<td>2</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Magalies Water</td>
<td>3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>City of Ekurhuleni</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>12</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>19</strong></td>
<td><strong>4 (21%)</strong></td>
<td><strong>15 (79%)</strong></td>
</tr>
</tbody>
</table>

Figure 66 - %WTWs that have trained operational staff over the past two years
The results confirm that only staff members from Rand Water and the City of Tshwane attended training over the past 2 years. Overall, only 21% of operational staff attended safety and technical training, with the balance of 79% not partaking in any skills development initiatives. Investment in human capital through technical skills development is likely to mitigate some of the water quality failures and lower performances noted, and municipalities and water boards should prioritise ongoing skills development of technical staff and appointment of qualified and registered (new) staff.

Diagnostic 2: Treatment Capacity and Flow Distribution

**Aim:** Diagnostic 2 deals with design and flow related dynamics, comprising of: i) design capacity and operational flow, ii) raw water abstraction, and iii) WUE and SIV.

(i) Design Capacity and Operational Flow

This diagnostic assesses the status of plant design capacity and daily water production at the WTWs, as well as SIVs as measured at the outflow from the WTW or inflow to the water distribution network. A capable WTW requires adequate installed design capacity and functional equipment to operate optimally. If the WTW design capacity is exceeded by the average daily production (treatment) volume, the WTW will not be able to deliver SANS compliant water quality. The available design capacity is typically exceeded when the water demand exceeds the installed design capacity, or when processes or equipment are dysfunctional, or when electrical supply problems render treatment and pumping of water defective. Typically, the production volume and SIV is the same if 1 WTW supplies 1 WSS, but different if multiple supply systems are feeding from a singular WTW.

**Findings:** Analysis of the design capacity and average daily production/ treatment volume indicate a total design capacity of 5,823,906 kl/d for the province, with a total average daily treatment (operational) volume of 4,923,288 kl/d. Theoretically, this implies that 85% of the design capacity is used with 15% available to meet additional water demand. However, the full 5,823,906 kl/d is not available as some infrastructure is dysfunctional, leaving 5,831,157 kl/d available. The capacity differential (difference between the originally installed- and currently available capacity) confirms a 16% surplus if considering the total available capacity (84%). This capacity differential should not constrain or impede any further social and economic development in municipal water supply areas, although other aspects may impact on service delivery planning and execution. For Gauteng, all municipalities displayed adequate knowledge of their installed and available capacities.

The audit data confirms that all WTWs are operating within their design capacities with the exception of Pretoria Findley (Upper & Lower Fountains) that exceeds its total design capacity by 234%. This risk is currently mitigated through operational optimisation and preventative maintenance regimes.

<table>
<thead>
<tr>
<th>WSA and WSP Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Design Capacity (kl/d)</th>
<th>Available Design Capacity (kl/d)</th>
<th>Average Daily Production (kl/d)</th>
<th>Available Variance* (kl/d)</th>
<th>% Use Available Capacity</th>
<th>Total SIV towards the WSS (kl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rand Water</td>
<td>2</td>
<td>17</td>
<td>5,427,000</td>
<td>5,427,000</td>
<td>4,681,827</td>
<td>745,173</td>
<td>86%</td>
<td>4,025,142</td>
</tr>
<tr>
<td>Magalies Water</td>
<td>3</td>
<td>3</td>
<td>70,000</td>
<td>70,000</td>
<td>58,734</td>
<td>11,266</td>
<td>84%</td>
<td>58,734</td>
</tr>
<tr>
<td>City of Ekurhuleni</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>12</td>
<td>11</td>
<td>315,906</td>
<td>323,157</td>
<td>181,427</td>
<td>141,730</td>
<td>56%</td>
<td>189,780</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>1</td>
<td>2</td>
<td>1,000</td>
<td>1,000</td>
<td>300</td>
<td>700</td>
<td>30%</td>
<td>300</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>1</td>
<td>2</td>
<td>10,000</td>
<td>10,000</td>
<td>1,000</td>
<td>9,000</td>
<td>10%</td>
<td>1,000</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>19</strong></td>
<td><strong>29</strong></td>
<td><strong>5,823,906</strong></td>
<td><strong>5,831,157</strong></td>
<td><strong>4,923,288</strong></td>
<td><strong>907,869</strong></td>
<td><strong>84%</strong></td>
<td><strong>4,274,956</strong></td>
</tr>
</tbody>
</table>

* Difference between the available design capacity and the average daily production
(ii) Raw Water Abstraction

This diagnostic takes a snapshot view of the status of water abstraction authorisations from natural water resources across the province. As per the National Water Act (Act no 36 of 1998), Water Use Licenses (WULs) mandate the maximum abstraction volumes of raw water, and the installation and monitoring of abstraction, inflow, and outflow meters, whilst the BD audit requires WSAs to report the flows on IRIS and to calibrate meters annually. Any defects in terms of abstracting water from a resource without an authorisation, or exceeding the authorised volume, or reporting inaccurate volumes, or not monitoring abstraction against authorised volumes, are considered to be a regulatory risk and contravention of the law.

Findings: Data pertaining to the daily abstraction volumes (kl/d), average daily treatment volumes (kl/d), the names of the WTWs exceeding the Daily Abstraction Volumes (Authorised) and Average Daily Treatment Volumes (Authorised) is captured in the tables below.

Table 88 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances & WTWs listed For Enforcement Action

<table>
<thead>
<tr>
<th>WSA and WSP Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Daily Abstraction Volumes (Authorised) (kl/d)</th>
<th>Average Daily Treatment Volume (kl/d)</th>
<th>Average Variance (kl/d) [+ or Minus]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rand Water</td>
<td>2</td>
<td>17</td>
<td>4,757,285</td>
<td>4,681,827</td>
<td>75,458</td>
</tr>
<tr>
<td>Magalies Water</td>
<td>3</td>
<td>3</td>
<td>88,108</td>
<td>58,734</td>
<td>29,374</td>
</tr>
<tr>
<td>City of Ekurhuleni</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>15</td>
<td>11</td>
<td>203,343</td>
<td>181,427</td>
<td>21,916</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>1</td>
<td>2</td>
<td>300</td>
<td>300</td>
<td>0</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Figure 67 - Rand Water, Magalies Water and WSA design and available capacity, average daily production, available variance and total SIV

Figure 68 - Rand Water, Magalies Water and WSA % available capacity
WTWs that exceed the Daily Abstraction Volumes (Authorised) and WTWs with no Daily Abstraction Volumes (Authorised) are reflected in the 2nd table above. WTWs that are not complying with the regulations will be required to show correction in the next Blue Drop audit cycle. The results conclude that no WTWs are exceeding the permitted abstraction limits and all WTWs provided authorised water use abstraction volumes with the exception of 1 borehole and 1 spring in the City of Tshwane.

For future BD audits, WSA/WSPs will be required to provide ‘actual’ abstraction volumes so that a comparative analysis can be undertaken of the ‘actual’ abstraction volume versus the authorised water use abstraction volumes (maximum). This would require that the WSAs and WSPs/WBs monitor and record all critical path flows (abstraction, raw and final).

(iii) Water Use Efficiency and System Input Value

The Department is committed to consider issues related to water scarcity and security, aiming to ensure there is sufficient water for the population, the economy, and the environment by increasing water use efficiency across all sectors. Water use for services sectors is specifically dealing with the quantity of water used directly by the consumer through the public distribution network and industries connected to the network.

This diagnostic assesses the water use efficiency (i.e., the average daily consumption in litres per person per day) and the individual and collective performance of the water supply systems. WUE indicates how effective is water used by consumers, i.e. the process between effective water use and actual water abstraction. This concept is closely related to the Department’s No Drop Certification assessment, whereby WUE, NRW and water losses are targeted as part of Water Conservation and Water Demand Management strategies by municipalities.

**Findings:** Both the Blue Drop audit and No Drop audit requires an IWA water balance to determine the SIV into each water supply system, and to identify and quantify possible losses from abstraction to the end-of-use point. Rand Water has comprehensive water balances in place for all 17 WSSs in Gauteng including 1 WSS in Midvaal. Magalies Water has partial water balances in place for the 3 WSSs in the City of Tshwane. Partial water balances are available for the remaining 7 WSSs in the City of Tshwane and 1 WSS in Emfuleni. Only 1 WSS in Emfuleni does not have a water balance in place.
WUE is calculated based on the SIV contributions, population served, and the average daily consumption, as summarised in the table following.

**Table 89 - Summary of total SIV, total population served, average daily consumption, WUE status and performance trend**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Total Population</th>
<th>Total SIV (kL/d)</th>
<th>2023 WUE (l/p/d)</th>
<th>2023 Blue Drop WUE Range and Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Ekurhuleni</td>
<td>1</td>
<td>3,774,542</td>
<td>986,972</td>
<td>261</td>
<td>&gt;250-300 - Poor</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>1</td>
<td>5,866,550</td>
<td>1,686,097</td>
<td>287</td>
<td>&gt;250-300 - Poor</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>11</td>
<td>2,494,429</td>
<td>1,031,202</td>
<td>414</td>
<td>&gt;300 - Extremely High</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>2</td>
<td>754,015</td>
<td>294,092</td>
<td>390</td>
<td>&gt;300 - Extremely High</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>1</td>
<td>99,950</td>
<td>23,350</td>
<td>234</td>
<td>&gt;200-250 - Poor</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>3</td>
<td>237,027</td>
<td>60,712</td>
<td>256</td>
<td>&gt;250-300 - Poor</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>2</td>
<td>67,000</td>
<td>34,371</td>
<td>513</td>
<td>&gt;300 - Extremely High</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>1</td>
<td>365,376</td>
<td>92,313</td>
<td>253</td>
<td>&gt;250-300 - Poor</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>7</td>
<td>269,888</td>
<td>63,847</td>
<td>237</td>
<td>&gt;200-250 - Poor</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>29</strong></td>
<td><strong>13,928,777</strong></td>
<td><strong>4,274,956</strong></td>
<td><strong>316</strong></td>
<td><strong>WUE (l/cap/day) performance categories</strong></td>
</tr>
</tbody>
</table>

**WUE (l/cap/day) performance categories**

<table>
<thead>
<tr>
<th>Colour</th>
<th>WUE Range</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>&gt;300</td>
<td>Extremely high per capita water use</td>
</tr>
<tr>
<td>Red</td>
<td>&gt;250-300</td>
<td>Poor per capita water use</td>
</tr>
<tr>
<td>Blue</td>
<td>&gt;200-250</td>
<td>Average per capita water use with potential for marked improvement</td>
</tr>
<tr>
<td>Green</td>
<td>&gt;150-200</td>
<td>Good per capita water use but some improvement may be possible subject to economic benefits</td>
</tr>
<tr>
<td>Blue</td>
<td>&lt;150</td>
<td>Excellent per capita water use management</td>
</tr>
</tbody>
</table>

Figure 70 - Total SIV towards the WSSs

Figure 71 - Total Population served

For the Gauteng province, 4,274,956 kL/d water is supplied to 13,928,777 consumers. Comparatively, Johannesburg distributes 39.4% of the total provincial SIV, followed by Tshwane (24.1%) and Ekurhuleni (23.1%). An average 316 litre of water is used per person per day, which implies a very high (poor) per capita water use. Results from the diagnostic data show that the City of Tshwane, Emfuleni and Midvaal has WUEs of more than 300 l/p/d, which is regarded as extremely high according to national benchmarks.
City of Ekurhuleni, City of Johannesburg, Merafong and Mogale City has WUE between 250–300 l/p/d, which is regarded as poor. No Drop Certification is specifically tasked with plans to curb water losses and improve NRW through water accounting assessments and water conservation and demand management.

**Diagnostic 3: Drinking Water Quality (DWQ) Monitoring and Compliance**

**Aim:** Blue Drop audits values the principles of “To measure is to know” and “To know is to manage”. The primary objective of a water treatment plant is to produce final water quality that is safe for human consumption at the end of the distribution network. This standard can only be measured and achieved if operational and compliance monitoring and DWQ compliance is executed at the correct frequency, sample point, and determinand type. This diagnostic assesses the i) operational and compliance monitoring status, ii) drinking water quality compliance, and iii) risk defined compliance and laboratory credibility.

(i) Drinking water operational and compliance monitoring

**Findings:** A minimum level of 90% operational monitoring compliance is applied as benchmark, to give weight to the importance of sampling and monitoring of the raw water, process unit water, and final water across the treatment stream. Compliance monitoring is also informed by SANS 241:2015 and the requirement for risk-informed monitoring through the WaSP process at both the WTW final and distribution network. DWQ compliance is calculated against the population size and the mandatory limits set by SANS 241:2015 and the Blue Drop standards, as calculated and reported from data loaded in the IRIS.

Table 90 - Summary of the KPA 2 WTW operational and WSS compliance monitoring status

<table>
<thead>
<tr>
<th>WSA and WSP Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>WTW Operational monitoring [KPA 2 sub-KPA 2.b]]</th>
<th>WSS Compliance monitoring [KPA 2 sub-KPA 2.c]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Satisfactory [BD score &gt;90%]</td>
<td>Not Satisfactory [BD score &lt;90%]</td>
<td>Satisfactory [BD score &gt;90%]</td>
<td>Not Satisfactory [BD score &lt;90%]</td>
</tr>
<tr>
<td>Rand Water</td>
<td>2</td>
<td>17</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Magalies Water</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>City of Ekurhuleni</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>12</td>
<td>11</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Totals</td>
<td>19</td>
<td>29</td>
<td>10 (53%)</td>
<td>9 (47%)</td>
</tr>
</tbody>
</table>

Note: The numbers reflected in grey highlight are not reflected in the totals

The performance recorded in the table above stems from performance data as measured against the Blue Drop Standard expressed in KPA 2 and sub-KPAs 2.b) and 2.c). Overall, an unsatisfactory sampling and analysis regime is observed for both operational (47%) and compliance (45%) monitoring.

The data indicates that 10 of 19 WTWs (53%) are on par with good practice for operational monitoring of the raw and final water and the respective process units at the WTW. Rand Water, Magalies Water and Midvaal are doing exceptionally well, whilst the City of Tshwane and Emfuleni fail to meet the Blue Drop standard. In terms of compliance monitoring, 16 WSSs (55%) are on par with good compliance monitoring practices, and 13 WSSs (45%) are failing the Blue Drop standard.

The latter observation is noted with deepening concern for the City of Tshwane. Compliance monitoring is a legal requirement and the only means to measure the DWQ performance of a water supply system. Operational monitoring is the cornerstone of day-to-day process adjustments and optimisation to ensure that the water treatment is efficient and delivers quality final water. The results indicate that 9 WTWs and 13 WSSs are not achieving regulatory and industry standards.

(ii) Drinking water quality compliance

**Findings:** DWQ compliance is measured against the requirements of SANS 241:2015 under KPA 5 of the Blue Drop audit. The tables following summarises the results of the DWQ status for Microbiological and Chemical Compliance, which also carries the highest Blue Drop score weighting of 35% (of 100%).
### Table 91 - Provincial Summary of the DWQ Status for Microbiological Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Micro Compliance</th>
<th># WSS Micro Performance Status</th>
<th>Excellent</th>
<th>Good</th>
<th>Unacceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Ekurhuleni</td>
<td>1</td>
<td>3,774,542</td>
<td>99.86%</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>1</td>
<td>5,866,550</td>
<td>99.70%</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>11</td>
<td>2,494,429</td>
<td>96.14%</td>
<td>4</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>2</td>
<td>754,015</td>
<td>97.70%</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>1</td>
<td>99,950</td>
<td>99.97%</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Merafong LM</td>
<td>3</td>
<td>237,027</td>
<td>99.95%</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>2</td>
<td>67,000</td>
<td>95.13%</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>1</td>
<td>365,376</td>
<td>99.87%</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rand West LM</td>
<td>7</td>
<td>269,888</td>
<td>99.97%</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>29</strong></td>
<td><strong>13,928,777</strong></td>
<td><strong>98.70%</strong></td>
<td><strong>23</strong></td>
<td><strong>0</strong></td>
<td></td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>

#### Figure 72 - Provincial Microbiological Drinking Water Quality Status

Out of the 29 WSSs, 23 (79%) systems achieved excellent microbiological quality, whilst 6 (21%) systems have an unacceptable microbiological water quality status. The water in these systems pose a serious acute health risk to the community. Failure to produce water that meets microbiological compliance standards can be linked back to poor operations, defective infrastructure, inadequate dosing rates, absence of disinfection chemicals, lack of monitoring, lack of operating and chemistry knowledge, and several other root causes. WSSs that are not monitoring the final water quality at the outlet of the treatment plant or at specific end use points are required to develop a monitoring programme and resume with compliance monitoring as a matter of urgency.

### Table 92 - Provincial Summary of the DWQ Status for Chemical Acute Health and Chronic Health Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Chem Acute Health Compliance</th>
<th># WSS Chem Acute Health Performance Status</th>
<th>Excellent</th>
<th>Good</th>
<th>Unacceptable</th>
<th>% Ave. Chem Chronic Health Compliance</th>
<th># WSS Chem Chronic Health Performance Status</th>
<th>Excellent</th>
<th>Good</th>
<th>Unacceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Ekurhuleni</td>
<td>1</td>
<td>3,774,542</td>
<td>100.0%</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>100.0%</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>1</td>
<td>5,866,550</td>
<td>100.0%</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>100.0%</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>11</td>
<td>2,494,429</td>
<td>98.3%</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>97.1%</td>
<td>8</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>2</td>
<td>754,015</td>
<td>66.7%</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>66.1%</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>1</td>
<td>99,950</td>
<td>100.0%</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>99.2%</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Merafong LM</td>
<td>3</td>
<td>237,027</td>
<td>99.8%</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>99.5%</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>2</td>
<td>67,000</td>
<td>100.0%</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>99.8%</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>1</td>
<td>365,376</td>
<td>100.0%</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>99.8%</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rand West LM</td>
<td>7</td>
<td>269,888</td>
<td>100.0%</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td>100.0%</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>29</strong></td>
<td><strong>13,928,777</strong></td>
<td><strong>96.1%</strong></td>
<td><strong>26</strong></td>
<td><strong>1</strong></td>
<td></td>
<td><strong>2</strong></td>
<td><strong>95.7%</strong></td>
<td><strong>25</strong></td>
<td><strong>1</strong></td>
<td><strong>3</strong></td>
<td></td>
</tr>
</tbody>
</table>
Chemical acute health compliance shows that 26 (90%) systems have excellent water quality, and 1 (3%) system has good water quality, whilst 2 systems (1 in the City of Tshwane and 1 in Emfuleni) have an unacceptable chemical acute health compliance. Chemical chronic health compliance shows that 25 (86%) systems have excellent water quality, and 1 (3%) system has good water quality, whilst 3 systems (2 in City of Tshwane and 1 in Emfuleni) had an unacceptable chemical chronic health compliance.

The Water Services Act upholds standards regarding the monitoring and reporting on drinking water quality and issuance of advisory notices to the public when significant DWQ failures are observed. The audit process applies a penalty when DWQ failures are noticed without issuing such Water Quality Alert Notices to forewarn water users of the status of (unsafe) water quality and to advise communities to source alternative water sources or methods to disinfect water used for drinking water purposes.

The following table reflects the compliance status of the WSAs as regards the issuing of these notices for DWQ failures.

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSS No Penalty Applied</th>
<th># WSS Partial Penalty Applied</th>
<th>WSS Names Partial Penalty</th>
<th># WSS Full Penalty Applied</th>
<th>WSS Names Full Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Tshwane</td>
<td>11</td>
<td>6</td>
<td>4</td>
<td>Onverwacht, Pretoria North Roodeplaat, Sokhulumi Informal Settlement &amp; Walmansthal Area</td>
<td>1</td>
</tr>
</tbody>
</table>

No penalties were applied to 24 (83%) WSSs in all of the 9 WSAs. Only 4 partial penalties and 1 full penalty was applied to 5 (17%) WSSs in the City of Tshwane.
(iii) Risk defined compliance and laboratory credibility

**Findings:** Risk-defined compliance standards aim to determine the compliance (to SANS 241) of those parameters that have been found to pose a risk in a specific WSS and need to be included in the routine monitoring programme or frequency as prescribed by SANS 241. The province achieved an average Annual Risk Defined Compliance of 95.5%, with the low risk WSSs coming from the City of Ekurhuleni, City of Johannesburg, Lesedi, Merafong and Rand West and the high risk WSSs coming from City of Tshwane and Emfuleni. Excellent risk-defined compliance was achieved by 21 (73%) systems, good compliance for 3 (10%) systems and poor compliance for 5 (17%) systems, with 4 of the latter 5 systems residing in the City of Tshwane.

Table 94 - Summary of the DWQ Compliance for Risk Defined Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Risk Defined Compliance</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Ekurhuleni</td>
<td>1</td>
<td>3,774,542</td>
<td>99.62%</td>
<td>1</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>1</td>
<td>5,866,550</td>
<td>99.36%</td>
<td>1</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>11</td>
<td>2,494,429</td>
<td>85.37%</td>
<td>1</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>2</td>
<td>754,015</td>
<td>92.56%</td>
<td>3</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>1</td>
<td>99,950</td>
<td>92.56%</td>
<td>1</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>3</td>
<td>237,027</td>
<td>99.76%</td>
<td>1</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>2</td>
<td>67,000</td>
<td>94.52%</td>
<td>2</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>1</td>
<td>365,376</td>
<td>96.02%</td>
<td>1</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>7</td>
<td>269,888</td>
<td>99.34%</td>
<td>7</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>29</strong></td>
<td><strong>13,928,777</strong></td>
<td><strong>95.46%</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

The aim of operational determinand compliance is to determine the efficiency of the water treatment process, by monitoring those parameters which are used to control the treatment process. Although not necessarily a health risk, these parameters provide good information on the integrity of the WTW. The province achieved an average % Actual Operational Determinand Compliance of 82%, with the best performances coming from Rand Water, Magalies Water, Emfuleni and Midvaal and the worst performance coming from City of Tshwane. Excellent risk defined compliance was achieved by 7 (37%) WTWs and bad compliance for 12 (63%) WTWs with 11 of the 12 WTWs residing in the City of Tshwane.

Table 95 - Summary of the Treatment (Operational) Efficiency Index

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WTWs</th>
<th>Population</th>
<th>Ave. % Actual Operational Determinand Compliance</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rand Water</td>
<td>2</td>
<td>12,952,342</td>
<td>100%</td>
<td>2</td>
</tr>
<tr>
<td>Magalies Water</td>
<td>3</td>
<td>446,375</td>
<td>100%</td>
<td>3</td>
</tr>
<tr>
<td>City of Ekurhuleni</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>12</td>
<td>524,860</td>
<td>56%</td>
<td>11</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>1</td>
<td>1,200</td>
<td>92%</td>
<td>1</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>1</td>
<td>4,000</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>19</strong></td>
<td><strong>13,928,777</strong></td>
<td><strong>82%</strong></td>
<td><strong>7</strong></td>
</tr>
</tbody>
</table>

The data further confirms that all of the WSSs in the province have access to credible laboratories for compliance and operational analysis. These in-house or contracted laboratories are accredited with SANAS or have Proficiency Testing Schemes with SABS or have inter-laboratory quality checks in place to ensure that suitable analytical methods are applied and that quality assurance processes are followed to ensure credible water quality results. The province is thus meeting the regulatory expectation that all WSIs have access to credible analytical services for compliance and operational monitoring.

**Diagnostic 4: Technical Site Assessments**

**Aim:** The Blue Drop process makes provision for a Technical Site Assessment (TSA) in order to verify the desktop evidence through field-based inspections. This assessment includes a physical inspection of the entire water treatment plant with all its process units, as well as the reservoir and spot checks of a pumpstation and pipelines. The technical assessment is coupled with an asset condition check to determine an approximate cost (VROOM) to restore existing infrastructure to functional status for the treatment facility (only).
Findings: The results of the province’s TSAs are summarised in the table below. A deviation of 10% between the BD and TSA score indicate a misalignment between the administrative aspects and the work on the ground. The Regulator regards a WTW with a TSA score of >80% to have an acceptable level of process control and functional equipment, and a TSA score of 90% as an excellent system that complies with most of the Blue Drop TSA standards. A TSA score of <30% indicates that the treatment facility and network fails in most regards, and is evident of dysfunctional infrastructure, failed process control, absence of record keeping and monitoring, and poor water quality.

The VROOM cost presents a “Very Rough Order of Magnitude” cost to return a WTWs functionality to its original design. More detail can be found in the Blue Drop Watch Report 2023.

Table 96 - %TSA and %DB score, and VROOM cost estimates total and split for civil, mechanical, and electrical

<table>
<thead>
<tr>
<th>WSA and WSP Name</th>
<th>TSA Name</th>
<th>%TSA</th>
<th>2023 BD Score (%)</th>
<th>Civil cost estimate</th>
<th>Mechanical cost estimate</th>
<th>Electrical &amp; C&amp;I cost estimate</th>
<th>Total VROOM cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randies Water</td>
<td>Vereeniging WTW</td>
<td>97%</td>
<td>90.1% ave.</td>
<td>R8,340,150</td>
<td>R3,849,300</td>
<td>R641,550</td>
<td>R12,831,000</td>
</tr>
<tr>
<td>Magalies Water</td>
<td>Cullinan WTW</td>
<td>95%</td>
<td>66.2% ave.</td>
<td>R400,000</td>
<td>R1,200,000</td>
<td>0</td>
<td>R1,600,000</td>
</tr>
<tr>
<td>City of Ekurhuleni</td>
<td>Impala Park Reservoirs</td>
<td>84%</td>
<td>97.1%</td>
<td>R117,700</td>
<td>R147,400</td>
<td>R245,300</td>
<td>R510,400</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>Illovo Reservoirs</td>
<td>89%</td>
<td>98.1%</td>
<td>R1,443,200</td>
<td>0</td>
<td>0</td>
<td>R1,443,200</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>Temba WTW</td>
<td>73%</td>
<td>88.2%</td>
<td>R6,740,663</td>
<td>R17,525,723</td>
<td>R2,696,265</td>
<td>R26,962,650</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>Vaalmeiser WTW</td>
<td>81%</td>
<td>85.9%</td>
<td>R660,000</td>
<td>R385,000</td>
<td>R55,000</td>
<td>R1,100,000</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>Heidelberg Reservoirs</td>
<td>53%</td>
<td>86.2%</td>
<td>R181,500</td>
<td>R363,900</td>
<td>R564,300</td>
<td>R1,382,700</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>Vaal Marina WTW</td>
<td>81%</td>
<td>94.8%</td>
<td>R860,000</td>
<td>R6,880,000</td>
<td>R860,000</td>
<td>R8,600,000</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td></td>
<td>R18,743,213</td>
<td>R30,624,323</td>
<td>R5,062,415</td>
<td>R54,429,950</td>
</tr>
</tbody>
</table>

- No TSAs were undertaken for Merafong LM, Mogale City LM and Rand West LM as they received their Bulk Water from Rand Water

A deviation of >10% between the BD and TSA score is noted for Magalies Water (29%), City of Ekurhuleni Impala Park Reservoirs (13%), City of Tshwane Temba WTW (15%), Lesedi Heidelberg Reservoirs (33%), and Midvaal Vaal Marina WTW (14%). A deviation of >20% between the BD and TSA score is noted for Magalies Water (29%) and the Lesedi Heidelberg Reservoirs (33%).

For the individual WTWs assessed in the province, a total budget of R54.43m is estimated, with the bulk of the work (91%) going towards restoration of mechanical equipment (56%) and civil infrastructure (35%).

Diagnostic 5: Operation, Maintenance and Refurbishment of Assets

**Aim:** Insufficient financial resources are often cited as a root cause to dysfunctional or non-compliant water treatment works and water networks. Knowledge and monitoring of fiscal spending are therefore a critical part of water services management and municipal governance of public assets. This diagnostic investigates the status of financial information as pertaining to O&M budgets and expenditure, asset figures, and capital funding.

Findings: A substantial amount of financial information was presented during the audit process. Unfortunately, the evidence was presented in different formats, levels of detail, or absent for some WSA. It was observed that WSA teams with financial officials that were present during the audits performed better and had a better understanding of the water services challenges experienced by their technical peers.

Discrepancies observed included amongst others - generic or non-ringfenced budgets, contract lump sums for service providers presented as budgets, outdated or incomplete asset registers, and some cost drivers which were lacking. As data credibility presents a significant challenge, the Regulator grouped data into different certainty levels, as summarised at the end of this Diagnostic.

The result of each financial portfolio is discussed hereunder.

NOTE: The Regulator regards the financial and asset information with low confidence. Not all WSAs submitted verifiable information or complete financial data sets for the audit year in question.

Capital, O&M Budget and Actual, and Asset Value

The capital budgets, O&M budgets, O&M actual expenditure, and current asset values are summarised below.
The Regulatory Comments following in this Chapter list the capital projects with secured funding for each municipality and/or its bulk water provider (WSP). The capital lists are deemed to be a definitive means to address water service inadequacies and ensure the infrastructure investment. A total capital budget of R4.915b has been reported for the refurbishment and upgrades of water infrastructure (networks, pump stations, treatment plants) is reportedly R28.632b (excluding Lesedi and Rand West with no information). The highest asset values are observed for the City of Johannesburg (R46.2b), Rand Water (R28.6b) and City of Ekurhuleni (R16.3b).

**O&M Cost Benchmarking**

By combining the SALGA and WRC WATCOST models, an estimation of the maintenance cost required per asset type can be done, i.e. civil, buildings, pipelines, mechanical, electrical, and instrumentation.

<table>
<thead>
<tr>
<th>Description</th>
<th>% of Current Asset Value</th>
<th>Asset Value Estimate</th>
<th>Modified SALGA Maintenance Guideline</th>
<th>Annual Maintenance Budget Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Asset Value estimate</td>
<td>100%</td>
<td>R95,440,360,730</td>
<td>15.75%</td>
<td>R2,061,511,792</td>
</tr>
<tr>
<td><strong>Broken down into:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Civil Structures</td>
<td>46%</td>
<td>R43,902,565,936</td>
<td>0.50%</td>
<td>R219,512,830</td>
</tr>
<tr>
<td>2. Buildings</td>
<td>3%</td>
<td>R2,863,210,822</td>
<td>1.50%</td>
<td>R42,948,162</td>
</tr>
<tr>
<td>3. Pipelines</td>
<td>6%</td>
<td>R5,726,421,644</td>
<td>0.75%</td>
<td>R42,948,162</td>
</tr>
<tr>
<td>4. Mechanical Equipment</td>
<td>30%</td>
<td>R28,632,108,219</td>
<td>4.00%</td>
<td>R1,145,284,329</td>
</tr>
<tr>
<td>5. Electrical Equipment</td>
<td>11%</td>
<td>R10,498,439,680</td>
<td>4.00%</td>
<td>R419,937,587</td>
</tr>
<tr>
<td>6. Instrumentation</td>
<td>4%</td>
<td>R3,817,614,429</td>
<td>5.00%</td>
<td>R190,880,721</td>
</tr>
</tbody>
</table>
The model estimates that R2.06b (2.16%) is required per year to maintain the assets valued at R95.44b. Notably, this maintenance estimate assumes that all assets are functional. In cases where Blue Drop Certification is not being achieved, it can be assumed that some form of inefficiency or constraint is being experienced, and national benchmarks closer to 7% of the asset value is advocated (R6.68b).

The table below indicates the SALGA maintenance cost estimation in relation to the O&M budget, and O&M actual expended.

Table 99 - O&M cost estimates by the SALGA versus actual budget and expenditure figures

<table>
<thead>
<tr>
<th>Cost Reference</th>
<th>O&amp;M Cost Estimate</th>
<th>Period</th>
<th>% of Asset Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified SALGA</td>
<td>R2,061,511,792</td>
<td>Annually, estimation</td>
<td>2.16%</td>
</tr>
<tr>
<td>O&amp;M Budget</td>
<td>R22,009,084,001</td>
<td>Actual for 2021/22</td>
<td>23%</td>
</tr>
<tr>
<td>O&amp;M Spend</td>
<td>R21,927,384,803</td>
<td>Actual for 2021/22</td>
<td>22.9%</td>
</tr>
</tbody>
</table>

In addition, the table below indicates the Blue Drop audit findings on the water supply operations cost determination and water supply O&M budget status.

Table 100 - BD Audit Water Supply Operations Cost Determination and Water Supply O&M Budget status

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>Water Supply Operations Cost Determination</th>
<th>Water Supply O&amp;M Budget status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rand Water</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Magalies Water</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY; SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>City of Ekurhuleni</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUT INCLUDES WATER &amp; SANITATION</td>
</tr>
<tr>
<td>City of Johannesburg</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUT INCLUDES WATER &amp; SANITATION</td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Emfuleni LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Lesedi LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Merafong LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Midvaal LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Mogale City LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>BUDGET IS NOT RINGFENCED FOR WATER ONLY</td>
</tr>
<tr>
<td>Rand West LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>BUDGET IS NOT RINGFENCED FOR WATER ONLY</td>
</tr>
</tbody>
</table>

From the tables above, the cost dynamics can be summarised as follows:

- The SALGA estimations for maintenance budgets is about 9.4% (Modified SALGA divided by O&M Budget) of the actual reported budgets for the 2021/22 fiscal year
- The actual O&M budget (23%) appears to be more than adequate when compared with the SALGA guideline (2.16%) or with the government benchmark (7%)
- These figures may be impacted by some of the smaller WSAs who did not provide budget and expenditure figures, and by some inaccurate asset values and where no asset values were provided for
- Lastly, the municipalities presents budget and expenditure data at different levels (table above) i.e. financial figures are not always ringfenced per water supply system – thus rendering provincial summaries to be indicative.
7.1 Rand Water

Introduction

Rand Water is the largest bulk water utility in Africa and supplies potable water to more than 16 million people in Gauteng and parts of Mpumalanga, the Free State and North West and even Limpopo, serving an area of more than 37,000 km². The utility serves the following 17 municipalities:

1. City of Johannesburg Metropolitan Municipality
2. City of Tshwane Metropolitan Municipality
3. City of Ekurhuleni Metropolitan Municipality
4. Mogale City Local Municipality
5. Emfuleni Local Municipality
6. Merafong Local Municipality
7. Midvaal Local Municipality
8. Rand West Local Municipality
9. Lesedi Local Municipality
10. Ngwathe Local Municipality
11. Rustenburg Local Municipality (which includes Royal Bafokeng Local Municipality)
12. Madibeng Local Municipality
13. Govan Mbeki Local Municipality
14. Thembisile Local Municipality
15. Victor Khanye Local Municipality
16. Metsimaholo Local Municipality

Given the large area of supply and dependency of thousands of water users on the continuous supply of high-quality water, the performance of this bulk water utility is critical to the well-being of the people serviced through the bulk supply and municipal water networks. Rand Water produces drinking water sourced from the Vaal dam and treated at Zuikerbosch and Vereeniging Water Treatment Works with an average supply of 4,443 ML/day and a peak day demand of 5,069 ML/day. The water produced is fed to 27 mines and 952 industries as well as direct consumers and the municipalities listed above. The water is fed into a distribution network of over 3,500 km of large diameter pipelines feeding 60 service reservoirs before being distributed to the consumers. The four pump stations (Mapleton, Palmiet, Zwartkopjes and Eikenhof) are utilised to chlorinate the water prior to pumping it over the long distances required to ensure that the consumers receive safe drinking water that complies with SANS 241 specifications.

Regulator’s Comment

The Blue Drop Audit was well attended by all relevant staff members and the personnel were well prepared, experienced, and understood the requirements of the Blue Drop Audit. Rand Water is commended for their preparedness and information provided. The scale of the Rand Water system is significant, and the local municipalities are fortunate to have this utility to assist them in the provision of safe drinking water for their consumers.

Rand Water uses a Water Quality Management System (WQMS) which integrates all aspects of water quality management across all operational and maintenance teams. The audit team was able to follow an incident with this WQMS right down to the results in the laboratory. Therefore, consumers can be assured that the Rand Water team continuously monitors all potential problems and actively manage these risks to ensure that the drinking water supplied is of excellent quality. The water quality data shows excellent compliance to all the required parameters and consumers within the Rand Water area of supply are assured of being able to drink water straight from the tap.

Rand Water operates and maintains its systems with a vast technical, operational, and scientific team who are qualified and competent in all technical, operational, and scientific aspects of drinking water supply. There are contracts in place for chemical supply and evidence of Capex budget and expenditure with long term planning. Pipeline age analysis is performed with upgrades and augmentation for pipelines, reservoirs, and other work via a rolling 5-year Capex forecast. Reservoirs and pipes are checked, and reports are generated weekly to assist in managing the system. Rand Water publishes water quality results on their website and their staff are managed with the provision of drinking water of good quality as the primary focus. Rand Water can be commended for managing this large complex system with excellence!

Blue Drop Findings

The Regulator notes finds that that there were some shortcomings, and the following summarises the collective recommendations as following:
The condition assessment of the works is done at a high level and more detail is expected in these documents. In addition, the data used was not within the assessment period (2017) and summary reports provided were compiled in 2020, which is outside the assessment period.

- The available budget was overspent by a small margin.
- During the site visit a water leak at the chemical plant was observed but service personnel had already been alerted to this.
- The pipe service ducts on site were not safe and this was pointed out to the Rand Water staff during the assessment.

**Technical Site Inspection**

The Vereeniging WTW is in a good condition with a TSA score of 97%.

The Regulator observed that regular routine maintenance is done on site with no significant operational or maintenance issues noted. The water leak at the chemical plant was already logged for the maintenance team to attend to. Both the operational and compliance water quality data show that this plant is producing water which complies with the drinking water standard.

The Rand Water team was able to show how all divisions of the utility are able to maintain the water treatment processes as efficiently as possible with a large team. Rand Water makes use of a Water Quality Management System which aims to breach the gaps between the various departments of this large utility. The documentation provided allowed the audit team to drill down to the water quality results as well as up to identify the control measures and the risks carried by the utility. As such, the Rand Water team is to be commended on a job well done, setting a prime example of care, competence, and diligence in providing excellent water quality to consumers.
7.2 Magalies Water

**Introduction**

Magalies Water is the bulk water utility in South Africa and supplies potable water to more than 500 000 people in Gauteng, North West, Limpopo. Magalies Water operations cover an area of 42 000 km² across the three provinces with water sourced from two major catchments being the Crocodile and the Pienaars rivers. However, in certain municipalities, Magalies Water serve on an operations and Maintenance contractual agreement where they operate the infrastructure owned by the local authority such as in Ngaka Modiri Molema DM and Dr Ruth Segomotsi Mompati DM in the North West province.

The utility serves the following 6 municipalities:

1. City of Tshwane Metropolitan Municipality, supplied with 15.872 Ml/d
2. Moses Kotane Local Municipality, supplied with 36 Ml/d
3. Rustenburg Local Municipality, supplied with 20 Ml/d
4. Modimolle/Mookgopong Local Municipality, supplied with 6.1 Ml/d
5. Thabazimbi Local Municipality, supplied with 11 Ml/d
6. Bela-Bela Local Municipality, supplied with 7.05 Ml/d

Magalies Water abstracts raw water and channelled to water treatments plants where it is treated before is supplied to its municipal and industrial clients. The Water Board own four WTPs, namely Vaalkop, Klipdrift, Wallmansthal and Cullinan. In total Magalies Water currently has the infrastructure and capacity to supply 314 megalitres or 314 million litres of water per day to all the municipalities mentioned above and the mines in the surrounding areas receiving bulk water from the water utility. Water is transported through pipelines, reservoirs, pumping stations, reticulation systems and owns a South African National Accreditation System (SANAS) accredited laboratory that is authorised and certified to analyse and rate the quality of water supplied to consumers. As such the performance of this bulk water utility is critical to the well-being of the people in area of supply.

**Regulator’s Comment**

The Blue Drop Audit was well attended by all relevant staff members and the personnel were well prepared, experienced, and understood the requirements of the Blue Drop Audit. Magalies Water is commended for their preparedness and information provided. The scale of the Magalies Water system is significant, and the local municipalities are fortunate to have this utility to assist them in the provision of safe drinking water for their consumers.

Magalies Water proactively seeks to comply with the ISO 14001 certification requirements and ensures that all its areas of operations have no impact on the environment. All the four water treatment works owned and operated by Magalies Water are ISO 14001 certified and have been retained the certification to date. The Water Board is equipped with a laboratory accredited with a South African National Accredited System (SANAS) that is authorised and certified to analyse water quality. The accreditation ensures that credibility of the results from the laboratory is not questionable and follows accredited methods in analytical procedures followed by the laboratory. These results are then submitted to the Departmental owned web-based system were drinking water quality results are submitted called Integrated Regulatory Information Systems (IRIS). The lab results as well as Incident Management Protocol are aligned such that any incidents with respect to failures in the systems are investigated and rectified immediately. The audit team was able to follow any incident within the systems. Therefore, consumers can be assured that the Magalies Water team continuously monitors all potential problems and actively manage these risks to ensure that the drinking water supplied is of excellent quality. The water quality data shows excellent compliance to all the required parameters and consumers within the Magalies Water area of supply are assured of being able to drink water straight from the tap. Water Quality results are published in the Water Boards annual reports and also when incidents are picked up, communication is issued to clients and also placed on Magalies Water website and can be commended for managing these large and complex systems with excellence!

Magalies Water operates and maintains its systems with a vast technical, operational, and scientific team who are qualified and competent in all technical, operational, and scientific aspects of drinking water supply. There are contracts in place for chemical supply, calibration/verification of meters and evidence of Capex budget and expenditure with long term planning. Pipelines equipped with cathodic protection however age analysis and network related audits and planning are still lacking. Operational costs determination based on all the five costs drivers, chemical costs, maintenance costs, compensation of employee, energy costs and raw water costs are in place.

**Blue Drop Findings**

The Regulator Notes finds that that there were some shortcomings, and the following summarises the collective recommendations as following:
• With the exception of Cullinan WTW which had a process audit in place to assess the integrity of the WTW whether it meets all the design specification as originally intended. However all the WTW owned and operated by Magalies Water have condition assessment of the works is done, this is a shortcoming as it is not awarded a full score for the KPA however the Department is comforted by the fact that findings and recommendations of the condition assessments are implemented.
• The available budget was overspent by a small margin.
• Record keeping of maintenance work done and the maintenance planning that is aligned with asset register needs to be improved
• Minor improvements on asset register that is aligned with Blue Drop assessment criteria is required.

Technical Site Inspection

The Cullinan WTW is in a good condition with a TSA score of 94%. The Regulator observed that regular routine maintenance is done on site with no significant operational or maintenance issues noted. Both the operational and compliance water quality data show that this plant is producing water which complies with the drinking water standard.

The Magalies Water team was able to show how all divisions of the utility are able to maintain the water treatment processes as efficiently as possible with a large team. With jar Tests conducted on site to address any water quality variation that may occur that may require adjustments of chemical. The documentation provided allowed the audit team to drill down to the water quality results as well as up to identify the control measures and the risks carried by the utility. This included chemical stocks available, adjustments made and dosage rates which will help in estimation of duration it takes for a batch to complete and this helps in supply chain management to ensure there is sufficient stock of treatment chemicals. The team is commended on a job well done, setting a prime example of care, competence, and diligence in providing excellent water quality to consumers.
### Municipal Blue Drop Score

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>97.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>96.62%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>98.95%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>97.44%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Ekurhuleni</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td>Rand Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>97.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>96.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>99.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>97.40%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>986 972</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>85.48%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>29.17%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>33.30%</td>
</tr>
</tbody>
</table>

*Technical Site Assessment: Impala Park Reservoirs - 84%*
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>98.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>96.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>98.92%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>97.63%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Greater Johannesburg WSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Rand Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>98.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>96.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>98.92%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>97.69%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>1 686 097</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>85.48%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>29.17%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>34.70%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Illovo Command Reservoir - 89%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>83.23%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>94.43%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>95.76%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>90.41%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>CULLINAN AREA (MAGALIES Cullinan WTW)</td>
<td></td>
</tr>
<tr>
<td>WALMANSTHAL AREA (MAGALIES Walmansthal WTW)</td>
<td></td>
</tr>
<tr>
<td>PRETORIA Temba (Temba WTW)</td>
<td></td>
</tr>
<tr>
<td>PRETORIA Central &amp; South (Rietvlei WTW &amp; Rand Water)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRETORIA Findley (Fountains)</td>
<td></td>
</tr>
<tr>
<td>PRETORIA North - (Roodeplaat WTW)</td>
<td></td>
</tr>
<tr>
<td>KUNGWINI - (Bronkhorstspruit Town WTW)</td>
<td></td>
</tr>
<tr>
<td>KUNGWINI (Bronkhorstsbaai WTW)</td>
<td></td>
</tr>
</tbody>
</table>

### System Design/Capacity

<table>
<thead>
<tr>
<th>Year</th>
<th>Design Capacity</th>
<th>Available Capacity</th>
<th>Input Value</th>
<th>Capacity Utilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>16 000</td>
<td>16 000</td>
<td>10 144</td>
<td>65.09%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>95.05%</td>
<td>93.50%</td>
<td>83.01%</td>
<td>94.43%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>90.75%</td>
<td>82.35%</td>
<td>83.23%</td>
<td>90.41%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>83.01%</td>
<td>84.50%</td>
<td>83.71%</td>
<td>90.41%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

- Natural Dolomitic Springs
- Roodeplaat dam
- Bronkhorstspruit River (Hondsrivier)
- Bronkhorstspruit dam

<table>
<thead>
<tr>
<th>Year</th>
<th>BDRR</th>
<th>2023%</th>
<th>2022%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>72.89%</td>
<td>69.65%</td>
<td>55.97%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>95.05%</td>
<td>93.50%</td>
<td>82.35%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>90.75%</td>
<td>82.35%</td>
<td>83.71%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>83.01%</td>
<td>83.71%</td>
<td>83.71%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>KUNGWINI (Summerplace WTW)</td>
<td>SOKHULUMI Informal Settlement</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------</td>
<td>-----------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>54.24%</td>
<td>43.93%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>95.53%</td>
<td>74.91%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>66.33%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NA</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>700</td>
<td>1553</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>700</td>
<td>407</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>105</td>
<td>285</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>15.00%</td>
<td>70.02%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Bronkhorstspruit dam</td>
<td>Groundwater</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>22.76%</td>
<td>47.07%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>47.00%</td>
<td>28.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Temba WTW – 73%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>85.90%</td>
</tr>
<tr>
<td>2014</td>
<td>88.16%</td>
</tr>
<tr>
<td>2012</td>
<td>96.80%</td>
</tr>
<tr>
<td>2011</td>
<td>95.75%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Emfuleni</th>
<th>Vaaloewer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>85.93%</td>
<td>58.08%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>88.27%</td>
<td>67.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>96.87%</td>
<td>84.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>96.42%</td>
<td>93.76%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>4 800 000</td>
<td>300</td>
</tr>
<tr>
<td>Design Capacity Utilisation</td>
<td>%</td>
<td>86.35%</td>
<td>30.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal River</td>
<td>Vaal River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>31.89%</td>
<td>42.10%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>86.9%</td>
<td>93.8%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Vaaloewer WTW – 81%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Blue Drop Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>86.22%</td>
</tr>
<tr>
<td>2014</td>
<td>87.75%</td>
</tr>
<tr>
<td>2012</td>
<td>92.92%</td>
</tr>
<tr>
<td>2011</td>
<td>87.41%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Lesedi Main (Rand Water)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Rand Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>86.22%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>87.75%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>92.92%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>87.41%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Heidelberg Command Reservoir – 53%

- **System Design Capacity**: 5 427 000 kL/d
- **System Available Capacity**: 5 427 000 kL/d
- **System Input Value**: 23 350 kL/d
- **Capacity Utilisation**: 85.48%
- **Resource Abstracted From**: Vaal River
- **BDRR 2023**: 30.43%
- **BDRR 2022**: 35.10%
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>93.22%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>84.56%</td>
</tr>
<tr>
<td></td>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>92.21%</td>
</tr>
<tr>
<td></td>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>86.46%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Carletonville</th>
<th>Fochville</th>
<th>Wedela</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Rand Water</td>
<td>Rand Water</td>
<td>Rand Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>93.31%</td>
<td>93.03%</td>
<td>93.31%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>91.60%</td>
<td>84.19%</td>
<td>84.19%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>95.26%</td>
<td>89.05%</td>
<td>90.76%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>86.41%</td>
<td>86.36%</td>
<td>86.98%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
<td>5 427 000</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
<td>5 427 000</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>33 305</td>
<td>20 491</td>
<td>6 916</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>86.35%</td>
<td>86.35%</td>
<td>86.35%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal River</td>
<td>Vaal River</td>
<td>Vaal River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>30.04%</td>
<td>30.04%</td>
<td>30.04%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>37.50%</td>
<td>37.50%</td>
<td>37.50%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment** - No TSA was conducted for the WSA as there are no WTWs to assess.
### Municipal Blue Drop Score

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>94.80%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>94.65%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>84.10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>67.94%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Meyerton</th>
<th>Vaal Marina</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Rand Water</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>95.12%</td>
<td>84.03%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>95.10%</td>
<td>83.96%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>85.95%</td>
<td>39.65%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>85.73%</td>
<td>35.31%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
<td>10 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
<td>10 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>33 371</td>
<td>1 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>86.35%</td>
<td>10.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal River</td>
<td>Vaal Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>29.98%</td>
<td>21.21%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>33.30%</td>
<td>16.80%</td>
</tr>
</tbody>
</table>

\*Technical Site Assessment: Vaal Marina WTW – 81%*
**Municipal Blue Drop Score**

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>93.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>88.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>98.79%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>97.32%</td>
</tr>
</tbody>
</table>

**Key Performance Area**

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Mogale City WSSs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Rand Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>93.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>88.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>98.79%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>96.19%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>92 313</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>86.35%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>29.43%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>37.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment**  
No TSA was conducted for the WSA as there are no WTWs to assess.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>87.23%</td>
<td>91.60%</td>
<td>97.54%</td>
<td>95.24%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Bakkersdal</th>
<th>Glenharvie</th>
<th>Suurbekom</th>
<th>Wagrerskop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td>Rand Water</td>
<td>Rand Water</td>
<td>Rand Water</td>
<td>Rand Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 86.11%</td>
<td>86.81%</td>
<td>86.81%</td>
<td>86.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 86.23%</td>
<td>86.42%</td>
<td>86.23%</td>
<td>86.23%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 95.29%</td>
<td>95.29%</td>
<td>95.76%</td>
<td>95.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% 84.37%</td>
<td>84.42%</td>
<td>84.42%</td>
<td>84.35%</td>
</tr>
</tbody>
</table>

| System Design Capacity    | kL/d  | 5 427 000 | 5 427 000 | 5 427 000 | 5 427 000 |
| System Available Capacity  | kL/d  | 5 427 000 | 5 427 000 | 5 427 000 | 5 427 000 |
| System Input Value         | kL/d  | 15 141    | 1 420     | 472       | 236       |
| Capacity Utilisation       | %     | 86.35%    | 86.35%    | 86.35%    | 86.35%    |
| Resource Abstracted From   |       | Vaal River | Vaal River | Vaal River | Vaal River |

| BDRR 2023                  | % 31.33% | 30.03% | 31.33% | 31.02% |
| BDRR 2022                  | % 37.50% | 34.20% | 36.40% | 36.40% |

### Technical Site Assessment:
No TSA was conducted for the WSA as there are no WTWs to assess.
Vaal Marina site assessment – good participation by technical staff to benefit from the consultative auditing process

City of Cape Town, Steenbras WTW in pristine condition, well operated with competent staff
8. KWAZULU NATAL PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE

- 14 WSAs & 172 systems audited
- 2 Water Boards & 4 WSPs
- 71.6% ave. TSA score
- 45.5% BDRR - Low risk
- 3 BD Certifications
- 21 Critical State systems
Provincial Synopsis

The KwaZulu Natal province provides drinking water to a total population of 8,787,506 persons in South Africa.

An audit attendance record of 100% of the 14 WSAs, with 172 water supply systems across the province, 2 Water Boards (Umgeni Water and Mhlathuze Water), Bulk Water Provider uThukela Water and WSPs (WSSA now Zana Manzi, Novubu Construction and Siza Water) affirms the province’s commitment to the Blue Drop national incentive-based regulatory programme. Umgeni Water own eleven water treatments works that supply potable water to 14 water supply systems in 6 WSAs (eThekwini MM, Harry Gwala DM, iLembe DM, Ugu DM, Msunduzi LM and uMgungundlovu DM). Umgeni Water also provides O&M support under a contractual arrangement to other water treatment systems (22) in the Ugu DM, uMgungundlovu DM and King Cetshwayo DM. Mhlathuze Water has recently merged with Umgeni Water in July 2023 to form uMngeni-uThukela Water (Government Gazette no. 48833 dated 19 June 2023). Mhlathuze LM owns one water treatment works and operates and maintains three other water treatment works that supplies potable water to 4 water supply systems in the uMhlathuze LM.

The Regulator determined that 3 water supply systems scored more than 95% when measured against the Blue Drop standards and thus qualified for the prestigious Blue Drop Certification. In 2014, 8 water supply systems were awarded Blue Drop status. Using the 2014 audit results as comparative baseline, the province shows a decline in excellence for 2023. Five (S) of 14 WSAs improved on their 2014 scores, namely Harry Gwala DM, iLembe DM, uMgungundlovu DM, Umkhanyakude DM and uThukela DM. The eThekwini MM and Msunduzi LM blue drop score comparison was very marginal. The remaining 7 WSAs regressed to lower Blue Drop scores compared to their 2014 baselines with at least Newcastle LM and uMhlathuze LM maintaining their good performance status. eThekwini MM, Msunduzi LM, uMgungundlovu DM and iLembe DM are the best performing WSAs in the province, with 3 of these 4 WSAs achieving Blue Drop Certifications for one water supply system each (3 in total). Excellent technical site assessment scores were achieved by the Midmar WTW in uMgungundlovu DM with a TSA score pf 95% and by the Nsezi WTW in uMhlathuze LM with a TSA score of 90%. 21 water supply systems were identified to be in a critical state in the province compared with 18 water supply systems in 2014.

The province’s overall Blue Drop performance is characterised by particular strengths when measured against the KPAs. Umgeni Water, Mhlathuze Water, uThukela Water, Siza Water, Msunduzi LM, uMgungundlovu DM and uMhlathuze LM stand out for its compliance, good practice and risk management practices that are well embedded in the water supply business. The KPAs that require attention and are the worst performing are KPA 4 Technical Management (37.4%) and KPA 5 DWQ Compliance (54.3%).

The provincial Blue Drop Risk Rating (BDRR) improved from 50.4% (medium risk category) in 2022 (BD PAT) to 45.4% (low risk category) in 2023. 113 (of 172) water supply systems are situated in the low risk category, 34 WSSs in the medium risk category, 15 WSSs in the high risk category, and 10 WSSs in the critical risk category.

The Regulator is optimistic that the 2023 Blue Drop report provides an updated residual basis from where a positive trajectory for water services delivery and improved performance will follow in the next BD audit. Municipalities and their service providers are encouraged to start preparation for the next Blue Drop audit cycle, which is planned to cover the financial year 2023/24 and released in 2025. The 2023 Blue Drop status for WSAs in the province are summarised in the table below.

Table 101 - 2023 Blue Drop Summary

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2014 BD Score (%)</th>
<th>2023 BD Score (%)</th>
<th>2023 BD Certified ≥95%</th>
<th>2023 Critical State (&lt;31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amajuba DM</td>
<td>58.18%</td>
<td>44.40%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>95.90%</td>
<td>94.95%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>62.86%</td>
<td>66.18%↑</td>
<td></td>
<td>Machunwini, Chibini</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>86.72%</td>
<td>87.09%↑</td>
<td>Dolphin Coast Ballito (Siza Water and Umgeni Water)</td>
<td></td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>74.08%</td>
<td>40.70%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>89.06%</td>
<td>84.35%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>97.97%</td>
<td>97.94%↓</td>
<td>Umsunduzi Umgeni Water</td>
<td></td>
</tr>
<tr>
<td>Ugu DM</td>
<td>66.29%</td>
<td>57.14%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>uMgungundlovu DM</td>
<td>89.94%</td>
<td>96.44%↑</td>
<td>UW-uMgungundlovu DM (Umgeni Water)</td>
<td></td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>89.60%</td>
<td>83.70%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>57.87%</td>
<td>74.32%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>78.02%</td>
<td>31.59%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>uThukela DM</td>
<td>34.50%</td>
<td>50.42%↑</td>
<td></td>
<td>Coronation, eMondlo, Hlobane, Louwsberg, Vryheid</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>51.18%</td>
<td>43.93%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td><strong>3</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

↑= improvement, ↓= regress, →= no change
The Department of Water and Sanitation acknowledges the excellence in water services management achieved for the Blue Drop Audit year of 2021-22. Three (3) Blue Drop Certificates are awarded in the KwaZulu Natal Province to the water supply systems of iLembe DM, Msunduzi LM and uMgungundlovu DM:

<table>
<thead>
<tr>
<th>Province</th>
<th>2023 Blue Drop Certified Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>KwaZulu Natal</td>
<td>• iLembe DM</td>
</tr>
<tr>
<td></td>
<td>o Dolphin Coast Ballito (Siza Water and Umgeni Water)</td>
</tr>
<tr>
<td></td>
<td>• Msunduzi LM</td>
</tr>
<tr>
<td></td>
<td>o Umsunduzi (Umgeni Water)</td>
</tr>
<tr>
<td></td>
<td>• uMgungundlovu DM</td>
</tr>
<tr>
<td></td>
<td>o UW-uMgungundlovu DM (Umgeni Water)</td>
</tr>
</tbody>
</table>

Background to Water Delivery and Distribution Infrastructure

The total volume of water treated in the province is 2,284,424 kl/d. Fourteen (14) WSAs, 2 Water Boards (Umgeni Water and Mhlathuze Water), Bulk Water Provider uThukela Water and WSPs (WSSA now Zana Manzi, Novubu Construction and Siza Water) are responsible for water services through a water network comprising of:

- 190 WTWs, boreholes and springs with the bulk of the water treated and supplied by the 12 WTWs of Umgeni Water and Mhlathuze Water to 7 WSAs with a total Average Daily Production of 1,611,562 kl/d
- 172 WSSs of which 15 WSSs in 7 WSAs are provided with bulk potable water from Umgeni Water and Mhlathuze Water, and 29 WSSs by Newcastle LM, Ugu DM and uThukela DM
- 816 pump stations, 4,763 km bulk water supply lines, 37,188 km reticulation pipe lines, and 1,975 reservoirs/ towers (excluding systems in 7 WSAs that were unable to provide some verifiable data)

<table>
<thead>
<tr>
<th>Micro Size Plants</th>
<th>Small Size Plants</th>
<th>Medium Size Plants</th>
<th>Large Size Plants</th>
<th>Macro Size Plants</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;500 kl/day</td>
<td>500 - &lt;2,000 kl/day</td>
<td>2,000 - &lt;10,000 kl/day</td>
<td>10,000 - &lt;25,000 kl/day</td>
<td>&gt;25,000 kl/day</td>
<td>Unknown (NI)*</td>
</tr>
<tr>
<td>No. of WTWs, Boreholes, Springs</td>
<td>36 (19%)</td>
<td>68 (36%)</td>
<td>48 (25%)</td>
<td>22 (12%)</td>
<td>16 (8%)</td>
</tr>
<tr>
<td>Total Design Capacity (kl/day)</td>
<td>8,518</td>
<td>57,880</td>
<td>203,800</td>
<td>335,300</td>
<td>2,328,400</td>
</tr>
<tr>
<td>Total Available Capacity (kl/day)</td>
<td>8,926</td>
<td>57,985</td>
<td>199,150</td>
<td>334,080</td>
<td>2,294,400</td>
</tr>
<tr>
<td>Average Daily Treatment Volume (kl/day)</td>
<td>8,795</td>
<td>32,910</td>
<td>92,458</td>
<td>213,082</td>
<td>1,937,179</td>
</tr>
<tr>
<td>Total SIV (kl/day)</td>
<td>10,324</td>
<td>50,927</td>
<td>168,359</td>
<td>266,226</td>
<td>2,080,791</td>
</tr>
<tr>
<td>Design Capacity Utilisation (%)</td>
<td>103%</td>
<td>57%</td>
<td>45%</td>
<td>64%</td>
<td>83%</td>
</tr>
<tr>
<td>Available Capacity Utilisation (%)</td>
<td>99%</td>
<td>57%</td>
<td>46%</td>
<td>64%</td>
<td>84%</td>
</tr>
</tbody>
</table>

*“Unknown” means the number of WTWs with NI (No Information) on design capacity or available capacity or SIV

The audit verified a total installed design capacity of 2,933,898 kl/d and a total available design capacity of 2,894,541 kl/d with most of this capacity residing in the macro-sized water treatment plants. Collectively, the 190 WTWs produce 2,284,424 kl/d and distributes 2,576,627 kl/d across the water networks. By comparing the available treatment capacity with the treated water volume, a spare treatment capacity of 610,117 kl/d is available (21%) to meet additional future demands. However, the WUE for the province is high (ave. 253 l/p/d) compared to the international WUE benchmark of 180 l/p/d, indicating a high ratio between effective water use and actual water abstraction. Going forward, the province will have to dedicate significant resources to curb water losses and NRW.
In some cases, a Bulk Water Supplier supplies water across provincial borders and it is difficult to report accurately on design capacity and available capacity at provincial level, as the statistical data may become repetitive. Therefore, the reporting on the total system input volumes (SIV) would provide more accurate figures on the supply of treated water to the various water supply systems.

The total SIV in the province is 2,576,627 kl/d and the average daily treatment volume is 2,284,424 kl/d, and this indicates that the treated volume is less than the total SIV (89%) as 47 WTWs/boreholes/springs are not measuring their average daily treatment volumes and in most cases the design capacity is used as the default SIV. The stand-alone largest contributor to the total SIV for 14 WSSs is from Umgeni Water with a total SIV contribution of 1,663,279 kl/d (65%). Diagnostic no. 2 to follow herein will unpack these statistics in more detail.

The data shows that 24 WTWs daily average treatment volume exceeds the available design capacity. 14 of the WTWs have daily production volumes that exceed the authorised daily abstraction volumes.

The water distribution infrastructure is summarised in the table below.

### Table 103 - Summary of Water Distribution Reticulation Infrastructure

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WSS with no WSP/WB</th>
<th># WSS with WSP/WB</th>
<th>Water Distribution Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td># Pump Stations (#)</td>
</tr>
<tr>
<td>Umgeni Water</td>
<td>-</td>
<td>14</td>
<td>86</td>
</tr>
<tr>
<td>Mhlathuze Water</td>
<td>-</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td></td>
<td>57</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>1</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>20</td>
<td>1</td>
<td>27</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>14</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>12</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>1</td>
<td>7</td>
<td>170</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>1</td>
<td>9</td>
<td>170</td>
</tr>
<tr>
<td>Ugu DM</td>
<td>8</td>
<td>5</td>
<td>255</td>
</tr>
<tr>
<td>uMngundlovu DM</td>
<td>7</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>3</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>12</td>
<td>34</td>
<td>30</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>14</td>
<td>53</td>
<td>57</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>14</td>
<td>39</td>
<td>94</td>
</tr>
<tr>
<td>Zululand DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>82</strong></td>
<td><strong>90</strong></td>
<td><strong>816</strong></td>
</tr>
</tbody>
</table>
The 100% response from the 14 WSAs audited demonstrates a firm commitment to progressive water services management in the province. There was no merging of municipalities only name changes of Sisonke DM to Harry Gwala DM and uThungulu DM to King Cetshwayo DM. Therefore, 14 WSAs were audited in 2023 compared to the 14 WSAs in 2014.

Table 104 - Blue Drop Comparative Analysis from 2012 to 2023

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>2012</th>
<th>2014</th>
<th>2023</th>
<th>Performance trend 2014 and 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSAs assessed (#)</td>
<td>14 (100%)</td>
<td>14 (100%)</td>
<td>14 (100%)</td>
<td>→</td>
</tr>
<tr>
<td>Water supply systems assessed (#)</td>
<td>191</td>
<td>209</td>
<td>172</td>
<td>↓</td>
</tr>
<tr>
<td>Blue Drop scores ≥50% (#)</td>
<td>172 (90%)</td>
<td>148 (71%)</td>
<td>117 (68%)</td>
<td>↓</td>
</tr>
<tr>
<td>Blue Drop scores &lt;50% (#)</td>
<td>19 (10%)</td>
<td>61 (29%)</td>
<td>55 (32%)</td>
<td>↑</td>
</tr>
<tr>
<td>Blue Drop Certifications (#)</td>
<td>16</td>
<td>8</td>
<td>3</td>
<td>↓</td>
</tr>
<tr>
<td>Lowest Technical Site Assessment Score (%)</td>
<td>50%</td>
<td>28%</td>
<td>50%</td>
<td>↑</td>
</tr>
<tr>
<td>Highest Technical Site Assessment Score (%)</td>
<td>96%</td>
<td>99%</td>
<td>90%</td>
<td>↓</td>
</tr>
</tbody>
</table>

NA = Not Applied  NI = No Information  ↑ = improvement,  ↓ = regress,  → = no change

The trend analysis indicates that:

- The no. of systems audited decreased from 209 systems in 2014 to 172 systems in 2023
- The no. of systems with BD scores of ≥50% decreased from 71% in 2014 to 68% in 2023
- This trend was reversed with no. of systems with a BD score of ≤50% increased from 29% in 2014 to 32% in 2023
- Blue Drop Certifications decreased from 8 awards in 2014 to 3 awards in 2023
- The lowest TSA score increased from 28% in 2014 to 50% in 2023, with the highest TSA score decreasing from 99% in 2014 to 90% in 2023
- The overall performance trend indicates a regression from 2014 to 2023
- This negative trajectory reinforces the need for regular audits to ensure timely turnaround and continued improvement
- The negative trend also implies that performance has declined slightly in the absence of regulatory engagement of the BD audits between 2014 to 2023.

Figure 77 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right)

Comparative analysis of the 2014 and 2023 BD scores, indicates that most of the system scores are in the >50–<80% (Average Performance) category, with the >31–<50% (Poor Performance) being the next largest category. It is concerning that 21 systems in 2023 reside in the Critical State (<31%).
In summary, trend analysis since 2014 to 2023 indicate as follows:

- Systems in a ‘critical state’ increased from 18 systems to 21 systems.
- Systems in a ‘poor state’ decreased from 43 systems to 34 systems.
- Systems in an ‘average state’ decreased from 124 systems to 95 systems.
- Systems in the ‘excellent and good state’ increased slightly (%wise not #) from 11% (24 systems) to 13% (22 systems).

Provincial BDRR Analysis

The Blue Drop Risk Rating (BDRR) analysis assesses the risk across the entire water supply network. The BDRR formula was updated in 2021 to include an added risk indicator, i.e. ‘E: Water Safety Plans’, to address the risk assessment requirements outlined in SANS 241 of 2015. The BDRR now contains 5 risk indicators, i.e. design capacity (A), operational capacity (B), water quality compliance (C), technical capacity (D), and water safety plans (E). The results from the BDRR analyses are summarised in the table and figure following.

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th># WBs/WSPs</th>
<th>2022 (BD PAT)</th>
<th>2023 (BD Audit)</th>
<th>Performance Trend 2022 and 2023</th>
<th>BDRR Risk Category Split</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2022</td>
<td>2023</td>
<td></td>
<td>0-50%</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td>43.7%</td>
<td>34.7%</td>
<td>↑</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>1</td>
<td>32.6%</td>
<td>31.6%</td>
<td>↑</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>21</td>
<td>36.6%</td>
<td>36.7%</td>
<td>↓</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>19</td>
<td>54.8%</td>
<td>32.0%</td>
<td>↑</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>12</td>
<td>42.2%</td>
<td>55.7%</td>
<td>↓</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>25.9%</td>
<td>28.5%</td>
<td>↑</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>1</td>
<td>100.0%</td>
<td>28.4%</td>
<td>↑</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Ugu DM</td>
<td>13</td>
<td>40.5%</td>
<td>41.9%</td>
<td>↓</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>uMgungundlovu DM</td>
<td>8</td>
<td>28.1%</td>
<td>28.2%</td>
<td>↓</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>4</td>
<td>32.4%</td>
<td>30.6%</td>
<td>↑</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Umkhangayude DM</td>
<td>22</td>
<td>86.1%</td>
<td>36.3%</td>
<td>↑</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>13</td>
<td>65.3%</td>
<td>59.5%</td>
<td>↑</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>14</td>
<td>54.7%</td>
<td>51.7%</td>
<td>↑</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>39</td>
<td>63.3%</td>
<td>65.3%</td>
<td>↓</td>
<td>30</td>
<td>4</td>
</tr>
</tbody>
</table>

| Totals & %BDRR/BDRRmax | 172 | 90 | 50.4% | 45.5% |

↑ = Improvement, ↓ = Regress, → = No Change

Figure 78 - a) WSS risk distribution and trends for 2022 and 2023; b) Colour legend

Trend analysis of the BDRR ratings for 2022 and 2023 indicates that:

- The 2023 audit cycle highlighted a progressive shift with an increase in the low risk WSSs (93 to 112), an increase in the medium risk WSSs (28 to 35), an increase in the high risk WSSs (10 to 15), and a decrease in critical risk WSSs (31 to 10).

Regulatory Enforcement

Water supply systems which fail to achieve the minimum Blue Drop target of 31%, are placed under regulatory focus. The Regulator requires these WSAs to submit a detailed corrective action plan (CAP) within 20 working days from publishing of this report.
21 WSSs received Blue Drop scores below 31%, and hence are placed under regulatory surveillance, in accordance with the Water Services Act (108 of 1997). DWS together with COGTA will through the grant allocation systems ensure priority is given to application of grants to rectify/restore the water services treatment and supply shortcomings identified in this report.

Table 106 - WSSs with <31% Blue Drop scores

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 BD Score</th>
<th>WSSs with &lt;31% score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harry Gwala DM</td>
<td>66.18%</td>
<td>Machunwini, Chibini</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>40.70%</td>
<td>Khombe, Pikilanyeza</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>31.59%</td>
<td>12 of 13 WSSs</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>43.93%</td>
<td>Coronation, eMondlo, Hlobane, Louwsberg, Vryheid</td>
</tr>
</tbody>
</table>

The following WSAs and their associated water treatment systems are in high and/or critical BDRR risk positions, which means that some or all the risk indicators are in a precarious state, i.e. operational capacity, design capacity utilisation, water quality compliance, technical capacity, and water safety plans. WTWs in high risk and critical risk positions pose a serious risk to public health. The following WSAs will be required to assess their risk contributors and to provide corrective measures in the above mentioned action plans to mitigate these risks.

Table 107 - %BDRR/BDRRmax scores and WSSs in critical and high-risk space

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 Average %BDRR/BDRRmax</th>
<th>WSSs in critical and high-risk space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harry Gwala DM</td>
<td>36.7%</td>
<td>Chibini, Machunwini, Njunga</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>32.0%</td>
<td>Mangwaneni, Mnqumeni, Rietvlei</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>55.7%</td>
<td>Khombe, Pikilanyeza</td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>36.3%</td>
<td>Hlabisa, Hluhluwe Ph 2, Manguzi</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>59.5%</td>
<td>Fabeni, Pomeroy, Sampofu, Isandlwana, Amakhubeleni, Greytown, Muden</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>65.3%</td>
<td>Coronation, eMondlo Town, Hlobane, Louwsberg, Vryheid</td>
</tr>
<tr>
<td>Totals</td>
<td>10 of 172 (6%)</td>
<td>15 of 172 (9%)</td>
</tr>
</tbody>
</table>

Good practice risk management requires that the Water Safety Plans (WaSPs) are informed by meaningful Process and Condition Audits, supported by zealous implementation of corrective measures and ongoing monitoring of risk movement. With the exception of 25 water supply systems in the 6 WSAs above, the remaining 147 water supply systems are in the low and medium risk positions.

Performance Barometer

The Blue Drop Performance Barometer presents the individual WSA Blue Drop scores, which essentially reflects the level of mastery that a WSA has achieved in terms of its overall water services business. The bar chart below compares the 2014 and 2023 BD scores, ranked from highest to lowest performing WSA in 2023. The Msunduzi LM is commended for maintaining excellent performance and uMgungundlovu is congratulated for achieving excellent performance. 5 WSAs improved on their 2014 scores, namely Harry Gwala DM, iLembe DM, uMgungundlovu DM, Umkhanyakude DM and uThukela DM. The eThekwini MM BD score comparison was very marginal. The remaining 7 WSAs regressed to lower Blue Drop scores compared to their 2014 baselines with at least Newcastle LM and uMhlathuze LM maintaining their good performance status.

Figure 79 - a) Blue Drop scores 2014 (bar left) and 2023 (bar right); b) Colour legend
The BDRR Risk Barometer expresses the level of risk that a WSA poses in respect of its water supply system. The schematic below presents the BDRR in ascending order – with the low-risk WSAs on the left and higher risk WSAs to the far right. The analysis reveals that there are 4 medium risk WSAs in the province. 10 WSAs are situated in the low risk positions with 113 (of 172) WSSs low risk and 34 (of 172) in medium risk positions respectively.

![Figure 80 - a) %BDRR/BDRmax Risk Performance Profile/Log 2023; b) Colour legend](image)

**Provincial Best Performers**

- **The Msunduzi Local Municipality (Umgeni Water)** is the **BEST PERFORMING WSA** in the province, based on the following record of excellence:
  - 2023 Blue Drop Score of 97.94%
  - 2014 Blue Drop Score of 97.97%
  - Significant improvement on the BDRR from 100% in 2022 to 28.4% in 2023
  - 1 system (100%) in the low risk position
  - No TSA score as no WTW in the Msunduzi LM (Potable water supplied by Umgeni Water WTWs)

- **The uMgungundlovu District Municipality (Umgeni Water)** is the second-best scoring WSA:
  - 2023 Blue Drop Score of 96.44%
  - 2014 Blue Drop Score of 89.94%
  - BDRR maintained with 28.1% in 2022 & 28.2% in 2023
  - 8 systems (100%) in low risk position
  - TSA score of 95% for the Midmar WTW

- **The eThekwini Metropolitan Municipality (Umgeni Water)** is the third-best scoring WSA:
  - 2023 Blue Drop Score of 94.95%
  - 2014 Blue Drop Score of 95.9%
  - Improvement on the BDRR from 32.6% in 2022 to 31.6% in 2023
  - 1 system (100%) in the low risk position
  - TSA score of 77% for the Kloof WTW
The BD audit process collects a vast amount of data that yield valuable insight into the state of the water services delivery and water quality in each province. Five focus areas or ‘diagnostics’ have been configured from the 2021/22 audit data and are discussed below.

**Table 108 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs**

<table>
<thead>
<tr>
<th>Diagnostic #</th>
<th>Diagnostic Description</th>
<th>Diagnostic Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical Competence</td>
<td>KPA 1, 2 &amp; Bonus</td>
</tr>
<tr>
<td>2</td>
<td>Treatment Capacity and Flow Distribution</td>
<td>KPA 4 &amp; Generic Audit data set</td>
</tr>
<tr>
<td>3</td>
<td>Drinking Water Quality (DWQ) Monitoring and Compliance</td>
<td>KPA 2 &amp; 4 &amp; Bonus</td>
</tr>
<tr>
<td>4</td>
<td>Technical Site Assessments</td>
<td>TSA and 2023 Blue Drop Watch Report</td>
</tr>
<tr>
<td>5</td>
<td>Operation, Maintenance and Refurbishment of Assets</td>
<td>KPA 3 &amp; 4</td>
</tr>
</tbody>
</table>

**Diagnostic 1: Technical Competence**

**Aim:** This focus area assesses the technical human resources capacity that is available to manage and operate water treatment processes and maintain the related water infrastructure. Theory advocates that a correlation exists between human resources capacity and capability (sufficient number of appropriately qualified staff) and a WSI’s performance. Thus, it is hypothesised that high HR capacity would translate to compliant water treatment plants and functional water supply network. Blue Drop assesses technical compliance on two levels: i) WTW plant supervision and process control staff and ii) Technical, scientific and maintenance staff.

**(i) Plant Supervisors and Process Controllers**

**Findings:** According to regulations, water treatment plants are classified as Class A, B, C, D or E plants. Similarly, Process Controllers and Plant Supervisors are registered as Class I, II, III, IV, V or VI Process Controllers. Higher classed plants require a higher level of Process Controllers due to technology complexity and strict water quality standards. Technical compliance of PCs and Supervisors is determined against the Blue Drop standards, as defined by Reg. 2834 of the Water Act 1956 (Act 54 of 1956) for the erection, enlargement, operation, and registration of water care works and draft Reg. 813 of the Water Services Act (No 108 of 1997). Regulation 2834 has been replaced by Regulation 3630 in 2023 but will only come in effect during the next Blue Drop audit cycle.

**Table 109 - No. compliant versus shortfall in Supervisor and Process Controller staff**

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th># Available Compliant Staff</th>
<th>Staff Shortfall</th>
<th>Ratio**</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Supervisor***</td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PCs</td>
<td>Supervisor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Umgeni Water</td>
<td>11</td>
<td>14</td>
<td>67</td>
<td>13</td>
<td>80</td>
<td>0</td>
</tr>
<tr>
<td>Mhlathuze Water</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>5</td>
<td>1</td>
<td>15</td>
<td>5</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>20</td>
<td>21</td>
<td>31</td>
<td>20</td>
<td>51</td>
<td>18</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>17</td>
<td>19</td>
<td>17</td>
<td>32</td>
<td>49</td>
<td>23</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>18</td>
<td>12</td>
<td>13</td>
<td>16</td>
<td>29</td>
<td>48</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Msunduzi LM*</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ugu DM</td>
<td>12</td>
<td>13</td>
<td>15</td>
<td>10</td>
<td>25</td>
<td>17</td>
</tr>
<tr>
<td>uMngungundlovu DM</td>
<td>7</td>
<td>8</td>
<td>27</td>
<td>7</td>
<td>34</td>
<td>0</td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>22</td>
<td>22</td>
<td>25</td>
<td>6</td>
<td>31</td>
<td>37</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>13</td>
<td>13</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>39</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>15</td>
<td>14</td>
<td>24</td>
<td>11</td>
<td>35</td>
<td>29</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>41</td>
<td>39</td>
<td>46</td>
<td>12</td>
<td>58</td>
<td>86</td>
</tr>
<tr>
<td>Totals</td>
<td>190</td>
<td>172</td>
<td>294</td>
<td>143</td>
<td>437</td>
<td>321</td>
</tr>
</tbody>
</table>

* Msunduzi LM receives water from Umgeni Water and has no WTWs in the LM

**Ratio** depicts the no. of qualified staff divided by the no. of WTWs operated by this no. of staff. E.g., eThekwini MM has 20 compliant Sups + PCs, divided by 5 WTWs = 4.0 qualified staff per WTW

**NB:** The Supervisor totals will be inflated as it is not possible to differentiate between which Supervisors are shared/roaming with other Class C to E WTWs

Note: “Compliant staff” means qualified and registered staff that meets the BD standard for a particular Class Works. “Staff shortfall” means staff that do not meet the BD standard for a particular Class of works (+1 for a shift) and/or staffing gaps exist at the respective WTWs.
Competent human resources are vital enablers in ensuring efficient and sustainable management of water services and delivery of safe water quality to consumers. For the province in general, the operational competencies are found to be excellent for the Supervisory staff and for the PCs in Umgeni Water, Mhlathuze Water and uMgungundlovu DM, as illustrated in the table above.

**Figure 81 - Schematic illustration of compliant and shortfall of Supervisors (a) and Process Controllers (b)**

**Plant Supervisors:** The pie charts indicate that 93% (143 of 154) of Plant Supervisors complies with the Blue Drop standard, with 11 shortfalls; **Process Controllers:** Similarly, 48% (294 of 615) of the PC staff complies with the required standards, noting a zero shortfall for Umgeni Water, Mhlathuze Water, and uMgungundlovu DM. There is a 52% (321 of 615) shortfall in Process Controllers with the highest shortfalls in Zululand DM, King Cetshwayo DM, Umkhanyakude DM and Umzinyathi DM.

Blue Drop standards require of Class A and B plants to employ dedicated Supervisors per WTW and Process Controllers per shift per works, whereas Class C to E plants may share Supervisory staff across works. Shifts have been introduced to ensure optimal operations while addressing security risks, particularly as it relates to theft and vandalism. Telemetry also reduces the requirement for on-site staff during night shifts, but these relaxations have to be done within the DWS regulatory guidelines. The Regulator expects correlation between the competence of an operational team and the performance of a WTW, as measured by the BD score. The data indicates as follows:

- All WSAs have qualified PCs in place, with the exception of the Amajuba DM
- All WSAs have qualified Supervisors per WTW, with the exception of the Amajuba DM. With the exception of the Umkhanyakude DM and Zululand DM, the Supervisor totals will be inflated as it is not possible to differentiate between what Supervisors are shared/roaming with other Class C to E WTWs
- All the WSAs have shortfalls in qualified PCs with the exception of Umgeni Water, Mhlathuze Water and uMgungundlovu DM, and all the WSAs have shortfalls in qualified Supervisors with the exception of Mhlathuze Water and 8 WSAs.

It is expected that a correlation would exist between the competence of an operational team and the performance of a water treatment works, as measured by the BD score. The results from the ratio analysis indicate high ratios (>2.5) for Umgeni Water, Mhlathuze Water and 4 WSAs with WTWs.

**Figure 82 - Ratio of compliant operational staff to no. of WTWs and Comparison of Ratios with BD scores**

<table>
<thead>
<tr>
<th>WSA</th>
<th>Ratio</th>
<th>BD score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umgeni Water</td>
<td>0.7</td>
<td>86.98% ave</td>
</tr>
<tr>
<td>Mhlathuze Water</td>
<td>0.7</td>
<td>93.23%</td>
</tr>
<tr>
<td>uMgungundlovu DM</td>
<td>0.5</td>
<td>96.44%</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>0.4</td>
<td>94.95%</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>0.4</td>
<td>84.35%</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>0.3</td>
<td>87.09%</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>0.3</td>
<td>66.18%</td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>0.2</td>
<td>83.7%</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>0.2</td>
<td>50.42%</td>
</tr>
<tr>
<td>Ugu DM</td>
<td>0.2</td>
<td>57.14%</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>0.2</td>
<td>40.7%</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>0.1</td>
<td>43.93%</td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>0.1</td>
<td>74.32%</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>0.0</td>
<td>31.59%</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>0.0</td>
<td>44.4%</td>
</tr>
</tbody>
</table>
Overall, the comparative bar chart confirms a reasonably close correlation from Umgeni Water to uMhlathuze LM with medium-high ratios (ranging from 2.3 to 7.3) and medium-high BD scores (ranging from 66.2% to 96.4%), and similarly there is a close correlation from uThukela DM to Umzinyathi DM medium-low ratios (ranging from 0.3 to 2.3) and medium-high BD scores (ranging from 31.6% to 57.1%) with only Umkhanyakude DM the anomaly with a lower ratio but higher BD score.

(ii) Technical, Scientific and Maintenance staff

In addition to operational capacity (above), good management practice also requires access to qualified engineers, technicians, technologists, MISA appointees, scientists, and maintenance capability (below). Such competencies could reside in-house or accessible through term contracts and external specialists.

Table 110 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Maintenance Arrangement</th>
<th>Total</th>
<th>qualified</th>
<th>Shortfall</th>
<th>Ratio</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umgeni Water</td>
<td>41</td>
<td>172</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>18</td>
<td>0</td>
<td>2</td>
<td>0.11</td>
<td>86.98% ave</td>
</tr>
<tr>
<td>Mhlathuze Water</td>
<td>38</td>
<td>102</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>11</td>
<td>0</td>
<td>7</td>
<td>0.43</td>
<td>93.23%</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>25</td>
<td>63</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>13</td>
<td>0</td>
<td>5</td>
<td>0.39</td>
<td>44.40%</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>26</td>
<td>59</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>15</td>
<td>0</td>
<td>2</td>
<td>0.27</td>
<td>87.09%</td>
</tr>
<tr>
<td>lEmbe DM</td>
<td>22</td>
<td>45</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>17</td>
<td>0</td>
<td>1</td>
<td>0.21</td>
<td>74.32%</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>18</td>
<td>39</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>12</td>
<td>0</td>
<td>8</td>
<td>0.41</td>
<td>87.09%</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>16</td>
<td>34</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>11</td>
<td>0</td>
<td>9</td>
<td>0.55</td>
<td>44.40%</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>11</td>
<td>24</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>10</td>
<td>0</td>
<td>10</td>
<td>1.00</td>
<td>96.44%</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>25</td>
<td>63</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>15</td>
<td>0</td>
<td>10</td>
<td>0.67</td>
<td>57.14%</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>26</td>
<td>59</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>17</td>
<td>0</td>
<td>17</td>
<td>1.00</td>
<td>88.69% ave</td>
</tr>
<tr>
<td>lEmbe DM</td>
<td>22</td>
<td>45</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>18</td>
<td>0</td>
<td>18</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>18</td>
<td>39</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>14</td>
<td>0</td>
<td>14</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>16</td>
<td>34</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>12</td>
<td>0</td>
<td>12</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>11</td>
<td>24</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>8</td>
<td>0</td>
<td>8</td>
<td>0.80</td>
<td>44.40%</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>25</td>
<td>63</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>15</td>
<td>0</td>
<td>15</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>26</td>
<td>59</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>17</td>
<td>0</td>
<td>17</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>lEmbe DM</td>
<td>22</td>
<td>45</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>18</td>
<td>0</td>
<td>18</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>18</td>
<td>39</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>14</td>
<td>0</td>
<td>14</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>16</td>
<td>34</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>12</td>
<td>0</td>
<td>12</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>11</td>
<td>24</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>8</td>
<td>0</td>
<td>8</td>
<td>0.80</td>
<td>44.40%</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>25</td>
<td>63</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>15</td>
<td>0</td>
<td>15</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>26</td>
<td>59</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>17</td>
<td>0</td>
<td>17</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>lEmbe DM</td>
<td>22</td>
<td>45</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>18</td>
<td>0</td>
<td>18</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>18</td>
<td>39</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>14</td>
<td>0</td>
<td>14</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>16</td>
<td>34</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>12</td>
<td>0</td>
<td>12</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>11</td>
<td>24</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>8</td>
<td>0</td>
<td>8</td>
<td>0.80</td>
<td>44.40%</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>25</td>
<td>63</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>15</td>
<td>0</td>
<td>15</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>26</td>
<td>59</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>17</td>
<td>0</td>
<td>17</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>lEmbe DM</td>
<td>22</td>
<td>45</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>18</td>
<td>0</td>
<td>18</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>18</td>
<td>39</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>14</td>
<td>0</td>
<td>14</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>16</td>
<td>34</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>12</td>
<td>0</td>
<td>12</td>
<td>1.00</td>
<td>87.09%</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>11</td>
<td>24</td>
<td>Internal + Specific Outsourcing, Internal Team (Only)</td>
<td>8</td>
<td>0</td>
<td>8</td>
<td>0.80</td>
<td>44.40%</td>
</tr>
</tbody>
</table>

* The single number ratio depicts the no. of qualified technical staff divided by the no. of WSSs that have access to the staff. E.g., Harry Gwala DM has 8 qualified staff, divided by 21 WSSs = 0.4 qualified staff per WSS
** There is no WTW in Msunduzi LM but it is supplied with potable water from Umgeni Water and the DWQ is monitored by Umgeni Water
Note 1: “Qualified Technical Staff” means staff appointed in positions to support water services, and who has the required qualifications. “Technical Shortfall” is calculated based on a minimum requirement of at least 3 Engineers or more than 1 of each of Engineers, Technologists & Technicians; and at least one 1 Candidate Scientist and 1 Professional Scientist per WSI.
Note 2: “Qualified Scientists” means professional registered scientists (SACNASP) and candidate scientists appointed in positions to support water services. “Scientists shortfall” means that the WSA does not have at least one qualified SACNASP registered scientist and at least one 1 candidate scientist in their employ or contracted.
In terms of maintenance capacity, all the municipalities in the province have a reasonable contingent of qualified technical and maintenance staff. The maintenance staff comprises of a collective of in-house, contracted, or outsourced personnel. The data indicates that:

- Umgeni Water and Mhlathuze Water have internal maintenance teams supplement with specific outsourced services
- 12 of 14 (86%) WSAs have in-house maintenance teams
- 10 of 14 (71%) WSAs have internal maintenance teams supplemented with term contracts
- 8 of 14 (57%) WSAs have internal maintenance teams supplement with specific outsourced services
- 1 WSA has inadequate capacity.

In general, the province presents a strong case for qualified professional technical staff as follows:

- A total of 102 qualified staff comprised of 23 Engineers, 41 Technologists, 35 Technicians, 3 MISA appointees (qualified); and 14 SACNASP registered scientists
- A total shortfall of 18 persons is identified, consisting of 11 technical staff and 7 scientists
- 5 WSAs have a total shortfall of 11 qualified technical staff with the highest indicated for Amajuba LM (4), uThukela DM (3) and King Cetshwayo DM (2)
- Umgeni Water, Mhlathuze Water and 13 WSAs have access to credible laboratories that comply with the Blue Drop standards.

![Figure 83 - Graphic illustration of the number and %: a) qualified engineering/technical staff; b) professional scientists; c) access to credible laboratory services that complies with Blue Drop standards](image)

Ratio analysis has been done to determine the number of qualified technical and scientific staff assigned per WSS. It is expected that a higher ratio would correspond with well-performing and maintained water supply systems, as represented by the BD score.

![Figure 84 - Ratio of compliant technical staff to no. of WSSs and Comparison of Ratios with BD scores](image)
The schematic above does show a strong correlation between high ratios (≥2.0) and high BD scores from eThekwini MM to Newcastle LM (ranging from 84.35% to 97.94%). Similarly, there is a correlation between low ratios (<0.5) from Zululand DM to uThukela DM and low BD scores (ranging from 41% to 50.42%) with the only anomalies being Harry Gwala DM and Umkhanyakude DM. A reasonably firm correlation can be drawn between technical capacity and water supply performance, mostly as result of the complexity of the WSA/Bulk Water Provider arrangement. However, it is observed that the involvement of Umgeni Water, Mhlathuze Water, uThukela Water and Siza Water has made a significant (positive) impact on the municipal BD scores.

Overall, the results highlight the inter-dependency between technical capacity and performance. One of the options to enhance operational capacity is through dedicated training programmes. The Blue Drop audit incentivises training of operational staff over the 2-year period prior to the audit date. The results are summarised as follows:

Table 111 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WTW staff attending training</th>
<th># WTW without training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umgeni Water</td>
<td>11</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Mhlathuze Water</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>20</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>17</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>18</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Msundusi LM</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ugu DM</td>
<td>12</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>uMgungundlovu DM</td>
<td>7</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>22</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>13</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>15</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>41</td>
<td>41</td>
<td>39</td>
</tr>
<tr>
<td>Totals</td>
<td>190</td>
<td>71 (36%)</td>
<td>119 (64%)</td>
</tr>
</tbody>
</table>

Figure 85 - %WTWs that have trained operational staff over the past two years

The results confirm that Umgeni Water, Mhlathuze Water and 11 WSAs had their operational staff attend training over the past 2 years. 71 WTWs had their operational staff attend training over the past 2 years. Investment in human capital through technical skills development is likely to mitigate some of the water quality failures and lower performances noted, and municipalities and water boards should prioritise ongoing skills development of technical staff and appointment of qualified staff that are legible for registration.

Diagnostic 2: Treatment Capacity and Flow Distribution

**Aim:** Diagnostic 2 deals with design and flow related dynamics, comprising of: i) design capacity and operational flow, ii) raw water abstraction, and iii) WUE and SIV.

(i) Design Capacity and Operational Flow

This diagnostic assesses the status of plant design capacity and daily water production at the WTWs, as well as SIVs as measured at the outflow from the WTW or inflow to the water distribution network. A capable WTW requires adequate installed design capacity and functional equipment to operate optimally. If the WTW design capacity is exceeded by the average daily production (treatment) volume, the WTW will not be able to deliver SANS compliant water quality. The available design capacity is typically exceeded when the water demand exceeds the installed design capacity, or when unit processes or equipment are dysfunctional, or when electrical supply problems render treatment and pumping of water defective. Typically, the production volume and SIV is the same if 1 WTW supplies 1 WSS, but different if multiple supply systems are feeding from a singular WTW.

**Findings:** Analysis of the design capacity and average daily production/ treatment volume indicate a total design capacity of 2,933,898 kl/d for the province, with a total average daily treatment (operational) volume of 2,284,424 kl/d. Theoretically, this implies that 78% of the design capacity is used with 22% available to meet additional water demand. However, the full 2,933,898 kl/d is not available as some infrastructure is dysfunctional, leaving 2,894,541 kl/d available. The reduced capacity means that the province is closer to its total available capacity (79%) with a 21% surplus available. The capacity differential (difference between the installed and available capacity) will not constrain or impede any further social and economic development in the drainage areas. WSAs do report and have knowledge of their installed and available capacities, and a higher figure than 21% surplus available cannot be expected.
Most of the WSAs have their full installed capacity available. For the province in general, 166 WTWs are operating within their design capacities with the exception of 24 WTWs that exceeds their total design capacity (13%). This risk is currently mitigated through operational optimisation and preventative maintenance regimes.

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Design Capacity (kl/d)</th>
<th>Available Design Capacity (kl/d)</th>
<th>Average Daily Production (kl/d)</th>
<th>Available Variance* (kl/d)</th>
<th>% Use Available Capacity</th>
<th>Total SIV towards the WSS (kl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umgeni Water</td>
<td>11</td>
<td>14</td>
<td>1,677,000</td>
<td>1,649,590</td>
<td>1,467,562</td>
<td>182,028</td>
<td>89%</td>
<td>1,663,279</td>
</tr>
<tr>
<td>Mhlathuze Water</td>
<td>1</td>
<td>1</td>
<td>205,000</td>
<td>205,000</td>
<td>144,000</td>
<td>61,000</td>
<td>70%</td>
<td>45,546</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td>3</td>
<td>12,000</td>
<td>10,000</td>
<td>4,856</td>
<td>5,144</td>
<td>49%</td>
<td>6,856</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>5</td>
<td>1</td>
<td>29,400</td>
<td>26,460</td>
<td>16,473</td>
<td>9,987</td>
<td>62%</td>
<td>16,390</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>20</td>
<td>21</td>
<td>46,810</td>
<td>45,830</td>
<td>22,802</td>
<td>23,028</td>
<td>50%</td>
<td>31,164</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>17</td>
<td>19</td>
<td>62,426</td>
<td>47,826</td>
<td>38,164</td>
<td>9,662</td>
<td>80%</td>
<td>35,209</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>18</td>
<td>12</td>
<td>61,750</td>
<td>61,750</td>
<td>10,600</td>
<td>51,150</td>
<td>17%</td>
<td>62,350</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>2</td>
<td>132,000</td>
<td>132,000</td>
<td>106,800</td>
<td>25,200</td>
<td>81%</td>
<td>108,450</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ugu DM</td>
<td>12</td>
<td>13</td>
<td>148,300</td>
<td>156,200</td>
<td>135,520</td>
<td>20,680</td>
<td>87%</td>
<td>152,203</td>
</tr>
<tr>
<td>uMngungundlovu DM</td>
<td>7</td>
<td>8</td>
<td>10,208</td>
<td>11,656</td>
<td>8,041</td>
<td>3,616</td>
<td>69%</td>
<td>8,120</td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>3</td>
<td>4</td>
<td>109,000</td>
<td>109,000</td>
<td>86,590</td>
<td>22,410</td>
<td>79%</td>
<td>86,590</td>
</tr>
<tr>
<td>Umk handyakude DM</td>
<td>22</td>
<td>22</td>
<td>76,734</td>
<td>76,734</td>
<td>51,616</td>
<td>25,118</td>
<td>67%</td>
<td>53,416</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>13</td>
<td>13</td>
<td>57,050</td>
<td>47,050</td>
<td>17,522</td>
<td>29,528</td>
<td>37%</td>
<td>36,572</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>15</td>
<td>14</td>
<td>119,200</td>
<td>129,940</td>
<td>117,200</td>
<td>12,740</td>
<td>90%</td>
<td>126,204</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>41</td>
<td>39</td>
<td>187,020</td>
<td>185,505</td>
<td>56,678</td>
<td>128,827</td>
<td>31%</td>
<td>144,278</td>
</tr>
<tr>
<td>Totals</td>
<td>190</td>
<td>172</td>
<td>2,933,898</td>
<td>2,894,541</td>
<td>2,284,424</td>
<td>610,117</td>
<td>79%</td>
<td>2,576,627</td>
</tr>
</tbody>
</table>

* Difference between the available design capacity and the average daily production

Figure 86 - Design and available capacity, average daily production, available variance and total SIV for the WTWs
(ii) Raw Water Abstraction

This diagnostic takes a snapshot view of the status of water abstraction authorisations from natural water resources across the province. As per the National Water Act (Act no 36 of 1998), Water Use Authorisation (WUA) mandate the maximum abstraction volumes of raw water, and the installation and monitoring of abstraction, inflow and outflow meters, whilst the BD audit requires WSAs to report the flows on IRIS and to calibrate meters annually. Any defects in terms of abstracting water from a resource without an authorisation, or exceeding the authorised volume, or reporting inaccurate volumes, or not monitoring abstraction against authorised volumes, are considered to be a regulatory risk and contravention of the law.

Findings: Data pertaining to the daily abstraction volumes (kl/d) (Authorised), average daily treatment volumes (kl/d), the names of the WTWs exceeding/with no Daily Abstraction Volumes (Authorised) and Average Daily Treatment Volumes (Authorised) is captured in the tables below.

Table 113 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances & WTWs listed For Enforcement Action

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Daily Abstraction Volumes (Authorised) (kl/d)</th>
<th>Average Daily Treatment Volume (kl/d)</th>
<th>Average Variance (kl/d) [+ or Minus]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umgeni Water</td>
<td>11</td>
<td>14</td>
<td>1,413,957</td>
<td>1,467,562</td>
<td>-53,605</td>
</tr>
<tr>
<td>Mhlathuze Water</td>
<td>1</td>
<td>1</td>
<td>258,840</td>
<td>144,000</td>
<td>114,840</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td>3</td>
<td>3,730</td>
<td>4,856</td>
<td>-1,126</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>5</td>
<td>1</td>
<td>4,629</td>
<td>16,473</td>
<td>-11,844</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>20</td>
<td>21</td>
<td>0</td>
<td>22,802</td>
<td>-22,802</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>17</td>
<td>19</td>
<td>626</td>
<td>38,164</td>
<td>-37,538</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>18</td>
<td>12</td>
<td>0</td>
<td>10,600</td>
<td>-10,600</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>2</td>
<td>113,528</td>
<td>106,800</td>
<td>6,728</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ugu DM</td>
<td>12</td>
<td>13</td>
<td>50,493</td>
<td>135,520</td>
<td>-85,027</td>
</tr>
<tr>
<td>uMngungundlovu DM</td>
<td>7</td>
<td>8</td>
<td>8,700</td>
<td>8,041</td>
<td>660</td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>3</td>
<td>4</td>
<td>84,591</td>
<td>86,590</td>
<td>-1,999</td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>22</td>
<td>22</td>
<td>63,324</td>
<td>51,616</td>
<td>11,708</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>13</td>
<td>13</td>
<td>9,000</td>
<td>17,522</td>
<td>-8,522</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>15</td>
<td>14</td>
<td>41,562</td>
<td>117,200</td>
<td>-75,638</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>41</td>
<td>39</td>
<td>55,886</td>
<td>56,678</td>
<td>-792</td>
</tr>
<tr>
<td>Totals</td>
<td>190</td>
<td>172</td>
<td>2,108,866</td>
<td>2,284,424</td>
<td>-175,558</td>
</tr>
</tbody>
</table>

Table: WTW exceeding the Daily Abstraction Volumes (Authorised) vs WTW with no Daily Abstraction Volumes (Authorised)

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>WTW exceeding the Daily Abstraction Volumes (Authorised)</th>
<th>WTW with no Daily Abstraction Volumes (Authorised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umgeni Water</td>
<td>1 WTW</td>
<td>1 WTW</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>2 WTWs</td>
<td>3 WTWs</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>1 WTW</td>
<td>20 WTWs</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>15 WTWs</td>
<td>All 19 WTWs</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>20 WTWs</td>
<td>15 WTWs</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>All 19 WTWs</td>
<td></td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>1 WTW</td>
<td>6 WTWs</td>
</tr>
<tr>
<td>Ugu DM</td>
<td>6 WTWs</td>
<td>2 WTWs</td>
</tr>
<tr>
<td>uMngungundlovu DM</td>
<td>2 WTWs</td>
<td>1 WTW</td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>1 WTW</td>
<td>14 WTWs</td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>1 WTW</td>
<td>12 WTWs</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>1 WTW</td>
<td>5 WTWs</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>5 WTWs</td>
<td>2 WTWs</td>
</tr>
</tbody>
</table>
WTWs that exceed the Daily Abstraction Volumes (Authorised) and WTWs with no Daily Abstraction Volumes (Authorised) are reflected in the 2nd table above. WTWs that are not complying with the regulations will be required to show correction in the next Blue Drop audit cycle. The results conclude that 14 WTWs are exceeding the permitted abstraction limits and 61 WTWs provided authorised water use abstraction volumes. The Daily Abstraction Volumes (Authorised) are not known for 129 water treatment systems resulting in negative average variances that skew the data sets. The negative average variances could be clearly attributed to over abstraction. For future BD audits, WSA/WSPs will be required to provide ‘actual’ abstraction volumes so that a comparative analysis can be undertaken of the ‘actual’ abstraction volume versus the authorised water use abstraction volumes (maximum). This would require that the WSAs and WSPs/WBs monitor and record all critical path flows (abstraction, raw and final).

### (iii) Water Use Efficiency and System Input Value

The Department is committed to consider issues related to water scarcity and security, aiming to ensure there is sufficient water for the population, the economy, and the environment by increasing water use efficiency across all sectors. Water use for services sectors is specifically dealing with the quantity of water used directly by the consumer through the public distribution network and industries connected to the network. This diagnostic assesses the water use efficiency (i.e., the average daily consumption in litres per person per day) and the individual and collective performance of the water supply systems. WUE indicates how effective water is used by consumers, i.e. the process between effective water use and actual water abstraction. This concept is closely related to the Department’s No Drop Certification assessment, whereby WUE, NRW and water losses are targeted as part of Water Conservation and Water Demand Management strategies by municipalities.
Findings: Both the Blue Drop audit and No Drop audit require an IWA water balance to determine the SIV into each water supply system, and to identify and quantify possible losses from abstraction to the end-of-use point. Umgeni Water and 4 WSA systems have full water balances in place for 59 WSSs in total. 66 WSSs in 8 WSAs have partial water balances in place, and 6 WSAs with a total of 47 WSSs do not have water balances in place. WUE is calculated based on the SIV contributions, population served, and the average daily consumption, as summarised in the following table.

Table 114 - Summary of total SIV, total population served, average daily consumption, WUE status and performance trend

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WSSs</th>
<th>Total Population</th>
<th>Total SIV (kl/d)</th>
<th>2023 WUE (l/p/d)</th>
<th>2023 Blue Drop WUE Range and Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td>60,437</td>
<td>6,856</td>
<td>113</td>
<td>&lt;150 (Excellent)</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>1</td>
<td>3,285,026</td>
<td>1,288,030</td>
<td>392</td>
<td>&gt;300 (Extremely High)</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>21</td>
<td>162,274</td>
<td>33,570</td>
<td>207</td>
<td>&gt;200-250 (Average)</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>19</td>
<td>599,027</td>
<td>100,972</td>
<td>169</td>
<td>&gt;150-200 (Good)</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>12</td>
<td>295,071</td>
<td>62,350</td>
<td>211</td>
<td>&gt;200-250 (Average)</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>520,988</td>
<td>108,450</td>
<td>208</td>
<td>&gt;200-250 (Average)</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>1</td>
<td>536,613</td>
<td>223,000</td>
<td>416</td>
<td>&gt;300 (Extremely High)</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>520,988</td>
<td>108,450</td>
<td>208</td>
<td>&gt;200-250 (Average)</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>1</td>
<td>536,613</td>
<td>223,000</td>
<td>416</td>
<td>&gt;300 (Extremely High)</td>
</tr>
<tr>
<td>uGumgundlovu DM</td>
<td>8</td>
<td>192,137</td>
<td>74,710</td>
<td>389</td>
<td>&gt;300 (Extremely High)</td>
</tr>
<tr>
<td>uMhlatuzhe LM</td>
<td>4</td>
<td>570,270</td>
<td>132,136</td>
<td>232</td>
<td>&gt;200-250 (Average)</td>
</tr>
<tr>
<td>Umgumgundlovu DM</td>
<td>22</td>
<td>779,000</td>
<td>53,416</td>
<td>69</td>
<td>&lt;150 (Excellent)</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>13</td>
<td>188,692</td>
<td>36,572</td>
<td>194</td>
<td>&gt;150-200 (Good)</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>14</td>
<td>277,564</td>
<td>126,204</td>
<td>455</td>
<td>&gt;300 (Extremely High)</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>39</td>
<td>559,998</td>
<td>144,278</td>
<td>258</td>
<td>&gt;250-300 (Poor)</td>
</tr>
<tr>
<td>Totals</td>
<td>172</td>
<td>8,787,506</td>
<td>2,569,907</td>
<td>253</td>
<td></td>
</tr>
</tbody>
</table>

WUE (/cap/day) performance categories

<table>
<thead>
<tr>
<th>Colour</th>
<th>WUE Range</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>&gt;300</td>
<td>Extremely high per capita water use</td>
</tr>
<tr>
<td>Orange</td>
<td>&gt;250-300</td>
<td>Poor per capita water use</td>
</tr>
<tr>
<td>Yellow</td>
<td>&gt;200-250</td>
<td>Average per capita water use with potential for marked improvement</td>
</tr>
<tr>
<td>Green</td>
<td>&gt;150-200</td>
<td>Good per capita water use but some improvement may be possible subject to economic benefits</td>
</tr>
<tr>
<td>Gray</td>
<td>&lt;150</td>
<td>Excellent per capita water use management</td>
</tr>
</tbody>
</table>

Figure 89 - Total SIV towards the WSSs

Figure 90 - Total Population served
For the province, 2,569,907 kl/d water is supplied to 8,787,506 consumers. Comparatively, eThekwini MM distributes 50% of the total provincial SIV, followed by Msunduzi LM (9%) and Ugu DM (7%). An average 253 litre of water is used per person per day, which implies a poor per capita water use.

Results from the diagnostic data show that 4 WSAs have WUEs of more than 300 l/c/d, which is regarded as extremely high according to national benchmarks. Only 1 WSA has a WUE between 250–300 l/c/d, which is regarded as poor. No Drop Certification is specifically tasked with plans to curb water losses and improve NRW through water accounting assessments and water conservation and demand management.

Diagnostic 3: Drinking Water Quality (DWQ) Monitoring and Compliance

**Aim:** Blue Drop audits values the principles of “To measure is to know” and “To know is to manage”. The primary objective of a water treatment plant is to produce final water quality that is safe for human consumption at the end of the distribution network. This standard can only be measured and achieved if operational and compliance monitoring and DWQ compliance is executed at the correct frequency, sample point, and determinant type. This diagnostic assesses the i) operational and compliance monitoring status, ii) drinking water quality compliance, and iii) risk defined compliance and laboratory credibility.

(i) Drinking water operational and compliance monitoring

**Findings:** A minimum level of 90% operational monitoring compliance is applied as benchmark, to give weight to the importance of sampling and monitoring of the raw water, process unit water, and final water across the treatment stream. Compliance monitoring is also informed by SANS 241:2015 and the requirement for risk-informed monitoring through the WaSP process at both the WTW and distribution network. DWQ compliance is calculated against the population size and the mandatory limits set by SANS 241:2015 and the Blue Drop standards, as calculated and reported from data loaded in the IRIS.

**Table 115 - Summary of the KPA 2 WTW operational and WSS compliance monitoring status**

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>WTW Operational monitoring [KPA 2 sub-KPA 2.b)]</th>
<th>WSS Compliance monitoring [KPA 2 sub-KPA 2.c]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Satisfactory [BD score &gt;90%]</td>
<td>Not Satisfactory [BD score &lt;90%]</td>
</tr>
<tr>
<td>Umgeni Water</td>
<td>11</td>
<td>14</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Mhlathuze Water</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>20</td>
<td>21</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>17</td>
<td>19</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>18</td>
<td>12</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>None</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Ugu DM</td>
<td>12</td>
<td>13</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>uMgungundlovu DM</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>22</td>
<td>22</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>13</td>
<td>13</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>15</td>
<td>14</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>41</td>
<td>39</td>
<td>37</td>
<td>4</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>190</strong></td>
<td><strong>172</strong></td>
<td><strong>104 (55%)</strong></td>
<td><strong>86 (45%)</strong></td>
</tr>
</tbody>
</table>

The performance recorded in the table above stems from performance data as measured against the Blue Drop Standard expressed in KPA 2 and sub-KPAs 2.b) and 2.c). Overall, an unsatisfactory sampling and analysis regime is observed for both operational (45%) and compliance (44%) monitoring.

The data indicates that 104 of 190 WTWs (55%) are on par with good practice for operational monitoring of the raw and final water and the respective process units at the WTW. Umgeni Water, Mhlathuze Water, eThekwini MM, Newcastle LM, uMgungundlovu DM and uMhlathuze LM are doing exceptionally well, whilst the remaining WSAs fail to meet the Blue Drop standard. In terms of compliance monitoring, 97 WSSs (56%) are on par with good compliance monitoring practices, and 75 WSSs (44%) are failing the Blue Drop standard.

The latter observation is noted with deepening concern. Compliance monitoring is a legal requirement and the only means to measure the DWQ performance of a water supply system. Operational monitoring is the cornerstone of day-to-day process adjustments and optimisation to ensure that the water treatment is efficient and delivers quality final water. The results indicate that 86 WTWs and 75 WSSs are not achieving regulatory and industry standards.
(ii) Drinking water quality compliance

**Findings:** DWQ compliance is measured against the requirements of SANS 241:2015 under KPA 5 of the Blue Drop audit. The tables following summarises the results of the DWQ status for Microbiological and Chemical Compliance, which also carries the highest Blue Drop score weighting of 35%.

**Table 116 - Provincial Summary of the DWQ Status for Microbiological Compliance**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Micro Compliance</th>
<th># WSS Micro Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td>60,437</td>
<td>98.98%</td>
<td>3</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>1</td>
<td>3,285,026</td>
<td>98.85%</td>
<td>1</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>21</td>
<td>162,274</td>
<td>69.11%</td>
<td>6</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>19</td>
<td>599,027</td>
<td>84.77%</td>
<td>6</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>12</td>
<td>295,071</td>
<td>80.50%</td>
<td>5</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>520,988</td>
<td>99.99%</td>
<td>2</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>1</td>
<td>536,613</td>
<td>99.91%</td>
<td>1</td>
</tr>
<tr>
<td>Ugu DM</td>
<td>13</td>
<td>760,409</td>
<td>96.29%</td>
<td>8</td>
</tr>
<tr>
<td>uMgungundlovu DM</td>
<td>8</td>
<td>192,137</td>
<td>98.22%</td>
<td>6</td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>4</td>
<td>570,270</td>
<td>98.11%</td>
<td>3</td>
</tr>
<tr>
<td>Umkanyakude DM</td>
<td>22</td>
<td>779,000</td>
<td>96.04%</td>
<td>13</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>13</td>
<td>188,692</td>
<td>92.82%</td>
<td>5</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>14</td>
<td>277,564</td>
<td>99.05%</td>
<td>13</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>39</td>
<td>559,998</td>
<td>84.41%</td>
<td>22</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>172</td>
<td>8,787,506</td>
<td>92.65%</td>
<td>93</td>
</tr>
</tbody>
</table>

![Figure 91 - Provincial Microbiological Drinking Water Quality Status](image)

Out of the 172 WSSs, 102 (59%) systems achieved excellent and good microbiological quality, whilst 70 (41%) systems have an unacceptable microbiological water quality status. The water in these systems pose a serious acute health risk to the community. Failure to produce water that meets microbiological compliance standards can be linked back to poor operations, defective infrastructure, inadequate dosing rates, absence of disinfection chemicals, lack of monitoring, lack of operating and chemistry knowledge, and several other root causes. WsIs that are not monitoring the final water quality at the outlet of the treatment plant or at specific end use points are required to develop a monitoring programme and resume with compliance monitoring as a matter of urgency.

**Table 117 - Provincial Summary of the DWQ Status for Chemical Acute Health and Chronic Health Compliance**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Chem Acute Health Compliance</th>
<th># WSS Chem Acute Health Performance Status</th>
<th>% Ave. Chem Chronic Health Compliance</th>
<th># WSS Chem Chronic Health Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
<td>Good</td>
<td>Unacceptable</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td>60,437</td>
<td>99.8%</td>
<td>3</td>
<td>100.0%</td>
<td>3</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>1</td>
<td>3,285,026</td>
<td>100.0%</td>
<td>1</td>
<td>100.0%</td>
<td>1</td>
</tr>
<tr>
<td>WSA Name</td>
<td># WSSs</td>
<td>Population</td>
<td>% Ave. Chem Acute Health Compliance</td>
<td># WSS Chem Acute Health Performance Status</td>
<td>% Ave. Chem Chronic Health Compliance</td>
<td># WSS Chem Chronic Health Performance Status</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------</td>
<td>------------</td>
<td>-------------------------------------</td>
<td>---------------------------------------------</td>
<td>---------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
<td>Good</td>
<td>Unacceptable</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>21</td>
<td>162,274</td>
<td>68.4%</td>
<td>12</td>
<td>9</td>
<td>89.8%</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>19</td>
<td>599,027</td>
<td>73.6%</td>
<td>13</td>
<td>6</td>
<td>94.6%</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>12</td>
<td>295,071</td>
<td>83.3%</td>
<td>10</td>
<td>2</td>
<td>83.2%</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>520,988</td>
<td>100.0%</td>
<td>2</td>
<td></td>
<td>99.2%</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>1</td>
<td>536,613</td>
<td>100.0%</td>
<td>1</td>
<td></td>
<td>99.9%</td>
</tr>
<tr>
<td>Ugu DM</td>
<td>13</td>
<td>760,409</td>
<td>65.4%</td>
<td>7</td>
<td>6</td>
<td>96.2%</td>
</tr>
<tr>
<td>uMgungundlovu DM</td>
<td>8</td>
<td>192,137</td>
<td>87.5%</td>
<td>7</td>
<td>1</td>
<td>99.2%</td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>4</td>
<td>570,270</td>
<td>80.0%</td>
<td>3</td>
<td>1</td>
<td>99.9%</td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>22</td>
<td>779,000</td>
<td>99.8%</td>
<td>21</td>
<td>1</td>
<td>96.3%</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>13</td>
<td>188,692</td>
<td>3.8%</td>
<td>13</td>
<td>1</td>
<td>96.0%</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>14</td>
<td>277,564</td>
<td>100.0%</td>
<td>14</td>
<td></td>
<td>99.7%</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>39</td>
<td>559,998</td>
<td>41.0%</td>
<td>16</td>
<td>23</td>
<td>87.1%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>172</strong></td>
<td><strong>8,787,506</strong></td>
<td><strong>78.8%</strong></td>
<td><strong>110</strong></td>
<td><strong>61</strong></td>
<td><strong>95.8%</strong></td>
</tr>
</tbody>
</table>

**Figure 92 - Provincial Chemical Acute Health and Chronic Health Drinking Water Quality Status**

Chemical acute health compliance shows that 110 (64%) systems have excellent, and 1 (1%) system has good water quality, whilst 61 (35%) systems in 8 WSSAs have an unacceptable chemical acute health compliance. Chemical chronic health compliance shows that 156 (91%) systems have excellent water quality, whilst 16 (9%) systems in 7 WSSAs have an unacceptable chemical chronic health compliance.
The Water Services Act upholds standards regarding the monitoring and reporting on drinking water quality and issuance of advisory notices to the public when significant DWQ failures are observed. The audit process applies a penalty when DWQ failures are noticed without issuing such Water Quality Alert Notices to forewarn consumers of the status of (unsafe) water quality and to advise communities to source alternative water sources or methods to disinfect water used for drinking water purposes.

The following table reflects the compliance status of the WSAs as regards the issuing of these notices for DWQ failures.

### Table 118 - Summary of Penalties Applied to WSSs for not Issuing Advisory Notices

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSS</th>
<th># WSS No Penalty Applied</th>
<th># WSS Partial Penalty Applied</th>
<th>WSS Names Partial Penalty</th>
<th># WSS Full Penalty Applied</th>
<th>WSS Names Full Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td>3</td>
<td></td>
<td>Dannhauser, Durnacol, Utrecht</td>
<td></td>
<td></td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>21</td>
<td>11</td>
<td>8</td>
<td>Esigandulweni, Franklin, Mangwaneni, Mqumeni, Mqatsheni, Njunga, Umzimkhulu, Washbank/ Highlands</td>
<td>2</td>
<td>Chibini, Machunwini</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>19</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>12</td>
<td>5</td>
<td>5</td>
<td>Catherine Booth, Eshowe, Greater Mthonjaneni, Methylm, Middledeift</td>
<td>2</td>
<td>Khombe, Pikiliyeye</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ugu DM</td>
<td>13</td>
<td>11</td>
<td>2</td>
<td>Harding, Mtamvuna</td>
<td></td>
<td></td>
</tr>
<tr>
<td>uMgungundlovu DM</td>
<td>8</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>uNhlahuzhe LM</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>22</td>
<td>1</td>
<td>21</td>
<td>21 of 22 WSSs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>13</td>
<td>4</td>
<td></td>
<td>Dundee, Keat’s Drift, Vant’s Drift, Qudeni</td>
<td>9</td>
<td>9 of 13 WSSs</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>14</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zululand DM</td>
<td>39</td>
<td>2</td>
<td>33</td>
<td>33 of 39 WSSs</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>172</strong></td>
<td><strong>79</strong></td>
<td><strong>76</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No penalties were applied to 79 (46%) WSSs in 12 WSAs. Partial penalties were applied to 76 (44%) WSSs in 7 WSAs and full penalties were applied to 17 (10%) WSSs in 4 WSAs.

(iii) Risk defined compliance and laboratory credibility

**Findings:** Risk-defined compliance standards aim to determine the compliance (to SANS 241) of those parameters that have been found to pose a risk in a specific WSS and need to be included in the routine monitoring programme or frequency as prescribed by SANS 241. The province achieved an average Annual Risk Defined Compliance of 85.6%, with the best performances coming from eThekwini MM, Msunduzi LM, and uMgungundlovu DM, and the worst performances coming from Harry Gwala DM, iLembe DM, Umkhanyakude DM, uThukela DM and Zululand DM. Excellent risk defined compliance was achieved by 33 (19%) systems, good compliance for 9 (5%) systems and bad compliance for 130 (76%) systems.

### Table 119 - Summary of the DWQ Compliance for Risk Defined Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>Ave. % Risk Defined Compliance</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td>60,437</td>
<td>91.36%</td>
<td>1</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>1</td>
<td>3,285,026</td>
<td>97.87%</td>
<td>1</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>21</td>
<td>162,274</td>
<td>71.73%</td>
<td>4</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>19</td>
<td>599,027</td>
<td>79.81%</td>
<td>3</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>12</td>
<td>295,071</td>
<td>73.54%</td>
<td>2</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>520,988</td>
<td>91.89%</td>
<td>1</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>1</td>
<td>536,613</td>
<td>99.81%</td>
<td>1</td>
</tr>
<tr>
<td>Ugu DM</td>
<td>13</td>
<td>760,409</td>
<td>85.50%</td>
<td>3</td>
</tr>
<tr>
<td>uMgungundlovu DM</td>
<td>8</td>
<td>192,137</td>
<td>96.19%</td>
<td>6</td>
</tr>
<tr>
<td>uNhlahuzhe LM</td>
<td>4</td>
<td>570,270</td>
<td>96.17%</td>
<td>2</td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>22</td>
<td>779,000</td>
<td>88.10%</td>
<td>7</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>13</td>
<td>188,692</td>
<td>85.82%</td>
<td>2</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>14</td>
<td>277,564</td>
<td>68.31%</td>
<td>1</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>39</td>
<td>559,998</td>
<td>72.86%</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>172</strong></td>
<td><strong>8,787,506</strong></td>
<td><strong>85.64%</strong></td>
<td><strong>33</strong></td>
</tr>
</tbody>
</table>

No penalties were applied to 79 (46%) WSSs in 12 WSAs. Partial penalties were applied to 76 (44%) WSSs in 7 WSAs and full penalties were applied to 17 (10%) WSSs in 4 WSAs.

(iii) Risk defined compliance and laboratory credibility

**Findings:** Risk-defined compliance standards aim to determine the compliance (to SANS 241) of those parameters that have been found to pose a risk in a specific WSS and need to be included in the routine monitoring programme or frequency as prescribed by SANS 241. The province achieved an average Annual Risk Defined Compliance of 85.6%, with the best performances coming from eThekwini MM, Msunduzi LM, and uMgungundlovu DM, and the worst performances coming from Harry Gwala DM, iLembe DM, Umkhanyakude DM, uThukela DM and Zululand DM. Excellent risk defined compliance was achieved by 33 (19%) systems, good compliance for 9 (5%) systems and bad compliance for 130 (76%) systems.

### Table 119 - Summary of the DWQ Compliance for Risk Defined Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>Ave. % Risk Defined Compliance</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td>60,437</td>
<td>91.36%</td>
<td>1</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>1</td>
<td>3,285,026</td>
<td>97.87%</td>
<td>1</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>21</td>
<td>162,274</td>
<td>71.73%</td>
<td>4</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>19</td>
<td>599,027</td>
<td>79.81%</td>
<td>3</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>12</td>
<td>295,071</td>
<td>73.54%</td>
<td>2</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>520,988</td>
<td>91.89%</td>
<td>1</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>1</td>
<td>536,613</td>
<td>99.81%</td>
<td>1</td>
</tr>
<tr>
<td>Ugu DM</td>
<td>13</td>
<td>760,409</td>
<td>85.50%</td>
<td>3</td>
</tr>
<tr>
<td>uMgungundlovu DM</td>
<td>8</td>
<td>192,137</td>
<td>96.19%</td>
<td>6</td>
</tr>
<tr>
<td>uNhlahuzhe LM</td>
<td>4</td>
<td>570,270</td>
<td>96.17%</td>
<td>2</td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>22</td>
<td>779,000</td>
<td>88.10%</td>
<td>7</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>13</td>
<td>188,692</td>
<td>85.82%</td>
<td>2</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>14</td>
<td>277,564</td>
<td>68.31%</td>
<td>1</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>39</td>
<td>559,998</td>
<td>72.86%</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>172</strong></td>
<td><strong>8,787,506</strong></td>
<td><strong>85.64%</strong></td>
<td><strong>33</strong></td>
</tr>
</tbody>
</table>
The aim of operational determinand compliance is to determine the efficiency of the water treatment process, by monitoring those parameters which are used to control the treatment process. Although not necessarily a health risk, these parameters provide good information on the integrity of the WTW. The province achieved an average % Actual Operational Determinand Compliance of 65%, the best performances coming from Umgeni Water, Mhlathuze Water and eThekwini MM, and the worst performances coming from Harry Gwala DM, iLembe DM, King Cetshwayo DM, Ugu DM, Umkhandakude DM, Umzinyathi DM, uThukela DM and Zululand DM. Excellent operational determinand compliance was achieved by 39 (21%) WTWs and bad compliance for 151 (79%) WTWs.

Table 120 - Summary of the Treatment (Operational) Efficiency Index

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th>Population</th>
<th>Ave. % Actual Operational Determinand Compliance</th>
<th># WTW Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
<td>Good</td>
</tr>
<tr>
<td>Umgeni Water</td>
<td>11</td>
<td>4,758,833</td>
<td>99%</td>
<td>11</td>
</tr>
<tr>
<td>Mhlathuze Water</td>
<td>1</td>
<td>75,000</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>3</td>
<td>60,437</td>
<td>77%</td>
<td>1</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>5</td>
<td>3,285,026</td>
<td>93%</td>
<td>4</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>20</td>
<td>162,274</td>
<td>55%</td>
<td>1</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>17</td>
<td>599,027</td>
<td>6%</td>
<td>1</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>18</td>
<td>295,071</td>
<td>53%</td>
<td>18</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>2</td>
<td>520,988</td>
<td>91%</td>
<td>1</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>None</td>
<td>536,613</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Ugu DM</td>
<td>12</td>
<td>760,409</td>
<td>25%</td>
<td>2</td>
</tr>
<tr>
<td>uMgungundlovu DM</td>
<td>7</td>
<td>192,137</td>
<td>90%</td>
<td>3</td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>3</td>
<td>570,270</td>
<td>57%</td>
<td>3</td>
</tr>
<tr>
<td>Umkhandakude DM</td>
<td>22</td>
<td>779,000</td>
<td>65%</td>
<td>3</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>13</td>
<td>188,692</td>
<td>47%</td>
<td>1</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>15</td>
<td>277,564</td>
<td>45%</td>
<td>15</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>41</td>
<td>559,998</td>
<td>69%</td>
<td>9</td>
</tr>
<tr>
<td>Totals</td>
<td>190</td>
<td>8,787,506</td>
<td>65%</td>
<td>39</td>
</tr>
</tbody>
</table>

The data confirms that Umgeni Water, Mhlathuze Water and 13 WSAs (93%) in the province have access to credible laboratories for compliance and operational analysis. These in-house or contracted laboratories are accredited with SANAS or have Proficiency Testing Schemes with SABS or have inter-laboratory quality checks in place to ensure that suitable analytical methods are applied and that quality assurance processes are followed to ensure credible water quality results. The province is meeting the regulatory expectation for the WSIs having access to credible analytical services for compliance and operational monitoring.

Diagnostic 4: Technical Site Assessments

Aim: The Blue Drop process makes provision for a Technical Site Assessment (TSA) in order to verify the desktop evidence through field-based inspections. This assessment includes a physical inspection of the entire water treatment plant with all its process units, as well as the reservoir and spot checks of a pumpstation and pipelines. The technical assessment is coupled with an asset condition check to determine an approximate cost (VROOM) to restore existing infrastructure to functional status for the treatment facility (only).

Findings: The results of the province’s TSAs are summarised in the table below. A deviation of 10% between the BD and TSA score indicate a misalignment between the administrative aspects and the work on the ground. The Regulator regards a WTW with a TSA score of >80% to have an acceptable level of process control and functional equipment, and a TSA score of 90% as an excellent system that complies with most of the Blue Drop TSA standards. A TSA score of <30% indicates that the treatment facility and network fails in most regards, and is evident of dysfunctional infrastructure, failed process control, absence of record keeping and monitoring, and poor water quality.

The VROOM cost presents a “Very Rough Order of Measurement” cost to return a WTWs functionality to its original design. More detail can be found in the Blue Drop Watch Report 2023.

Table 121 - %TSA and %BD score, and VROOM cost estimates total and split for civil, mechanical, and electrical

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>TSA Name</th>
<th>%TSA</th>
<th>2023 BD Score (%)</th>
<th>Civil cost estimate</th>
<th>Mechanical cost estimate</th>
<th>Electrical &amp; C&amp;I cost estimate</th>
<th>Total VROOM cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umgeni Water (UMDM)</td>
<td>Midmar WTP</td>
<td>95.0%</td>
<td>96.44%</td>
<td>6,715,000</td>
<td>53,720,000</td>
<td>6,715,000</td>
<td>67,150,000</td>
</tr>
<tr>
<td>Mhlathuze Water (uMhlathuze LM)</td>
<td>Ncezi</td>
<td>90.0%</td>
<td>83.70%</td>
<td>1,537,500</td>
<td>4,612,500</td>
<td>0</td>
<td>6,150,000</td>
</tr>
</tbody>
</table>
A deviation of >10% between the BD and TSA score is noted for eThekwini MM (18%), iLembe DM (18%), King Cetshwayo DM (22%), uMgungundlovu DM (46%), uMhlathuze LM (19%), Umkanyakude DM (17%), Umzinyathi DM (48%), uThukela DM (39%) and Zululand DM (25%). A deviation of >20% between the BD and TSA score is noted for 5 WSAs.

For the individual WTWs assessed in the province, a total budget of R386m is estimated, with the bulk of the work (84%) going towards restoration of mechanical equipment (55%) and civil infrastructure (29%).

DiagnoMIc 5: Operation, Maintenance and Refurbishment of Assets

Aim: Insufficient financial resources are often cited as a root cause to dysfunctional or non-compliant water treatment works and water networks. Knowledge and monitoring of fiscal spending are therefore a critical part of water services management and municipal governance of public assets. This diagnostic investigates the status of financial information as pertaining to O&M budgets and expenditure, asset figures, and capital funding.

Findings: A substantial amount of financial information was presented during the audit process. Unfortunately, the evidence was presented in different formats, levels of detail, or absent for some WSAs. It was observed that WSA teams with financial officials that were present during the audits performed better and had a better understanding of the water services challenges experienced by their technical peers.

Discrepancies observed included amongst others - generic or non-ringfenced budgets, contract lump sums for service providers presented as budgets, outdated or incomplete asset registers, and some cost drivers which were lacking. As data credibility presents a significant challenge, the Regulator grouped data into different certainty levels, as summarised at the end of this Diagnostic.

The result of each financial portfolio is discussed hereunder.

NOTE: The Regulator regards the financial and asset information with low confidence. Not all WSAs submitted verifiable information or complete financial data sets for the audit year in question.

Capital, O&M Budget and Actual, and Asset Value

The capital budgets, O&M budgets, O&M actual expenditure, and current asset values are summarised below.

Table 122 - Summary of the capital budgets, O&M budgets, O&M actual expenditure, and current asset values

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Capital budget available (R)</th>
<th>O&amp;M budget (R) (2021/22)</th>
<th>O&amp;M expended (R) (2021/22)</th>
<th>% Expended</th>
<th>Total Current Asset Value (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umgeni Water</td>
<td>NI</td>
<td>R2,012,361,963</td>
<td>R2,225,309,612</td>
<td>111%</td>
<td>R10,227,680,261</td>
</tr>
<tr>
<td>Mhlathuze Water</td>
<td>NI</td>
<td>R119,985,665</td>
<td>R104,039,413</td>
<td>87%</td>
<td>NI</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>R81,650,000</td>
<td>R77,500,000</td>
<td>R68,800,000</td>
<td>89%</td>
<td>R341,000,000</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>R264,324,000</td>
<td>R3,825,032,091</td>
<td>R3,390,781,491</td>
<td>89%</td>
<td>NI</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td></td>
<td>R832,184,829</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>NI</td>
<td>R120,363,034</td>
<td>R115,707,731</td>
<td>96%</td>
<td>R11,441,938,921</td>
</tr>
</tbody>
</table>
### WSA & WB Name

<table>
<thead>
<tr>
<th>Capital budget available (R)</th>
<th>O&amp;M budget (R) (2021/22)</th>
<th>O&amp;M expended (R) (2021/22)</th>
<th>% Expended</th>
<th>Total Current Asset Value (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>King Cetshwayo DM</td>
<td>R55,000,000</td>
<td>R73,212,000</td>
<td>R99,819,700</td>
<td>136%</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>R304,140,000</td>
<td>R264,875,980</td>
<td>R368,780,041</td>
<td>139%</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>R42,848,488</td>
<td>R1,140,091,936</td>
<td>R918,725,973</td>
<td>81%</td>
</tr>
<tr>
<td>Ugu DM</td>
<td>NI</td>
<td>R70,583,000</td>
<td>R145,553,000</td>
<td>206%</td>
</tr>
<tr>
<td>uMgungundlovu DM</td>
<td>R219,893,000</td>
<td>R45,167,287</td>
<td>R69,642,330</td>
<td>154%</td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>R15,119,600</td>
<td>R890,244,885</td>
<td>R773,060,127</td>
<td>87%</td>
</tr>
<tr>
<td>Umkhyanyakude DM</td>
<td>R468,563,939</td>
<td>R67,500,042</td>
<td>R60,461,823</td>
<td>90%</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>NI</td>
<td>R311,355,085</td>
<td>R500,673,945</td>
<td>161%</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>R604,077,000</td>
<td>R324,425,305</td>
<td>R344,993,361</td>
<td>106%</td>
</tr>
</tbody>
</table>

**Totals**

- **R2,055,616,027**
- **R9,342,698,273**
- **R9,186,348,546**
- **98%**
- **R33,032,215,222**

The Regulatory Comments following in this Chapter list the capital projects with secured funding for each municipality and/or its bulk water provider (WSP). The capital lists are deemed to be a definitive means to address water service inadequacies and ensuring water infrastructure investment. A total capital budget of **R2.06b** has been reported for the refurbishment and upgrades of water supply system infrastructure for most of the WSAs. The largest capital budgets are observed for Zululand DM (R604m), Umkhanyakude DM (R468m), Newcastle LM (R304m), and eThekwini MM (R264m).

For the 2021/22 fiscal year, the total O&M budget reported for the province was **R9.343b**, of which **R9.186b (98%)** has been expended. The highest over-expenditure of 206% by Ugu DM and the lowest under expenditure by Msunduzi LM (81%) was observed. The provincial figures exclude 6 WSAs who had no and partial financial information.

**Figure 93 - Total current asset value reported**

The total current asset value for water infrastructure (networks, pump stations, treatment plants) is reportedly **R33b** (excluding 4 WSAs with no information). The highest asset values are observed for iLembe DM (R11.4b), followed by Umgeni Water (R10.2b), uThukela DM (R3.2b) and Umzinyathi DM (R2.9b).

### O&M Cost Benchmarking

By combining the SALGA and WRC WATCOST models, an estimation of the maintenance cost required per asset type can be done, i.e. civil, buildings, pipelines, mechanical, electrical, and instrumentation.

**Table 123 - SALGA-WRC annual maintenance budget guideline and cost estimation**

<table>
<thead>
<tr>
<th>Description</th>
<th>% of Current Asset Value</th>
<th>Asset Value Estimate (R)</th>
<th>Modified SALGA Maintenance Guideline</th>
<th>Annual Maintenance Budget Guideline (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Asset Value estimate</td>
<td>100%</td>
<td>R33,032,215,222</td>
<td>15.75%</td>
<td>R713,495,849</td>
</tr>
<tr>
<td><strong>Broken down into:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Civil Structures</td>
<td>46%</td>
<td>R15,194,819,002</td>
<td>0.50%</td>
<td>R75,974,095</td>
</tr>
<tr>
<td>2. Buildings</td>
<td>3%</td>
<td>R990,966,457</td>
<td>1.50%</td>
<td>R14,864,497</td>
</tr>
<tr>
<td>3. Pipelines</td>
<td>6%</td>
<td>R1,981,932,913</td>
<td>0.75%</td>
<td>R14,864,497</td>
</tr>
<tr>
<td>4. Mechanical Equipment</td>
<td>30%</td>
<td>R9,909,664,567</td>
<td>4.00%</td>
<td>R396,386,583</td>
</tr>
</tbody>
</table>
From the tables above, the cost dynamics can be summarised as follows:

- The SALGA estimations for maintenance budgets is about 7.6% (Modified SALGA divided by O&M Budget) of the actual reported budgets for the 2021/22 fiscal year.
- The actual O&M budget (28.2%) appears to be more than adequate when compared with the SALGA guideline (2.16%) or with the government benchmark (7%).
- These figures may be impacted by some of the WSAs who did not provide budget and expenditure figures, and by some inaccurate asset values and where no asset values were provided for.
- Lastly, the municipalities presents budget and expenditure data at different levels (table above) i.e. financial figures are not always ringfenced per water supply system – thus rendering provincial summaries to be indicative.

The table below indicates the SALGA maintenance cost estimation in relation to the O&M budget, and O&M actual expended.

**Table 124 - O&M cost estimates by the SALGA versus actual budget and expenditure figures**

<table>
<thead>
<tr>
<th>Cost Reference</th>
<th>O&amp;M Cost Estimate</th>
<th>Period</th>
<th>% of Asset Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified SALGA</td>
<td>R713,495,849</td>
<td>Annually, estimation</td>
<td>2.16%</td>
</tr>
<tr>
<td>O&amp;M Budget</td>
<td>R9,342,698,273</td>
<td>Actual for 2021/22</td>
<td>28.2%</td>
</tr>
<tr>
<td>O&amp;M Spend</td>
<td>R9,186,348,546</td>
<td>Actual for 2021/22</td>
<td>27.8%</td>
</tr>
</tbody>
</table>

In addition, the table below indicates the Blue Drop audit findings on the water supply operations cost determination and water supply O&M budget status.

**Table 125 - BD Audit Water Supply Operations Cost Determination and Water Supply O&M Budget status**

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Water Supply Operations Cost Determination</th>
<th>Water Supply O&amp;M Budget status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umgeni Water</td>
<td>DETERMINED OF THE WHOLE SYSTEM; NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>SYSTEM SPECIFIC BUDGET: WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY; BUDGET IS NOT RINGFENCED FOR WATER ONLY</td>
</tr>
<tr>
<td>Mhlathuze Water</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Amajuba DM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>eThekwini MM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Harry Gwala DM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>BUDGET IS NOT RINGFENCED FOR WATER ONLY</td>
</tr>
<tr>
<td>iLembe DM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET: WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>King Cetshwayo DM</td>
<td>DETERMINED FOR PART OF SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Newcastle LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL); DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Msunduzi LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Ugu DM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>uMngungundlovu DM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>BUDGET IS NOT RINGFENCED FOR WATER ONLY</td>
</tr>
<tr>
<td>uMhlathuze LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Umkhanyakude DM</td>
<td>DETERMINED FOR PART OF SYSTEM</td>
<td>SYSTEM SPECIFIC BUT INCLUDES WATER &amp; SANITATION</td>
</tr>
<tr>
<td>Umzinyathi DM</td>
<td>DETERMINED OF THE WHOLE SYSTEM; NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY; BUDGET IS NOT RINGFENCED FOR WATER ONLY</td>
</tr>
<tr>
<td>uThukela DM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>BUDGET IS NOT RINGFENCED FOR WATER ONLY</td>
</tr>
<tr>
<td>Zululand DM</td>
<td>DETERMINED OF THE WHOLE SYSTEM; NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
</tbody>
</table>

From the tables above, the cost dynamics can be summarised as follows:

- The model estimates that R713m (2.16%) is required per year to maintain the assets valued at R33b. Notably, this maintenance estimate assumes that all assets are functional. In cases where Blue Drop Certification is not being achieved, it can be assumed that some form of inefficiency or constraint is being experienced, and national benchmarks closer to 7% of the asset value is advocated (R2,31b).
8.1 Umgeni Water

**Introduction**

Umgeni Water supplies potable water to more than 52% of the households in KwaZulu Natal. The utility serves the following municipalities:

1. eThekwini Metropolitan Municipality
2. Harry Gwala District Municipality
3. iLembe District Municipality
4. King Cetshwayo District Municipality
5. Msunduzi Local Municipality
6. Ugu District Municipality
7. uMgungundlovu District Municipality

Umgeni Water also supports WSA through the operation of some of their WWTWs, supply of laboratory services, Blue Drop support and preparation and training.

**Regulator’s Comment**

Umgeni Water was very well prepared for the Blue Drop assessment, which was well attended by all the relevant divisions within the organisation. It was very clear from the outset that one of the strengths of the organisation is its teamwork, which was displayed throughout the audit process. Every department was aware of the information that they were to provide and how it fitted into the Blue Drop criteria.

Umgeni Water has set up impressive internal systems which are focused on making sure water quality is maintained at a high standard. Everyone appears to understand how their role fits into ensuring water quality. Maintenance of their facilities, to keep all equipment in good working order, appears to be a strength, along with excellent operational monitoring systems. The organisation has clearly taken a risk-based approach to their operations which shows in robust and well-considered systems.

It would be important to note that all these systems are underpinned by professional, motivated, and competent staff who work well together, which appears to be the key to their success.

**Blue Drop Findings**

All the systems that Umgeni Water owns received excellent Blue Drop scores. Areas of excellence to be noted include:

- A well-managed maintenance schedule for each item of equipment, which is kept up to date and linked to the asset register.
- Experienced and professional technical, scientific, maintenance and operations teams.
- Excellent Water Safety Plans with regular reviews, regular adjustment of monitoring programmes based on incidents and feedback systems, thorough risk assessments and tracking of implementation.
- The operational and compliance monitoring exceeds SANS241 as they have carefully assessed risks in the development of their monitoring programmes.
- Financials are well managed, and operations costs are known.
- Generally, the compliance of their operational determinants is excellent (all > 99%).
- Umgeni Water has also undertaken numerous cross-pollination activities in KZN with many of the WSAs, and their commitment to supporting their customers should be commended.
- Their proactive management of water quality during the 2022 floods should be commended as they were able to maintain excellent water quality under the most challenging conditions.

Some recommendations for improvement include:

- A water reticulation network report consolidating the various condition assessments of the distribution network is needed.
- In a few cases, the abstraction rates from the water resource were greater than the authorised quantities. This needs to be rectified.
- The iXopo system requires a registered supervisor, flow meter verification and the recording of the operational data to calculate the operational efficiency index.
**Technical Site Inspection**

The *Midmar WTW* is in good condition with a TSA score of 95%. The Regulator noted that the works is well maintained and there are excellent monitoring systems in place to ensure compliant water quality. It was clear that the staff are proud of their facility, and this reflects in the management of the plant.

Health and Safety compliance is of a high standard. Chemical stocks are well-managed and organised. Phase separation (clarification and filtration) is excellent with automated backwashing. Sludge dewatering is partially inhibited by centrifuges which required extensive maintenance and alternative dewatering technologies could be investigated. All mechanical equipment is kept in a very well-maintained condition both within the works as well as within the distribution network (reservoirs and pump stations).
8.2 uMhlathuze Water

Introduction

uMhlathuze Water manages raw water sources, designs, optimises, installs, extends, operates, and maintains the required infrastructure to meet the bulk water services requirements and related services to customers. uMhlathuze Water is situated in KwaZulu Natal in Richards bay and supplies bulk water to:

1. Mondi Paper
2. City of uMhlathuze Local Municipality

uMhlathuze Water’s area of supply covers some 37 000 km² stretching from uThukela River in the South and up the East Coast to the Mozambique and Swaziland borders, around Vryheid and back to the Thukela River. The plant has two raw water sources, namely: uMhlathuze River (Weir) and Nsezi Lake. The Weir is used as the primary source, and it has a capacity of 205 ML/d. The Weir pump station was upgraded in 2010 however recently it is unable to reach its design capacity. The maximum flow that can be achieved is 144 ML/d (6000 m3/h). As a result, supplementing of the Lake level from the Weir was also suspended as the plant demand increased. The plant has three chlorine dosing facilities, two pre-chlorine room for the respective raw water sources and one post chlorination room for disinfection. The plant is generally well operated, and it is compliant with the drinking water standards SANS 241:2015. The raw water quality has deteriorated over the years. The plant recently has been experiencing elevated level of total organic carbon (TOC) as well as sporadic high level of manganese. The presence of organics in raw water causes water quality problems such as: colour, taste and odour, increased coagulant usage, DBPs and promoting biological regrowth within the distribution system. Powder activated carbon and potassium permanganate should be dosed to remove organics and manganese respectively.

Raw water from Mhlathuze River is pumped using Weir Pump station that is more than 6km away from Nsezi WTP. Sometime water is pump from Nsezi lake 200 meters away from Nsezi WTP. The pumped water first enters into the head of works (Mixing Tower). The raw water is pre-chlorinated before the mixing Tower using a dosing line from chlorine facility. The chlorinated water enters the mixing tower from the bottom. Two coagulants compounds or chemicals are dosed at the mixing tower, namely aluminium sulphate, and the primary polymeric coagulant. Flush mixing is achieved through a hydraulic jump which creates turbulence across the Mixing Tower (the mixing tower has three passes). The coagulated water is gravitated to three clarifioculators where solids are settled out. The sludge from the clarifioculators is collected in the sludge holding tank from where it is pumped to the buoyant effluent Collecting Chamber for disposal. The clarified water is gravitated to the secondary coagulation chamber and a portion of the clarified water stream is distributed for industrial use. Flash mixing for the secondary polymeric coagulant is achieved through water turbulence (there are two mechanical mixers which are currently not in use). The re-coagulated water is gravitated to eight flocculation tanks each fitted with a paddle mixer. The flocculated water is gravitated to eight dissolved air flotation tanks where solids are separated by injecting a mixture of pressurised air and water. The Sludge from the Dissolved Air Floatation (DAF) units is mixed with the sludge from the clarifioculators.

The clarified water from the DAF is filtered through twelve rapid gravity sand filters. The filtered water is dosed with chlorine for disinfection and sodium hydroxide for pH correction. Final water is distributed to both industrial and domestic customers. The spent backwash water is recycled back to the head of works or mixing tower.

Regulator’s Comment

uMhlathuze Water was represented with a team that came to the assessments well prepared and demonstrated their commitment to the Blue Drop process and water quality excellence. The water service provider is commended for the diligence in getting the relevant and required documentation for the Blue Drop application.

uMhlathuze Water takes pride in knowing that they work with world-class team of specialists who work together daily to ensure the different parts of the water supply puzzle are resolved. This shows that customers of uMhlathuze Water are always assured of reliable and high-quality service. The water service provider was able to demonstrate good planning through precise and well-planned logistics for the initial meeting up to the end of the assessment period including confirmations sessions.

The water service provider has a well-rounded team with adequate skills and qualification to carryout maintenance work both at the plant and bulk supply. Compliance and operational monitoring programmes are conducted as required. Water service provider is equipped with accredited laboratory and skilled personnel to do all the necessary analysis.

It must also be noted that uMhlathuze water is currently in process of amalgamating with Umgeni Water. uMhlathuze water has initiated engagements with DWS to be assessed separately from City of uMhlathuze Local municipality. The water service provider is under the view that if they are the dilution of the score with the municipality is not doing justice to them.
Blue Drop Findings

The Regulator Notes finds that that there were some shortcomings, and the following summarises the collective recommendations as following:

- Although the laboratory is SANAS accredited it was noted that certified data analysis does not yield 100%, therefore, water service provider would need to further follow up with the DWS to determine the gap in methods submitted.
- When the site was visited the O&M manuals were not on site but kept in offices, it was recommended that a copy be made available for the site.
- Three backwash pumps are installed and in working condition. Media will require replacement as well as few minor pipes paintings and mechanical equipment (slight rust was visible).

Technical Site Inspection

The Nsezi WTW is in very good condition with a TSA score of 90%. The Regulator observed that regular routine maintenance is done on site with no significant operational or maintenance issues noted. The reservoirs were surrounded by a fence and a gated entrance. Telemetry at the command reservoirs is operational and can be observed from the operations room at the WTW. The reservoirs were observed to be leak free.

Six recycle pumps are installed and are new and in good condition. Saturator was serviced in the last 12 months; it was noted to be serviced at least every 2 - 3 years nevertheless it is in good working condition. 2 duty pumps & 2 standby. All pumps in working good condition. Pipeline appears to be in good condition - servitude in place with concrete vents and manholes. Even cathodic protection analysis was being undertaken. A large flow splitting tower with 'cascade' to each clarifier with even flow splitting.

Refer to the Blue Drop Watch Report 2023 for more detail.

All pumps working - 4 installed 2 duty & 2 standby

Chemical feed in a very good condition - duty/standby alum dosing noted dripping

Excellent white-water and good DAF operation

The clarifiers are generally in very good condition with very minimal floc carry-over

General workplace and personnel were in good spirit and expressed satisfaction at the workplace

Six recycle pumps are installed and are new and in good condition
8.3 uThukela Water

Introduction

uThukela Water (Pty) Ltd was initially the first municipal entity which provided a full spectrum of bulk and reticulation water and sanitation services, and in this case, on a regional basis to its three fully owned shareholders, namely Amajuba District Municipality, uMzinyathi District Municipality, and Newcastle Municipality. Following a Section 78 assessment undertaken in 2011, the Entity has transferred the water reticulation services back to the municipalities, and now only operates as a bulk water services provider to the shareholders. uThukela Water has established itself to be an industry leader with emphasis on a high-quality water product, and prides itself on this achievement. uThukela Water provides bulk water from two WTW namely, Ngagane and Biggarsberg water treatment plants. uThukela Water’s head offices and laboratory facilities are situated in Newcastle.

The Ngagane Water Treatment Works was initially constructed around 1965 with a daily capacity of 24 Ml/day. The plant was upgraded and consisted of 8 rapid sand filters and 16 candy vertical sedimentation tanks. A second upgrade was undertaken which resulted into Plant 2, consisting of 6 rapid sand filters and 2 horizontal sedimentation tanks. In 2002 a third upgrade resulted in Plant 3, consisting of 5 rapid sand filters and 10 candy vertical sedimentation tanks. Ngagane water treatment currently has a total capacity of 130Ml/d. Ngangane WTW supplies bulk water to the areas of Newcastle, Madadeni, Osizweni, Brakfontein, Kilbarchan, Eskom Village, Ballengeich and the rural areas of the Amajuba District Municipality.

The Biggarsberg water plant has a design capacity of 19,3Ml/d and is currently operating at 15,84 Ml/d. Plans are also afoot to increase this plant’s capacity, but these are restricted by the availability of sufficient and sustainable raw water sources. The Company’s Master Plan does address this matter and makes recommendations to source water higher up in the Drakensberg catchment areas to augment the scarce water supplies in the uMzinyathi area. The Biggarsberg plant supplies water to the areas of Dundee, Glencoe, Sithembile, Wasbank, Hattinghspruit and certain rural areas. Both water plants achieved Blue Drop status determined in terms of national norms and standards and denote the high quality of water delivered to the municipalities from these plants.

Regulator’s Comment

uThukela Water continues to set a benchmark for many bulk water service providers with regards to effective drinking water quality management. The highly passionate and committed members of the service provider are commended for their remarkable efforts to maintain excellence in their daily operations and therefore deserve the recognition.

The department wishes to commend uThukela Water for being consistent in complying excellently with the regulatory requirements of the Blue Drop certification programme. The constant engagements between uThukela Water and the auditors speaks of a remarkable dedication towards achieving management of excellent and effective drinking water quality management.

Blue Drop Findings

The Regulator notes finds that that there were some shortcomings, and the following summarises the collective recommendations as following:

- Lack of bulk inspection.
- No process audit or conditional assessment for Biggarsberg WTW.
- Meter calibration or verification outside the assessment period.
- The final water pipeline to the command reservoirs was not assessed. However, it was indicated that the bulk line to Hilldrop has cathodic protection, and the maintenance team does regular spot checks on all the bulk pipelines. Valve chambers were inspected and found to be in secure and safe condition. One valve chamber was flooded (rain/ ground water ingress).

Technical Site Inspection

Ngagane WTW is in very good condition with a TSA score of 87%. Rotameters all observed to be in good condition and working. The works uses chlorine gas with enough stock to last up to 30 days at any given time. The plant has 3 modules with a total of 28 clarifiers. There was limited floc carryover at the clarifiers at module 1 and 3. The static clarifiers at module 2 were observed to have a lot of flocs which had accumulated at the units, but these are designed to be periodically desludged. No carry-over of floc over the weirs. Desludging of the clarifiers is done once/day at module 2 (and full emptying monthly) and twice/day at module 1 and 3. The reservoirs were surrounded by a fence and a gated entrance. Telemetry at the command reservoirs is operational and can be observed from the operations room at the WTW. The reservoirs were observed to be leak free.

Refer to the Blue Drop Watch Report 2023 for more detail.
General weeding and upkeep is maintained when required.

PCs were very proud of their plant and quite satisfied with their workplace.

There is more than 30 days storage of poly available at the works.

Ngagane river pump station.

Flow splitting to module 1 and 2.

There were two lime feeders that were in good condition.
### Municipal Blue Drop Score

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>44.40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>58.18%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>83.31%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>84.43%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>DANNHAUSER LM - Durnacol WTW</th>
<th>DANNHAUSER LM - Dannhauser WTW</th>
<th>UTRECHT LM - Utrecht WTW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>43.75%</td>
<td>38.70%</td>
<td>48.30%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>47.35%</td>
<td>58.61%</td>
<td>58.61%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>77.42%</td>
<td>77.05%</td>
<td>77.05%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>82.75%</td>
<td>84.33%</td>
<td>84.33%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 000</td>
<td>2 000</td>
<td>5 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>5 000</td>
<td>0</td>
<td>5 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>1 656</td>
<td>2 000</td>
<td>3 200</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>33.12%</td>
<td>NI</td>
<td>64.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Ntshingwayo Dam</td>
<td>Chelmsford Dam</td>
<td>Balele Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>27.65%</td>
<td>51.28%</td>
<td>29.64%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>31.70%</td>
<td>76.80%</td>
<td>35.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Durnacol WTW (package plant) - 49%**
### Municipal Blue Drop Score

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>94.95%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>95.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>98.77%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>95.71%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>eThekwini Main</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Umgeni Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>94.95%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>96.18%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>98.79%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>96.05%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 632 400</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 603 460</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>1 288 030</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>88.95%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Nungwane; Nagle; Mbokodweni</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>31.61%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>32.60%</td>
</tr>
</tbody>
</table>

*Technical Site Assessment: Kloof WTW - 79% and Midmar WTW - 95%*
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>66.18%</td>
<td>62.86%</td>
<td>69.35%</td>
<td>40.09%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Bulwer</th>
<th>Chibini</th>
<th>Creighton</th>
<th>Esiqandulweni</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>70.48%</td>
<td>29.00%</td>
<td>57.43%</td>
<td>54.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>46.02%</td>
<td>NA</td>
<td>69.92%</td>
<td>44.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>47.40%</td>
<td>NA</td>
<td>47.40%</td>
<td>43.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>35.60%</td>
<td>NA</td>
<td>38.80%</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>1 000</td>
<td>1 000</td>
<td>1 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>1 000</td>
<td>1 000</td>
<td>1 100</td>
<td>780</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>1 000</td>
<td>1 000</td>
<td>722</td>
<td>357</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>72.20%</td>
<td>NA</td>
<td>65.64%</td>
<td>45.77%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Upper Bisi</td>
<td>Xobho</td>
<td>boreholes</td>
<td>Mkomazi</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>21.89%</td>
<td>95.31%</td>
<td>35.30%</td>
<td>30.50%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>48.10%</td>
<td>44.80%</td>
<td>30.30%</td>
<td>26.40%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Franklin</th>
<th>Hlanganani/Polela</th>
<th>Ibisí</th>
<th>Ixopo</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>58.13%</td>
<td>68.96%</td>
<td>72.26%</td>
<td>85.92%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>47.29%</td>
<td>68.05%</td>
<td>61.30%</td>
<td>90.11%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NA</td>
<td>49.00%</td>
<td>27.00%</td>
<td>95.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NA</td>
<td>32.80%</td>
<td>77.20%</td>
<td>77.20%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>500</td>
<td>250</td>
<td>5 000</td>
<td>4 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>500</td>
<td>250</td>
<td>5 000</td>
<td>2 590</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>800</td>
<td>250</td>
<td>135</td>
<td>2 406</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>160.00%</td>
<td>NA</td>
<td>2.71%</td>
<td>92.90%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Umzintlawa River</td>
<td>Ohane River, Umkholhwa River and 3 boreholes</td>
<td>Ibisí River</td>
<td>Xobho</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>34.46%</td>
<td>20.65%</td>
<td>16.04%</td>
<td>22.46%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>26.80%</td>
<td>31.80%</td>
<td>24.00%</td>
<td>16.80%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Kokstad</th>
<th>Machunwini</th>
<th>Mangwaneni WTW</th>
<th>Mnqumeni WTW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Blue Drop Score 2023

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Kokstad</th>
<th>Machunwini</th>
<th>Mangwaneni WTW</th>
<th>Mnqumeni WTW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>84.03%</td>
<td>22.80%</td>
<td>37.00%</td>
<td>34.90%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Kokstad</th>
<th>Machunwini</th>
<th>Mangwaneni WTW</th>
<th>Mnqumeni WTW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>66.31%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>70.70%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>35.20%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kl/d</th>
<th>18 000</th>
<th>600</th>
<th>1 000</th>
<th>2 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>18 000</td>
<td>600</td>
<td>500</td>
<td>2 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>12 775</td>
<td>600</td>
<td>500</td>
<td>1 750</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>70.97%</td>
<td>NI</td>
<td>NI</td>
<td>87.50%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>uMzintlava River</td>
<td>Upper Bisi</td>
<td>Mkomazi</td>
<td>Bisi</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>24.23%</td>
<td>100.00%</td>
<td>85.77%</td>
<td>78.13%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>29.40%</td>
<td>NA</td>
<td>86.90%</td>
<td>70.10%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Mqatsheni WTW</th>
<th>Njunga</th>
<th>Nokweja</th>
<th>Rietvlei</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>53.93%</th>
<th>35.25%</th>
<th>62.48%</th>
<th>48.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
<td>49.48%</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
<td>53.30%</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kl/d</th>
<th>1 200</th>
<th>480</th>
<th>1 800</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>1 200</td>
<td>480</td>
<td>1 440</td>
<td>500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>1 000</td>
<td>231</td>
<td>1 100</td>
<td>414</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>83.33%</td>
<td>48.13%</td>
<td>76.39%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>boreholes</td>
<td>2 x Boreholes</td>
<td>uMzimkhulu River</td>
<td>Mzimkulwana</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>22.01%</td>
<td>90.69%</td>
<td>34.48%</td>
<td>66.78%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>23.70%</td>
<td>72.80%</td>
<td>48.40%</td>
<td>30.80%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Riverside</th>
<th>St Apollinaris</th>
<th>Umzimkhulu</th>
<th>Underberg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>49.10%</th>
<th>56.60%</th>
<th>57.05%</th>
<th>54.08%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>63.89%</td>
<td>64.70%</td>
<td>51.59%</td>
<td>66.64%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>50.63%</td>
<td>71.43%</td>
<td>71.29%</td>
<td>58.55%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>15.00%</td>
<td>31.65%</td>
<td>38.68%</td>
<td>33.93%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kl/d</th>
<th>500</th>
<th>660</th>
<th>5 000</th>
<th>4 500</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>500</td>
<td>660</td>
<td>5 000</td>
<td>4 500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>500</td>
<td>600</td>
<td>2 610</td>
<td>4 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>90.91%</td>
<td>52.20%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Ngwagwane River</td>
<td>uMzimkhulu River</td>
<td>uMzimkhulu River</td>
<td>uMzimkhulu River</td>
</tr>
</tbody>
</table>
### Key Performance Area Weight | Riverside | St Apollinaris | Umzimkhulu | Underberg
--- | --- | --- | --- | ---
**BDRR 2023** | % | 38.96% | 34.16% | 38.11% | 48.19%
**BDRR 2022** | % | 37.40% | 32.30% | 35.80% | 45.50%

### Key Performance Area Weight | Washbank/Highlands
--- | ---
**Bulk/WSP** | -
**Blue Drop Score 2023** | % | 48.95%
**Blue Drop Score 2014** | % | 48.75%
**Blue Drop Score 2012** | % | 61.20%
**Blue Drop Score 2011** | % | 9.63%
**System Design Capacity** | kL/d | 820
**System Available Capacity** | kL/d | 820
**System Input Value** | kL/d | 820
**Capacity Utilisation** | % | NI
**Resource Abstracted From** | Mshushwane River
**BDRR 2023** | % | 56.42%
**BDRR 2022** | % | 38.50%

---

**Technical Site Assessment: Kokstad WTW - 73%**

The Regulator notes the dire state of management and drinking water quality in the Chibini and Machunwini water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>87.09%</td>
</tr>
<tr>
<td>2014</td>
<td>86.72%</td>
</tr>
<tr>
<td>2012</td>
<td>88.26%</td>
</tr>
<tr>
<td>2011</td>
<td>85.54%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Ifalethu</th>
<th>Isithundu</th>
<th>Lambothi</th>
<th>Lower Tukela</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>66.84%</td>
<td>68.86%</td>
<td>55.38%</td>
<td>90.44%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>60.36%</td>
<td>72.87%</td>
<td>36.06%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>31.95%</td>
<td>65.03%</td>
<td>28.70%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>54.47%</td>
<td>53.37%</td>
<td>39.38%</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>50</td>
<td>500</td>
<td>50</td>
<td>55 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>50</td>
<td>500</td>
<td>50</td>
<td>55 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>50</td>
<td>500</td>
<td>50</td>
<td>19 341</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>83.51%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Ifalethu borehole</td>
<td>Unknown Spring</td>
<td>Unnamed borehole</td>
<td>Tugela</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>38.38%</td>
<td>30.05%</td>
<td>77.02%</td>
<td>32.23%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>90.20%</td>
<td>28.70%</td>
<td>90.20%</td>
<td>28.10%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Makwanini</th>
<th>Maphumulo Borehole Supply system</th>
<th>Maphumulo WTW-Reticulation</th>
<th>Montebello</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>57.72%</td>
<td>61.63%</td>
<td>93.99%</td>
<td>74.86%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>42.94%</td>
<td>80.04%</td>
<td>94.48%</td>
<td>78.62%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>45.45%</td>
<td>77.10%</td>
<td>NI</td>
<td>73.33%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>40.63%</td>
<td>59.60%</td>
<td>NI</td>
<td>76.76%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>50</td>
<td>900</td>
<td>11 000</td>
<td>500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>50</td>
<td>900</td>
<td>11 000</td>
<td>500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>50</td>
<td>900</td>
<td>7 267</td>
<td>246</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>66.06%</td>
<td>49.20%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Unknown</td>
<td>NI</td>
<td>iMvutshane Dam</td>
<td>Mdloti</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>49.20%</td>
<td>55.56%</td>
<td>28.27%</td>
<td>26.58%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>62.40%</td>
<td>29.20%</td>
<td>66.10%</td>
<td>21.50%</td>
</tr>
</tbody>
</table>
### Key Performance Area Weight

<table>
<thead>
<tr>
<th></th>
<th>Ncebo</th>
<th>Nsuze</th>
<th>Ntabaskop</th>
<th>Sundumbili</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>84.51%</td>
<td>75.64%</td>
<td>69.62%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>78.18%</td>
<td>NI</td>
<td>57.20%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>77.59%</td>
<td>NI</td>
<td>78.87%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>74.73%</td>
<td>NI</td>
<td>54.67%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>4 000</td>
<td>2 000</td>
<td>250</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>3 840</td>
<td>600</td>
<td>250</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>917</td>
<td>281</td>
<td>3 112</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>23.88%</td>
<td>46.83%</td>
<td>1,244.80%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Tugela</td>
<td>Nsuze</td>
<td>Unknown</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>16.11%</td>
<td>29.05%</td>
<td>34.46%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>16.30%</td>
<td>34.20%</td>
<td>91.60%</td>
</tr>
</tbody>
</table>

### Key Performance Area Weight

<table>
<thead>
<tr>
<th></th>
<th>Umvoti</th>
<th>Vukile</th>
<th>Waterfall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Umgeni Water</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>88.70%</td>
<td>71.86%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>82.83%</td>
<td>63.95%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>87.40%</td>
<td>79.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>91.40%</td>
<td>74.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>67 000</td>
<td>500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>67 000</td>
<td>500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>12 135</td>
<td>288</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>76.28%</td>
<td>57.60%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Mvoti</td>
<td>Unknown</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>39.00%</td>
<td>30.05%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>29.70%</td>
<td>22.60%</td>
</tr>
</tbody>
</table>

*Technical Site Assessment: Sundumbili WTW – 69%*
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td></td>
<td>40.70%</td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td>74.08%</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td>75.51%</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td>71.31%</td>
</tr>
</tbody>
</table>

### Key Performance Area Weights

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Eshowe WTW</th>
<th>Gingindlovu (Gingindlovu WTW)</th>
<th>Khombe</th>
<th>Pikiliyeza</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>34.48%</td>
<td>55.35%</td>
<td>16.28%</td>
<td>12.05%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>73.68%</td>
<td>78.00%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>77.77%</td>
<td>69.86%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>74.98%</td>
<td>75.80%</td>
<td>NI</td>
<td>NI</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>System Design Capacity</td>
<td>9 000</td>
<td>2 000</td>
<td>1 000</td>
<td>500</td>
</tr>
</tbody>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>System Available Capacity</td>
<td>9 000</td>
<td>2 000</td>
<td>1 000</td>
<td>500</td>
</tr>
</tbody>
</table>

### System Input Value

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>System Input Value</td>
<td>9 000</td>
<td>2 600</td>
<td>1 000</td>
<td>500</td>
</tr>
</tbody>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Utilisation</td>
<td></td>
<td>130.00%</td>
<td>NI</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Abstracted From</td>
<td>Mlalazi</td>
<td>Matigulu</td>
<td>Not confirmed</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

### BDRR 2023

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023</td>
<td>58.32%</td>
<td>24.15%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

### BDRR 2022

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2022</td>
<td>55.80%</td>
<td>17.00%</td>
<td>NI</td>
<td>NI</td>
</tr>
</tbody>
</table>

### Key Performance Area Weights

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Greater Mthonjaneni</th>
<th>Melmoth (Melmoth WTW)</th>
<th>Middledrift</th>
<th>Mtunzini</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>35.52%</td>
<td>45.00%</td>
<td>50.66%</td>
<td>50.75%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>56.40%</td>
<td>64.96%</td>
<td>49.67%</td>
<td>77.18%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NI</td>
<td>68.22%</td>
<td>NI</td>
<td>81.92%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NI</td>
<td>77.60%</td>
<td>NI</td>
<td>70.21%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>System Design Capacity</td>
<td>22 000</td>
<td>3 600</td>
<td>10 000</td>
<td>2 000</td>
</tr>
</tbody>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>System Available Capacity</td>
<td>22 000</td>
<td>3 600</td>
<td>10 000</td>
<td>2 000</td>
</tr>
</tbody>
</table>

### System Input Value

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>System Input Value</td>
<td>22 000</td>
<td>3 600</td>
<td>10 000</td>
<td>2 000</td>
</tr>
</tbody>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Utilisation</td>
<td></td>
<td>36.36%</td>
<td>NI</td>
<td>NI</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Abstracted From</td>
<td>Goedertrouw, Mlalazi</td>
<td>Melmoth Dam</td>
<td>Tugela</td>
<td>Mlalazi</td>
</tr>
</tbody>
</table>

### BDRR 2023

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023</td>
<td>52.28%</td>
<td>43.57%</td>
<td>40.96%</td>
<td>31.70%</td>
</tr>
</tbody>
</table>

### BDRR 2022

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2022</td>
<td>37.90%</td>
<td>36.10%</td>
<td>41.10%</td>
<td>19.70%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Fort Louis</td>
<td>Nkandla bulk</td>
<td>Nomponjwana</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>--------</td>
<td>------------</td>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>46.06%</td>
<td>52.15%</td>
<td>44.53%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>55.98%</td>
<td>90.92%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>52.28%</td>
<td>84.07%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>57.63%</td>
<td>57.63%</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>850</td>
<td>3 800</td>
<td>1 500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>850</td>
<td>3 800</td>
<td>1 500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>850</td>
<td>3 800</td>
<td>1 500</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>0.00%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Nsuze River</td>
<td>Mhlathuze</td>
<td>Mefule</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>53.62%</td>
<td>35.89%</td>
<td>42.13%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>54.70%</td>
<td>23.00%</td>
<td>NI</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Greater Mthonjaneni WTW - 61%**

The Regulator note the dire state of management and drinking water quality in the Khombe and Pikiliyeza water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td><strong>97.94%</strong></td>
</tr>
<tr>
<td>2014</td>
<td><strong>97.97%</strong></td>
</tr>
<tr>
<td>2012</td>
<td><strong>95.38%</strong></td>
</tr>
<tr>
<td>2011</td>
<td><strong>95.60%</strong></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Umsunduzi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Umgeni Water</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td><strong>97.94%</strong></td>
</tr>
<tr>
<td>2014</td>
<td><strong>97.97%</strong></td>
</tr>
<tr>
<td>2012</td>
<td><strong>95.38%</strong></td>
</tr>
<tr>
<td>2011</td>
<td><strong>95.60%</strong></td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td></td>
<td>535 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td></td>
<td>510 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
</tr>
<tr>
<td></td>
<td>223 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>96.84%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Midmar Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>28.41%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>100.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Midmar WTW – 95%**
### Municipal Blue Drop Score

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>84.35%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>89.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Charlestown</th>
<th>Newcastle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>47.13%</td>
<td>85.05%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>64.49%</td>
<td>90.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>60.10%</td>
<td>97.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>40.70%</td>
<td>75.90%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 000</td>
<td>130 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 000</td>
<td>130 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 000</td>
<td>106 450</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>17.50%</td>
<td>81.88%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Boreholes</td>
<td>Ntshingway dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>35.97%</td>
<td>28.38%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>11.70%</td>
<td>54.10%</td>
</tr>
</tbody>
</table>

*Technical Site Assessment: Ngagane WTW (uThukela Water) - 89%*
## Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>57.14%</td>
<td>66.29%</td>
<td>92.55%</td>
<td>92.82%</td>
</tr>
</tbody>
</table>

## Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Bhobhoyi</th>
<th>Harding</th>
<th>KwaHlongwa</th>
<th>KwaLembe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Bulk/WSP

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>41.40%</td>
<td>62.49%</td>
<td>91.40%</td>
<td>91.20%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### Blue Drop Score 2023

| %                     | 41.40%               | 55.51%               | 60.16%               | 46.68%               |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### System Design Capacity

| kl/d    | 81 000 | 26 800 | 250       | 750       |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### System Available Capacity

| kl/d    | 81 000 | 25 400 | 250       | 750       |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### System Input Value

| kl/d    | 81 000 | 1 183  | 250       | 750       |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### Capacity Utilisation

| %       | 100.00% | 84.50%  | 100.00%   | 100.00%  |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### Resource Abstracted From

- Mzimkhulu, Mzimkulwana
- Mzimkulwana
- Malukoka
- Mkomazi

### BDRR 2023

| %       | 49.41% | 26.48%  | 21.23%    | 37.10%   |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### BDRR 2022

| %       | 35.20% | 59.50%  | 27.11%    | 35.13%   |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

## Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>KwaNdelu</th>
<th>KwaNyuswa 1</th>
<th>KwaNyuswa 2</th>
<th>Mhlabashane</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Bulk/WSP

<table>
<thead>
<tr>
<th></th>
<th>KwaNdelu</th>
<th>KwaNyuswa 1</th>
<th>KwaNyuswa 2</th>
<th>Mhlabashane</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>53.08%</td>
<td>50.05%</td>
<td>41.65%</td>
<td>82.52%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### Blue Drop Score 2023

| %       | 53.08%   | 50.05%   | 41.65%   | 82.52%   |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### System Design Capacity

| kl/d    | 1 400 | 250 | 750 | 4 000 |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### System Available Capacity

| kl/d    | 1 400 | 250 | 750 | 4 000 |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### System Input Value

| kl/d    | 1 400 | 250 | 750 | 7 240 |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### Capacity Utilisation

| %       | 100.00% | 100.00% | 100.00% | 181.00% |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### Resource Abstracted From

- Mzumbe
- Mzimkulwana
- Gilbert Eyles
- Mhlabashane Dam

### BDRR 2023

| %       | 29.26% | 29.49% | 47.64% | 58.87% |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

### BDRR 2022

| %       | 19.66% | 30.22% | 23.62% | NI       |

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

## Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Umtamvuna</th>
<th>Umtwalume</th>
<th>Umzinto</th>
<th>Vulamehlo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Bulk/WSP

<table>
<thead>
<tr>
<th></th>
<th>Umtamvuna</th>
<th>Umtwalume</th>
<th>Umzinto</th>
<th>Vulamehlo</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

## KWAZULU NATAL
## Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Umntamvuna</th>
<th>Umtwalume</th>
<th>Umzinto</th>
<th>Vulamehlo</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td>42.83%</td>
<td>93.04%</td>
<td>82.61%</td>
<td>54.91%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2014</strong></td>
<td>%</td>
<td>64.99%</td>
<td>83.52%</td>
<td>87.08%</td>
<td>62.49%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2012</strong></td>
<td>%</td>
<td>95.20%</td>
<td>95.20%</td>
<td>96.30%</td>
<td>87.00%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2011</strong></td>
<td>%</td>
<td>95.20%</td>
<td>95.20%</td>
<td>96.61%</td>
<td>93.40%</td>
</tr>
<tr>
<td><strong>System Design Capacity</strong></td>
<td>kL/d</td>
<td>30 000</td>
<td>38 000</td>
<td>36 000</td>
<td>4 500</td>
</tr>
<tr>
<td><strong>System Available Capacity</strong></td>
<td>kL/d</td>
<td>30 000</td>
<td>39 720</td>
<td>41 680</td>
<td>5 000</td>
</tr>
<tr>
<td><strong>System Input Value</strong></td>
<td>kL/d</td>
<td>30 000</td>
<td>33 000</td>
<td>13 440</td>
<td>4 500</td>
</tr>
<tr>
<td><strong>Capacity Utilisation</strong></td>
<td>%</td>
<td>62.58%</td>
<td>74.35%</td>
<td>63.77%</td>
<td>90.00%</td>
</tr>
<tr>
<td><strong>Resource Abstracted From</strong></td>
<td></td>
<td>Mtamvuna</td>
<td>Mtwalume, Nungwane</td>
<td>Mzinto</td>
<td>Mtwalume</td>
</tr>
<tr>
<td><strong>BDRR 2023</strong></td>
<td>%</td>
<td>69.47%</td>
<td>30.41%</td>
<td>31.66%</td>
<td>35.37%</td>
</tr>
<tr>
<td><strong>BDRR 2022</strong></td>
<td>%</td>
<td>75.93%</td>
<td>28.44%</td>
<td>27.93%</td>
<td>32.69%</td>
</tr>
</tbody>
</table>

## Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Weza</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td>Umgeni Water</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td>62.78%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2014</strong></td>
<td>%</td>
<td>50.25%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2012</strong></td>
<td>%</td>
<td>73.10%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2011</strong></td>
<td>%</td>
<td>92.70%</td>
</tr>
<tr>
<td><strong>System Design Capacity</strong></td>
<td>kL/d</td>
<td>29 600</td>
</tr>
<tr>
<td><strong>System Available Capacity</strong></td>
<td>kL/d</td>
<td>26 000</td>
</tr>
<tr>
<td><strong>System Input Value</strong></td>
<td>kL/d</td>
<td>5 600</td>
</tr>
<tr>
<td><strong>Capacity Utilisation</strong></td>
<td>%</td>
<td>211.90%</td>
</tr>
<tr>
<td><strong>Resource Abstracted From</strong></td>
<td></td>
<td>Weza</td>
</tr>
<tr>
<td><strong>BDRR 2023</strong></td>
<td>%</td>
<td>34.45%</td>
</tr>
<tr>
<td><strong>BDRR 2022</strong></td>
<td>%</td>
<td>71.22%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Bhoyboyi WTW – 61%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>96.44%</td>
</tr>
<tr>
<td>2014</td>
<td>89.94%</td>
</tr>
<tr>
<td>2012</td>
<td>92.42%</td>
</tr>
<tr>
<td>2011</td>
<td>56.22%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Boreholes (Untreated)</th>
<th>Gomane Boreholes</th>
<th>Impendle Spring</th>
<th>Lidgetton West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>76.30%</td>
<td>78.33%</td>
<td>76.85%</td>
<td>93.58%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>41.10%</td>
<td>81.57%</td>
<td>69.31%</td>
<td>66.11%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>69.90%</td>
<td>75.99%</td>
<td>75.91%</td>
<td>74.71%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NI</td>
<td>62.71%</td>
<td>52.49%</td>
<td>66.55%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Available Capacity</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>478</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Input Value</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>439</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capacity Utilisation</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>91.90%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground water abstractions (Umgeni, Mooi, Mvoti Catchments)</td>
<td>Groundwater source</td>
</tr>
<tr>
<td>Ntshishini River catchment</td>
<td>Ntshishini River catchment</td>
</tr>
<tr>
<td>Lion</td>
<td>Lion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BDGR 2023</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>16.20%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BDGR 2022</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>21.70%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Year</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>91.70%</td>
</tr>
<tr>
<td>2014</td>
<td>79.83%</td>
</tr>
<tr>
<td>2012</td>
<td>72.94%</td>
</tr>
<tr>
<td>2011</td>
<td>54.99%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Available Capacity</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Input Value</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6240</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capacity Utilisation</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>78.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mooi River</td>
<td>Mooi River</td>
</tr>
<tr>
<td>Nzinga River</td>
<td>Nzinga River</td>
</tr>
<tr>
<td>Mooi River (just below Spring Grove Dam)</td>
<td>Mooi River (just below Spring Grove Dam)</td>
</tr>
<tr>
<td>Mgeni River</td>
<td>Mgeni River</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BDGR 2023</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.54%</td>
<td>19.51%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BDGR 2022</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.50%</td>
<td>21.20%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Impendle Spring Protection – 50%**
# 8.13 City of uMhlathuze Local Municipality

## Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>83.70%</td>
</tr>
<tr>
<td>2014</td>
<td>89.60%</td>
</tr>
<tr>
<td>2012</td>
<td>92.94%</td>
</tr>
<tr>
<td>2011</td>
<td>89.26%</td>
</tr>
</tbody>
</table>

## Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Esikhaleni WTW</th>
<th>Mzingazi WTW</th>
<th>Ngwelezane WTW</th>
<th>Nzezi WTW (Mhlathuze Water)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mhlathuze Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>87.25%</td>
<td>73.01%</td>
<td>87.13%</td>
<td>93.23%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>91.85%</td>
<td>85.45%</td>
<td>95.02%</td>
<td>95.38%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>92.35%</td>
<td>89.91%</td>
<td>96.37%</td>
<td>98.39%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>90.07%</td>
<td>89.28%</td>
<td>91.35%</td>
<td>88.90%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>36 000</td>
<td>65 000</td>
<td>8 000</td>
<td>205 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>36 000</td>
<td>65 000</td>
<td>8 000</td>
<td>205 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>28 199</td>
<td>52 030</td>
<td>6 361</td>
<td>45 546</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>78.33%</td>
<td>80.05%</td>
<td>79.51%</td>
<td>70.24%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Lake Cubhu</td>
<td>Lake Mzingazi</td>
<td>uMhlathuze River</td>
<td>Mhlathuze River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>34.62%</td>
<td>41.27%</td>
<td>23.41%</td>
<td>26.81%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>30.80%</td>
<td>28.50%</td>
<td>28.20%</td>
<td>42.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessments:**
- **Mzingazi WTW (operated by City of uMhlathuze)** - 64%
- **Nzezi WTW (operated by Mhlathuze Water)** - 91%
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>74.32%</td>
</tr>
<tr>
<td>2014</td>
<td>57.87%</td>
</tr>
<tr>
<td>2012</td>
<td>77.77%</td>
</tr>
<tr>
<td>2011</td>
<td>32.45%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Enkanyezini</th>
<th>Hlabisa</th>
<th>Hluhluwe Phase 1</th>
<th>Hluhluwe Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Novubu</td>
<td>Novubu</td>
<td>Novubu</td>
<td>Novubu</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
<th>%</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>76.95%</td>
<td>59.80%</td>
<td>84.68%</td>
<td>62.21%</td>
</tr>
<tr>
<td>2014</td>
<td>60.00%</td>
<td>63.00%</td>
<td>61.00%</td>
<td>58.00%</td>
</tr>
<tr>
<td>2012</td>
<td>82.00%</td>
<td>82.00%</td>
<td>75.00%</td>
<td>73.00%</td>
</tr>
<tr>
<td>2011</td>
<td>26.00%</td>
<td>28.00%</td>
<td>28.00%</td>
<td>28.00%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>500</th>
<th>800</th>
<th>10 000</th>
<th>1 800</th>
</tr>
</thead>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>500</th>
<th>800</th>
<th>10 000</th>
<th>1 800</th>
</tr>
</thead>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>kl/d</th>
<th>369</th>
<th>800</th>
<th>8 630</th>
<th>2 032</th>
</tr>
</thead>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>%</th>
<th>73.80%</th>
<th>NI</th>
<th>86.30%</th>
<th>112.89%</th>
</tr>
</thead>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th>BDRR 2023</th>
<th>%</th>
<th>%</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>15.76%</td>
<td>76.18%</td>
<td>24.84%</td>
<td>74.59%</td>
</tr>
<tr>
<td>2022</td>
<td>94.20%</td>
<td>95.50%</td>
<td>94.90%</td>
<td>94.40%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Ingwavuma</th>
<th>Jozini New</th>
<th>Jozini Old</th>
<th>Makhonyeni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Novubu</td>
<td>Novubu</td>
<td>Novubu</td>
<td>Novubu</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
<th>%</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>57.58%</td>
<td>73.03%</td>
<td>62.61%</td>
<td>70.40%</td>
</tr>
<tr>
<td>2014</td>
<td>61.00%</td>
<td>63.00%</td>
<td>67.00%</td>
<td>62.00%</td>
</tr>
<tr>
<td>2012</td>
<td>72.00%</td>
<td>80.00%</td>
<td>62.00%</td>
<td>75.00%</td>
</tr>
<tr>
<td>2011</td>
<td>NA</td>
<td>43.00%</td>
<td>47.00%</td>
<td>26.00%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>500</th>
<th>5 000</th>
<th>3 000</th>
<th>800</th>
</tr>
</thead>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>500</th>
<th>5 000</th>
<th>3 000</th>
<th>800</th>
</tr>
</thead>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>kl/d</th>
<th>157</th>
<th>4 212</th>
<th>917</th>
<th>543</th>
</tr>
</thead>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>%</th>
<th>31.40%</th>
<th>84.24%</th>
<th>30.57%</th>
<th>67.88%</th>
</tr>
</thead>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th>BDRR 2023</th>
<th>%</th>
<th>%</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>40.49%</td>
<td>64.28%</td>
<td>61.02%</td>
<td>26.07%</td>
</tr>
<tr>
<td>2022</td>
<td>94.90%</td>
<td>95.60%</td>
<td>95.60%</td>
<td>94.90%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Malobeni</th>
<th>Manguzi</th>
<th>Manguzi Airfield</th>
<th>Mbazwana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Novubu</td>
<td>Novubu</td>
<td>Novubu</td>
<td>Novubu</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Malobeni</td>
<td>Manguzi</td>
<td>Manguzi Airfield</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
<td>----------</td>
<td>---------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>73.63%</td>
<td>54.93%</td>
<td>67.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>64.00%</td>
<td>60.00%</td>
<td>40.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>70.00%</td>
<td>66.00%</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>44.00%</td>
<td>29.00%</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>500</td>
<td>500</td>
<td>1 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>500</td>
<td>500</td>
<td>1 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>89</td>
<td>299</td>
<td>1 154</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>17.80%</td>
<td>59.80%</td>
<td>115.40%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Phongolo River and Jozini Dam</td>
<td>Gezisa stream (conventional WTW); Shengeza stream (DAF system)</td>
<td>Boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>18.56%</td>
<td>70.52%</td>
<td>27.51%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>94.90%</td>
<td>94.60%</td>
<td>94.80%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Mjindi Central</th>
<th>Mkuze</th>
<th>Mpembeni</th>
<th>Mseleni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Novubu</td>
<td>Novubu</td>
<td>Novubu</td>
<td>Novubu</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>72.48%</td>
<td>64.19%</td>
<td>71.25%</td>
<td>71.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>64.00%</td>
<td>65.00%</td>
<td>22.00%</td>
<td>52.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>61.00%</td>
<td>65.00%</td>
<td>NA</td>
<td>84.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>27.00%</td>
<td>28.00%</td>
<td>NA</td>
<td>32.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>350</td>
<td>1 500</td>
<td>384</td>
<td>800</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>350</td>
<td>1 500</td>
<td>384</td>
<td>800</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>63</td>
<td>1 309</td>
<td>299</td>
<td>1 004</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>18.00%</td>
<td>87.27%</td>
<td>77.86%</td>
<td>125.50%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Phongolo River and Jozini Dam</td>
<td>Mkuse River &amp; Blacky dam &amp; augmented by Phongolo River</td>
<td>Borehole</td>
<td>Lake Sibaya</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>18.56%</td>
<td>56.95%</td>
<td>21.80%</td>
<td>26.52%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>94.90%</td>
<td>96.10%</td>
<td>94.90%</td>
<td>94.80%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Mshudu</th>
<th>Mtubatuba</th>
<th>Nkolokothe</th>
<th>Nondubuya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Novubu</td>
<td>Novubu</td>
<td>Novubu</td>
<td>Novubu</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>73.55%</td>
<td>78.43%</td>
<td>65.73%</td>
<td>56.40%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>45.00%</td>
<td>58.00%</td>
<td>59.00%</td>
<td>60.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NA</td>
<td>82.00%</td>
<td>81.00%</td>
<td>77.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NA</td>
<td>46.00%</td>
<td>27.00%</td>
<td>23.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 000</td>
<td>20 000</td>
<td>5 000</td>
<td>300</td>
</tr>
</tbody>
</table>
### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Mshudu</th>
<th>Mtubatuba</th>
<th>Nkolokotho</th>
<th>Nondubuya</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 000</td>
<td>20 000</td>
<td>5 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>1 000</td>
<td>8 324</td>
<td>3 703</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>41.62%</td>
<td>74.06%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Borehole</td>
<td>Mfolozi river &amp; 3 boreholes along river bank</td>
<td>uMfolozi river &amp; Mbuku lake or Nkolokotho Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>29.05%</td>
<td>23.93%</td>
<td>65.31%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>95.50%</td>
<td>57.60%</td>
<td>94.90%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Shemula</th>
<th>Thengane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Novubu</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>74.63%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>54.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>80.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>26.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>20 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>20 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>16 285</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>81.43%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Lower Phongolo river</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>32.64%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>95.90%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Mtubatuba WTW - 57%**
## 8.15 uMzinyathi District Municipality

### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>31.59%</td>
</tr>
<tr>
<td>2014</td>
<td>78.02%</td>
</tr>
<tr>
<td>2012</td>
<td>93.45%</td>
</tr>
<tr>
<td>2011</td>
<td>70.01%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Dundee</th>
<th>Fabeni</th>
<th>Keat’s Drift (Ethembeni)</th>
<th>Pomeroy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>uThukela Water</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>61.03%</td>
<td>21.00%</td>
<td>25.85%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>82.70%</td>
<td>71.81%</td>
<td>67.21%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>97.04%</td>
<td>89.65%</td>
<td>90.37%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>71.40%</td>
<td>65.06%</td>
<td>68.81%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>16 000</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>16 000</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>9 522</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>59.51%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Buffalo River &amp; Tom Worthington Dam</td>
<td>Borehole Water</td>
<td>Mooi River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>48.48%</td>
<td>65.99%</td>
<td>45.90%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>48.50%</td>
<td>66.00%</td>
<td>45.90%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Sampofu</th>
<th>Isandlwana</th>
<th>Nondweni</th>
<th>Nqutu (Vant’s Drift)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>15.35%</td>
<td>15.35%</td>
<td>29.35%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>76.45%</td>
<td>70.01%</td>
<td>62.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>88.98%</td>
<td>91.88%</td>
<td>84.57%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>66.51%</td>
<td>62.09%</td>
<td>73.32%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>3 000</td>
<td>450</td>
<td>2 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>3 000</td>
<td>450</td>
<td>2 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>3 000</td>
<td>450</td>
<td>2 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Tugela River and Borehole</td>
<td>Manz Manyama River</td>
<td>Vovo River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>77.21%</td>
<td>72.18%</td>
<td>36.36%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>77.20%</td>
<td>72.20%</td>
<td>20.50%</td>
</tr>
</tbody>
</table>
### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Qudeni</th>
<th>Amakhabaleni</th>
<th>Greytown</th>
<th>Muden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>27.40%</td>
<td>15.35%</td>
<td>15.35%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>73.20%</td>
<td>77.45%</td>
<td>78.25%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>90.82%</td>
<td>85.07%</td>
<td>92.73%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NI</td>
<td>60.53%</td>
<td>70.86%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>300</td>
<td>4000</td>
<td>6000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>300</td>
<td>2000</td>
<td>6000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>300</td>
<td>2000</td>
<td>6000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Kubazi river</td>
<td>Uthukela River</td>
<td>Lake Mathle</td>
<td>Muden Irrigation Canal</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>36.85%</td>
<td>65.81%</td>
<td>65.81%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>36.80%</td>
<td>62.40%</td>
<td>65.80%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Vants Drift WTW - 80%

The Regulator notes the dire state of management and drinking water quality in the Fabeni, Keat’s Drift (Ethembeni), Pomeroy, Sampofu, Isandlwana, Nondweni, Vant’s Drift, Qudeni, Amakhabaleni, Greytown, Muden and Kranskop Thukela water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a **detailed corrective action plan within 20 days** of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>50.42%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>34.50%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>57.39%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>55.29%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Colenso</th>
<th>Ezakheni</th>
<th>Ladysmith</th>
<th>Loskop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>51.98%</td>
<td>48.05%</td>
<td>50.80%</td>
<td>48.05%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>28.87%</td>
<td>31.00%</td>
<td>46.64%</td>
<td>24.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>44.80%</td>
<td>45.93%</td>
<td>63.37%</td>
<td>68.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>44.00%</td>
<td>51.55%</td>
<td>63.01%</td>
<td>42.10%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 200</td>
<td>32 000</td>
<td>23 000</td>
<td>8 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 640</td>
<td>37 000</td>
<td>25 300</td>
<td>9 200</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 300</td>
<td>36 000</td>
<td>31 304</td>
<td>3 250</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>87.12%</td>
<td>97.30%</td>
<td>122.53%</td>
<td>55.45%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Tugela</td>
<td>Tugela</td>
<td>Tugela</td>
<td>Njesuthi</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>48.53%</td>
<td>53.06%</td>
<td>51.59%</td>
<td>49.98%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>55.60%</td>
<td>47.00%</td>
<td>56.70%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Ekuvukeni Township and surrounding Rural areas</th>
<th>Tugela Estates</th>
<th>Bergville Town and Surrounding Rural Areas</th>
<th>Langkloof</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>52.50%</td>
<td>49.13%</td>
<td>52.60%</td>
<td>45.83%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>24.66%</td>
<td>22.23%</td>
<td>26.10%</td>
<td>27.83%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>62.19%</td>
<td>56.80%</td>
<td>53.58%</td>
<td>62.24%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>58.69%</td>
<td>42.10%</td>
<td>56.64%</td>
<td>58.81%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>8 000</td>
<td>1 200</td>
<td>2 600</td>
<td>100</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>10 000</td>
<td>1 200</td>
<td>2 400</td>
<td>100</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>8 000</td>
<td>1 200</td>
<td>2 600</td>
<td>100</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>133.33%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Sundays</td>
<td>Tugela</td>
<td>Tugela</td>
<td>Tugela</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>53.85%</td>
<td>49.15%</td>
<td>47.95%</td>
<td>44.80%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>35.40%</td>
<td>28.90%</td>
<td>60.90%</td>
<td>42.40%</td>
</tr>
</tbody>
</table>
### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Moyeni/Zwelisha</th>
<th>Winterton Town, Khethani Township</th>
<th>Archie Rodel</th>
<th>George Cross</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>%</td>
<td>52.95%</td>
<td>52.40%</td>
<td>51.30%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>25.09%</td>
<td>27.57%</td>
<td>37.40%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>42.04%</td>
<td>56.08%</td>
<td>64.29%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>59.49%</td>
<td>55.40%</td>
<td>60.54%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 400</td>
<td>1 200</td>
<td>12 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 500</td>
<td>1 200</td>
<td>12 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 700</td>
<td>1 500</td>
<td>10 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>108.00%</td>
<td>125.00%</td>
<td>83.33%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Tugela</td>
<td>Little Tugela</td>
<td>Boesmans</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>47.95%</td>
<td>45.03%</td>
<td>45.87%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>61.80%</td>
<td>45.90%</td>
<td>65.90%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Weenen 2</th>
<th>Weenen Town</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>%</td>
<td>49.68%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>40.99%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>66.79%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>58.25%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>4 200</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>3 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>71.43%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Boesmans</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>42.76%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>62.50%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Ladysmith WTW - 89%**
### Zululand District Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Blue Drop Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>43.93%</td>
</tr>
<tr>
<td>2014</td>
<td>51.18%</td>
</tr>
<tr>
<td>2012</td>
<td>83.05%</td>
</tr>
<tr>
<td>2011</td>
<td>72.13%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Babanango</th>
<th>Belgrade</th>
<th>Belgrade New</th>
<th>Bhokwe</th>
</tr>
</thead>
</table>

#### Bulk/WSP

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>68.48%</th>
<th>65.94%</th>
<th>43.70%</th>
<th>54.38%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>58.00%</td>
<td>55.00%</td>
<td>40.00%</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>89.00%</td>
<td>92.00%</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>80.00%</td>
<td>80.00%</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

#### System Design Capacity

<table>
<thead>
<tr>
<th>Area</th>
<th>kL/d</th>
<th>330</th>
<th>1100</th>
<th>4000</th>
<th>300</th>
</tr>
</thead>
</table>

#### System Available Capacity

<table>
<thead>
<tr>
<th>Area</th>
<th>kL/d</th>
<th>330</th>
<th>825</th>
<th>4000</th>
<th>300</th>
</tr>
</thead>
</table>

#### System Input Value

<table>
<thead>
<tr>
<th>Area</th>
<th>kL/d</th>
<th>368</th>
<th>867</th>
<th>2366</th>
<th>110</th>
</tr>
</thead>
</table>

#### Capacity Utilisation

<table>
<thead>
<tr>
<th>Area</th>
<th>%</th>
<th>111.52%</th>
<th>105.09%</th>
<th>59.15%</th>
<th>36.67%</th>
</tr>
</thead>
</table>

#### Resource Abstracted From

<table>
<thead>
<tr>
<th>Area</th>
<th>Golokodo river and Babanango dam</th>
<th>Belgrade pond &amp; Mozane River</th>
<th>Belgrade pond &amp; Mozane River</th>
<th>Spring</th>
</tr>
</thead>
</table>

#### BDRR 2023

<table>
<thead>
<tr>
<th>Area</th>
<th>%</th>
<th>32.79%</th>
<th>34.90%</th>
<th>48.01%</th>
<th>21.92%</th>
</tr>
</thead>
</table>

#### BDRR 2022

<table>
<thead>
<tr>
<th>Area</th>
<th>%</th>
<th>40.90%</th>
<th>43.40%</th>
<th>48.30%</th>
<th>NA</th>
</tr>
</thead>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Cenza</th>
<th>eDumbe</th>
<th>eMakhosini</th>
<th>Enyathi</th>
</tr>
</thead>
</table>

#### Bulk/WSP

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>62.88%</th>
<th>67.85%</th>
<th>58.48%</th>
<th>57.08%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>50.00%</td>
<td>71.00%</td>
<td>51.00%</td>
<td>56.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>78.00%</td>
<td>94.00%</td>
<td>66.00%</td>
<td>75.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>80.00%</td>
<td>79.00%</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

#### System Design Capacity

<table>
<thead>
<tr>
<th>Area</th>
<th>kL/d</th>
<th>400</th>
<th>2400</th>
<th>700</th>
<th>1000</th>
</tr>
</thead>
</table>

#### System Available Capacity

<table>
<thead>
<tr>
<th>Area</th>
<th>kL/d</th>
<th>360</th>
<th>2400</th>
<th>700</th>
<th>1000</th>
</tr>
</thead>
</table>

#### System Input Value

<table>
<thead>
<tr>
<th>Area</th>
<th>kL/d</th>
<th>479</th>
<th>2459</th>
<th>498</th>
<th>309</th>
</tr>
</thead>
</table>

#### Capacity Utilisation

<table>
<thead>
<tr>
<th>Area</th>
<th>%</th>
<th>133.06%</th>
<th>102.46%</th>
<th>71.14%</th>
<th>30.90%</th>
</tr>
</thead>
</table>

#### Resource Abstracted From

<table>
<thead>
<tr>
<th>Area</th>
<th>Vungu River</th>
<th>eDumbe Dam</th>
<th>A well on bank of Mpembeni River</th>
<th>Spring tributary of Black uMfolozi river</th>
</tr>
</thead>
</table>

#### BDRR 2023

<table>
<thead>
<tr>
<th>Area</th>
<th>%</th>
<th>34.05%</th>
<th>35.13%</th>
<th>40.01%</th>
<th>30.92%</th>
</tr>
</thead>
</table>

#### BDRR 2022

<p>| Area          | % | 50.80% | 47.80% | 45.40% | 28.70% |</p>
<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Frischgewaagd Bilanyoni</th>
<th>Gumbi RSS</th>
<th>Itshelejuba Hospital</th>
<th>Khambi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>74.13%</td>
<td>61.53%</td>
<td>62.24%</td>
<td>42.98%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>71.00%</td>
<td>51.00%</td>
<td>51.00%</td>
<td>66.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>92.00%</td>
<td>NA</td>
<td>88.00%</td>
<td>84.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>79.00%</td>
<td>84.00%</td>
<td>84.00%</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>10 000</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>10 000</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>2 156</td>
<td>269</td>
<td>500</td>
<td>466</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>21.56%</td>
<td>53.80%</td>
<td>NI</td>
<td>93.20%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Pongola River</td>
<td>Jozini Dam</td>
<td>Borehole</td>
<td>Sihlengeni River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>20.71%</td>
<td>36.54%</td>
<td>35.38%</td>
<td>48.91%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>41.70%</td>
<td>36.20%</td>
<td>30.00%</td>
<td>41.60%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Khangela Palace</th>
<th>Khiphunyawo</th>
<th>Kombuzi</th>
<th>Mandlikazi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>65.94%</td>
<td>60.08%</td>
<td>55.45%</td>
<td>65.83%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>43.00%</td>
<td>66.00%</td>
<td>51.00%</td>
<td>48.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>63.00%</td>
<td>75.00%</td>
<td>72.00%</td>
<td>84.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>80.00%</td>
<td>61.00%</td>
<td>81.00%</td>
<td>80.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>150</td>
<td>370</td>
<td>200</td>
<td>10 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>150</td>
<td>370</td>
<td>200</td>
<td>10 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>59</td>
<td>400</td>
<td>119</td>
<td>4 908</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>39.33%</td>
<td>108.11%</td>
<td>59.50%</td>
<td>49.08%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Nkuza river</td>
<td>Myokane river</td>
<td>Nkuza river</td>
<td>Pongolapoort dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>28.37%</td>
<td>34.71%</td>
<td>37.81%</td>
<td>34.95%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>48.60%</td>
<td>38.50%</td>
<td>35.80%</td>
<td>35.90%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Mountain View</th>
<th>Mpungamhlope</th>
<th>Msibi</th>
<th>Mvuzini</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>47.58%</td>
<td>70.43%</td>
<td>60.08%</td>
<td>67.68%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>64.00%</td>
<td>45.00%</td>
<td>53.00%</td>
<td>53.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>82.00%</td>
<td>85.00%</td>
<td>80.00%</td>
<td>85.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>75.00%</td>
<td>82.00%</td>
<td>73.00%</td>
<td>75.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>200</td>
<td>800</td>
<td>500</td>
<td>800</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>200</td>
<td>800</td>
<td>500</td>
<td>800</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>121</td>
<td>776</td>
<td>296</td>
<td>619</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Mountain View</td>
<td>Mpungamhlope</td>
<td>Msibi</td>
<td>Mvuzini</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------</td>
<td>---------------</td>
<td>-------------</td>
<td>----------</td>
<td>-----------</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>60.50%</td>
<td>97.00%</td>
<td>59.20%</td>
<td>77.38%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Nthombothi River</td>
<td>White uMfolozi River</td>
<td>Myokane river</td>
<td>Mvunyani Dam, and Mvuzini River and Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>50.17%</td>
<td>33.51%</td>
<td>37.81%</td>
<td>23.31%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>41.30%</td>
<td>51.30%</td>
<td>44.60%</td>
<td>43.10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Nkonjeni Hospital</th>
<th>Nkosentsha</th>
<th>Nongoma</th>
<th>Ophuzane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Zana Manzi (WSSA)</td>
<td>Zana Manzi (WSSA)</td>
<td>Zana Manzi (WSSA)</td>
<td>Zana Manzi (WSSA)</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>64.64%</td>
<td>45.40%</td>
<td>68.11%</td>
<td>47.58%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>54.00%</td>
<td>61.00%</td>
<td>65.00%</td>
<td>65.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>79.00%</td>
<td>66.00%</td>
<td>94.00%</td>
<td>81.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>82.00%</td>
<td>61.00%</td>
<td>81.00%</td>
<td>68.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>100</td>
<td>130</td>
<td>14 800</td>
<td>500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>100</td>
<td>130</td>
<td>14 800</td>
<td>500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>126</td>
<td>27</td>
<td>6 937</td>
<td>283</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>126.00%</td>
<td>20.77%</td>
<td>60.69%</td>
<td>56.60%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Nqabaneni Dam</td>
<td>Nkwazana river</td>
<td>Swart Mfolozi River &amp; Vokwana dam or Vuna dam</td>
<td>Nsingane River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>33.17%</td>
<td>47.96%</td>
<td>44.85%</td>
<td>50.17%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>82.80%</td>
<td>36.30%</td>
<td>61.50%</td>
<td>41.60%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Osingisingini</th>
<th>Pongola</th>
<th>Purim RWS</th>
<th>Sidinsi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Zana Manzi (WSSA)</td>
<td>Zana Manzi (WSSA)</td>
<td>Zana Manzi (WSSA)</td>
<td>Zana Manzi (WSSA)</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>48.03%</td>
<td>69.98%</td>
<td>58.40%</td>
<td>56.65%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>43.00%</td>
<td>73.00%</td>
<td>64.00%</td>
<td>50.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>76.00%</td>
<td>94.00%</td>
<td>80.00%</td>
<td>85.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>75.00%</td>
<td>80.00%</td>
<td>77.00%</td>
<td>68.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>60</td>
<td>10 300</td>
<td>500</td>
<td>280</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>60</td>
<td>10 300</td>
<td>500</td>
<td>280</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>39</td>
<td>10 622</td>
<td>434</td>
<td>123</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>65.00%</td>
<td>103.13%</td>
<td>86.80%</td>
<td>43.93%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Unknown river</td>
<td>Bizane dam via Senekal boerdery irrigation channel and Pongola River</td>
<td>Mondlo Dam</td>
<td>Mona river</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>42.73%</td>
<td>36.53%</td>
<td>34.05%</td>
<td>34.34%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>36.30%</td>
<td>35.90%</td>
<td>39.10%</td>
<td>37.20%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Sovane</td>
<td>Spekboom</td>
<td>Tholakele</td>
<td>Thulasizwe Hospital</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------</td>
<td>--------------</td>
<td>--------------</td>
<td>--------------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zana Manzi (WSSA)</td>
<td>Zana Manzi (WSSA)</td>
<td>Zana Manzi (WSSA)</td>
<td>Zana Manzi (WSSA)</td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>45.18%</td>
<td>41.65%</td>
<td>60.08%</td>
<td>64.21%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>NA</td>
<td>43.00%</td>
<td>53.00%</td>
<td>62.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NA</td>
<td>81.00%</td>
<td>70.00%</td>
<td>85.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NA</td>
<td>72.00%</td>
<td>68.00%</td>
<td>80.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>200</td>
<td>1 200</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>200</td>
<td>1 200</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>101</td>
<td>821</td>
<td>291</td>
<td>95</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>50.50%</td>
<td>68.42%</td>
<td>58.20%</td>
<td>47.50%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Unknown river</td>
<td>Spekboom river</td>
<td>Ntombe River</td>
<td>Sihululu River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>37.70%</td>
<td>63.68%</td>
<td>37.81%</td>
<td>28.37%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>30.80%</td>
<td>64.30%</td>
<td>50.80%</td>
<td>36.30%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Ulundi Nkonjeni</th>
<th>Usuthu</th>
<th>Coronation</th>
<th>eMondlo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Zana Manzi (WSSA)</td>
<td>Zana Manzi (WSSA)</td>
<td>Abaqulusi LM</td>
<td>Abaqulusi LM</td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>68.15%</td>
<td>58.36%</td>
<td>26.10%</td>
<td>27.45%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>69.00%</td>
<td>45.00%</td>
<td>18.00%</td>
<td>42.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>88.00%</td>
<td>NA</td>
<td>71.00%</td>
<td>76.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>81.00%</td>
<td>NA</td>
<td>51.00%</td>
<td>55.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>26 400</td>
<td>10 000</td>
<td>8 000</td>
<td>12 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>26 400</td>
<td>10 000</td>
<td>8 000</td>
<td>12 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>16 210</td>
<td>2 924</td>
<td>8 000</td>
<td>12 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>61.40%</td>
<td>29.24%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>White uMfolozi River</td>
<td>Swart Mfolozi River</td>
<td>Boulders Dam</td>
<td>Mvunyana River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>34.34%</td>
<td>31.87%</td>
<td>99.27%</td>
<td>97.44%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>38.20%</td>
<td>NA</td>
<td>99.70%</td>
<td>98.20%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Hlobane</th>
<th>Louwsberg</th>
<th>Vryheid</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Abaqulusi LM</td>
<td>Abaqulusi LM</td>
<td>Abaqulusi LM</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>29.60%</td>
<td>25.50%</td>
<td>30.69%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>27.00%</td>
<td>43.00%</td>
<td>31.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>80.00%</td>
<td>67.00%</td>
<td>75.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>67.00%</td>
<td>64.00%</td>
<td>67.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>4 500</td>
<td>1 100</td>
<td>61 500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>4 500</td>
<td>1 100</td>
<td>61 500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>4 500</td>
<td>1 100</td>
<td>61 500</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>0.00%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Hlobane</td>
<td>Louwsberg</td>
<td>Vryheid</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
<td>---------</td>
<td>-----------</td>
<td>---------</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Vaalbank dam</td>
<td>Mhulumbele River</td>
<td>Bloemveld dam, Wit Mfolozi River &amp; Klipfontein dam</td>
<td></td>
</tr>
<tr>
<td>BDWR 2023</td>
<td>%</td>
<td>99.27%</td>
<td>99.20%</td>
<td>99.43%</td>
</tr>
<tr>
<td>BDWR 2022</td>
<td>%</td>
<td>99.80%</td>
<td>99.70%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Ulundi-Nkonjeni WTW - 69%**

The Regulator notes the dire state of management and drinking water quality in the Coronation, eMondlo, Hlobane, Louwsberg and Vryheid water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
Mbombela: The new Nelspruit clear water tank is well maintained, proud housekeeping

Grabouw WTW: Chemical dosing facility – accurate dosing and knowledgeable process controllers
LIMPOPO PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE

- 10 WSAs & 84 systems audited
- 2 Water Boards & 3 WSPs
- 59.6 ave. % TSA score
- 52.8% BDRR - Medium risk
- No BD Certifications
- 26 Critical State systems
Provincial Synopsis

The Limpopo province provides drinking water to a total population of 3,391,492 persons in South Africa.

An audit attendance record of 100% of the 10 WSAs, with 84 water supply systems across the province, 2 Water Boards (Lepelle Northern Water and Magalies Water, and 3 Bulk Water Providers (EXXARO, Eskom and Public Works LP) affirms the province’s commitment to the Blue Drop national incentive-based regulatory programme. The main Bulk Water Supplier is Lepelle Northern Water who supplies potable water to 24 water supply systems in 6 WSAs followed by Magalies Water who supplies potable water from the Vaalkop WTW in the Northwest province to 2 water supply systems in the Thabazimbi LM and from the Klipdrift WTW in the Gauteng province to 1 water supply system in the Bela Bela LM and Modimolle/Mookgophong LM respectively. EXXARO and Eskom supply potable water to 2 water supply systems in the Lephalele LM.

The Regulator determined that no water supply systems scored more than 95% when measured against the Blue Drop standards and thus did not qualify for the prestigious Blue Drop Certification. In 2014, 1 water supply system was awarded Blue Drop status. Using the 2014 audit results as comparative baseline, the province shows a decline in excellence for 2023.

Two (2) of 10 WSAs improved on their 2014 scores, namely Bela-Bela LM and Vhembe DM. The remaining 8 WSAs regressed to lower Blue Drop scores compared to their 2014 baselines. The Vhembe DM, Bela-Bela LM and Polokwane LM are the best performing WSAs in the province. The best technical site assessment scores of 86% for the Zeeland WTW in Lephalele LM, followed by the Doorndraai WTW and Khalavha WTW with a TSA score of 76% respectively. 26 water supply systems were identified to be in a critical state in the province compared with 22 water supply systems in 2014.

The province’s overall Blue Drop performance is characterised by particular strengths when measured against the KPAs. Only Magalies Water stands out for its compliance, good practice and risk management practices that is fairly well embedded in the water supply business. The KPAs that require attention and are reflecting scores below 50% are KPA 2 DWQ Risk Management (29.8%), KPA 3 Financial Management (44.5%), and KPA 4 Technical Management (23.2%).

The provincial Blue Drop Risk Rating (BDRR) remained in the medium risk category but improved from 61.6% in 2022 (BD PAT) to 52.8% in 2023. 42 (of 84) water supply systems are situated in the low risk category, 25 WSSs in the medium risk category, 8 WSSs in the high risk category, and 9 WSSs in the critical risk category.

The Regulator is optimistic that the 2023 Blue Drop report provides an updated residual basis from where a positive trajectory for water services delivery and improved performance will follow in the next BD audit. Municipalities and their service providers are encouraged to start preparation for the next Blue Drop audit cycle, which is planned to cover the financial year 2023/24 and released in 2025. The 2023 Blue Drop status for WSAs in the province are summarised in the table below.

Table 126 - 2023 Blue Drop Summary

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2014 BD Score (%)</th>
<th>2023 BD Score (%)</th>
<th>2023 BD Certified ≥95%</th>
<th>2023 Critical State (&lt;31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bela-Bela LM</td>
<td>43.1%</td>
<td>60.3%↑</td>
<td></td>
<td>Radium, Rapotokwane</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>70.9%</td>
<td>38.1%↓</td>
<td></td>
<td>Alldays, Botlokwa, Mogwadi and Senwabarwana</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>47.7%</td>
<td>39.6%↓</td>
<td></td>
<td>Flag Boshielo, Kutullo, Magukubjane, Mahlokoena, Mapodile, Marishane, Masemola, Ngwaabe, Nkosini, Penge, Steelpoort, Tsakane and Vergelegen</td>
</tr>
<tr>
<td>Lephalele LM</td>
<td>85.5%</td>
<td>48.4%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>62.8%</td>
<td>51.1%↓</td>
<td></td>
<td>Mookgophong, Mabaleng, Mabatlane and Roedtan</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>60.5%</td>
<td>40.9%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mopani DM</td>
<td>64.6%</td>
<td>56.1%↓</td>
<td></td>
<td>Drakensig</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>92.5%</td>
<td>56.2%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>55.8%</td>
<td>47.5%↓</td>
<td></td>
<td>Leeuport and Rooblin</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>39.4%</td>
<td>63.8%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td><strong>0</strong></td>
<td><strong>26</strong></td>
</tr>
</tbody>
</table>

↑= improvement, ↓= regress, →= no change

The Department of Water and Sanitation acknowledges the excellence in water services management achieved for the Blue Drop Audit year of 2021-22. No Blue Drop Certificates are awarded in the Limpopo Province.
Background to Water Delivery and Distribution Infrastructure

The total volume of water treated in the province is 654,176 kl/d. Ten (10) WSA, 2 Water Boards (Lepelle Northern Water and Magalies Water, and 3 Bulk Water Providers (EXXARO, Eskom and Public Works LP) are responsible for water services through a water network comprising of:

- 85 WTWs and boreholes with the bulk of the water treated and supplied by Lepelle Northern Water from 17 WTWs to 24 WSSs in 6 WSAs with a total Average Daily Production of 340,865 kl/d
- 84 WSSs of which 30 WSSs in all 10 WSAs are provided with bulk potable water from Lepelle Northern Water, Magalies Water, EXXARO and Eskom)
- 116 pump stations, 3,568 km bulk water supply lines, 30,105 km reticulation pipe lines, and 1,154 reservoirs/towers (excluding 6 WSAs systems that provide no or partial verifiable data).

Table 127 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes

<table>
<thead>
<tr>
<th></th>
<th>Micro Size Plants</th>
<th>Small Size Plants</th>
<th>Medium Size Plants</th>
<th>Large Size Plants</th>
<th>Macro Size Plants</th>
<th>Unknown (NI)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of WTWs, Boreholes, Springs</td>
<td>&lt;500 kl/day</td>
<td>500 - &lt;2,000 kl/day</td>
<td>2,000 - &lt;10,000 kl/day</td>
<td>10,000 - &lt;25,000 kl/day</td>
<td>&gt;25,000 kl/day</td>
<td>Total</td>
</tr>
<tr>
<td>Total Design Capacity (kl/day)</td>
<td>7 (8%)</td>
<td>18 (21%)</td>
<td>33 (39%)</td>
<td>19 (22%)</td>
<td>8 (10%)</td>
<td>85</td>
</tr>
<tr>
<td>Total Available Capacity (kl/day)</td>
<td>1,520</td>
<td>18,328</td>
<td>157,973</td>
<td>255,560</td>
<td>412,700</td>
<td>None</td>
</tr>
<tr>
<td>Average Daily Treatment Volume (kl/day)</td>
<td>1,520</td>
<td>18,128</td>
<td>152,933</td>
<td>255,560</td>
<td>412,700</td>
<td>None</td>
</tr>
<tr>
<td>Total SIV (kl/day)</td>
<td>1,690</td>
<td>19,241</td>
<td>135,571</td>
<td>175,144</td>
<td>382,048</td>
<td>33 Ni</td>
</tr>
<tr>
<td>Design Capacity Utilisation (%)</td>
<td>11%</td>
<td>45%</td>
<td>62%</td>
<td>50%</td>
<td>102%</td>
<td>77%</td>
</tr>
<tr>
<td>Available Capacity Utilisation (%)</td>
<td>11%</td>
<td>45%</td>
<td>64%</td>
<td>50%</td>
<td>102%</td>
<td>78%</td>
</tr>
</tbody>
</table>

* “Unknown” means the number of WTWs with NI (No Information) on design capacity or available capacity or SIV

The audit verified a total installed design capacity of 846,081 kl/d and a total available design capacity of 840,841 kl/d with most of this capacity residing in the large and macro-sized water treatment plants.

Collectively, the 85 WTWs produce 654,176 kl/d and distributes 713,694 kl/d across the water networks. By comparing the available treatment capacity with the treated water volume, a spare treatment capacity of 186,665 kl/d is available (22%) to meet additional future demands.

However, the WUE for the province is slightly high (ave. 210 l/p/d) compared to the international WUE benchmark of 180 l/p/d, indicating a high ratio between effective water use and actual water abstraction.

Going forward, the province will have to dedicate significant resources to curb water losses and NRW.
In some cases, a Bulk Water Supplier supplies water across provincial borders and it is difficult to report accurately on design capacity and available capacity at provincial level, as the statistical data may become repetitive. Therefore, the reporting on the total system input volumes (SIV) would provide more accurate figures on the supply of treated water to the various water supply systems.

The total SIV in the province is 713,694 kl/d and the average daily treatment volume is 654,176. kl/d and this indicates that the treated volume is less than the total SIV (92%) as 33 no. WTWs are not measuring their average daily treatment volumes, and 4 WSSs are receiving potable water from the Magalies Water Vaalkop WTW in the North West province and the Magalies Water Klipdrift WTW in the Gauteng province. The largest contributor to the total SIV for 24 WSSs is from Lepelle Northern Water with a total SIV contribution of 340,865 kl/d (48%). Diagnostic no. 2 to follow herein will unpack these statistics in more detail.

The data shows that 7 WTW daily average treatment volumes exceeds the available design capacity. 4 WTWs have daily production volumes that exceed the authorised daily abstraction volumes.

The water distribution infrastructure is summarised in the table below.

Table 128 - Summary of Water Distribution Reticulation Infrastructure

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WSS with no WSP/WB</th>
<th># WSS with WSP/WB</th>
<th>Water Distribution Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td># Pump Stations (#)</td>
</tr>
<tr>
<td>Lepelle Northern Water</td>
<td>-</td>
<td>24</td>
<td>55</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>4</td>
<td>3</td>
<td>NI</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>8</td>
<td>12</td>
<td>NI</td>
</tr>
<tr>
<td>Lephalale LM</td>
<td>4</td>
<td>2</td>
<td>NI</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>4</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mopani DM</td>
<td>15</td>
<td>3</td>
<td>39</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>4</td>
<td>3</td>
<td>NI</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>15</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Totals</td>
<td>55</td>
<td>29</td>
<td>116</td>
</tr>
</tbody>
</table>

Provincial Blue Drop Analysis

The 100% response from the 10 WSAs audited demonstrates a firm commitment to progressive water services management in the province. Local Government reforms resulted in the merging of Mookgophong LM and Modimolle LM into Modimolle-Mookgophong LM. Therefore, 10 WSAs were audited in 2023 compared to the 11 WSAs in 2014.

Table 129 - Blue Drop Comparative Analysis from 2012 to 2023

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>2012</th>
<th>2014</th>
<th>2023</th>
<th>Performance trend 2014 and 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSAs assessed (#)</td>
<td>11 (100%)</td>
<td>11 (100%)</td>
<td>10 (100%)</td>
<td>→</td>
</tr>
<tr>
<td>Water supply systems assessed (#)</td>
<td>64</td>
<td>74</td>
<td>84</td>
<td>→</td>
</tr>
<tr>
<td>Blue Drop scores ≥50% (#)</td>
<td>47 (73%)</td>
<td>29 (39%)</td>
<td>44 (52%)</td>
<td>↑</td>
</tr>
<tr>
<td>Blue Drop scores &lt;50% (#)</td>
<td>17 (27%)</td>
<td>45 (61%)</td>
<td>40 (48%)</td>
<td>↑</td>
</tr>
<tr>
<td>Blue Drop Certifications (#)</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>↓</td>
</tr>
<tr>
<td>Lowest Technical Site Assessment Score (%)</td>
<td>27%</td>
<td>29%</td>
<td>24%</td>
<td>↓</td>
</tr>
</tbody>
</table>
BLUE DROP COMPARATIVE ANALYSIS

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>2012</th>
<th>2014</th>
<th>2023</th>
<th>Performance trend 2014 and 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest Technical Site Assessment Score (%)</td>
<td>99%</td>
<td>100%</td>
<td>86%</td>
<td>↓</td>
</tr>
</tbody>
</table>

Incentive-based indicators

NA = Not Applied  NI = No Information

↑ = improvement, ↓ = regress, → = no change

Figure 95 - Blue Drop trend analysis over the period 2012 to 2023, indicating the percentage BD scores above and below 50%

The trend analysis indicates that:

- The no. of systems audited has increased from the last BD audit in 2014
- The no. of systems with BD scores of ≥50% increased from 29 (39%) in 2014 to 44 (52%) in 2023
- This trend was reversed with no. of systems with a BD score of ≤50% decreasing from 45 (61%) in 2014 to 40 (48%) in 2023
- Blue Drop Certifications decreased from 1 award in 2014 to no awards in 2023
- The lowest TSA score decreased from 29% in 2014 to 24% in 2023, with the highest TSA score decreasing from 100% in 2014 to 86% in 2023
- The overall performance trend indicates some regression and some progression from 2014 to 2023
- This negative trajectory reinforces the need for regular audits to ensure timely turnaround and continued improvement
- The negative trend for the TSA scores and BD certifications implies that performance has declined in the absence of regulatory engagement of the BD audits between 2014 to 2023.

Figure 96 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right)

Comparative analysis of the 2014 and 2023 blue drop scores, indicates that most of the system scores are in the >50–<80% (Average Performance) category, with the >31% (Critical State) being the next largest category. It is concerning that 26 systems in 2023 reside in Critical State (<31%).

In summary, trend analysis since 2014 to 2023 indicate as follows:

- Systems in a ‘critical state’ has increased from 22 systems in 2014 to 26 systems in 2023
- Systems in a ‘poor state’ decreased from 23 systems to 14 systems
- Systems in an ‘average state’ increased from 19 systems to 44 systems
- Systems in the ‘good state’ decreased from 9 systems (13%) to no systems (0%)
- Systems in ‘excellent state’ decreased from 1 (1%) to no systems (0%).

Provincial BDRR Analysis

The Blue Drop Risk Rating (BDRR) analysis assesses the risk across the entire water supply network. The BDRR formular was updated in 2021 to include an added risk indicator, i.e. ‘E: Water Safety Plans’, to address the risk assessment requirements outlined in SANS 241 of 2015. The BDRR now contains 5 risk indicators, i.e. design capacity (A), operational capacity (B), water quality compliance (C), technical capacity (D), and water safety plans (E). The results from the BDRR analyses are summarised in the table and figure following.
Table 130 - Municipal BDRR/BDRRmax Comparative Analysis from 2022 and 2023

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th># WBs/WSPs</th>
<th>2022 (BD PAT)</th>
<th>2023 (BD Audit)</th>
<th>Performance Trend 2022 and 2023</th>
<th>BDRR Risk Category Split</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>3</td>
<td>1</td>
<td>40.1%</td>
<td>34.1%</td>
<td>↑</td>
<td>1 1 1</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>7</td>
<td>3</td>
<td>71.4%</td>
<td>56.1%</td>
<td>↑</td>
<td>1 3 2 1</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>20</td>
<td>12</td>
<td>65.9%</td>
<td>49.8%</td>
<td>↑</td>
<td>4 11 3 2</td>
</tr>
<tr>
<td>Lephalele LM</td>
<td>2</td>
<td>2</td>
<td>57.9%</td>
<td>46.2%</td>
<td>↑</td>
<td>1 1</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>5</td>
<td>1</td>
<td>81.6%</td>
<td>74.9%</td>
<td>↑</td>
<td>1 4</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>1</td>
<td>1</td>
<td>73.2%</td>
<td>52.0%</td>
<td>↑</td>
<td>1</td>
</tr>
<tr>
<td>Mopani DM</td>
<td>18</td>
<td>3</td>
<td>49.4%</td>
<td>42.9%</td>
<td>↑</td>
<td>14 3 1</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>7</td>
<td>4</td>
<td>40.8%</td>
<td>39.7%</td>
<td>↑</td>
<td>5 2</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>4</td>
<td>1</td>
<td>87.4%</td>
<td>69.5%</td>
<td>↑</td>
<td>1 1 1 2</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>17</td>
<td>2</td>
<td>48.5%</td>
<td>35.1%</td>
<td>↑</td>
<td>15 2</td>
</tr>
<tr>
<td><strong>Totals &amp; %BDRR/BDRRmax</strong></td>
<td><strong>84</strong></td>
<td><strong>29</strong></td>
<td><strong>61.6%</strong></td>
<td><strong>52.8%</strong></td>
<td><strong>↑</strong></td>
<td><strong>42 25 8 9</strong></td>
</tr>
</tbody>
</table>

Up=improvement, Down=regress, No change

Figure 97 - a) WSS risk distribution and trends for 2022 and 2023; b) Colour legend

Trend analysis of the BDRR ratings for 2022 and 2023 indicates that:

- The 2023 audit cycle highlighted a progressive shift with an increase in the no. of low risk WSSs (36 to 42) and an increase in the medium risk WSSs (13 to 25), a decrease in the high risk WSSs (19 to 8) and a decrease in critical risk WSSs (10 to 9).

Regulatory Enforcement

Water supply systems which fail to achieve the minimum Blue Drop target of 31%, are placed under regulatory focus. The Regulator requires these WSAs to submit a detailed corrective action plan (CAP) within 20 working days from publishing of this report. 26 WSSs received Blue Drop scores below 31%, and hence are placed under regulatory surveillance, in accordance with the Water Services Act (108 of 1997). DWS together with COGTA will through the grant allocation systems ensure priority is given to application of grants to rectify/restore the water services treatment and supply shortcomings identified in this report.

Table 131 - WSSs with <31% Blue Drop scores

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 BD Score</th>
<th>WSSs with &lt;31% score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bela-Bela LM</td>
<td>60.3%</td>
<td>Radium, Rapotokwane</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>38.1%</td>
<td>Alldays, Botlokwa, Mogwadi and Senwabarwana</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>39.6%</td>
<td>Flag Boshielo, Kutullo, Magukubjane, Mahlokoea, Mapodile, Marishane, Masemola, Ngwaabe, Nkosini, Penge, Steelpoort, Tsakane and Vergelegen</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>51.1%</td>
<td>Modkgophong, Mabaleng, Mabatlane and Roedtan</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>47.5%</td>
<td>Leeupoort and Rooiberg</td>
</tr>
</tbody>
</table>
The following WSAs and their associated water treatment systems are in high and/or critical BDRR risk positions, which means that some or all the risk indicators are in a precarious state, i.e. operational capacity, design capacity utilisation, water quality compliance, technical capacity, and water safety plans. WTWs in high risk and critical risk positions pose a serious risk to public health. The following WSAs will be required to assess their risk contributors and to provide corrective measures in the above mentioned action plans to mitigate these risks.

Table 132 - %BDRR/BDRR\text{max} scores and WSSs in critical and high-risk space

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 Average %BDRR/BDRR\text{max}</th>
<th>WSSs in critical and high-risk space</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Critical Risk (90–100%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rapotokwane</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alldays, Mogwadi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flag Boshielo, Kutullo, Marble Hall</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Oaks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Leuropoort and Roelburg</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>9 of 84 (11%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 of 84 (10%)</td>
</tr>
</tbody>
</table>

Good practice risk management requires that the Water Safety Plans (WaSPs) are informed by meaningful Process and Condition Audits, supported by zealous implementation of corrective measures and ongoing monitoring of risk movement. With the exception of 17 water supply systems in 6 WSAs, the remaining water supply systems for 4 WSAs are in the low and medium risk positions.

**Performance Barometer**

The [Blue Drop Performance Barometer](#) presents the individual WSA Blue Drop Scores, which essentially reflects the level of mastery that a WSA has achieved in terms of its overall water services business. The bar chart below compares the 2014 and 2023 BD scores, ranked from highest to lowest performing WSA in 2023. Only Bela-Bela LM and Vhembe DM improved on their 2014 scores. The remaining 8 WSAs regressed to lower Blue Drop scores compared to their 2014 baselines.

The BDRR Risk Barometer expresses the level of risk that a WSA poses in respect of its water supply system. The schematic below presents the BDRR in ascending order – with the low-risk WSAs on the left and higher risk WSAs to the far right. The analysis reveals that there are 3 WSAs in the medium risk position. 7 WSAs are situated in the low risk positions.
**Figure 99 - a) %BDRR/BDRR<sub>max</sub> Risk Performance Profile/Log 2023; b) Colour legend**

### Provincial Best Performers

The **Vhembe District Municipality (Lepelle Northern Water)** is the BEST PERFORMING WSA in the province, based on the following record of excellence:
- ✓ 2023 Blue Drop Score of 63.8%
- ✓ 2014 Blue Drop Score of 39.4%
- ✓ Improvement on the BDRR from 48.5% in 2022 to 35.1% in 2023
- ✓ 15 systems (88%) in the low risk position
- ✓ TSA score of 76% for Khalavha WTW

The **Bela-Bela Local Municipality (Magalies Water)** is the second-best scoring WSA:
- ✓ 2023 Blue Drop Score of 43.1%
- ✓ 2014 Blue Drop Score of 60.3%
- ✓ Improvement on the BDRR from 40.1% in 2022 to 34.1% in 2023
- ✓ 1 system (33%) in low risk position
- ✓ TSA score of 69% for Bela Bela WTW

The **Polokwane Local Municipality (Lepelle Northern Water)** is the third-best scoring WSA:
- ✓ 2023 Blue Drop Score of 56.2%
- ✓ 2014 Blue Drop Score of 92.5%
- ✓ Improvement on the BDRR from 40.8% in 2022 to 39.7% in 2023
- ✓ 5 systems (71%) in low risk positions
- ✓ TSA score 61% for Ebenhezer WTW
The BD audit process collects a vast amount of data that yield valuable insight into the state of the water services delivery and water quality in each province. Five focus areas or ‘diagnostics’ have been configured from the 2021/22 audit data and are discussed below.

### Table 133 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs

<table>
<thead>
<tr>
<th>Diagnostic #</th>
<th>Diagnostic Description</th>
<th>Diagnostic Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical Competence</td>
<td>KPA 1, 2 &amp; Bonus</td>
</tr>
<tr>
<td>2</td>
<td>Treatment Capacity and Flow Distribution</td>
<td>KPA 4 &amp; Generic Audit data set</td>
</tr>
<tr>
<td>3</td>
<td>Drinking Water Quality (DWQ) Monitoring and Compliance</td>
<td>KPA 2 &amp; 4 &amp; Bonus</td>
</tr>
<tr>
<td>4</td>
<td>Technical Site Assessments</td>
<td>TSA and 2023 Blue Drop Watch Report</td>
</tr>
<tr>
<td>5</td>
<td>Operation, Maintenance and Refurbishment of Assets</td>
<td>KPA 3 &amp; 4</td>
</tr>
</tbody>
</table>

### Diagnostic 1: Technical Competence

**Aim:** This focus area assesses the technical human resources capacity that is available to manage and operate water treatment processes and maintain the related water infrastructure. Theory advocates that a correlation exists between human resources capacity and capability (sufficient number of appropriately qualified staff) and a WSI’s performance. Thus, it is hypothesised that high HR capacity would translate to compliant water treatment plants and functional water supply network. Blue Drop assesses technical compliance on two levels: i) WTW plant supervision and process control staff and ii) Technical, scientific and maintenance staff.

**Findings:** According to regulations, water treatment plants are classified as Class A, B, C, D or E plants. Similarly, Process Controllers and Plant Supervisors are registered as Class I, II, III, IV, V or VI Process Controllers. Higher classed plants require a higher level of Process Controllers due to technology complexity and strict water quality standards. Technical compliance of PCs and Supervisors is determined against the Blue Drop standards, as defined by Reg. 2834 of the Water Act 1956 (Act 54 of 1956) for the erection, enlargement, operation, and registration of water care works and draft Reg. 813 of the Water Services Act (No 108 of 1997). Regulation 2834 has been replaced by Regulation 3630 in 2023 but will only come in effect during the next Blue Drop audit cycle.

### Table 134 - No. compliant versus shortfall in Supervisor and Process Controller staff

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th># Available Compliant Staff</th>
<th>Staff Shortfall</th>
<th>Ratio</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PCs</td>
<td>Supervisor</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lepelle Northern Water</td>
<td>17</td>
<td>24</td>
<td>49</td>
<td>10</td>
<td>59</td>
<td>25 4</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4 1</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>4</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1 8</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>11</td>
<td>20</td>
<td>13</td>
<td>0</td>
<td>13</td>
<td>23 2</td>
</tr>
<tr>
<td>Lephalale LM</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18 1</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td>3 3</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>None</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0 7</td>
</tr>
<tr>
<td>Mopani DM</td>
<td>17</td>
<td>18</td>
<td>49</td>
<td>8</td>
<td>8</td>
<td>57 16</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>4</td>
<td>7</td>
<td>24</td>
<td>0</td>
<td>4</td>
<td>28 7</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>5 5</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>19</td>
<td>17</td>
<td>78</td>
<td>1</td>
<td>7</td>
<td>85 12</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>85</td>
<td>84</td>
<td>235</td>
<td>35</td>
<td>35</td>
<td>270 114</td>
</tr>
</tbody>
</table>

* Ratio depicts the no. of qualified staff divided by the no. of WTWs operated by this no. of staff. E.g., Bela Bela LM has 6 compliant Sups + PCs, divided by 3 WTWs = 2.0 qualified staff per WTW
** NB: The Supervisor totals will be inflated as it is not possible to differentiate between which Supervisors are shared/ roaming with other Class C to E WTWs

Note: "Compliant staff" means qualified and registered staff that meets the BD standard for a particular Class Works. "Staff shortfall" means staff that do not meet the BD standard for a particular Class of works (+1 for a shift) and/or staffing gaps exist at the respective WTWs.

Competent human resources are vital enablers in ensuring efficient and sustainable management of water services and delivery of safe water quality to consumers. For the province in general, the operational competencies are found to be excellent for the Supervisory staff and predominantly excellent for the PCs in Lephalale LM and Polokwane LM as illustrated in the table above.
**Plant Supervisors:** The pie charts indicate that 76% (35 of 46) of Plant Supervisors complies with the Blue Drop standard, with 11 shortfalls.

**Process Controllers:** Similarly, 67% (235 of 349) of the PC staff complies with the required standards, noting a zero shortfall for Lephalale LM only. There is a 33% (114 of 349) shortfall in Process Controllers with the highest shortfall in Lepelle Northern Water, Greater Sekhukhune DM, Modimolle/Mookgophong LM, Mopani DM and Vhembe DM.

Blue Drop standards require of Class A and B plants to employ dedicated Supervisors per WTW and Process Controllers per shift per works, whereas Class C to E plants may share Supervisory staff across works. Shifts have been introduced to ensure optimal operations while addressing security risks, particularly as it relates to theft and vandalism. Telemetry also reduces the requirement for on-site staff during night shifts, but these relaxations have to be done within the DWS regulatory guidelines.

The Regulator expects correlation between the competence of an operational team and the performance of a WTW, as measured by the BD score. The data indicates as follows:

- Lepelle Northern Water and 7 WSAs have qualified PCs in place, with the exception of WTWs in 3 WSAs
- Lepelle Northern Water and 5 WSAs have qualified Supervisors in place
- Lepelle Northern Water and 9 WSAs have shortfalls in qualified Process Controllers and Lepelle Northern Water and 5 WSAs have shortfalls in qualified Supervisors.

It is expected that a correlation would exist between the competence of an operational team and the performance of a water treatment works, as measured by the BD score. The results from the ratio analysis indicate high ratios (>2.0) for Lepelle Northern Water and 5 WSAs with WTWs.
Overall, the comparative bar chart confirms a reasonably close correlation from Lephalale LM to Bela Bela LM with high ratios (ranging from 2.0 to 9.0) and poor to average BD scores (ranging from 43.6% to 63.8%). No extreme variations are noted when comparing the ratios against the BD scores respectively.

**(ii) Technical, Scientific and Maintenance staff**

In addition to operational capacity (above), good management practice also requires access to qualified engineers, technicians, technologists, MISA appointees, scientists, and maintenance capability (below). Such competencies could reside in-house or accessible through term contracts and external specialists. 

*Table 135 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff*

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Maintenance Arrangement</th>
<th>Qualified Technical Staff (#)</th>
<th>Technical Shortfall (#)</th>
<th>Qualified Scientists (#)</th>
<th>Scientists Shortfall (#)</th>
<th>Ratio*</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lepelle Northern Water</td>
<td>17</td>
<td>24</td>
<td>Internal+Specific Outsourcing</td>
<td>10</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>0.4</td>
<td>43.55%</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>3</td>
<td>3</td>
<td>Internal+Specific Outsourcing; Internal Team (only)</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0.7</td>
<td>60.3%</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>4</td>
<td>7</td>
<td>Internal+Specific Outsourcing; Internal Team (only)</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0.0</td>
<td>38.1%</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>11</td>
<td>20</td>
<td>Internal+Term Contract; No Capacity; Internal+Specific Outsourcing; Internal Team (only); Partial Capacitated</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0.0</td>
<td>39.6%</td>
</tr>
<tr>
<td>Lephalale LM</td>
<td>2</td>
<td>2</td>
<td>Internal Team (Only)</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>5</td>
<td>5.0</td>
<td>48.4%</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>5</td>
<td>5</td>
<td>Internal+Specific Outsourcing; Internal Team (only); Partial Capacitated</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0.2</td>
<td>51.1%</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>None</td>
<td>1</td>
<td>No Capacity; Internal+Specific Outsourcing</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0.0</td>
<td>40.9%</td>
</tr>
<tr>
<td>Mopani DM</td>
<td>17</td>
<td>18</td>
<td>Internal+Specific Outsourcing; Internal Team (only)</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0.2</td>
<td>56.1%</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>4</td>
<td>7</td>
<td>Internal+Specific Outsourcing; Internal+Term Contract</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0.4</td>
<td>56.2%</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>3</td>
<td>4</td>
<td>Internal Team (Only); Internal+Specific Outsourcing</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0.5</td>
<td>47.5%</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>19</td>
<td>17</td>
<td>Internal Team (Only); Internal+Term Contract; Internal+Specific Outsourcing</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0.2</td>
<td>63.8%</td>
</tr>
</tbody>
</table>

In terms of maintenance capacity, all the municipalities in the province have a reasonable contingent of qualified technical and maintenance staff. The maintenance staff comprises of a collective of in-house, contracted, or outsourced personnel. The data indicates that:

- Lepelle Northern Water have internal maintenance teams supplement with specific outsourced services.
- 8 of 10 (80%) WSAs have in-house maintenance teams.
- 3 of 10 (30%) WSAs have internal maintenance teams supplemented with term contracts.
- 9 of 10 (90%) WSAs have internal maintenance teams supplement with specific outsourced services.
- 4 WSAs have systems with no capacity and partial capacity.
In general, the province presents a strong case for qualified professional technical staff as follows:

- A total of 35 qualified staff comprised of 8 Engineers, 14 Technologists, 13 Technicians, no MISA appointees (qualified); and 14 SACNASP registered scientists
- A total shortfall of 37 persons is identified, consisting of 21 technical staff and 16 scientists
- 8 WSAs have a total shortfall of 21 qualified technical staff with the highest indicated for Capricorn DM, Greater Sekhukhune DM and Mogalakwena LM (4 each)
- Lepelle Northern Water and 8 WSAs have access to credible laboratories that comply with the Blue Drop standards.

Figure 102 - Graphic illustration of the number and %: a) qualified engineering/technical staff; b) professional scientists; c) access to credible laboratory services that complies with Blue Drop standards

Ratio analysis has been done to determine the number of qualified technical and scientific staff assigned per WSS. It is expected that a higher ratio would correspond with well-performing and maintained water supply systems, as represented by the BD score.

The schematic on the following page does not show a strong correlation between high ratios and high BD scores. Lephalale LM has a high ratio but a poor BD score. Lepelle Northern Water and the remaining WSAs have poor to average BD scores and rations <1.0. No firm correlation can be drawn between technical capacity and water supply performance.

Figure 103 - Ratio of compliant technical staff to no. of WSSs and Comparison of Ratios with BD scores

Overall, the results highlight the inter-dependency between technical capacity and performance. One of the options to enhance operational capacity is through dedicated training programmes. The Blue Drop audit incentivises training of operational staff over the 2-year period prior to the audit date. The results are summarised as follows:
### Table 136 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WTW staff attending training</th>
<th># WTW without training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lepelle Northern Water</td>
<td>17</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>11</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Lephale LM</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mopani DM</td>
<td>17</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>19</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>85</strong></td>
<td><strong>21 (24%)</strong></td>
<td><strong>64 (76%)</strong></td>
</tr>
</tbody>
</table>

*Figure 104 - %WTWs that have trained operational staff over the past two years*

The results confirm that Lepelle Northern Water and 3 WSAAs had their operational staff attend training over the past 2 years. 21 of 85 WTWs had their operational staff attend training over the past 2 years. Investment in human capital through technical skills development is likely to mitigate some of the water quality failures and lower performances noted, and municipalities and water boards should prioritise ongoing skills development of technical staff and appointment of qualified staff that are eligible for registration.

### Diagnostic 2: Treatment Capacity and Flow Distribution

**Aim:** Diagnostic 2 deals with design and flow related dynamics, comprising of: i) design capacity and operational flow, ii) raw water abstraction, and iii) WUE and SIV.

#### (i) Design Capacity and Operational Flow

This diagnostic assesses the status of plant design capacity and daily water production at the WTWs, as well as SIVs as measured at the outflow from the WTW or inflow to the water distribution network. A capable WTW requires adequate installed design capacity and functional equipment to operate optimally. If the WTW design capacity is exceeded by the average daily production (treatment) volume, the WTW will not be able to deliver SANS compliant water quality. The available design capacity is typically exceeded when the water demand exceeds the installed design capacity, or when unit processes or equipment are dysfunctional, or when electrical supply problems render treatment and pumping of water defective. Typically, the production volume and SIV is the same if 1 WTW supplies 1 WSS, but different if multiple supply systems are feeding from a singular WTW.

**Findings:** Analysis of the design capacity and average daily production/ treatment volume indicate a total design capacity of 846,081 kl/d for the province, with a total average daily treatment (operational) volume of 654,176 kl/d. Theoretically, this implies that 77% of the design capacity is used with 23% available to meet additional water demand. However, the full 846,081 kl/d is not available as some infrastructure is dysfunctional, leaving 840,841 kl/d available. The reduced capacity means that the province is slightly closer to its total available capacity (78%) with a 22% surplus available. The capacity differential (difference between the installed and available capacity) will not constrain or impede any further social and economic development in the drainage areas. WSAAs do report and have knowledge of their installed and available capacities, and a higher figure than 22% surplus available cannot be expected.

All the WSAAs have their full installed capacity available. For the province in general, 26 WTWs are operating within their design capacities with the exception of 7 WTWs that exceed their total design capacity (%). This risk is currently mitigated through operational optimisation and preventative maintenance regimes.

### Table 137 - Summary of WTWs design and available capacities, average daily production, % available capacity, and total SIV towards the WSSs

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Design Capacity (kl/d)</th>
<th>Available Design Capacity (kl/d)</th>
<th>Average Daily Production (kl/d)</th>
<th>Available Variance* (kl/d)</th>
<th>% Use Available Capacity</th>
<th>Total SIV towards the WSS (kl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lepelle Northern Water</td>
<td>17</td>
<td>24</td>
<td>323,800</td>
<td>323,600</td>
<td>340,865</td>
<td>-17,265</td>
<td>105%</td>
<td>294,847</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>3</td>
<td>3</td>
<td>8,470</td>
<td>6,970</td>
<td>6,347</td>
<td>623</td>
<td>91%</td>
<td>13,131</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>4</td>
<td>7</td>
<td>6,500</td>
<td>6,500</td>
<td>0</td>
<td>6,500</td>
<td>0%</td>
<td>6,500</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>11</td>
<td>20</td>
<td>36,150</td>
<td>36,150</td>
<td>0</td>
<td>36,150</td>
<td>0%</td>
<td>28,036</td>
</tr>
<tr>
<td>Lephale LM</td>
<td>2</td>
<td>2</td>
<td>63,000</td>
<td>63,000</td>
<td>22,200</td>
<td>40,800</td>
<td>35%</td>
<td>13,000</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>5</td>
<td>5</td>
<td>17,100</td>
<td>17,100</td>
<td>2,000</td>
<td>15,100</td>
<td>12%</td>
<td>12,300</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Capacities, Production, SIV and Variance

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Design Capacity (kl/d)</th>
<th>Available Design Capacity (kl/d)</th>
<th>Average Daily Production (kl/d)</th>
<th>Available Variance* (kl/d)</th>
<th>% Use Available Capacity</th>
<th>Total SIV towards the WSS (kl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mopani DM</td>
<td>17</td>
<td>18</td>
<td>190,000</td>
<td>190,000</td>
<td>121,784</td>
<td>68,216</td>
<td>64%</td>
<td>148,832</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>4</td>
<td>7</td>
<td>14,760</td>
<td>14,760</td>
<td>2,209</td>
<td>12,551</td>
<td>15%</td>
<td>19,547</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>3</td>
<td>4</td>
<td>7,000</td>
<td>7,000</td>
<td>0</td>
<td>7,000</td>
<td>0%</td>
<td>19,937</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>19</td>
<td>17</td>
<td>179,301</td>
<td>175,761</td>
<td>158,771</td>
<td>16,990</td>
<td>90%</td>
<td>157,564</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>85</strong></td>
<td><strong>84</strong></td>
<td><strong>846,081</strong></td>
<td><strong>840,841</strong></td>
<td><strong>654,176</strong></td>
<td><strong>186,665</strong></td>
<td><strong>78%</strong></td>
<td><strong>713,694</strong></td>
</tr>
</tbody>
</table>

* Difference between the available design capacity and the average daily production

---

**Figure 105** - Design and available capacity, average daily production, available variance and total SIV for the WTWs

**Figure 106** - % available capacity
(ii) Raw Water Abstraction

This diagnostic takes a snapshot view of the status of water abstraction authorisations from natural water resources across the province. As per the National Water Act (Act no 36 of 1998), Water Use Authorisation (WUA) mandate the maximum abstraction volumes of raw water, and the installation and monitoring of abstraction, inflow, and outflow meters, whilst the BD audit requires WSAs to report the flows on IRIS and to calibrate meters annually. Any defects in terms of abstracting water from a resource without an authorisation, or exceeding the authorised volume, or reporting inaccurate volumes, or not monitoring abstraction against authorised volumes, are considered to be a regulatory risk and contravention of the law.

Findings: Data pertaining to the daily abstraction volumes (kl/d) (Authorised), average daily treatment volumes (kl/d), the names of the WTWs exceeding/with no Daily Abstraction Volumes (Authorised) and Average Daily Treatment Volumes (Authorised) is captured in the tables below.

Table 138 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances & WTWs listed For Enforcement Action

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Daily Abstraction Volumes (Authorised) (kl/d)</th>
<th>Average Daily Treatment Volume (kl/d)</th>
<th>Average Variance (kl/d) [+ or Minus]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lepelle Northern Water</td>
<td>17</td>
<td>24</td>
<td>402,222</td>
<td>340,865</td>
<td>61,357</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>6,347</td>
<td>-6,347</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>4</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>11</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lephalale LM</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>22,200</td>
<td>-22,200</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>2,000</td>
<td>-2,000</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mopani DM</td>
<td>17</td>
<td>18</td>
<td>6,849</td>
<td>121,784</td>
<td>-114,935</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>4</td>
<td>7</td>
<td>0</td>
<td>2,209</td>
<td>-2,209</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>19</td>
<td>17</td>
<td>99,976</td>
<td>158,771</td>
<td>-58,795</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>85</strong></td>
<td><strong>84</strong></td>
<td><strong>509,047</strong></td>
<td><strong>654,176</strong></td>
<td><strong>-145,129</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>WTW exceeding the Daily Abstraction Volumes (Authorised)</th>
<th>WTW with no Daily Abstraction Volumes (Authorised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lepelle Northern Water</td>
<td>2 WTWs</td>
<td>9 WTWs</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>All 3 WTWs</td>
<td></td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>4 WTWs</td>
<td></td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>11 WTWs</td>
<td></td>
</tr>
<tr>
<td>Lephalale LM</td>
<td>Both WTWs</td>
<td></td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>All 5 WTWs</td>
<td></td>
</tr>
<tr>
<td>Mopani DM</td>
<td>16 WTWs</td>
<td></td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>4 WTWs</td>
<td></td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>All 3 WTWs</td>
<td></td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>2 WTWs</td>
<td>13 WTWs</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>4</strong></td>
<td><strong>66</strong></td>
</tr>
</tbody>
</table>

WTWs that exceed the Daily Abstraction Volumes (Authorised) and WTWs with no Daily Abstraction Volumes (Authorised) are reflected in the 2nd table above. WTWs that are not complying with the regulations will be required to show correction in the next Blue Drop audit cycle. The results conclude that 4 WTWs are exceeding the permitted abstraction limits and 19 WTWs provided authorised water use abstraction volumes. The Daily Abstraction Volumes (Authorised) are not known for 66 water treatment systems resulting in negative average variances that skew the data sets. Negative average variance could be clearly attributed to 6 WSAs for over abstraction.

For future BD audits, WSA/WSPs will be required to provide ‘actual’ abstraction volumes so that a comparative analysis can be undertaken of the ‘actual’ abstraction volume versus the authorised water use abstraction volumes (maximum). This would require that the WSAs and WSPs/WBs monitor and record all critical path flows (abstraction, raw and final).
Abstraction Volumes (Authorised), Ave. Treatment volumes, and Variances

Figure 107 - Abstraction Volumes (Authorised), Average Daily Treatment Volumes, and Variances

(iii) Water Use Efficiency and System Input Value

The Department is committed to consider issues related to water scarcity and security, aiming to ensure there is sufficient water for the population, the economy, and the environment by increasing water use efficiency across all sectors. Water use for services sectors is specifically dealing with the quantity of water used directly by the consumer through the public distribution network and industries connected to the network. This diagnostic assesses the water use efficiency (i.e., the average daily consumption in litres per person per day) and the individual and collective performance of the water supply systems. WUE indicates how effective water is used by consumers, i.e. the process between effective water use and actual water abstraction. This concept is closely related to the Department’s No Drop Certification assessment, whereby WUE, NRW and water losses are targeted as part of Water Conservation and Water Demand Management strategies by municipalities.

Findings: Both the Blue Drop audit and No Drop audit requires an IWA water balance to determine the SIV into each water supply system, and to identify and quantify possible losses from abstraction to the end-of-use point. 21 WSSs in 5 WSAs have full water balances in place. 42 WSSs in 7 WSAs have partial water balances in place, and 5 WSAs with a total of 21 WSSs do not have water balances in place.

WUE is calculated based on the SIV contributions, population served, and the average daily consumption, as summarised in the following table.

Table 139 - Summary of total SIV, total population served, average daily consumption, WUE status and performance trend

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WSSs</th>
<th>Total Population</th>
<th>Total SIV (kl/d)</th>
<th>2023 WUE (l/p/d)</th>
<th>2023 Blue Drop WUE Range and Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bela-Bela LM</td>
<td>3</td>
<td>60,882</td>
<td>13,131</td>
<td>216</td>
<td>&gt;200-250</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>7</td>
<td>289,097</td>
<td>29,520</td>
<td>102</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>20</td>
<td>330,850</td>
<td>91,290</td>
<td>276</td>
<td>&gt;250-300</td>
</tr>
<tr>
<td>Lephalale LM</td>
<td>2</td>
<td>40,530</td>
<td>13,000</td>
<td>321</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>5</td>
<td>131,622</td>
<td>12,300</td>
<td>93</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>1</td>
<td>39,733</td>
<td>10,108</td>
<td>254</td>
<td>&gt;250-300</td>
</tr>
</tbody>
</table>

LIMPOPO
<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WSSs</th>
<th>Total Population</th>
<th>Total SIV (kl/d)</th>
<th>2023 WUE (l/p/d)</th>
<th>2023 Blue Drop WUE Range and Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mopani DM</td>
<td>18</td>
<td>781,372</td>
<td>214,564</td>
<td>275</td>
<td>&gt;250-300 Poor</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>7</td>
<td>498,999</td>
<td>99,495</td>
<td>199</td>
<td>&gt;150-200 Good</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>4</td>
<td>57,609</td>
<td>19,937</td>
<td>346</td>
<td>&gt;300 Extremely High</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>17</td>
<td>1,160,798</td>
<td>210,349</td>
<td>181</td>
<td>&gt;150-200 Good</td>
</tr>
<tr>
<td>Totals</td>
<td>84</td>
<td>3,391,492</td>
<td>713,694</td>
<td>210</td>
<td></td>
</tr>
</tbody>
</table>

### WUE (l/cap/day) performance categories

<table>
<thead>
<tr>
<th>Colour</th>
<th>WUE Range</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>&gt;300</td>
<td>Extremely high per capita water use</td>
</tr>
<tr>
<td>Yellow</td>
<td>&gt;250–300</td>
<td>Poor per capita water use</td>
</tr>
<tr>
<td>Grey</td>
<td>&gt;200–250</td>
<td>Average per capita water use with potential for marked improvement</td>
</tr>
<tr>
<td>Green</td>
<td>&gt;150-200</td>
<td>Good per capita water use but some improvement may be possible subject to economic benefits</td>
</tr>
<tr>
<td>Blue</td>
<td>&lt;150</td>
<td>Excellent per capita water use management</td>
</tr>
</tbody>
</table>

**Figure 108 - Total SIV towards the WSSs**

**Figure 109 - Total Population served**

For the province, 713,694 kl/d water is supplied to 3,391,492 consumers. Comparatively, Mopani DM distributes 30% of the total provincial SIV, followed by Vhembe DM (29%) and Greater Sekhukhune DM (13%). An average 210 litre of water is used per person per day, which implies an average per capita water use. Results from the diagnostic data show that 2 WSAs have WUEs of more than 300 l/c/d, which is regarded as extremely high according to national benchmarks. 3 WSAs have WUE between 250–300 l/c/d, which is regarded as poor. No Drop Certification is specifically tasked with plans to curb water losses and improve NRW through water accounting assessments and water conservation and demand management.

### Diagnostic 3: Drinking Water Quality (DWQ) Monitoring and Compliance

**Aim:** Blue Drop audits values the principles of “To measure is to know” and “To know is to manage”. The primary objective of a water treatment plant is to produce final water quality that is safe for human consumption at the end of the distribution network. This standard can only be measured and achieved if operational and compliance monitoring and DWQ, compliance is executed at the correct frequency, sample point, and determinand type. This diagnostic assesses the i) operational and compliance monitoring status, ii) drinking water quality compliance, and iii) risk defined compliance and laboratory credibility.
(i) Drinking water operational and compliance monitoring

**Findings:** A minimum level of 90% operational monitoring compliance is applied as benchmark, to give weight to the importance of sampling and monitoring of the raw water, process unit water, and final water across the treatment stream. Compliance monitoring is also informed by SANS 241:2015 and the requirement for risk-informed monitoring through the WaSP process at both the WTW final and distribution network. DWQ compliance is calculated against the population size and the mandatory limits set by SANS 241:2015 and the Blue Drop standards, as calculated and reported from data loaded in the IRIS.

**Table 140 - Summary of the KPA 2 WTW operational and WSS compliance monitoring status**

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>WTW Operational monitoring [KPA 2 sub-KPA 2.b]</th>
<th>WSS Compliance monitoring [KPA 2 sub-KPA 2.c]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Satisfactory [BD score &gt;90%]</td>
<td>Not Satisfactory [BD score &lt;90%]</td>
</tr>
<tr>
<td>Lepelle Northern Water</td>
<td>17</td>
<td>24</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>3</td>
<td>3</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>4</td>
<td>7</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>11</td>
<td>20</td>
<td>11</td>
<td>-</td>
</tr>
<tr>
<td>Lephalele LM</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>None</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mopani DM</td>
<td>17</td>
<td>18</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>4</td>
<td>7</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>19</td>
<td>17</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>Totals</td>
<td>85</td>
<td>84</td>
<td>35 (44%)</td>
<td>50 (56%)</td>
</tr>
</tbody>
</table>

The performance recorded in the table above stems from performance data as measured against the Blue Drop Standard expressed in KPA 2 and sub-KPAs 2.b) and 2.c). Overall, an unsatisfactory sampling and analysis regime is observed for both operational (56%) and compliance (98%) monitoring.

The data indicates that 35 of 85 WTWs (44%) are on par with good practice for operational monitoring of the raw and final water and the respective process units at the WTW. Lepelle Northern Water, Mopani DM and Vhembe DM and are doing fairly well, whilst the remaining WSAs fail to meet the Blue Drop standard. In terms of compliance monitoring, 2 WSSs (2%) are on par with good compliance monitoring practices, and 82 WSSs (98%) are failing the Blue Drop standard.

The latter observation is noted with deep concern. Compliance monitoring is a legal requirement and the only means to measure the DWQ performance of a water supply system. Operational monitoring is the cornerstone of day-to-day process adjustments and optimisation to ensure that the water treatment is efficient and delivers quality final water. The results indicate that 50 WTWs and 82 WSSs are not achieving regulatory and industry standards.

(ii) Drinking water quality compliance

**Findings:** DWQ compliance is measured against the requirements of SANS 241:2015 under KPA 5 of the Blue Drop audit. The tables following summarises the results of the DWQ status for Microbiological and Chemical Compliance, which also carries the highest Blue Drop score weighting of 35%.

**Table 141 - Provincial Summary of the DWQ Status for Microbiological Compliance**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Micro Compliance</th>
<th># WSS Micro Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>3</td>
<td>60,882</td>
<td>85.75%</td>
<td>1</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>7</td>
<td>289,097</td>
<td>84.22%</td>
<td>2</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>20</td>
<td>330,850</td>
<td>99.36%</td>
<td>19</td>
</tr>
<tr>
<td>Lephalele LM</td>
<td>2</td>
<td>40,530</td>
<td>93.16%</td>
<td>1</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>5</td>
<td>131,622</td>
<td>20.00%</td>
<td>1</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>1</td>
<td>39,733</td>
<td>85.90%</td>
<td>1</td>
</tr>
<tr>
<td>Mopani DM</td>
<td>18</td>
<td>781,372</td>
<td>99.24%</td>
<td>16</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>7</td>
<td>498,999</td>
<td>99.75%</td>
<td>7</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>4</td>
<td>57,609</td>
<td>50.00%</td>
<td>2</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>17</td>
<td>1,160,798</td>
<td>98.81%</td>
<td>13</td>
</tr>
<tr>
<td>Totals</td>
<td>84</td>
<td>3,391,492</td>
<td>81.62%</td>
<td>59</td>
</tr>
</tbody>
</table>
Out of the 84 WSSs, 66 (79%) systems achieved excellent and good microbiological quality, whilst 18 (21%) systems have an unacceptable microbiological water quality status. The water in these systems pose a serious acute health risk to the community. Failure to produce water that meets microbiological compliance standards can be linked back to poor operations, defective infrastructure, inadequate dosing rates, absence of disinfection chemicals, lack of monitoring, lack of operating and chemistry knowledge, and several other root causes.

WSIs that are not monitoring the final water quality at the outlet of the treatment plant or at specific end use points are required to develop a monitoring programme and resume with compliance monitoring as a matter of urgency.

### Table 142 - Provincial Summary of the DWQ Status for Chemical Acute Health and Chronic Health Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Chem Acute Health Compliance</th>
<th># WSS Chem Acute Health Performance Status</th>
<th>% Ave. Chem Chronic Health Compliance</th>
<th># WSS Chem Chronic Health Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
<td>Good</td>
<td>Unacceptable</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>3</td>
<td>60,882</td>
<td>50.4%</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>7</td>
<td>289,097</td>
<td>14.3%</td>
<td>1</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>20</td>
<td>330,850</td>
<td>53.6%</td>
<td>7</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Lephalale LM</td>
<td>2</td>
<td>40,530</td>
<td>50.0%</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>5</td>
<td>131,622</td>
<td>10.0%</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>1</td>
<td>39,733</td>
<td>0.0%</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mopani DM</td>
<td>18</td>
<td>781,372</td>
<td>94.4%</td>
<td>16</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>7</td>
<td>498,999</td>
<td>66.3%</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>4</td>
<td>57,609</td>
<td>25.0%</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>17</td>
<td>1,160,798</td>
<td>93.9%</td>
<td>14</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Totals</td>
<td>84</td>
<td>3,391,492</td>
<td>63.5%</td>
<td>40</td>
<td>2</td>
<td>42</td>
</tr>
</tbody>
</table>

Chemical acute health compliance shows that 40 (48%) systems have excellent and 2 (2%) systems have good water quality, whilst 42 (50%) systems have an unacceptable chemical acute health compliance. Chemical chronic health compliance shows that 62 (74%) systems have excellent, whilst 22 systems in Capricorn DM, Greater Sekhukhune DM, Modimolle/Mookgophong LM and Thabazimbi LM have an unacceptable chemical chronic health compliance.
The Water Services Act upholds standards regarding the monitoring and reporting on drinking water quality and issuance of advisory notices to the public when significant DWQ failures are observed. The audit process applies a penalty when DWQ failures are noticed without issuing such Water Quality Alert Notices to forewarn consumers of the status of (unsafe) water quality and to advise communities to source alternative water sources or methods to disinfect water used for drinking water purposes.

The following table reflects the compliance status of the WSAs as regards the issuing of these notices for DWQ failures.

**Table 143 - Summary of Penalties Applied to WSSs for not Issuing Advisory Notices**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSS No Penalty Applied</th>
<th># WSS Partial Penalty Applied</th>
<th>WSS Names Partial Penalty</th>
<th># WSS Full Penalty Applied</th>
<th>WSS Names Full Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bela-Bela LM</td>
<td>3</td>
<td>2</td>
<td>Bela Bela/Magalies, Radium</td>
<td>1</td>
<td>Rapotokwane</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>7</td>
<td>7</td>
<td>Alltdays, Botlokwa, Lebowakgomo, Mogwadi, Olifantspoort, Senwabarwana, Zebidiela</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>20</td>
<td>14</td>
<td>Ngwaba, Penge, Tubatse</td>
<td>3</td>
<td>Flag Boschelo, Kutullo, Marble Hall</td>
</tr>
<tr>
<td>Lephalale LM</td>
<td>2</td>
<td>1</td>
<td>Lephalale</td>
<td>3</td>
<td>Drakensig</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>5</td>
<td>1</td>
<td>Drakensig</td>
<td>4</td>
<td>Lim365:Mabaleng Res (B/H MM 006007/2010)-2 No, Mookgophong, Roedtan</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>1</td>
<td>1</td>
<td>Mokopane Mahwelereng</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mopani DM</td>
<td>18</td>
<td>17</td>
<td>Drakensig</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>7</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 111 - Provincial Chemical Acute Health and Chronic Health Drinking Water Quality Status
No penalties were applied to 56 (67%) WSSs in 5 WSAs. Partial penalties were applied to 16 (19%) WSSs in 7 WSAs and full penalties were applied to 12 (14%) WSSs in 4 WSAs.

(iii) Risk defined compliance and laboratory credibility

Findings: Risk-defined compliance standards aim to determine the compliance (to SANS 241) of those parameters that have been found to pose a risk in a specific WSS and need to be included in the routine monitoring programme or frequency as prescribed by SANS 241. The province achieved an average Annual Risk Defined Compliance of 70.7%. Excellent risk defined compliance was achieved by 25 (30%) systems, good compliance for 4 (5%) systems and bad compliance for 55 (65%) systems with most of these systems residing in Greater Sekhukhune DM, Mopani DM and Vhembe DM.

Table 144 - Summary of the DWQ Compliance for Risk Defined Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>Ave. % Risk Defined Compliance</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bela-Bela LM</td>
<td>3</td>
<td>60,882</td>
<td>47.07%</td>
<td>Excellent, Good, Bad</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>7</td>
<td>289,097</td>
<td>86.00%</td>
<td>3, 4, 11</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>20</td>
<td>330,850</td>
<td>81.88%</td>
<td>9, 11</td>
</tr>
<tr>
<td>Lephale LM</td>
<td>2</td>
<td>40,530</td>
<td>88.70%</td>
<td>2</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>5</td>
<td>131,622</td>
<td>18.20%</td>
<td>5</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>1</td>
<td>39,733</td>
<td>86.93%</td>
<td>1</td>
</tr>
<tr>
<td>Mopani DM</td>
<td>18</td>
<td>781,372</td>
<td>91.01%</td>
<td>6, 3, 9</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>7</td>
<td>498,999</td>
<td>93.26%</td>
<td>3</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>4</td>
<td>57,609</td>
<td>16.24%</td>
<td>4</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>17</td>
<td>1,160,798</td>
<td>88.02%</td>
<td>4, 1, 12</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>84</strong></td>
<td><strong>3,391,492</strong></td>
<td><strong>70.7%</strong></td>
<td><strong>25, 4, 55</strong></td>
</tr>
</tbody>
</table>

The aim of operational determinand compliance is to determine the efficiency of the water treatment process, by monitoring those parameters which are used to control the treatment process. Although not necessarily a health risk, these parameters provide good information on the integrity of the WTW. The province achieved an average % Actual Operational Determinand Compliance of 25%. Excellent operational determinand compliance was achieved by 23 (27%) WTWs, good compliance for 3 (4%) WTWs and bad compliance for 59 (69%) WTWs with most of these WTWs residing in Lepelle Northern Water, Greater Sekhukhune and Vhembe DM.

Table 145 - Summary of the Treatment (Operational) Efficiency Index

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th>Population</th>
<th>Ave. % Actual Operational Determinand Compliance</th>
<th># WTW Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lepelle Northern Water</td>
<td>17</td>
<td>1,214,023</td>
<td>74%</td>
<td>7, 1, 9</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>3</td>
<td>60,882</td>
<td>28%</td>
<td>3</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>4</td>
<td>96,355</td>
<td>0%</td>
<td>4</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>11</td>
<td>102,839</td>
<td>0%</td>
<td>11</td>
</tr>
<tr>
<td>Lephale LM</td>
<td>2</td>
<td>40,530</td>
<td>0%</td>
<td>2</td>
</tr>
<tr>
<td>Modimolle/ Mookgophong LM</td>
<td>5</td>
<td>131,622</td>
<td>0%</td>
<td>5</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mopani DM</td>
<td>17</td>
<td>701,648</td>
<td>80%</td>
<td>11, 2, 4</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>4</td>
<td>108,999</td>
<td>0%</td>
<td>4</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>3</td>
<td>57,609</td>
<td>0%</td>
<td>3</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>19</td>
<td>876,985</td>
<td>70%</td>
<td>5, 14</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>85</strong></td>
<td><strong>3,391,492</strong></td>
<td><strong>25%</strong></td>
<td><strong>23, 3, 59</strong></td>
</tr>
</tbody>
</table>

The data confirms that Lepelle Northern Water and 8 (80%) WSAs in the province have access to credible laboratories for compliance and operational analysis. These in-house or contracted laboratories are accredited with SANAS or have Proficiency Testing Schemes with SABS or have inter-laboratory quality checks in place to ensure that suitable analytical methods are applied and that quality assurance processes are followed to ensure credible water quality results. The province is predominantly meeting the regulatory expectation for the WSIs having access to credible analytical services for compliance and operational monitoring.
**Diagnostic 4: Technical Site Assessments**

**Aim:** The Blue Drop process makes provision for a Technical Site Assessment (TSA) in order to verify the desktop evidence through field-based inspections. This assessment includes a physical inspection of the entire water treatment plant with all its process units, as well as the reservoir and spot checks of a pumpstation and pipelines. The technical assessment is coupled with an asset condition check to determine an approximate cost (VROOM) to restore existing infrastructure to functional status for the treatment facility (only).

**Findings:** The results of the province’s TSAs are summarised in the table below. A deviation of 10% between the BD and TSA score indicates a misalignment between the administrative aspects and the work on the ground. The Regulator regards a WTW with a TSA score of >80% to have an acceptable level of process control and functional equipment, and a TSA score of 90% as an excellent system that complies with most of the Blue Drop TSA standards. A TSA score of <30% indicates that the treatment facility and network fails in most regards, and is evident of dysfunctional infrastructure, failed process control, absence of record keeping and monitoring, and poor water quality.

The VROOM cost presents a “Very Rough Order of Measurement” cost to return a WTWs functionality to its original design. More detail can be found in the Blue Drop Watch Report 2023.

*Table 146 - %TSA and %BD score, and VROOM cost estimates total and split for civil, mechanical, and electrical*

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>TSA Name</th>
<th>%TSA</th>
<th>2023 BD Score (%)</th>
<th>Civil cost estimate</th>
<th>Mechanical cost estimate</th>
<th>Electrical &amp; C&amp;I cost estimate</th>
<th>Total VROOM cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lepelle Northern Water</td>
<td>Doorndraai</td>
<td>76.0%</td>
<td>40.9%</td>
<td>144,000</td>
<td>336,000</td>
<td>-</td>
<td>480,000</td>
</tr>
<tr>
<td>Lepelle Northern Water</td>
<td>Ebenhezer (Polokwane)</td>
<td>61.0%</td>
<td>56.2%</td>
<td>2,704,000</td>
<td>21,632,000</td>
<td>2,704,000</td>
<td>27,040,000</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>Bela Bela</td>
<td>69.0%</td>
<td>60.3%</td>
<td>672,000</td>
<td>5,376,000</td>
<td>672,000</td>
<td>6,720,000</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>Mogwadi</td>
<td>59.0%</td>
<td>38.1%</td>
<td>784,000</td>
<td>980,000</td>
<td>196,000</td>
<td>1,960,000</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>Groblersdal</td>
<td>50.0%</td>
<td>39.6%</td>
<td>5,413,650</td>
<td>11,910,030</td>
<td>4,330,920</td>
<td>21,654,600</td>
</tr>
<tr>
<td>Lephalale LM</td>
<td>Zeeland</td>
<td>86.0%</td>
<td>48.4%</td>
<td>2,120,000</td>
<td>16,960,000</td>
<td>2,120,000</td>
<td>21,200,000</td>
</tr>
<tr>
<td>Modimolle/Mookgophong LM</td>
<td>Donkerpoort</td>
<td>34.0%</td>
<td>51.1%</td>
<td>19,910,000</td>
<td>9,050,000</td>
<td>7,240,000</td>
<td>36,200,000</td>
</tr>
<tr>
<td>Mopani DM</td>
<td>Giyani</td>
<td>62.0%</td>
<td>56.1%</td>
<td>2,605,700</td>
<td>20,845,600</td>
<td>2,605,700</td>
<td>26,057,000</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>Molepo</td>
<td>59.0%</td>
<td>56.2%</td>
<td>3,312,000</td>
<td>4,554,000</td>
<td>414,000</td>
<td>8,280,000</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>Thabazimbi Chlorination Plant</td>
<td>24.0%</td>
<td>47.5%</td>
<td>170,720</td>
<td>21,340</td>
<td>21,340</td>
<td>231,400</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>Khalavha</td>
<td>76.0%</td>
<td>63.8%</td>
<td>98,000</td>
<td>686,000</td>
<td>196,000</td>
<td>980,000</td>
</tr>
</tbody>
</table>

% Split of Cost Items | 25% | 61% | 14% | 100%

A deviation of >10% between the BD and TSA score is noted for 6 WSAs. A deviation of >20% between the BD and TSA score is noted for 4 WSAs. For the individual WTWs assessed in the province, a total budget of R150.8m is estimated, with the bulk of the work (86%) going towards restoration of mechanical equipment (61%) and civil infrastructure (25%).

**Diagnostic 5: Operation, Maintenance and Refurbishment of Assets**

**Aim:** Insufficient financial resources are often cited as a root cause to dysfunctional or non-compliant water treatment works and water networks. Knowledge and monitoring of fiscal spending are therefore a critical part of water services management and municipal governance of public assets. This diagnostic investigates the status of financial information as pertaining to O&M budgets and expenditure, asset figures, and capital funding.

**Findings:** A substantial amount of financial information was presented during the audit process. Unfortunately, the evidence was presented in different formats, levels of detail, or absent for some WSAs. It was observed that WSA teams with financial officials that were present during the audits performed better and had a better understanding of the water services challenges experienced by their technical peers.

Discrepancies observed included amongst others - generic or non-ringfenced budgets, contract lump sums for service providers presented as budgets, outdated or incomplete asset registers, and some cost drivers which were lacking. As data credibility presents a significant challenge, the Regulator grouped data into different certainty levels, as summarised at the end of this Diagnostic.

The result of each financial portfolio is discussed hereunder.

**NOTE:** The Regulator regards the financial and asset information with low confidence. Not all WSAs submitted verifiable information or complete financial data sets for the audit year in question.
Capital, O&M Budget and Actual, and Asset Value

The capital budgets, O&M budgets, O&M actual expenditure, and current asset values are summarised below.

Table 147 - Summary of the capital budgets, O&M budgets, O&M actual expenditure, and current asset values

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Capital budget available (R)</th>
<th>O&amp;M budget (R) (2021/22)</th>
<th>O&amp;M expended (R) (2021/22)</th>
<th>% Expended</th>
<th>Total Current Asset Value (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lepelle Northern Water</td>
<td>NI</td>
<td>R259,296,232</td>
<td>R300,230,989</td>
<td>116%</td>
<td>R3,990,225,544</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>NI</td>
<td>R41,355,491</td>
<td>R31,363,084</td>
<td>76%</td>
<td>R3,469,723,153</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>R1,803,521,458</td>
</tr>
<tr>
<td>Lephalale LM</td>
<td>NI</td>
<td>R63,437,030</td>
<td>R9,692,000</td>
<td>15%</td>
<td>R14,900,000</td>
</tr>
<tr>
<td>Modimolle/ Mookgophong LM</td>
<td>R81,500,001</td>
<td>R54,299,914</td>
<td>R77,618,776</td>
<td>143%</td>
<td>R131,999,466</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Mopani DM</td>
<td>NI</td>
<td>R147,551,751</td>
<td>R147,982,855</td>
<td>100%</td>
<td>NI</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>R34,271,699</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>R1,352,458,975</td>
<td>R243,573,581</td>
<td>R152,523,176</td>
<td>63%</td>
<td>R2,507,627,024</td>
</tr>
<tr>
<td>Totals</td>
<td>R1,433,958,976</td>
<td>R809,513,999</td>
<td>R719,410,880</td>
<td>88.9%</td>
<td>R11,952,268,344</td>
</tr>
</tbody>
</table>

The Regulatory Comments following in this Chapter list the capital projects with secured funding for each municipality and/or its bulk water provider (WSP). The capital lists are deemed to be a definitive means to address water service inadequacies and ensuring water infrastructure investment. A total capital budget of R1.434b has been reported for the refurbishment and upgrades of water supply system infrastructure for 2 of 10 WSAs. The largest capital budgets are observed for Vhembe DM (R1.352b) followed by Modimolle/ Mookgophong LM (R81.5m).

For the 2021/22 fiscal year, the total O&M budget reported for the province was R809.5m, of which R719.4m (89%) has been expended. The highest over-expenditure of 143% by Modimolle/ Mookgophong LM and the lowest under expenditure by Lephalale LM (15%) was observed. The provincial figures exclude 5 WSAs who had no financial information.

The total current asset value for water infrastructure (networks, pump stations, treatment plants) is reportedly R11.95b (excluding 4 WSAs with no information). The highest asset values are observed for Lepelle Northern Water (R3.99b), followed by Bela-Bela LM (R3.47b), Vhembe DM (R2.51b) and Greater Sekhukhune DM (R1.8b).

O&M Cost Benchmarking

By combining the SALGA and WRC WATCOST models, an estimation of the maintenance cost required per asset type can be done, i.e. civil, buildings, pipelines, mechanical, electrical, and instrumentation.
The model estimates that R258m (2.16%) is required per year to maintain the assets valued at R11.95b. Notably, this maintenance estimate assumes that all assets are functional. In cases where Blue Drop Certification is not being achieved, it can be assumed that some form of inefficiency or constraint is being experienced, and national benchmarks closer to 7% of the asset value is advocated (R836m).

The table below indicates the SALGA maintenance cost estimation in relation to the O&M budget, and O&M actual expended.

**Table 149 - O&M cost estimates by the SALGA versus actual budget and expenditure figures**

<table>
<thead>
<tr>
<th>Cost Reference</th>
<th>O&amp;M Cost Estimate</th>
<th>Period</th>
<th>% of Asset Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified SALGA</td>
<td>R258,168,996</td>
<td>Annually, estimation</td>
<td>2.16%</td>
</tr>
<tr>
<td>O&amp;M Budget</td>
<td>R809,513,999</td>
<td>Actual for 2021/22</td>
<td>6.8%</td>
</tr>
<tr>
<td>O&amp;M Spend</td>
<td>R719,410,880</td>
<td>Actual for 2021/22</td>
<td>6.0%</td>
</tr>
</tbody>
</table>

In addition, the table below indicates the Blue Drop audit findings on the water supply operations cost determination and water supply O&M budget status.

**Table 150 - BD Audit Water Supply Operations Cost Determination and Water Supply O&M Budget status**

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Water Supply Operations Cost Determination</th>
<th>Water Supply O&amp;M Budget status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lepelle Northern Water</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET; WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Bela-Bela LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM; NO PROOF</td>
<td>SYSTEM SPECIFIC BUT INCLUDES WATER &amp; SANITATION; NO PROOF</td>
</tr>
<tr>
<td>Capricorn DM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Greater Sekhukhune DM</td>
<td>NO PROOF (0% SCORE); NOT SYSTEM SPECIFIC (GLOBAL); DETERMINED OF THE WHOLE SYSTEM</td>
<td>NO PROOF; WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY; SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Lephalale LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL); DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY; SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Modimolle/ Mookgophong LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>BUDGET IS NOT RINGFENCED FOR WATER ONLY</td>
</tr>
<tr>
<td>Mogalakwena LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Mopani DM</td>
<td>NO PROOF (0% SCORE); NOT SYSTEM SPECIFIC (GLOBAL); DETERMINED OF THE WHOLE SYSTEM</td>
<td>NO PROOF; WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY; SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Polokwane LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Thabazimbi LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Vhembe DM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
</tbody>
</table>

From the tables above, the cost dynamics can be summarised as follows:

- The SALGA estimations for maintenance budgets is about 31.9% (Modified SALGA divided by O&M Budget) of the actual reported budgets for the 2021/22 fiscal year
- The actual O&M budget (31.9%) does not appear to be adequate when compared with the SALGA guideline (2.16%) or with the government benchmark (7%)
- These figures are impacted by some of the WSAs who did not provide budget and expenditure figures, and by some inaccurate asset values and where no asset values were provided for
- Lastly, the municipalities presents budget and expenditure data at different levels (table above) i.e. financial figures are not always ringfenced per water supply system – thus rendering provincial summaries to be indicative.
**Introduction**

Lepelle Northern Water (LNW) was established in terms of the Water Services Act No. 108 of 1997. As bulk supplier, it provides water services to water services authorities and industries within the Limpopo Province.

LNW is actively involved in schemes serving more than 3 million people as well as some major industrial users. LNW plans to progressively increase the number of people it serves in consultation with the WSAs in its service area.

LNW’s area of supply covers approximately 64% of the square kilometres within the 125 754 square kilometres of Limpopo Province’s surface. The bulk supplier is currently providing bulk water in 42% of its mandated 80 000 square kilometres which is equivalent to about 56% of the province. In so doing, it assists the following Water Services Authorities:

- Polokwane Local Municipality
- Capricorn District Municipality
- Sekhukhune District Municipality
- Mopani District Municipality
- Mogalakwena Local Municipality

To fulfil its obligation in its area of responsibility, Lepelle Northern Water operates 18 treatment systems, varying from treatment plants to boreholes. The total design capacity of the treatment systems is said to be 316 300 kL/d. For the 2021/2022 year of assessment the design capacity was fully utilised with 316 101 kL/d supplied.

**Regulator’s Comment**

The Inspectors visited the Lepelle Northern Water offices in Polokwane in December 2022 to assess all the management systems and information available. The requested information was shared in a professional and transparent manner by scientific and technical staff.

During assessments at Water Services Authorities (WSAs) as well as during the Confirmation Assessments, staff of Lepelle Northern Water played a critical role to assist the WSAs in providing required information. In this regard Lepelle Northern Water is encouraged to practise basic and sound business principles in the management of water and to transfer these skills to the WSA.

**Blue Drop Findings**

- Lepelle Northern Water demonstrated sufficient potential in their technical, scientific, financial and management capacity to provide a sustainable bulk water service. Introducing proper supervision and performance management will activate a top performer.
- One area that needs specific attention will be the continuous update of the Water Safety Plan, its links to the budget, the Water Services Development Plan and IDP.
- Although maintenance is budgeted for, it seems as if most of the money is used for reactive maintenance. The WSP is encouraged to implement a special project to prioritise preventative maintenance and, in so doing to save on overall maintenance cost.
- Associated with the above will be the implementation of the water conservation and demand plan, with special attention given to water losses on the plants. This is of paramount importance, given the full use of the design capacity indicated above.
- Despite several challenges indicated identified during the assessment, Lepelle Northern Waters' internal records indicated that it was still able to produce drinking water that complied to the four quality criteria of SANS 241:2015 as follow:
  - Chronic health - 99.5%
  - Acute health - 99.3%
  - Operational - 93.4%
  - Microbiological - 98.7%

**Technical Site Inspection**

Two of the 18 treatment facilities operated by Lepelle Northern Water were visited. The Inspectors were guided through both plants in a friendly and professional manner by well-informed staff. The *Ebenezer WTW* obtained a TSA score of 58% and *Doorndraai WTW* a score of 75%.
Grounds at both the treatment facilities is well maintained but absence of the link between the budget, the expenditure, preventative maintenance plan and asset register is clear (as noted during the Blue Drop Assessment) when looking at the condition of infrastructure.

It was clear from the site visits that the plants are operated to achieve the required final drinking water standards but that it is based on institutional memory and not on documented standard operating procedures. This may explain the high-risk conditions at the chlorination facilities or the inability of operation staff to apply Jar Test results on the plant. The latter having budget and quality implications.

Refer to the Blue Drop Watch Report 2023 for more detail.
9.2 Bela Bela Local Municipality

### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>60.25%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>43.11%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>71.21%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>71.07%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Bela Bela</th>
<th>Radium</th>
<th>Rapotokwane</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Magalies Water</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>66.28%</td>
<td>19.00%</td>
<td>16.40%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>65.70%</td>
<td>28.60%</td>
<td>30.33%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>74.88%</td>
<td>38.59%</td>
<td>69.72%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>78.67%</td>
<td>38.95%</td>
<td>48.45%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>49 000</td>
<td>1 000</td>
<td>470</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>47 500</td>
<td>1 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>11 500</td>
<td>847</td>
<td>784</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>93.44%</td>
<td>84.70%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Roodeplaat Dam; Plat River</td>
<td>Borehole</td>
<td>Borehole</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>33.26%</td>
<td>50.72%</td>
<td>81.94%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>38.20%</td>
<td>44.70%</td>
<td>98.40%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Bela Bela WTW - 69%**

The Regulator notes the dire state of management and drinking water quality in the Radium and Rapotokwane water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### 9.3 Capricorn District Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td></td>
<td>38.10%</td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td>70.87%</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td>71.99%</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td>86.85%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Alldays</th>
<th>Botlokwa</th>
<th>Lebowakgomo</th>
<th>Mogwadi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>19.15%</td>
<td>21.18%</td>
<td>47.89%</td>
<td>4.75%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>N/A</td>
<td>29.99%</td>
<td>70.43%</td>
<td>33.44%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>N/A</td>
<td>54.55%</td>
<td>n/a</td>
<td>N/A</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>N/A</td>
<td>N/A</td>
<td>n/a</td>
<td>N/A</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 000</td>
<td>1 500</td>
<td>60 000</td>
<td>2 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>1 000</td>
<td>1 500</td>
<td>3 837</td>
<td>2 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Boreholes</td>
<td>Borehole water</td>
<td>Olifants River</td>
<td>Boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>72.97%</td>
<td>57.12%</td>
<td>49.39%</td>
<td>74.94%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>82.10%</td>
<td>53.00%</td>
<td>62.40%</td>
<td>53.00%</td>
</tr>
</tbody>
</table>

#### Technical Site Assessment: Mogwadi WTW (Reverse Osmosis) - 58%

The Regulator notes the dire state of management and drinking water quality in the Alldays, Botlokwa, Mogwadi and Senwabarwana water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Greater Sekhukhune District Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>39.62%</td>
<td>47.65%</td>
<td>59.93%</td>
<td>59.05%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Burgersfort</th>
<th>Fetakgomo</th>
<th>Flag Boshielo</th>
<th>Groblersdal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>43.43%</td>
<td>58.53%</td>
<td>27.47%</td>
<td>33.43%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>75.50%</td>
<td>N/A</td>
<td>69.97%</td>
<td>30.37%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>80.54%</td>
<td>N/A</td>
<td>63.93%</td>
<td>40.34%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>87.62%</td>
<td>N/A</td>
<td>66.45%</td>
<td>66.35%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>15 500</td>
<td>60 000</td>
<td>12 000</td>
<td>1 870</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>15 500</td>
<td>60 000</td>
<td>12 000</td>
<td>18 700</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>8 881</td>
<td>27 836</td>
<td>14 500</td>
<td>10 586</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>121.01%</td>
<td>103.98%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Steelpoort</td>
<td>Olifants River</td>
<td>Olifants River</td>
<td>Olifants River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>42.95%</td>
<td>41.57%</td>
<td>77.20%</td>
<td>42.97%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>24.30%</td>
<td>59.30%</td>
<td>65.60%</td>
<td>43.10%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Hlogotlou</th>
<th>Kutullo</th>
<th>Magukubjane</th>
<th>Mahlokoena</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>42.91%</td>
<td>18.95%</td>
<td>24.85%</td>
<td>21.74%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>38.48%</td>
<td>N/A</td>
<td>25.29%</td>
<td>N/A</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>47.40%</td>
<td>N/A</td>
<td>55.61%</td>
<td>N/A</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>45.39%</td>
<td>N/A</td>
<td>41.99%</td>
<td>N/A</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 900</td>
<td>100</td>
<td>900</td>
<td>100</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 900</td>
<td>100</td>
<td>900</td>
<td>100</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 542</td>
<td>100</td>
<td>900</td>
<td>100</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>0.00%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Motshephiri</td>
<td>Steelpoort</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>50.93%</td>
<td>83.56%</td>
<td>46.51%</td>
<td>86.09%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>39.30%</td>
<td>NA</td>
<td>NI</td>
<td>NI</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Mapodile</th>
<th>Marble Hall</th>
<th>Marishane</th>
<th>Masemola</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>30.66%</td>
<td>33.56%</td>
<td>27.25%</td>
<td>15.88%</td>
</tr>
</tbody>
</table>

---

LIMPOPO

Page 275
### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Mapodile</th>
<th>Marble Hall</th>
<th>Marishane</th>
<th>Masemola</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>31.23%</td>
<td>73.43%</td>
<td>19.88%</td>
<td>21.62%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2014</th>
<th>%</th>
<th>31.23%</th>
<th>73.43%</th>
<th>19.88%</th>
<th>21.62%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>N/A</td>
<td>84.26%</td>
<td>37.78%</td>
<td>45.03%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>N/A</td>
<td>72.61%</td>
<td>N/A</td>
<td>44.04%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>1 000</th>
<th>3 000</th>
<th>150</th>
<th>2 000</th>
</tr>
</thead>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>800</th>
<th>3 000</th>
<th>150</th>
<th>2 000</th>
</tr>
</thead>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>kl/d</th>
<th>1 148</th>
<th>2 957</th>
<th>150</th>
<th>2 000</th>
</tr>
</thead>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>%</th>
<th>143.50%</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
</tr>
</thead>
</table>

### Resource Abstracted From

| Nadimeng | Loskop Dam | NI | NI |

### BDRR 2023

<table>
<thead>
<tr>
<th>%</th>
<th>29.60%</th>
<th>74.11%</th>
<th>27.79%</th>
<th>54.06%</th>
</tr>
</thead>
</table>

### BDRR 2022

<table>
<thead>
<tr>
<th>%</th>
<th>100.00%</th>
<th>75.90%</th>
<th>96.90%</th>
<th>72.10%</th>
</tr>
</thead>
</table>

---

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Ngwaabe</th>
<th>Nkosini</th>
<th>Penge</th>
<th>Roosenekal</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>27.87%</td>
<td>17.50%</td>
<td>25.75%</td>
<td>32.83%</td>
</tr>
</tbody>
</table>

### Bulk/WSP

| Lepelle Northern Water | - | - | - |

### Blue Drop Score 2023

<table>
<thead>
<tr>
<th>%</th>
<th>27.87%</th>
<th>17.50%</th>
<th>25.75%</th>
<th>32.83%</th>
</tr>
</thead>
</table>

### Blue Drop Score 2014

<table>
<thead>
<tr>
<th>%</th>
<th>31.23%</th>
<th>73.43%</th>
<th>19.88%</th>
<th>21.62%</th>
</tr>
</thead>
</table>

### Blue Drop Score 2012

<table>
<thead>
<tr>
<th>%</th>
<th>N/A</th>
<th>84.26%</th>
<th>37.78%</th>
<th>45.03%</th>
</tr>
</thead>
</table>

### Blue Drop Score 2011

<table>
<thead>
<tr>
<th>%</th>
<th>N/A</th>
<th>72.61%</th>
<th>N/A</th>
<th>44.04%</th>
</tr>
</thead>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>1 000</th>
<th>3 000</th>
<th>150</th>
<th>2 000</th>
</tr>
</thead>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>800</th>
<th>3 000</th>
<th>150</th>
<th>2 000</th>
</tr>
</thead>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>kl/d</th>
<th>1 148</th>
<th>2 957</th>
<th>150</th>
<th>2 000</th>
</tr>
</thead>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>%</th>
<th>143.50%</th>
<th>N/A</th>
<th>N/A</th>
<th>N/A</th>
</tr>
</thead>
</table>

### Resource Abstracted From

| de Hoop Dam | Loskop Dam | NI | NI |

### BDRR 2023

<table>
<thead>
<tr>
<th>%</th>
<th>45.76%</th>
<th>50.54%</th>
<th>32.19%</th>
<th>24.70%</th>
</tr>
</thead>
</table>

### BDRR 2022

<table>
<thead>
<tr>
<th>%</th>
<th>53.50%</th>
<th>95.90%</th>
<th>28.92%</th>
<th>NI</th>
</tr>
</thead>
</table>

---

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Steelpoort</th>
<th>Tsakane</th>
<th>Tubatse</th>
<th>Vergelegen</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>26.46%</td>
<td>26.31%</td>
<td>32.36%</td>
<td>22.55%</td>
</tr>
</tbody>
</table>

### Bulk/WSP

| Lepelle Northern Water | Lepelle Northern Water | Lepelle Northern Water | - |

### Blue Drop Score 2023

<table>
<thead>
<tr>
<th>%</th>
<th>26.46%</th>
<th>26.31%</th>
<th>32.36%</th>
<th>22.55%</th>
</tr>
</thead>
</table>

### Blue Drop Score 2014

<table>
<thead>
<tr>
<th>%</th>
<th>44.59%</th>
<th>N/A</th>
<th>17.68%</th>
<th>25.24%</th>
</tr>
</thead>
</table>

### Blue Drop Score 2012

<table>
<thead>
<tr>
<th>%</th>
<th>N/A</th>
<th>N/A</th>
<th>n/a</th>
<th>43.43%</th>
</tr>
</thead>
</table>

### Blue Drop Score 2011

<table>
<thead>
<tr>
<th>%</th>
<th>N/A</th>
<th>N/A</th>
<th>30.49%</th>
<th>52.54%</th>
</tr>
</thead>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>3 000</th>
<th>100</th>
<th>15 000</th>
<th>5 000</th>
</tr>
</thead>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>3 000</th>
<th>100</th>
<th>15 000</th>
<th>5 000</th>
</tr>
</thead>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>kl/d</th>
<th>1 789</th>
<th>100</th>
<th>7 719</th>
<th>5 000</th>
</tr>
</thead>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>%</th>
<th>18.00%</th>
<th>14.74%</th>
<th>N/A</th>
</tr>
</thead>
</table>

### Resource Abstracted From

| Steelpoort | Tsakane | Steelpoort | N/A |

### BDRR 2023

<table>
<thead>
<tr>
<th>%</th>
<th>88.60%</th>
<th>65.55%</th>
<th>27.87%</th>
<th>56.95%</th>
</tr>
</thead>
</table>

---
### Technical Site Assessment: Groblersdal WTW – 50%

The Regulator notes the dire state of management and drinking water quality in the Flag Boshielo, Kutullo, Magukubjane, Mahlokoena, Mapodile, Marishane, Masemola, Ngwaabe, Nkosini, Penge, Steelpoort, Tsakane and Vergelegen water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>%</td>
<td>48.37%</td>
<td>85.46%</td>
<td>92.84%</td>
<td>82.63%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Matimba</th>
<th>Zeeland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>ESKOM</td>
<td>EXXARO</td>
</tr>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>60.17%</td>
<td>43.12%</td>
</tr>
<tr>
<td>2023</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>%</td>
<td>82.84%</td>
<td>87.52%</td>
</tr>
<tr>
<td>2012</td>
<td>%</td>
<td>88.34%</td>
<td>95.82%</td>
</tr>
<tr>
<td>2011</td>
<td>%</td>
<td>77.41%</td>
<td>88.63%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>23 000</td>
<td>40 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>23 000</td>
<td>40 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>4 000</td>
<td>9 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>57.39%</td>
<td>22.50%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Mokolo Dam</td>
<td>Hans Strijdom</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>31.62%</td>
<td>54.63%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>82.10%</td>
<td>53.10%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Zeeland WTW – 86%**
### 9.6 Modimolle-Mookgopong Local Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>2023</td>
<td>51.05%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>62.84%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>70.10%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>81.70%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Modimolle</th>
<th>Mookgophong</th>
<th>Mabaleng</th>
<th>Mabatlane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Magalies Water</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>68.19%</td>
<td>15.78%</td>
<td>18.83%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>66.43%</td>
<td>26.40%</td>
<td>32.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>73.96%</td>
<td>31.73%</td>
<td>43.28%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>95.01%</td>
<td>24.79%</td>
<td>34.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>52 000</td>
<td>5 000</td>
<td>500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>52 000</td>
<td>5 000</td>
<td>500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>8 200</td>
<td>2 000</td>
<td>500</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>70.98%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Donkerpoort Dam; Pienaars river (Roodeplaat Dam)</td>
<td>Welgevonden Dam</td>
<td>Borehole</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>40.92%</td>
<td>97.93%</td>
<td>100.00%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>79.30%</td>
<td>91.70%</td>
<td>99.70%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Roedtan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
</tr>
</tbody>
</table>
The Regulator notes the dire state of management and drinking water quality in the Mookgophong, Mabaleng, Mabatlane and Roedtan water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a **detailed corrective action plan within 20 days** of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td><strong>40.85%</strong></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td><strong>60.49%</strong></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td><strong>0.00%</strong></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td><strong>0.00%</strong></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Mokopane Mahwelereng</th>
<th>Lepelle Northern Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td><strong>40.85%</strong></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>9.07%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>12 000</td>
<td></td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>12 000</td>
<td></td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>10 108</td>
<td></td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>85.71%</td>
<td></td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Doorndraai dam</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>51.98%</td>
<td></td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>73.20%</td>
<td></td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Doorndraai WTW - 75%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>56.13%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>64.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>79.21%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>63.87%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Drakensig</th>
<th>Giyani</th>
<th>Greater Tzaneen</th>
<th>Letsitele</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Public Works LP</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>23.83%</td>
<td>54.44%</td>
<td>64.31%</td>
<td>61.84%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>26.09%</td>
<td>32.51%</td>
<td>77.39%</td>
<td>73.44%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>NI</td>
<td>65.48%</td>
<td>95.10%</td>
<td>95.02%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>NI</td>
<td>41.85%</td>
<td>95.08%</td>
<td>95.05%</td>
<td></td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>12 500</td>
<td>36 700</td>
<td>15 000</td>
<td>1 800</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>12 500</td>
<td>36 700</td>
<td>15 000</td>
<td>1 800</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>12 500</td>
<td>29 901</td>
<td>17 415</td>
<td>787</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>81.47%</td>
<td>119.62%</td>
<td>43.72%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Mohlabetsi</td>
<td>Hudson Ntsanwisi</td>
<td>Groot Letaba</td>
<td>Groot Letaba</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>52.04%</td>
<td>47.32%</td>
<td>40.29%</td>
<td>14.99%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>74.60%</td>
<td>33.70%</td>
<td>25.00%</td>
<td>18.70%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Mapuve</th>
<th>Middle Letaba</th>
<th>Modjadi</th>
<th>Nkambako</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>65.23%</td>
<td>61.38%</td>
<td>54.33%</td>
<td>59.17%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>29.33%</td>
<td>32.40%</td>
<td>76.37%</td>
<td>32.19%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>63.17%</td>
<td>66.18%</td>
<td>92.88%</td>
<td>67.39%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>24.00%</td>
<td>48.38%</td>
<td>61.97%</td>
<td>27.33%</td>
<td></td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>4 000</td>
<td>36 000</td>
<td>12 000</td>
<td>12 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>4 000</td>
<td>36 000</td>
<td>12 000</td>
<td>12 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 549</td>
<td>22 900</td>
<td>7 506</td>
<td>4 513</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>63.61%</td>
<td>62.56%</td>
<td>37.61%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Middel-Letaba</td>
<td>Middle Letaba Dam</td>
<td>Molototsi</td>
<td>Groot Letaba</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>41.67%</td>
<td>47.23%</td>
<td>43.61%</td>
<td>37.62%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>73.30%</td>
<td>64.90%</td>
<td>32.00%</td>
<td>95.60%</td>
</tr>
</tbody>
</table>
### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Nkowankowa</th>
<th>Nondweni</th>
<th>Phalaborwa, Lulekani and Namakgale</th>
<th>Politsi and Modjadji Kloof</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td>Lepelle Northern Water</td>
<td>Lepelle Northern Water</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>59.60%</th>
<th>60.41%</th>
<th>57.68%</th>
<th>61.34%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>46.73%</td>
<td>46.73%</td>
<td>80.20%</td>
<td>76.21%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>66.27%</td>
<td>66.27%</td>
<td>92.63%</td>
<td>92.88%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>30.43%</td>
<td>30.43%</td>
<td>80.47%</td>
<td>68.55%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>24 000</td>
<td>4 700</td>
<td>76 000</td>
<td>5 500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>24 000</td>
<td>4 700</td>
<td>76 000</td>
<td>5 500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>20 939</td>
<td>3 605</td>
<td>59 521</td>
<td>6 211</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>87.25%</td>
<td>76.70%</td>
<td>104.65%</td>
<td>121.02%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Groot Letaba</td>
<td>Ni</td>
<td>Olifants River</td>
<td>Molototsi</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>30.13%</td>
<td>45.26%</td>
<td>38.84%</td>
<td>31.31%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>38.30%</td>
<td>56.60%</td>
<td>43.70%</td>
<td>32.00%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Semarela</th>
<th>Thabina</th>
<th>Thapane</th>
<th>The Oaks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>52.08%</th>
<th>61.95%</th>
<th>48.25%</th>
<th>37.78%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>N/A</td>
<td>28.09%</td>
<td>38.27%</td>
<td>26.09%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>N/A</td>
<td>64.41%</td>
<td>65.68%</td>
<td>N/A</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>N/A</td>
<td>7.75%</td>
<td>38.50%</td>
<td>N/A</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 000</td>
<td>12 000</td>
<td>8 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 000</td>
<td>12 000</td>
<td>8 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>65</td>
<td>12 000</td>
<td>2 062</td>
<td>3 609</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>6.40%</td>
<td>Ni</td>
<td>25.78%</td>
<td>360.90%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Semarela river</td>
<td>Thabina</td>
<td>Thapane River</td>
<td>Olifants</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>36.20%</td>
<td>61.51%</td>
<td>27.60%</td>
<td>72.67%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>33.30%</td>
<td>77.20%</td>
<td>28.20%</td>
<td>36.50%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Tours</th>
<th>Zava</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>51.96%</th>
<th>52.70%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>36.91%</td>
<td>N/A</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>80.49%</td>
<td>N/A</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>29.55%</td>
<td>N/A</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>9 000</td>
<td>300</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>9 000</td>
<td>300</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Tours</td>
<td>Zava</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------</td>
<td>-----------</td>
<td>------</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>8 325</td>
<td>156</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>92.50%</td>
<td>52.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Tours</td>
<td>Groot Letaba</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>48.05%</td>
<td>39.88%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>78.80%</td>
<td>75.40%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Giyani WTW – 62%**

The Regulator notes the dire state of management and drinking water quality in the Drakensig water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>56.17%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>92.48%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>86.52%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>92.61%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Chuenemaja</th>
<th>City Polokwane</th>
<th>Mankweng Area</th>
<th>Mashashane</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lepelle Northern Water</td>
<td>Lepelle Northern Water</td>
<td>Lepelle Northern Water</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>56.83%</td>
<td>55.45%</td>
<td>57.72%</td>
<td>38.28%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>88.09%</td>
<td>95.00%</td>
<td>86.07%</td>
<td>55.03%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>87.29%</td>
<td>92.03%</td>
<td>80.89%</td>
<td>91.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>81.44%</td>
<td>95.05%</td>
<td>95.15%</td>
<td>72.55%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>60 000</td>
<td>130 000</td>
<td>52 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>60 000</td>
<td>130 000</td>
<td>52 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>1 001</td>
<td>53 618</td>
<td>8 119</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>101.39%</td>
<td>93.07%</td>
<td>96.32%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Tudumo</td>
<td>Olifantsriver; Ebenezer dam</td>
<td>Ebenezer dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>41.83%</td>
<td>40.18%</td>
<td>37.05%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>44.30%</td>
<td>36.20%</td>
<td>38.00%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Molepo</th>
<th>Moletjie Area</th>
<th>Seshego</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>Lepelle Northern Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>51.66%</td>
<td>53.61%</td>
<td>59.13%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>85.38%</td>
<td>85.26%</td>
<td>86.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>82.02%</td>
<td>73.79%</td>
<td>87.12%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>79.89%</td>
<td>76.57%</td>
<td>89.65%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>6 000</td>
<td>3 400</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>6 000</td>
<td>3 400</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>6 000</td>
<td>1 393</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>40.97%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Molepo Dam</td>
<td>Hout</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>37.03%</td>
<td>21.78%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>19.90%</td>
<td>18.80%</td>
</tr>
</tbody>
</table>

*Technical Site Assessment: Molepo WTW – 59%*
## Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>47.50%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>55.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>54.33%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>14.32%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Greater Thabazimbi</th>
<th>Northam</th>
<th>Leeupoort</th>
<th>Rooiberg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Magalies Water</td>
<td>Magalies Water</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>50.83%</td>
<td>55.55%</td>
<td>4.70%</td>
<td>4.20%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>59.27%</td>
<td>62.19%</td>
<td>37.66%</td>
<td>22.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>58.48%</td>
<td>62.90%</td>
<td>20.18%</td>
<td>20.18%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>13.69%</td>
<td>12.78%</td>
<td>21.28%</td>
<td>13.68%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>280 000</td>
<td>270 000</td>
<td>1 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>270 000</td>
<td>270 000</td>
<td>1 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>12 364</td>
<td>5 573</td>
<td>1 000</td>
<td>1 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>49.58%</td>
<td>83.24%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Vaalkop Dam &amp; Borehole</td>
<td>Vaalkop Dam</td>
<td>Borehole</td>
<td>Borehole</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>65.80%</td>
<td>73.05%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>92.90%</td>
<td>81.70%</td>
<td>89.20%</td>
<td>89.20%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Thabazimbi Chlorination Plant - 24%

The Regulator notes the dire state of management and drinking water quality in the Leeupoort and Rooiberg water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Vhembe District Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>63.78%</td>
</tr>
<tr>
<td>2014</td>
<td>39.35%</td>
</tr>
<tr>
<td>2012</td>
<td>74.85%</td>
</tr>
<tr>
<td>2011</td>
<td>45.06%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Key Performance Area</th>
<th>Damani</th>
<th>Dzindzi</th>
<th>Dzingahe</th>
<th>Elim</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>74.55%</td>
<td>62.58%</td>
<td>67.03%</td>
<td>57.05%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>43.61%</td>
<td>43.61%</td>
<td>43.61%</td>
<td>28.12%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>71.21%</td>
<td>71.21%</td>
<td>71.21%</td>
<td>53.79%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>51.65%</td>
<td>51.65%</td>
<td>51.65%</td>
<td>29.73%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>12 000</td>
<td>5 200</td>
<td>3 000</td>
<td>2 160</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>12 000</td>
<td>5 200</td>
<td>260</td>
<td>2 160</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>10 000</td>
<td>5 200</td>
<td>260</td>
<td>2 160</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>83.33%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th>Mvuwe/Damani Dam which is fed from Mbwedi River</th>
<th>Dzidi River</th>
<th>Mutshundudi River</th>
<th>Borehole Supply System</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>33.71%</td>
<td>28.26%</td>
<td>12.83%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>34.00%</td>
<td>34.00%</td>
<td>34.00%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Key Performance Area</th>
<th>Luphepe-Nwanedi</th>
<th>Makhado</th>
<th>Malamulele</th>
<th>Musina</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>60.73%</td>
<td>64.33%</td>
<td>70.43%</td>
<td>52.20%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>32.92%</td>
<td>29.00%</td>
<td>41.00%</td>
<td>59.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>77.17%</td>
<td>71.00%</td>
<td>78.00%</td>
<td>77.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>50.10%</td>
<td>45.00%</td>
<td>37.00%</td>
<td>32.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 400</td>
<td>10 360</td>
<td>76 000</td>
<td>9 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 400</td>
<td>10 360</td>
<td>76 000</td>
<td>9 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 400</td>
<td>9 000</td>
<td>35 279</td>
<td>9 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>86.87%</td>
<td>95.45%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th>Lupepe River</th>
<th>Albasini</th>
<th>Luvuvhu</th>
<th>Boreholes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>27.57%</td>
<td>28.68%</td>
<td>37.16%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>24.10%</td>
<td>39.40%</td>
<td>68.20%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Mutale</td>
<td>Mutshedzi</td>
<td>Ndzelele</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------</td>
<td>--------------</td>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td>68.48%</td>
<td>63.88%</td>
<td>52.85%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2014</strong></td>
<td>%</td>
<td>33.00%</td>
<td>42.00%</td>
<td>22.00%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2012</strong></td>
<td>%</td>
<td>77.00%</td>
<td>72.00%</td>
<td>44.00%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2011</strong></td>
<td>%</td>
<td>50.00%</td>
<td>46.00%</td>
<td>12.00%</td>
</tr>
<tr>
<td><strong>System Design Capacity</strong></td>
<td>kL/d</td>
<td>8 640</td>
<td>17 000</td>
<td>7 000</td>
</tr>
<tr>
<td><strong>System Available Capacity</strong></td>
<td>kL/d</td>
<td>8 640</td>
<td>17 000</td>
<td>7 000</td>
</tr>
<tr>
<td><strong>System Input Value</strong></td>
<td>kL/d</td>
<td>7 750</td>
<td>13 000</td>
<td>7 000</td>
</tr>
<tr>
<td><strong>Capacity Utilisation</strong></td>
<td>%</td>
<td>89.78%</td>
<td>76.47%</td>
<td>100.00%</td>
</tr>
<tr>
<td><strong>Resource Abstracted From</strong></td>
<td></td>
<td>Mutale</td>
<td>Mutshedzi Dam</td>
<td>Nzhellele Weir</td>
</tr>
<tr>
<td><strong>BDRR 2023</strong></td>
<td>%</td>
<td>29.72%</td>
<td>31.07%</td>
<td>52.05%</td>
</tr>
<tr>
<td><strong>BDRR 2022</strong></td>
<td>%</td>
<td>44.50%</td>
<td>31.50%</td>
<td>45.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Tshakhuma</th>
<th>Tshedza</th>
<th>Tshifhire Murunwa</th>
<th>Vondo</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td>57.90%</td>
<td>56.18%</td>
<td>54.75%</td>
<td>65.77%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2014</strong></td>
<td>%</td>
<td>43.61%</td>
<td>38.00%</td>
<td>27.00%</td>
<td>43.61%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2012</strong></td>
<td>%</td>
<td>71.21%</td>
<td>68.00%</td>
<td>72.00%</td>
<td>71.21%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2011</strong></td>
<td>%</td>
<td>51.65%</td>
<td>39.00%</td>
<td>44.00%</td>
<td>51.65%</td>
</tr>
<tr>
<td><strong>System Design Capacity</strong></td>
<td>kL/d</td>
<td>6 000</td>
<td>1 468</td>
<td>2 073</td>
<td>54 000</td>
</tr>
<tr>
<td><strong>System Available Capacity</strong></td>
<td>kL/d</td>
<td>5 200</td>
<td>1 468</td>
<td>2 073</td>
<td>54 000</td>
</tr>
<tr>
<td><strong>System Input Value</strong></td>
<td>kL/d</td>
<td>3 959</td>
<td>1 725</td>
<td>1 960</td>
<td>53 800</td>
</tr>
<tr>
<td><strong>Capacity Utilisation</strong></td>
<td>%</td>
<td>99.29%</td>
<td>117.51%</td>
<td>94.55%</td>
<td>99.67%</td>
</tr>
<tr>
<td><strong>Resource Abstracted From</strong></td>
<td></td>
<td>Tshakhuma Dam; Mutshedzi River</td>
<td>Tshikhwikwikhwi River</td>
<td>Phiphindi Dam</td>
<td></td>
</tr>
<tr>
<td><strong>BDRR 2023</strong></td>
<td>%</td>
<td>59.89%</td>
<td>27.64%</td>
<td>29.38%</td>
<td>35.84%</td>
</tr>
<tr>
<td><strong>BDRR 2022</strong></td>
<td>%</td>
<td>34.00%</td>
<td>49.90%</td>
<td>42.00%</td>
<td>34.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Xikundu</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td>65.73%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2014</strong></td>
<td>%</td>
<td>41.20%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2012</strong></td>
<td>%</td>
<td>78.39%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2011</strong></td>
<td>%</td>
<td>36.93%</td>
</tr>
<tr>
<td><strong>System Design Capacity</strong></td>
<td>kL/d</td>
<td>23 000</td>
</tr>
<tr>
<td><strong>System Available Capacity</strong></td>
<td>kL/d</td>
<td>23 000</td>
</tr>
<tr>
<td><strong>System Input Value</strong></td>
<td>kL/d</td>
<td>14 350</td>
</tr>
<tr>
<td><strong>Capacity Utilisation</strong></td>
<td>%</td>
<td>62.39%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Xikundu</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
<td>---------</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Luvuvhu</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>34.14%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>68.20%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Khalavha Water Purification Plant - 76%**
Swartland booster pumpstation and water network: Secured and well maintained

Theewaterskloof: Grabouw WTW clarifiers, routine monitoring to ensure optimal clarification
10. MPUMALANGA PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE

- 17 WSAs & 100 systems audited
- 1 Water Board & 4 WSPs
- 69% TSA score
- 54.0% BDRR - Medium risk
- 8 BD Certifications
- 34 Critical State systems
The Mpumalanga province provides drinking water to a total population of 4,770,957 persons in South Africa.

An audit attendance record of 100% of the 17 WSAs, with 100 water supply systems across the province, 1 Water Board (Rand Water) and 4 Water Service Providers (Sembcorp-Silulumanzi, Eskom, Glencore, and Anglo operations/Nu Water systems) and affirms the province’s commitment to the Blue Drop national incentive-based regulatory programme. The main Bulk Water Supplier is Rand Water who supplies potable water to 13 water supply systems in 4 WSAs.

The Regulator determined that 4 water supply systems scored more than 95% when measured against the Blue Drop standards and thus qualified for the prestigious Blue Drop Certification. In 2014, 9 water supply systems were awarded Blue Drop status. Using the 2014 audit results as comparative baseline, the province shows a decline in excellence for 2023.

Nine (9) of 17 WSAs improved on their 2014 scores as seen in the table below. The remaining 8 WSAs regressed to lower Blue Drop scores compared to their 2014 baselines. The Govan Mbeki LM (Rand Water), Victor Khanye LM (Rand Water) and Thembislile LM (Rand Water) are the best performing WSAs in the province. However, Mbombela/Umjindi achieved Blue Drop Certifications for 4 water supply systems in total. The Blue Drop scores of these top WSA performers were supported by excellent technical site assessment scores of 92% for the Nelspruit (New) WTW in Mbombela/Umjindi, followed by the Bundu WTW in Thembislile LM with a TSA score of 88%. 34 water supply systems were identified to be in a critical state in the province compared with 23 water supply systems in 2014.

The province’s overall Blue Drop performance is characterised by particular strengths when measured against the KPAs. The water supply systems operated by Rand Water and the respective Water Service Provider and Nkomazi LM stand out for its compliance, good practice and risk management practices that are well embedded in the water supply business. The KPAs that require attention and are reflecting scores below 50% are KPA 3 Financial Management (49%), KPA 4 Technical Management (35.3%) and KPA 5 Drinking Water Quality Compliance (43.3%).

The provincial Blue Drop Risk Rating (BDRR) remained in the medium risk category but improved slightly from 54.8% in 2022 (BD PAT) to 54.0% in 2023. 52 (of 100) water supply systems are situated in the low risk category, 16 WSSs in the medium risk category, 23 WSSs in the high risk category, and 9 WSSs in the critical risk category.

The Regulator is optimistic that the 2023 Blue Drop report provides an updated residual basis from where a positive trajectory for water services delivery and improved performance will follow in the next BD audit. Municipalities and their service providers are encouraged to start preparation for the next Blue Drop audit cycle, which is planned to cover the financial year 2023/24 and released in 2025. The 2023 Blue Drop status for WSAs in the province are summarised in the table below.

### Table 151 - 2023 Blue Drop Summary

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2014 BD Score (%)</th>
<th>2023 BD Score (%)</th>
<th>2023 BD Certified ≥95%</th>
<th>2023 Critical State (&lt;31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>53.2%</td>
<td>19.1%↓</td>
<td></td>
<td>All 8 WSSs</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>64.2%</td>
<td>62.2%↓</td>
<td></td>
<td>Greater Dipaleseng</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>10.6%</td>
<td>7.0%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>89.3%</td>
<td>53.4%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ermahzeni LM</td>
<td>50.0%</td>
<td>31.2%↓</td>
<td></td>
<td>Belfast, Dullstroom</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>43.6%</td>
<td>65.7%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>77.2%</td>
<td>90.8%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>14.5%</td>
<td>33.5%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>88.9%</td>
<td>69.3%↓</td>
<td>Karino, Matsulu, Nelspruit, Primkop</td>
<td>Elandsheok, Hazyview, White River, White River Country &amp; Golf Estates, Mjindini Trust-Madakwa, Rimers-Suid Kaap, Sheba, Mjejane, Legogote, Nyongane River, Dwaleni, Mshadza</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>32.4%</td>
<td>54.5%↑</td>
<td>Rural WSS</td>
<td></td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>18.1%</td>
<td>21.6%↑</td>
<td>Breyten, Davel, Douglas dam, Lothair, South works (noitgedacht farm)</td>
<td></td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>51.5%</td>
<td>68.6%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pixley Ka Serne LM</td>
<td>43.4%</td>
<td>45.0%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>97.1%</td>
<td>67.4%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>9.1%</td>
<td>8.2%↓</td>
<td>Coromandel, Graskop, Lydenburg, Sabie</td>
<td></td>
</tr>
<tr>
<td>Thembislile LM</td>
<td>67.6%</td>
<td>75.3%↑</td>
<td>Langkloof</td>
<td></td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>63.5%</td>
<td>90.1%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td>4</td>
<td>34</td>
</tr>
</tbody>
</table>

↑= improvement, ↓= regress, →= no change
The Department of Water and Sanitation acknowledges the excellence in water services management achieved for the Blue Drop Audit year of 2021-22. Four (4) Blue Drop Certificates are awarded in the Mpumalanga Province to the water supply systems of Mbombela/Umjindi:

### Province

<table>
<thead>
<tr>
<th>2023 Blue Drop Certified Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mbombela-Umjindi LM (Rand Water)</td>
</tr>
<tr>
<td>o Karino Water Treatment Works</td>
</tr>
<tr>
<td>o Matsulu</td>
</tr>
<tr>
<td>o Nelspruit Supply System</td>
</tr>
<tr>
<td>o Primkop WTW</td>
</tr>
</tbody>
</table>

#### Background to Water Delivery and Distribution Infrastructure

The total volume of water treated in the province is 713,159 kl/d. 17 WSAs, 1 Water Board (Rand Water) and 4 Water Service Providers (Sembcorp-Silulumanzi, Eskom, Glencore and Anglo operations/Nu Water systems) are responsible for water services through a water network comprising of:

- 107 WTWs with the bulk of the water treated and supplied by Emalahleni LM, Mbombela/Umjindi, Bushbuckridge LM and Nkomazi LM with a total of 63 WTWs with a total Average Daily Production of 554,585 kl/d supplying potable water to 52 WSSs
- 6 WSSs in Govan Mbeki LM, Victor Khanye LM and Thembisile LM are provided with bulk water supply from the Rand Water WTWs located in Gauteng
- 272 pump stations, 2,075 km bulk water supply lines, 9,088 km reticulation pipe lines, and 640 reservoirs/ towers (excluding all the systems that were unable to provide data).

#### Table 152 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes

<table>
<thead>
<tr>
<th>Micro Size Plants</th>
<th>Small Size Plants</th>
<th>Medium Size Plants</th>
<th>Large Size Plants</th>
<th>Macro Size Plants</th>
<th>Unknown (NI)*</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;500 kl/day</td>
<td>500 - &lt;2,000 kl/day</td>
<td>2,000 - &lt;10,000 kl/day</td>
<td>10,000 - &lt;25,000 kl/day</td>
<td>&gt;25,000 kl/day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of WTWs, Boreholes, Springs</td>
<td>7 (7%)</td>
<td>20 (19%)</td>
<td>54 (50%)</td>
<td>16 (15%)</td>
<td>10 (9%)</td>
<td>107</td>
</tr>
<tr>
<td>Total Design Capacity (kl/day)</td>
<td>1,639</td>
<td>20,140</td>
<td>233,200</td>
<td>243,960</td>
<td>574,000</td>
<td>None</td>
</tr>
<tr>
<td>Total Available Capacity (kl/day)</td>
<td>1,668</td>
<td>20,840</td>
<td>229,033</td>
<td>219,635</td>
<td>556,000</td>
<td>None</td>
</tr>
<tr>
<td>Average Daily Treatment Volume (kl/day)</td>
<td>2,609</td>
<td>6,421</td>
<td>134,831</td>
<td>124,663</td>
<td>444,635</td>
<td>23 NI</td>
</tr>
<tr>
<td>Total SIV (kl/day)</td>
<td>2,779</td>
<td>11,029</td>
<td>191,666</td>
<td>205,362</td>
<td>622,421</td>
<td>1,033,257</td>
</tr>
<tr>
<td>Design Capacity Utilisation (%)</td>
<td>159%</td>
<td>32%</td>
<td>58%</td>
<td>51%</td>
<td>77%</td>
<td>66%</td>
</tr>
<tr>
<td>Available Capacity Utilisation (%)</td>
<td>156%</td>
<td>31%</td>
<td>59%</td>
<td>57%</td>
<td>80%</td>
<td>69%</td>
</tr>
</tbody>
</table>

* “Unknown” means the number of WTWs with NI (No Information) on design capacity or available capacity or SIV

The audit verified a total installed design capacity of 1,072,939 kl/d and a total available design capacity of 1,027,176 kl/d with most of this capacity residing in the medium to macro-sized water treatment plants. Collectively, the 107 WTWs produce 713,159 kl/d and distributes 1,033,257 kl/d across the water networks. The larger SIV total is due to Rand Water supplying potable water from their WTWs in Gauteng to 4 WSAs in the Mpumalanga province. By comparing the available treatment capacity with the treated water volume, a spare treatment capacity of 314,017 kl/d is available (31%) to meet additional future demands. However, the WUE for the province is fairly high (ave. 231 l/p/d) compared to the international WUE benchmark of 180 l/p/d, indicating a high ratio between effective water use and actual water abstraction. Going forward, the province will have to dedicate significant resources to curb water losses and NRW.
In some cases, a Bulk Water Supplier supplies water across provincial borders and it is difficult to report accurately on design capacity and available capacity at provincial level, as the statistical data may become repetitive. Therefore, the reporting on the total system input volumes (SIV) would provide more accurate figures on the supply of treated water to the various water supply systems.

The total SIV in the province is 1,033,257 kl/d and the average daily treatment volume is 713,159 kl/d and this indicates that the treated volume is less than the total SIV (69%) as some WTWs are not measuring their average daily treatment volumes and also that Rand Water is supplying potable water from their WTWs in Gauteng to 4 WSAs in the Mpumalanga province. The largest contributors to the total SIV are Emalahleni LM, Mbombela/Umjindi, Bushbuckridge LM and Nkomazi LM with a total Average Daily Production of 554,585 kl/d supplying potable water to 52 WSSs. Diagnostic no. 2 to follow herein will unpack these statistics in more detail.

The water distribution infrastructure is summarised in the table below.

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSS with no WSP/WB</th>
<th># WSS with WSP/WB</th>
<th># Pump Stations (#)</th>
<th>Bulk Water Supply Lines (km)</th>
<th>Reticulation pipe lines (km)</th>
<th># Reservoirs/Towers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td></td>
<td>13</td>
<td>704</td>
<td>0</td>
<td>35</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td></td>
<td>23</td>
<td>429</td>
<td>721</td>
<td>147</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td></td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>1</td>
<td></td>
<td>4</td>
<td>28</td>
<td>Ni</td>
<td>4</td>
</tr>
<tr>
<td>Emakhazeni LM</td>
<td>4</td>
<td></td>
<td>11</td>
<td>Ni</td>
<td>Ni</td>
<td>12</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>3</td>
<td>3</td>
<td>37</td>
<td>90</td>
<td>444</td>
<td>26</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>1</td>
<td></td>
<td>12</td>
<td>61</td>
<td>1,224</td>
<td>26</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>2</td>
<td></td>
<td>7</td>
<td>Ni</td>
<td>Ni</td>
<td>5</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>12</td>
<td>6</td>
<td>47</td>
<td>381</td>
<td>1,427</td>
<td>167</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>5</td>
<td></td>
<td>13</td>
<td>123</td>
<td>1,441</td>
<td>18</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5</td>
<td></td>
<td>8</td>
<td>66</td>
<td>207</td>
<td>14</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>16</td>
<td></td>
<td>43</td>
<td>430</td>
<td>502</td>
<td>86</td>
</tr>
<tr>
<td>Pixley Ka Seme LM</td>
<td>4</td>
<td></td>
<td>17</td>
<td>Ni</td>
<td>Ni</td>
<td>15</td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>6</td>
<td></td>
<td>19</td>
<td>139</td>
<td>1,040</td>
<td>15</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>4</td>
<td></td>
<td>7</td>
<td>Ni</td>
<td>Ni</td>
<td>12</td>
</tr>
<tr>
<td>Thembisle LM</td>
<td>2</td>
<td></td>
<td>3</td>
<td>225</td>
<td>1,328</td>
<td>50</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>2</td>
<td></td>
<td>2</td>
<td>28</td>
<td>753</td>
<td>8</td>
</tr>
<tr>
<td>Totals</td>
<td>85</td>
<td>15</td>
<td>272</td>
<td>2,705</td>
<td>9,088</td>
<td>640</td>
</tr>
</tbody>
</table>
Provincial Blue Drop Analysis

The 100% response from the 17 WSAs audited demonstrates a firm commitment to progressive water services management in the province. Local government reforms resulted in the merging of Umjindi LM and Mbombela into Mbombela/Umjindi LM. Therefore, 17 WSAs were audited in 2023 compared to the 18 WSAs in 2014.

Table 154 - Blue Drop Comparative Analysis from 2012 to 2023

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>2012</th>
<th>2014</th>
<th>2023</th>
<th>Performance trend 2014 and 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSAs assessed (#)</td>
<td>18 (100%)</td>
<td>18 (100%)</td>
<td>17 (100%)</td>
<td>→</td>
</tr>
<tr>
<td>Water supply systems assessed (#)</td>
<td>91</td>
<td>100</td>
<td>100</td>
<td>→</td>
</tr>
<tr>
<td>Blue Drop scores ≥50% (#)</td>
<td>35 (38%)</td>
<td>49 (49%)</td>
<td>55 (55%)</td>
<td>↑</td>
</tr>
<tr>
<td>Blue Drop scores &lt;50% (#)</td>
<td>65 (72%)</td>
<td>51 (51%)</td>
<td>45 (45%)</td>
<td>↑</td>
</tr>
<tr>
<td>Blue Drop Certifications (#)</td>
<td>10</td>
<td>9</td>
<td>4</td>
<td>↓</td>
</tr>
<tr>
<td>Lowest Technical Site Assessment Score (%)</td>
<td>23%</td>
<td>27%</td>
<td>48%</td>
<td>↑</td>
</tr>
<tr>
<td>Highest Technical Site Assessment Score (%)</td>
<td>90%</td>
<td>97%</td>
<td>92%</td>
<td>↓</td>
</tr>
</tbody>
</table>

NA = Not Applied, NI = No Information
↑ = improvement, ↓ = regress, → = no change

Figure 114 - Blue Drop trend analysis over the period 2012 to 2023, indicating the percentage BD scores above and below 50%

The trend analysis indicates that:

- The no. of systems audited has remained the same from the last BD audit in 2014
- The no. of systems with BD scores of ≥50% increased from 49 (49%) in 2014 to 55 (55%) in 2023
- This trend was reversed with no. of systems with a BD score of ≤50% decreasing from 51 (51%) in 2014 to 45 (45%) in 2023
- Blue Drop Certifications decreased from 9 awards in 2014 to 4 awards in 2023
- The lowest TSA score increased from 27% in 2014 to 48% in 2023, with the highest TSA score decreasing from 97% in 2014 to 92% in 2023
- The overall performance trend indicates a progression from 2014 to 2023
- Despite this positive trend, this trajectory still reinforces the need for regular audits to ensure timely turnaround and continued improvement for many of the systems
- The positive trend implies that performance has increased marginally despite the absence of regulatory engagement of the BD audits between 2014 to 2023.

Figure 115 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right)
Comparative analysis of the 2014 and 2023 blue drop scores, indicates that most of the system scores are in the >50–<80% (Average Performance) category, with the <31% (Critical Performance) being the next largest category. It is concerning that 34 systems in 2023 reside in Critical Performance category.

In summary, trend analysis since 2014 to 2023 indicate as follows:

- Systems in a ‘critical state’ increased from 23 systems to 34 systems
- Systems in a ‘poor state’ decreased from 28 systems to 11 systems
- Systems in an ‘average state’ increased from 33 systems to 42 systems
- Systems in the ‘excellent and good state’ decreased from 16 systems (16%) to 13 systems (13%).

**Provincial BDRR Analysis**

The Blue Drop Risk Rating (BDRR) analysis assesses the risk across the entire water supply network. The BDRR formula was updated in 2021 to include an added risk indicator, i.e. ‘E: Water Safety Plans’, to address the risk assessment requirements outlined in SANS 241 of 2015. The BDRR now contains 5 risk indicators, i.e. design capacity (A), operational capacity (B), water quality compliance (C), technical capacity (D), and water safety plans (E). The results from the BDRR analyses are summarised in the table and figure following.

### Table 155 - Municipal BDRR/BDRRmax Comparative Analysis from 2022 and 2023

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th># WBs/WSPs</th>
<th>2022 (BD PAT)</th>
<th>2023 (BD Audit)</th>
<th>Performance Trend 2022 and 2023</th>
<th>BDRR Risk Category Split</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2022</td>
<td>2023</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2022</td>
<td>2023</td>
<td></td>
<td>0–&lt;50%</td>
</tr>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td></td>
<td>63.9%</td>
<td>78.5%</td>
<td>↓</td>
<td>7</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td></td>
<td>38.6%</td>
<td>36.4%</td>
<td>↑</td>
<td>12</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td></td>
<td>97.0%</td>
<td>100.0%</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>2</td>
<td></td>
<td>37.2%</td>
<td>64.2%</td>
<td>↓</td>
<td>1</td>
</tr>
<tr>
<td>Emakhazeni LM</td>
<td>4</td>
<td></td>
<td>40.9%</td>
<td>54.6%</td>
<td>↓</td>
<td>2</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>6</td>
<td>3</td>
<td>52.6%</td>
<td>54.2%</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>1</td>
<td>1</td>
<td>40.8%</td>
<td>32.4%</td>
<td>↑</td>
<td>1</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>2</td>
<td></td>
<td>60.6%</td>
<td>80.9%</td>
<td>↓</td>
<td>1</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>18</td>
<td>6</td>
<td>95.2%</td>
<td>47.4%</td>
<td>↑</td>
<td>6</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>5</td>
<td></td>
<td>37.9%</td>
<td>44.4%</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5</td>
<td></td>
<td>52.3%</td>
<td>76.3%</td>
<td>↑</td>
<td>1</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>16</td>
<td></td>
<td>47.5%</td>
<td>46.3%</td>
<td>↑</td>
<td>13</td>
</tr>
<tr>
<td>Pixley Ka Serne LM</td>
<td>4</td>
<td></td>
<td>59.1%</td>
<td>56.8%</td>
<td>↑</td>
<td>1</td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>6</td>
<td></td>
<td>33.4%</td>
<td>37.8%</td>
<td>↓</td>
<td>5</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>4</td>
<td></td>
<td>87.1%</td>
<td>86.5%</td>
<td>↑</td>
<td>3</td>
</tr>
<tr>
<td>Thembsile LM</td>
<td>5</td>
<td>3</td>
<td>53.7%</td>
<td>42.5%</td>
<td>↑</td>
<td>3</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>2</td>
<td>2</td>
<td>34.5%</td>
<td>30.4%</td>
<td>↑</td>
<td>2</td>
</tr>
<tr>
<td><strong>Totals &amp; %BDRR/BDRRmax</strong></td>
<td><strong>100</strong></td>
<td><strong>15</strong></td>
<td><strong>54.8%</strong></td>
<td><strong>54.0%</strong></td>
<td>↑</td>
<td><strong>52</strong></td>
</tr>
</tbody>
</table>

↑ = improvement, ↓ = regress, → = no change

**Figure 116 - a) WSS risk distribution and trends for 2022 and 2023; b) Colour legend**
Trend analysis of the BDRR ratings for 2022 and 2023 indicates that:

- The 2023 audit cycle highlighted a slightly progressive shift with a decrease in the no. of low risk WSSs (61 to 52), a decrease in the medium risk WSSs (20 to 16), and an increase in the high risk WSSs (6 to 23).

### Regulatory Enforcement

Water supply systems which fail to achieve the minimum Blue Drop target of 31%, are placed under regulatory focus. The Regulator requires these WSAs to submit a detailed corrective action plan (CAP) within 20 working days from publishing of this report. 34 WSSs received Blue Drop scores below 31%, hence are placed under **regulatory surveillance**, in accordance with the Water Services Act (108 Of 1997). DWS together with COGTA will through the grant allocation systems ensure priority is given to application of grants to rectify/restore the water services treatment and supply shortcomings identified in this report.

#### Table 156 - WSSs with <31% Blue Drop scores

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 BD Score</th>
<th>WSSs with &lt;31% score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>19.1%</td>
<td>All 8 WSSs</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>7.0%</td>
<td>Greater Dipaleseng</td>
</tr>
<tr>
<td>Emakhzazi LM</td>
<td>31.2%</td>
<td>Belfast, Dullstroom</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>69.3%</td>
<td>Elandshoek, Hazvyview, White River, White River Country &amp; Golf Estates, Mjindini Trust-Madakwa, Rimers-Suid Kaap, Sheba, Mjejane, Legogote, Nyongane River, Dwaleni, Mshadza</td>
</tr>
<tr>
<td>Mkondo LM</td>
<td>54.5%</td>
<td>Rural WSS</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>21.6%</td>
<td>Breyten, Davel, Douglas dam, Lothair, South works (noitgedacht farm)</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>8.2%</td>
<td>Coromandel, Graskop, Lydenburg, Sabie</td>
</tr>
<tr>
<td>Thembisile LM</td>
<td>75.3%</td>
<td>Langkloof</td>
</tr>
</tbody>
</table>

The following WSAs and their associated water treatment systems are in high and/or critical BDRR risk positions, which means that some or all the risk indicators are in a precarious state, i.e. operational capacity, design capacity utilisation, water quality compliance, technical capacity, and water safety plans. WTWs in high risk and critical risk positions pose a serious risk to public health. The following WSAs will be required to assess their risk contributors and to provide corrective measures in the above-mentioned action plans to mitigate these risks.

#### Table 157 - %BDRR/BDRRmax scores and WSSs in critical and high-risk space

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 Average %BDRR/BDRRmax</th>
<th>WSSs in critical and high-risk space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>78.5%</td>
<td>Rudimentary Boreholes</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>100.0%</td>
<td>The Greater Dipaleseng LM</td>
</tr>
<tr>
<td>Emakhzazi LM</td>
<td>54.6%</td>
<td>Dullstroom</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>80.9%</td>
<td>Standerton</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>47.4%</td>
<td>Mjejane, Legogote, Nyongane River Scheme, Dwaleni, Mshadza, Sheba</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>76.3%</td>
<td>Elandshoek, New Hazvyview, Mjindini Trust-Madakwa, White River, White River Country Estates</td>
</tr>
<tr>
<td>Piley Ka Seme LM</td>
<td>56.8%</td>
<td>Davel, Douglas dam, Lothair, South works (noitgedacht farm)</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>85.5%</td>
<td>Coromandel</td>
</tr>
<tr>
<td>Thembisile LM</td>
<td>42.5%</td>
<td>Graskop, Lydenburg, Sabie</td>
</tr>
</tbody>
</table>

#### Totals

<table>
<thead>
<tr>
<th></th>
<th>9 of 100 (9%)</th>
<th>23 of 100 (23%)</th>
</tr>
</thead>
</table>

Good practice risk management requires that the Water Safety Plans (WaSPs) are informed by meaningful Process and Condition Audits, supported by zealous implementation of corrective measures and ongoing monitoring of risk movement. 9 (of 100) WSSs in 4 WSAs are in critical risk positions followed by 23 (of 100) WSSs in high risk positions in 8 WSAs. Most of these water supply systems are in Albert Luthuli LM and Mbombela/Umjindi.

### Performance Barometer

The **Blue Drop Performance Barometer** presents the individual WSA Blue Drop Scores, which essentially reflects the level of mastery that a WSA has achieved in terms of its overall water services business. The bar chart below compares the 2014 and 2023 BD scores, ranked from highest to lowest performing WSA in 2023. The Govan Mbeki LM and Victor Khanye LM are commended for their good performance and improving their municipal blue drop scores. 9 WSAs improved on their 2014 scores and 8 WSAs regressed to lower Blue Drop scores compared to their 2014 baseline. The blue drop scores for Mbombela/Umjindi, Steve Tshwete LM and Dr JS Moroka LM regressed from excellent and good performances in 2014 to average performances in 2023.
The BDRR Risk Barometer expresses the level of risk that a WSA poses in respect of its water supply system. The schematic below presents the BDRR in ascending order – with the low-risk WSAs on the left and higher risk WSAs to the far right. The analysis reveals that there are 4 medium risk WSAs, 4 high risk WSAs and 1 critical risk WSA in the province. 8 WSAs are situated in the low risk positions despite.

**Provincial Best Performers**

The **Govan Mbeki Local Municipality (Rand Water)** is the BEST PERFORMING WSA in the province, based on the following record of excellence:
- 2023 Blue Drop Score of 90.8%
- 2014 Blue Drop Score of 77.2%
- Improvement on the BDRR from 40.8% in 2022 to 32.4% in 2023
- 1 system (100%) in the low risk position
- No TSA undertaken there is no WTW in the municipality

The **Victor Khanye Local Municipality (Rand Water)** is the second-best scoring WSA:
- 2023 Blue Drop Score of 90.1%
- 2014 Blue Drop Score of 63.5%
- Improvement on the BDRR from 34.5% in 2022 to 30.4% in 2023
- 2 systems (100%) in low risk position
- TSA score of 64% for Delmas

The **Thembisile Local Municipality (Rand Water)** is the third-best scoring WSA:
- 2023 Blue Drop Score of 75.3%
- 2014 Blue Drop Score of 67.6%
- Improvement on the BDRR from 53.7% in 2022 to 42.5% in 2023
- 3 systems (60%) in low risk positions
- TSA score 88% for Bundu
The BD audit process collects a vast amount of data that yield valuable insight into the state of the water services delivery and water quality in each province. Five focus areas or ‘diagnostics’ have been configured from the 2021/22 audit data and are discussed below.

### Diagnostic 1: Technical Competence

**Aim:** This focus area assesses the technical human resources capacity that is available to manage and operate water treatment processes and maintain the related water infrastructure. Theory advocates that a correlation exists between human resources capacity and capability (sufficient number of appropriately qualified staff) and a WSI’s performance. Thus, it is hypothesised that high HR capacity would translate to compliant water treatment plants and functional water supply network. Blue Drop assesses technical compliance on two levels: i) WTW plant supervision and process control staff and ii) Technical, scientific and maintenance staff.

**Findings:** According to regulations, water treatment plants are classified as Class A, B, C, D or E plants. Similarly, Process Controllers and Plant Supervisors are registered as Class I, II, III, IV, V or VI Process Controllers. Higher classed plants require a higher level of Process Controllers due to technology complexity and strict water quality standards. Technical compliance of PCs and Supervisors is determined against the Blue Drop standards, as defined by Reg. 2834 of the Water Act 1956 (Act 54 of 1956) for the erection, enlargement, operation, and registration of water care works and draft Reg. 813 of the Water Services Act (No 108 of 1997). Regulation 2834 has been replaced by Regulation 3630 in 2023 but will only come in effect during the next Blue Drop audit cycle.

#### Table 158 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs

<table>
<thead>
<tr>
<th>Diagnostic #</th>
<th>Diagnostic Description</th>
<th>Diagnostic Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical Competence</td>
<td>KPA 1, 2 &amp; Bonus</td>
</tr>
<tr>
<td>2</td>
<td>Treatment Capacity and Flow Distribution</td>
<td>KPA 4 &amp; Generic Audit data set</td>
</tr>
<tr>
<td>3</td>
<td>Drinking Water Quality (DWQ) Monitoring and Compliance</td>
<td>KPA 2 &amp; 4 &amp; Bonus</td>
</tr>
<tr>
<td>4</td>
<td>Technical Site Assessments</td>
<td>TSA and 2023 Blue Drop Watch Report</td>
</tr>
<tr>
<td>5</td>
<td>Operation, Maintenance and Refurbishment of Assets</td>
<td>KPA 3 &amp; 4</td>
</tr>
</tbody>
</table>

#### Diagnostic 1: Technical Competence

**Aim:** This focus area assesses the technical human resources capacity that is available to manage and operate water treatment processes and maintain the related water infrastructure. Theory advocates that a correlation exists between human resources capacity and capability (sufficient number of appropriately qualified staff) and a WSI’s performance. Thus, it is hypothesised that high HR capacity would translate to compliant water treatment plants and functional water supply network. Blue Drop assesses technical compliance on two levels: i) WTW plant supervision and process control staff and ii) Technical, scientific and maintenance staff.

**Findings:** According to regulations, water treatment plants are classified as Class A, B, C, D or E plants. Similarly, Process Controllers and Plant Supervisors are registered as Class I, II, III, IV, V or VI Process Controllers. Higher classed plants require a higher level of Process Controllers due to technology complexity and strict water quality standards. Technical compliance of PCs and Supervisors is determined against the Blue Drop standards, as defined by Reg. 2834 of the Water Act 1956 (Act 54 of 1956) for the erection, enlargement, operation, and registration of water care works and draft Reg. 813 of the Water Services Act (No 108 of 1997). Regulation 2834 has been replaced by Regulation 3630 in 2023 but will only come in effect during the next Blue Drop audit cycle.

#### Table 159 - No. compliant versus shortfall in Supervisor and Process Controller staff

<table>
<thead>
<tr>
<th>WSA WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th># Available Compliant Staff</th>
<th>Staff Shortfall</th>
<th>Ratio*</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PCs</td>
<td>Supervisor</td>
<td>Total</td>
<td>PCs</td>
</tr>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td>8</td>
<td>43</td>
<td>3</td>
<td>46</td>
<td>5</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td>12</td>
<td>44</td>
<td>21</td>
<td>65</td>
<td>12</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Emakhandeni LM</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>7</td>
<td>6</td>
<td>24</td>
<td>5</td>
<td>29</td>
<td>9</td>
</tr>
<tr>
<td>Govan Mbeki LM**</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>22</td>
<td>18</td>
<td>51</td>
<td>36</td>
<td>87</td>
<td>35</td>
</tr>
<tr>
<td>Mkondo LM</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Msukaliwa LM</td>
<td>5</td>
<td>5</td>
<td>7</td>
<td>2</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>22</td>
<td>16</td>
<td>79</td>
<td>45</td>
<td>124</td>
<td>12</td>
</tr>
<tr>
<td>Pkley Ka Serne LM</td>
<td>4</td>
<td>4</td>
<td>21</td>
<td>0</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>7</td>
<td>6</td>
<td>17</td>
<td>22</td>
<td>39</td>
<td>9</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Thembisile LM</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

* Ratio depicts the no. of qualified staff divided by the no. of WTWs operated by this no. of staff. E.g., Bushbuckridge has 65 compliant Sups + PCs, divided by 12 WTWs = 5.4 qualified staff per WTW
** Govan Mbeki LM receives water from the Rand Water WTWs - it has no WTW
NB: “Compliant staff” means qualified and registered staff that meets the BD standard for a particular Class Works. “Staff shortfall” means staff that do not meet the BD standard for a particular Class of works (+1 for a shift) and/or staffing gaps exist at the respective WTWs.
Competent human resources are vital enablers in ensuring efficient and sustainable management of water services and delivery of safe water quality to consumers. For the province in general, the operational competencies are found to be excellent for the Supervisory staff and predominantly excellent for the PCs in Dr JS Moroka LM and Victor Khanye LM, with the exception being for PC staff shortages in 15 of the municipalities.

![Figure 119 - Schematic illustration of compliant and shortfall of Supervisors (a) and Process Controllers (b)](image)

Plant Supervisors: The pie charts indicate that 92% (143 of 155) of the Supervisors complies with the BD standard, with 12 shortfalls. Process Controllers: Similarly, 71% (319 of 451) of the PC staff complies with the required standards, noting a zero shortfall for Dr JS Moroka LM and Victor Khanye LM. There is a 29% (132 of 451) shortfall in Process Controllers with the highest shortfall in Mbombela/Umjindi.

Blue Drop standards require of Class A and B plants to employ dedicated Supervisors per WTW and Process Controllers per shift per works, whereas Class C to E plants may share Supervisory staff across works. Shifts have been introduced to ensure optimal operations while addressing security risks, particularly as it relates to theft and vandalism. Telemetry also reduces the requirement for on-site staff during night shifts, but these relaxations have to be done within the DWS regulatory guidelines.

The Regulator expects correlation between the competence of an operational team and the performance of a WTW, as measured by the BD score. The data indicates as follows:

- All the WSAs have qualified PCs in place but only 2 WSAs do not have shortfalls in qualified PC staff
- 12 WSAs have qualified Supervisors per WTW. The Supervisor totals will be inflated as it is not possible to differentiate between what Supervisors are shared/roaming with other Class C to E WTWs
- 8 WSAs have shortfalls in qualified Supervisors and 15 WSAs have shortfalls in qualified Process Controllers.

It is expected that a correlation would exist between the competence of an operational team and the performance of a water treatment works, as measured by the BD score. The results from the ratio analysis indicate high ratios (>3.0) for 10 WSAs with WTWs.

Overall, the comparative bar chart on the following page confirms a reasonably close correlation between high ratios (ranging from 3.0 to 7.0) and average BD scores with anomalies for Albert Luthuli LM, Pixley ka Seme LM and Emakhazeni LM that have a high number of qualified PCs per WTW. In contrast, low ratios and low BD scores are reflected in the bottom half of the schematic.
(ii) Technical, Scientific and Maintenance staff

In addition to operational capacity (above), good management practice also requires access to qualified engineers, technicians, technologists, MISA appointees, scientists, and maintenance capability (below). Such competencies could reside in-house or accessible through term contracts and external specialists.

Table 160 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Maintenance Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td>8</td>
<td>Internal+Specific Outsourcing; Internal Team (only)</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td>12</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td>1</td>
<td>No Capacity</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>1</td>
<td>1</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Emakhazeni LM</td>
<td>4</td>
<td>4</td>
<td>Internal+Specific Outsourcing; Internal+Term Contract</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>7</td>
<td>6</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>None</td>
<td>1</td>
<td>Internal+Specific Outsourcing; Internal Team (only)</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>2</td>
<td>2</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>22</td>
<td>18</td>
<td>Internal+Specific Outsourcing; Internal Team (only); Internal+Term Contract; No Capacity</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>5</td>
<td>5</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5</td>
<td>5</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>22</td>
<td>16</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Pixley Ka Seme LM</td>
<td>4</td>
<td>4</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>7</td>
<td>6</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>4</td>
<td>4</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Thembisile LM</td>
<td>2</td>
<td>5</td>
<td>Internal+Specific Outsourcing; Internal+Term Contract</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>1</td>
<td>2</td>
<td>Internal+Specific Outsourcing; Internal+Term Contract</td>
</tr>
<tr>
<td>Totals</td>
<td>107</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table 161 - Qualified Technical Staff (#)

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Technicians</th>
<th>Technologists</th>
<th>Engineers</th>
<th>MISA appointees</th>
<th>Total</th>
<th>Technical Shortfall (#)</th>
<th>Qualified Scientists (#)</th>
<th>Scientists Shortfall (#)</th>
<th>Ratio*</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0.3</td>
<td>19.1%</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td>12</td>
<td>9</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0.9</td>
<td>62.2%</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0.0</td>
<td>7.0%</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>5.0</td>
<td>53.4%</td>
</tr>
</tbody>
</table>
In terms of maintenance capacity, all the municipalities in the province have a reasonable contingent of qualified technical and maintenance staff. The maintenance staff comprises of a collective of in-house, contracted, or outsourced personnel. The data indicates that:

- 3 of 17 (18%) WSA have in-house maintenance teams
- 6 of 17 (35%) WSA have internal maintenance teams supplemented with term contracts
- 14 of 17 (82%) WSA have internal maintenance teams supplemented with specific outsourced services
- 2 of 17 (12%) WSA have some of their WSSs as having no maintenance capacity.

In general, the province presents a strong case for qualified professional technical staff as follows:

- A total of 121 qualified staff comprised of 17 Engineers, 55 Technologists, 46 Technicians, 3 MISA appointees (qualified); and 7 SACNASP registered scientists are assigned to 6 WSA only
- A total shortfall of 47 persons is identified, consisting of 20 technical staff and 27 scientists
- 12 WSA have a total shortfall of 20 qualified technical staff - the highest indicated for Dipaleseng LM (4), and 5 WSA (2 each)
- 14 WSAs have access to credible laboratories that comply with the Blue Drop standards.

Figure 121 - Graphic illustration of the number and %: a) qualified engineering/technical staff; b) professional scientists; c) access to credible laboratory services that comply with Blue Drop standards.

Ratio analysis has been done to determine the number of qualified technical and scientific staff assigned per WSS. It is expected that a higher ratio would correspond with well-performing and maintained water supply systems, as represented by the BD score.
The schematic above does show some correlation between high ratios (>2.0) and average-to-high BD scores for the top five in the schematic above with the exception of Lekwa LM. In contrast, some of the WSAs in the bottom half of the schematic show a correlation between lower ratios and low BD scores but 3 WSAs show average BD scores for lower ratios.

Unlike the Green Drop 2022 diagnostics, no firm correlation can be drawn between technical capacity and water supply performance, mostly as result of the complexity of the WSA/Bulk Water Provider arrangement. However, it is observed that the involvement of Rand Water in the supply of potable water to its various WSAs does have a positive impact on the municipal BD scores particularly in the case of the Govan Mbeki LM, Thembisile LM and Victor Khanye LM.

Overall, the results highlight the inter-dependency between technical capacity and performance. One of the options to enhance operational capacity is through dedicated training programmes. The Blue Drop audit incentivises training of operational staff over the 2-year period prior to the audit date. The results are summarised as follows:

**Table 161 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WTWs</th>
<th># WTW staff attending training</th>
<th># WTW without training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Emakhazeni LM</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>7</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>None</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>22</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Mkondo LM</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>22</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Pixley Ka Seme LM</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>7</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Thembisile LM</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>107</strong></td>
<td><strong>45 (42%)</strong></td>
<td><strong>62 (58%)</strong></td>
</tr>
</tbody>
</table>

**Figure 123 - %WTWs that have trained operational staff over the past two years**
The results confirm that 7 WSAs had their operational staff attend training over the past 2 years. Only 45 of 107 (42%) WTWs had their operational staff attend training over the past 2 years.

Investment in human capital through technical skills development is likely to mitigate some of the water quality failures and lower performances noted, and municipalities and water boards should prioritise ongoing skills development of technical staff and appointment of qualified staff that are legible for registration.

Diagnostic 2: Treatment Capacity and Flow Distribution

**Aim:** Diagnostic 2 deals with design and flow related dynamics, comprising of: i) design capacity and operational flow, ii) raw water abstraction, and iii) WUE and SIV.

**(i) Design Capacity and Operational Flow**

This diagnostic assesses the status of plant design capacity and daily water production at the WTWs, as well as SIVs as measured at the outflow from the WTW or inflow to the water distribution network. A capable WTW requires adequate installed design capacity and functional equipment to operate optimally. If the WTW design capacity is exceeded by the average daily production (treatment) volume, the WTW will not be able to deliver SANS compliant water quality. The available design capacity is typically exceeded when the water demand exceeds the installed design capacity, or when unit processes or equipment are dysfunctional, or when electrical supply problems render treatment and pumping of water defective. Typically, the production volume and SIV is the same if 1 WTW supplies 1 WSS, but different if multiple supply systems are feeding from a singular WTW.

**Findings:** Analysis of the design capacity and average daily production/ treatment volume indicate a total design capacity of 1,072,939 kl/d for the province, with a total average daily treatment (operational) volume of 713,159 kl/d. Theoretically, this implies that 66% of the design capacity is used with 34% available to meet additional water demand. However, the full 1,072,939 kl/d is not available as some infrastructure is dysfunctional, leaving 1,027,176 kl/d available. The reduced capacity means that the province is closer to its total available capacity (69%) with a 31% surplus available. The capacity differential (difference between the installed and available capacity) will not constrain or impede any further social and economic development in the drainage areas. WSAs do report or have knowledge of their installed and available capacities, and a higher figure than 31% surplus available cannot be expected.

For the province in general, most of the WTWs are operating within their design capacities with the exception of 13 WTWs that exceed their total design capacity (%). This risk is currently mitigated through operational optimisation and preventative maintenance regimes.

**Table 162 - Summary of WTWs design and available capacities, average daily production, % available capacity, and total SIV towards the WSSs**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Design Capacity (kl/d)</th>
<th>Available Design Capacity (kl/d)</th>
<th>Average Daily Production (kl/d)</th>
<th>Available Variance* (kl/d)</th>
<th>% Use Available Capacity</th>
<th>Total SIV towards the WSS (kl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td>8</td>
<td>47,000</td>
<td>45,000</td>
<td>0</td>
<td>45,000</td>
<td>0%</td>
<td>45,050</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td>12</td>
<td>166,000</td>
<td>151,500</td>
<td>132,196</td>
<td>19,304</td>
<td>87%</td>
<td>132,196</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td>1</td>
<td>6,000</td>
<td>6,000</td>
<td>0</td>
<td>6,000</td>
<td>0%</td>
<td>6,000</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>1</td>
<td>1</td>
<td>60,000</td>
<td>60,000</td>
<td>30,000</td>
<td>30,000</td>
<td>50%</td>
<td>30,000</td>
</tr>
<tr>
<td>Emakhesi LM</td>
<td>4</td>
<td>4</td>
<td>11,700</td>
<td>11,700</td>
<td>11,108</td>
<td>592</td>
<td>95%</td>
<td>11,108</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>7</td>
<td>6</td>
<td>209,460</td>
<td>217,460</td>
<td>195,097</td>
<td>22,363</td>
<td>90%</td>
<td>195,097</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>None</td>
<td>1</td>
<td>20,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>90,525</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>2</td>
<td>2</td>
<td>39,200</td>
<td>29,200</td>
<td>0</td>
<td>29,200</td>
<td>0%</td>
<td>39,200</td>
</tr>
<tr>
<td>MBombela/Umjindi</td>
<td>22</td>
<td>18</td>
<td>203,220</td>
<td>200,020</td>
<td>133,872</td>
<td>66,148</td>
<td>67%</td>
<td>176,744</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>5</td>
<td>5</td>
<td>27,240</td>
<td>26,240</td>
<td>26,137</td>
<td>103</td>
<td>100%</td>
<td>27,177</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5</td>
<td>5</td>
<td>32,000</td>
<td>32,000</td>
<td>0</td>
<td>32,000</td>
<td>0%</td>
<td>32,000</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>22</td>
<td>16</td>
<td>127,850</td>
<td>133,700</td>
<td>93,421</td>
<td>40,280</td>
<td>70%</td>
<td>93,420</td>
</tr>
<tr>
<td>Pixley Ka Serne LM</td>
<td>4</td>
<td>4</td>
<td>14,000</td>
<td>14,600</td>
<td>16,909</td>
<td>-2,309</td>
<td>116%</td>
<td>16,909</td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>7</td>
<td>6</td>
<td>65,769</td>
<td>60,881</td>
<td>44,170</td>
<td>16,711</td>
<td>73%</td>
<td>44,170</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>4</td>
<td>4</td>
<td>37,900</td>
<td>23,300</td>
<td>24,350</td>
<td>-1,050</td>
<td>105%</td>
<td>34,900</td>
</tr>
<tr>
<td>Thembisle LM</td>
<td>2</td>
<td>5</td>
<td>10,600</td>
<td>7,800</td>
<td>5,900</td>
<td>1,900</td>
<td>76%</td>
<td>40,026</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>1</td>
<td>2</td>
<td>15,000</td>
<td>7,775</td>
<td>0</td>
<td>7,775</td>
<td>0%</td>
<td>18,755</td>
</tr>
</tbody>
</table>

* Difference between the available design capacity and the average daily production
This diagnostic takes a snapshot view of the status of water abstraction authorisations from natural water resources across the province. As per the National Water Act (Act no 36 of 1998), Water Use Authorisation (WUA) mandate the maximum abstraction volumes of raw water, and the installation and monitoring of abstraction, inflow and outflow meters, whilst the BD audit requires WSAs to report the flows on IRIS and to calibrate meters annually. Any defects in terms of abstracting water from a resource without an authorisation, or exceeding the authorised volume, or reporting inaccurate volumes, or not monitoring abstraction against authorised volumes, are considered to be a regulatory risk and contravention of the law.

**(ii) Raw Water Abstraction**

Findings: Data pertaining to the daily abstraction volumes (kl/d) (Authorised), average daily treatment volumes (kl/d), the names of the WTWs exceeding/with no Daily Abstraction Volumes (Authorised) and Average Daily Treatment Volumes (Authorised) is captured in the tables below.
### Table 163 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances & WTWs listed For Enforcement Action

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Daily Abstraction Volumes (Authorised) (kl/d)</th>
<th>Average Daily Treatment Volume (kl/d)</th>
<th>Average Variance (kl/d) [+ or Minus]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td>8</td>
<td>4,000</td>
<td>0</td>
<td>4,000</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td>12</td>
<td>135,262</td>
<td>132,196</td>
<td>3,066</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>1</td>
<td>1</td>
<td>60,000</td>
<td>30,000</td>
<td>30,000</td>
</tr>
<tr>
<td>Emakhazeni LM</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>11,108</td>
<td>-11,108</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>7</td>
<td>6</td>
<td>228,509</td>
<td>195,097</td>
<td>33,412</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>22</td>
<td>18</td>
<td>84,599</td>
<td>133,872</td>
<td>-49,272</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>5</td>
<td>5</td>
<td>14,247</td>
<td>26,137</td>
<td>-11,890</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>22</td>
<td>16</td>
<td>61,340</td>
<td>93,421</td>
<td>-32,081</td>
</tr>
<tr>
<td>Pixley Ka Seme LM</td>
<td>4</td>
<td>4</td>
<td>7,430</td>
<td>16,909</td>
<td>-9,479</td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>7</td>
<td>6</td>
<td>0</td>
<td>44,170</td>
<td>-44,170</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>4</td>
<td>4</td>
<td>9,000</td>
<td>24,350</td>
<td>-15,350</td>
</tr>
<tr>
<td>Thembisile LM</td>
<td>2</td>
<td>5</td>
<td>7,800</td>
<td>5,900</td>
<td>1,900</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>107</td>
<td>100</td>
<td>612,188</td>
<td>713,159</td>
<td>-100,971</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>WTW exceeding the Daily Abstraction Volumes (Authorised)</th>
<th>WTW with no Daily Abstraction Volumes (Authorised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>6 of 7</td>
<td></td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>2 of 12</td>
<td></td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1 of 1</td>
<td></td>
</tr>
<tr>
<td>Emakhazeni LM</td>
<td>4 of 4</td>
<td></td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>2 of 7</td>
<td></td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>2 of 2</td>
<td></td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>3 of 22</td>
<td>16 of 22</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>3 of 5</td>
<td>8 of 22</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5 of 5</td>
<td>1 of 4</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>6 of 22</td>
<td>3 of 4</td>
</tr>
<tr>
<td>Pixley Ka Seme LM</td>
<td>2 of 4</td>
<td>1 of 4</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>3 of 4</td>
<td></td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>1 of 1</td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>15</td>
<td>50</td>
</tr>
</tbody>
</table>
WTWs that exceed the Daily Abstraction Volumes (Authorised) and WTWs with no Daily Abstraction Volumes (Authorised) are reflected in the 2nd table above. WTWs that are not complying with the regulations will be required to show correction in the next Blue Drop audit cycle. The results conclude that 15 WTWs are exceeding the permitted abstraction limits. The Daily Abstraction Volumes (Authorised) are not known for 50 water treatment systems resulting in negative average variances that skew the data sets.

For future BD audits, WSA/WSPs will be required to provide ‘actual’ abstraction volumes so that a comparative analysis can be undertaken of the ‘actual’ abstraction volume versus the authorised water use abstraction volumes (maximum). This would require that the WSAs and WSPs/WBs monitor and record all critical path flows (abstraction, raw and final).

(iii) Water Use Efficiency and System Input Value

The Department is committed to consider issues related to water scarcity and security, aiming to ensure there is sufficient water for the population, the economy, and the environment by increasing water use efficiency across all sectors. Water use for services sectors is specifically dealing with the quantity of water used directly by the consumer through the public distribution network and industries connected to the network.

This diagnostic assesses the water use efficiency (i.e., the average daily consumption in litres per person per day) and the individual and collective performance of the water supply systems. WUE indicates how effective water is used by consumers, i.e. the process between effective water use and actual water abstraction. This concept is closely related to the Department’s No Drop Certification assessment, whereby WUE, NRW and water losses are targeted as part of Water Conservation and Water Demand Management strategies by municipalities.

Findings: Both the Blue Drop audit and No Drop audit requires an IWA water balance to determine the SIV into each water supply system, and to identify and quantify possible losses from abstraction to the end-of-use point. Dr JS Moroka LM, Govan Mbeki LM, Victor Khanye LM and Mbombela/Umjindi have full water balances in place for 13 WSSs in total. 52 WSSs in 7 WSAs have partial water balances in place, and 10 WSAs with a total of 35 WSSs do not have water balances in place.
WUE is calculated based on the SIV contributions, population served, and the average daily consumption, as summarised in the following table.

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Total Population</th>
<th>Total SIV (kl/d)</th>
<th>2023 WUE (l/p/d)</th>
<th>2023 Blue Drop WUE Range and Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td>227,686</td>
<td>45,050</td>
<td>198</td>
<td>&gt;150-200 Good</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td>922,078</td>
<td>132,196</td>
<td>143</td>
<td>&lt;150 Excellent</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td>41,666</td>
<td>6,000</td>
<td>144</td>
<td>&lt;150 Excellent</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>1</td>
<td>265,828</td>
<td>30,000</td>
<td>113</td>
<td>&lt;150 Excellent</td>
</tr>
<tr>
<td>Emakhazeni LM</td>
<td>4</td>
<td>43,083</td>
<td>11,108</td>
<td>258</td>
<td>&gt;250-300 Poor</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>6</td>
<td>449,825</td>
<td>195,097</td>
<td>434</td>
<td>&gt;300 Extremely High</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>1</td>
<td>343,157</td>
<td>90,525</td>
<td>264</td>
<td>&gt;250-300 Poor</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>2</td>
<td>104,155</td>
<td>39,200</td>
<td>376</td>
<td>&gt;300 Extremely High</td>
</tr>
<tr>
<td>Mbombela/Umjindi LM</td>
<td>18</td>
<td>841,433</td>
<td>176,744</td>
<td>210</td>
<td>&gt;200-250 Average</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>5</td>
<td>256,919</td>
<td>27,177</td>
<td>106</td>
<td>&lt;150 Excellent</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5</td>
<td>166,545</td>
<td>32,000</td>
<td>192</td>
<td>&gt;150-200 Good</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>16</td>
<td>471,891</td>
<td>93,420</td>
<td>198</td>
<td>&gt;150-200 Good</td>
</tr>
<tr>
<td>Pikey Ka Sene LM</td>
<td>4</td>
<td>92,312</td>
<td>16,909</td>
<td>183</td>
<td>&gt;150-200 Good</td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>6</td>
<td>199,416</td>
<td>44,170</td>
<td>221</td>
<td>&gt;200-250 Average</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>4</td>
<td>94,116</td>
<td>34,900</td>
<td>371</td>
<td>&gt;300 Extremely High</td>
</tr>
<tr>
<td>Thembisele LM</td>
<td>5</td>
<td>187,007</td>
<td>40,026</td>
<td>214</td>
<td>&gt;200-250 Average</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>2</td>
<td>63,840</td>
<td>18,735</td>
<td>293</td>
<td>&gt;250-300 Poor</td>
</tr>
<tr>
<td>Totals</td>
<td>100</td>
<td>4,770,957</td>
<td>1,033,257</td>
<td>231</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WUE (l/cap/day) performance categories</th>
<th>Colour</th>
<th>WUE Range</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely high per capita water use</td>
<td>&gt;300</td>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>Poor per capita water use</td>
<td>&gt;250-300</td>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>Average per capita water use with potential for marked improvement</td>
<td>&gt;200-250</td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>Good per capita water use but some improvement may be possible subject to economic benefits</td>
<td>&gt;150-200</td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>Excellent per capita water use management</td>
<td>&lt;150</td>
<td></td>
<td>Poor</td>
</tr>
</tbody>
</table>

**Figure 127 - Total SIV towards the WSSs**

**Figure 128 - Total Population served**
For the province, 1,033,257 kl/d water is supplied to 4,770,957 consumers. Comparatively, Emalahleni LM distributes 19% of the total provincial SLV, followed by Mbombela/Umjindi (17%) and Bushbuckridge LM (13%). An average 231 litre of water is used per person per day, which implies a fairly high (average) per capita water use. Results from the diagnostic data show that the Emalahleni LM, Lekwa LM and Thaba Chweu LM have WUEs of more than 300 l/c/d, which is regarded as extremely high according to national benchmarks. 3 WSAs have WUEs between 250–300 l/c/d, which is regarded as poor. No Drop Certification is specifically tasked with plans to curb water losses and improve NRW through water accounting assessments and water conservation and demand management.

Diagnostic 3: Drinking Water Quality (DWQ) Monitoring and Compliance

**Aim:** Blue Drop audits values the principles of “To measure is to know” and “To know is to manage”. The primary objective of a water treatment plant is to produce final water quality that is safe for human consumption at the end of the distribution network. This standard can only be measured and achieved if operational and compliance monitoring and DWQ compliance is executed at the correct frequency, sample point, and determinand type. This diagnostic assesses the i) operational and compliance monitoring status, ii) drinking water quality compliance, and iii) risk defined compliance and laboratory credibility.

(i) Drinking water operational and compliance monitoring

**Findings:** A minimum level of 90% operational monitoring compliance is applied as benchmark, to give weight to the importance of sampling and monitoring of the raw water, process unit water, and final water across the treatment stream. Compliance monitoring is also informed by SANS 241:2015 and the requirement for risk-informed monitoring through the WaSP process at both the WTW final and distribution network. DWQ compliance is calculated against the population size and the mandatory limits set by SANS 241:2015 and the Blue Drop standards, as calculated and reported from data loaded in the IRIS.

**Table 165 - Summary of the KPA 2 WTW operational and WSS compliance monitoring status**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>WTW Operational monitoring [KPA 2 sub-KPA 2.2(b)]</th>
<th>WSS Compliance monitoring [KPA 2 sub-KPA 2.2(c)]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Satisfactory [BD score ≥90%]</td>
<td>Satisfactory [BD score ≥90%]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Not Satisfactory [BD score &lt;90%]</td>
<td>Not Satisfactory [BD score &lt;90%]</td>
</tr>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Emakhazeni LM</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>7</td>
<td>6</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>None</td>
<td>1</td>
<td>None</td>
<td>1</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>22</td>
<td>18</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>Mkondo LM</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>22</td>
<td>16</td>
<td>22</td>
<td>16</td>
</tr>
<tr>
<td>Pixley Ka Serne LM</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>7</td>
<td>6</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Thembisile LM</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Totals</td>
<td>107</td>
<td>100</td>
<td>59 (55%)</td>
<td>48 (45%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>38 (38%)</td>
<td>62 (62%)</td>
</tr>
</tbody>
</table>

The performance recorded in the table above stems from performance data as measured against the Blue Drop Standard expressed in KPA 2 and sub-KPAs 2.b) and 2.c). Overall, an unsatisfactory sampling and analysis regime is observed for both operational (45%) and compliance (62%) monitoring.

The data indicates that 59 of 107 WTWs (55%) are on par with good practice for operational monitoring of the raw and final water and the respective process units at the WTW. Five WSAs are doing really well, whilst 11 WSAs fail to meet the Blue Drop standard. In terms of compliance monitoring, 38 WSSs (38%) are on par with good compliance monitoring practices, and 62 WSSs (62%) are failing the Blue Drop standard.

The latter observation is noted with concern. Compliance monitoring is a legal requirement and the only means to measure the DWQ performance of a water supply system. Operational monitoring is the cornerstone of day-to-day process adjustments and optimisation to ensure that the water treatment is efficient and delivers quality final water. The results indicate that 48 WTWs and 62 WSSs are not achieving regulatory and industry standards.
(ii) Drinking water quality compliance

**Findings:** DWQ compliance is measured against the requirements of SANS 241:2015 under KPA 5 of the Blue Drop audit. The tables following summarises the results of the DWQ status for Microbiological and Chemical Compliance, which also carries the highest Blue Drop score weighting of 35%.

**Table 166 - Provincial Summary of the DWQ Status for Microbiological Compliance**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Micro Compliance</th>
<th># WSS Micro Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td>227,686</td>
<td>37.54%</td>
<td></td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td>922,078</td>
<td>99.88%</td>
<td></td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td>41,666</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>1</td>
<td>265,828</td>
<td>82.09%</td>
<td></td>
</tr>
<tr>
<td>Emakhazeni LM</td>
<td>4</td>
<td>43,083</td>
<td>93.14%</td>
<td>2</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>6</td>
<td>449,825</td>
<td>96.95%</td>
<td>3</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>1</td>
<td>343,157</td>
<td>99.82%</td>
<td>1</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>2</td>
<td>104,155</td>
<td>76.16%</td>
<td>1</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>18</td>
<td>841,433</td>
<td>33.26%</td>
<td>6</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>5</td>
<td>256,919</td>
<td>80.30%</td>
<td>5</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5</td>
<td>166,545</td>
<td>73.87%</td>
<td></td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>16</td>
<td>471,891</td>
<td>82.25%</td>
<td>2</td>
</tr>
<tr>
<td>Pixley Ka Seme LM</td>
<td>4</td>
<td>92,312</td>
<td>69.41%</td>
<td></td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>6</td>
<td>199,416</td>
<td>92.25%</td>
<td>3</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>4</td>
<td>94,116</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Thembisile LM</td>
<td>5</td>
<td>187,007</td>
<td>91.67%</td>
<td>3</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>2</td>
<td>63,840</td>
<td>99.86%</td>
<td>2</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>100</strong></td>
<td><strong>4,770,957</strong></td>
<td><strong>71.08%</strong></td>
<td>35</td>
</tr>
</tbody>
</table>

**Figure 129 - Provincial Microbiological Drinking Water Quality Status**

Out of the 100 WSSs, 36 (36%) systems achieved excellent and good microbiological quality, whilst 64 (64%) systems have an unacceptable microbiological water quality status. The water in these systems pose a serious acute health risk to the community. Failure to produce water that meets microbiological compliance standards can be linked back to poor operations, defective infrastructure, inadequate dosing rates, absence of disinfection chemicals, lack of monitoring, lack of operating and chemistry knowledge, and several other root causes. WSLs that are not monitoring the final water quality at the outlet of the treatment plant or at specific end use points are required to develop a monitoring programme and resume with compliance monitoring as a matter of urgency.
### Table 167 - Provincial Summary of the DWQ Status for Chemical Acute Health and Chronic Health Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Chem Acute Health Compliance</th>
<th>% WSS Chem Acute Health Performance Status</th>
<th>% Ave. Chem Chronic Health Compliance</th>
<th># WSS Chem Chronic Health Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td>227,686</td>
<td>87.5%</td>
<td>7 1</td>
<td>87.5%</td>
<td>7 1</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td>922,078</td>
<td>40.0%</td>
<td>3 9</td>
<td>99.6%</td>
<td>12</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td>41,666</td>
<td>0.0%</td>
<td>1 0.0%</td>
<td>92.1%</td>
<td>1</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>1</td>
<td>265,828</td>
<td>0.0%</td>
<td>1 0.0%</td>
<td>92.1%</td>
<td>1</td>
</tr>
<tr>
<td>Emakhandeni LM</td>
<td>4</td>
<td>43,083</td>
<td>0.0%</td>
<td>4 0.0%</td>
<td>92.1%</td>
<td>1</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>6</td>
<td>449,825</td>
<td>99.7%</td>
<td>6 96.7%</td>
<td>99.4%</td>
<td>5</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>1</td>
<td>343,157</td>
<td>99.8%</td>
<td>1 90.3%</td>
<td>99.4%</td>
<td>4</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>2</td>
<td>104,155</td>
<td>100.0%</td>
<td>2 100.0%</td>
<td>99.4%</td>
<td>5</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>18</td>
<td>841,433</td>
<td>33.3%</td>
<td>6 33.2%</td>
<td>99.4%</td>
<td>13</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>5</td>
<td>256,919</td>
<td>98.8%</td>
<td>4 100.0%</td>
<td>99.4%</td>
<td>5</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5</td>
<td>166,545</td>
<td>99.9%</td>
<td>5 99.4%</td>
<td>99.4%</td>
<td>5</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>16</td>
<td>471,891</td>
<td>100.0%</td>
<td>16 98.3%</td>
<td>100.0%</td>
<td>15 1</td>
</tr>
<tr>
<td>Pixley Ka Seme LM</td>
<td>4</td>
<td>92,312</td>
<td>96.5%</td>
<td>2 99.1%</td>
<td>99.4%</td>
<td>4</td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>6</td>
<td>199,416</td>
<td>98.2%</td>
<td>5 100.0%</td>
<td>99.4%</td>
<td>4 1 1</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>4</td>
<td>94,116</td>
<td>0.0%</td>
<td>4 0.0%</td>
<td>99.4%</td>
<td>4</td>
</tr>
<tr>
<td>Thembisile LM</td>
<td>5</td>
<td>187,007</td>
<td>99.8%</td>
<td>5 90.6%</td>
<td>99.4%</td>
<td>3</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>2</td>
<td>63,840</td>
<td>99.6%</td>
<td>2 99.2%</td>
<td>99.4%</td>
<td>2</td>
</tr>
<tr>
<td>Totals</td>
<td>100</td>
<td>4,770,957</td>
<td>67.8%</td>
<td>64 1 35</td>
<td>75.3%</td>
<td>69 3 28</td>
</tr>
</tbody>
</table>

**CHEM Acute Health: Population <100,000**
- Excellent: >97%
- Good: >95% - <97%
- Unacceptable: <95%

**CHEM Acute Health: Population >100,000**
- Excellent: >99%
- Good: >97% - <99%
- Unacceptable: <97%

**CHEM Chronic Health: Population <100,000**
- Excellent: >95%
- Good: >93% - <95%
- Unacceptable: <93%

**CHEM Chronic Health: Population >100,000**
- Excellent: >97%
- Good: >95% - <97%
- Unacceptable: <95%

![Image](image-url)
Chemical acute health compliance shows that 64 (64%) systems have excellent, and 1 (1%) system has good water quality, whilst 35 (35%) systems for 7 WSAs have an unacceptable chemical acute health compliance. Chemical chronic health compliance shows that 69 (69%) systems have excellent, and 3 (3%) systems have good water quality, whilst 28 (28%) systems for 8 WSAs have an unacceptable chemical chronic health compliance.

The Water Services Act upholds standards regarding the monitoring and reporting on drinking water quality and issuance of advisory notices to the public when significant DWQ failures are observed. The audit process applies a penalty when DWQ failures are noticed without issuing such Water Quality Alert Notices to forewarn consumers of the status of (unsafe) water quality and to advise communities to source alternative water sources or methods to disinfect water used for drinking water purposes.

The following table reflects the compliance status of the WSAs as regards the issuing of these notices for DWQ failures.

### Table 168 - Summary of Penalties Applied to WSSs for not Issuing Advisory Notices

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSS No Penalty Applied</th>
<th># WSS Partial Penalty Applied</th>
<th>WSS Names</th>
<th># WSS Full Penalty Applied</th>
<th>WSS Names Full Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td>4</td>
<td>Badplaas, Bettysgoed, Ekulindeni, Elukwatini</td>
<td>4</td>
<td>Carolina, Empuluzi/Mayflower, Fernie, Rudimentary Boreholes</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td>7</td>
<td>Edinburg, Marite, Sandriver, Sehlares, Thulamahashi</td>
<td>1</td>
<td>The Greater Dipaleseng LM</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td>1</td>
<td>Welterwedren</td>
<td>1</td>
<td>Emgwenya</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>4</td>
<td>3</td>
<td>Belfast, Duistroom, Entokozweni</td>
<td>1</td>
<td>Thaba Chweu LM</td>
</tr>
<tr>
<td>Emakhazeni LM</td>
<td>6</td>
<td>4</td>
<td>Point B Blended, Witbank</td>
<td>1</td>
<td>The Greater Govan Mbeki LM</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>1</td>
<td>1</td>
<td>The Greater Govan Mbeki LM</td>
<td>1</td>
<td>Standerton</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>2</td>
<td>1</td>
<td></td>
<td>1</td>
<td>12 WSSs (excl. Silulumanzi)</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>18</td>
<td>6</td>
<td>Amsterdam, Mkhondo 1, Rural WSS</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5</td>
<td>2</td>
<td>All 5 WSSs</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>16</td>
<td>3</td>
<td>All 13 WSSs</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>4</td>
<td>1</td>
<td>All 4 WSSs</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Pixley Ka Seine LM</td>
<td>6</td>
<td>5</td>
<td>Borehole: Doornkop #2</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>4</td>
<td>3</td>
<td>Bomandu, Langkloof</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>5</td>
<td>3</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Thembsile LM</td>
<td>2</td>
<td>2</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>100</td>
<td>33</td>
<td>45</td>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>

No penalties were applied to 33 (33%) WSSs in 9 WSAs, partial penalties were applied to 45 (45%) WSSs in 13 WSAs, and full penalties were applied to 22 (22%) WSSs in 5 WSAs.

### (iii) Risk defined compliance and laboratory credibility

**Findings**: Risk-defined compliance standards aim to determine the compliance (to SANS 241) of those parameters that have been found to pose a risk in a specific WSS and need to be included in the routine monitoring programme or frequency as prescribed by SANS 241. The province achieved an average Annual Risk Defined Compliance of 71%, with the best performances coming from Govan Mbeki LM and Victor Khanye LM, and the worst performances coming from Albert Luthuli LM, Bushbuckridge LM, Emalahleni LM, Mbombela/Umjindi, Nkomazi LM, Msukaligwa LM and Thaba Chweu LM. Excellent risk defined compliance was achieved by 22 (22%) systems, good compliance for 3 (3%) systems and bad compliance for 75 (75%) systems.

### Table 169 - Summary of the DWQ Compliance for Risk Defined Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>Ave. % Risk Defined Compliance</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td>227,686</td>
<td>47.76%</td>
<td>Excellent</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td>922,078</td>
<td>92.12%</td>
<td>4</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td>41,666</td>
<td>0.00%</td>
<td>4</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>4</td>
<td>265,828</td>
<td>76.74%</td>
<td>4</td>
</tr>
<tr>
<td>Emakhazeni LM</td>
<td>6</td>
<td>449,825</td>
<td>88.54%</td>
<td>4</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>1</td>
<td>343,157</td>
<td>99.08%</td>
<td>4</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>2</td>
<td>104,155</td>
<td>80.76%</td>
<td>4</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>18</td>
<td>841,433</td>
<td>31.62%</td>
<td>6</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>5</td>
<td>256,919</td>
<td>78.85%</td>
<td>6</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5</td>
<td>166,545</td>
<td>79.56%</td>
<td>6</td>
</tr>
</tbody>
</table>
The aim of operational determinand compliance is to determine the efficiency of the water treatment process, by monitoring those parameters which are used to control the treatment process. Although not necessarily a health risk, these parameters provide good information on the integrity of the WTW. The province achieved an average % Actual Operational Determinand Compliance of 51%, the best performances coming from the Dr JS Moroka LM, Bushbuckridge LM and Nkomazi LM, and the worst performances coming from the Albert Luthuli LM, Emakhazi LM, Lekwa LM, Mbombela/Umjindi, Msukaligwa LM, Pixley Ka Seme LM and Thaba Chweu LM. Excellent risk defined compliance was achieved by 35 (33%) systems, good compliance for 18 (17%) systems and bad compliance for 54 (50%) systems with most of these systems residing in Albert Luthuli LM and Mbombela/Umjindi.

### Table 170 - Summary of the Treatment (Operational) Efficiency Index

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>Ave. % Risk Defined Compliance</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>16</td>
<td>471,891</td>
<td>75.20%</td>
<td></td>
</tr>
<tr>
<td>Pixley Ka Seme LM</td>
<td>4</td>
<td>92,312</td>
<td>86.02%</td>
<td></td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>6</td>
<td>199,416</td>
<td>91.05%</td>
<td>2</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>4</td>
<td>94,116</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Thembisile LM</td>
<td>5</td>
<td>187,007</td>
<td>92.22%</td>
<td>4</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>2</td>
<td>63,840</td>
<td>97.31%</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>100</td>
<td>4,770,957</td>
<td>70.95%</td>
<td>22</td>
</tr>
</tbody>
</table>

The data confirms that 14 (78%) WSSs in the province have access to credible laboratories for compliance and operational analysis. These in-house or contracted laboratories are accredited with SANAS or have Proficiency Testing Schemes with SABS or have inter-laboratory quality checks in place to ensure that suitable analytical methods are applied and that quality assurance processes are followed to ensure credible water quality results. The province is mostly meeting the regulatory expectation for the WSIIs having access to credible analytical services for compliance and operational monitoring.

### Diagnostic 4: Technical Site Assessments

**Aim:** The BD process makes provision for a Technical Site Assessment (TSA) in order to verify the desktop evidence through field-based inspections. This assessment includes a physical inspection of the entire water treatment plant with all its process units, as well as the reservoir and spot checks of a pumpstation and pipelines. The technical assessment is coupled with an asset condition check to determine an approximate cost (VROOM) to restore existing infrastructure to functional status for the treatment facility (only).

**Findings:** The results of the province’s TSAs are summarised in the table below. A deviation of 10% between the BD and TSA score indicate a misalignment between the administrative aspects and the work on the ground. The Regulator regards a WTW with a TSA score of >80% to have an acceptable level of process control and functional equipment, and a TSA score of 90% as an excellent system that complies with most of the Blue Drop TSA standards. A TSA score of <30% indicates that the treatment facility and network fails in most regards, and is evident of dysfunctional infrastructure, failed process control, absence of record keeping and monitoring, and poor water quality.

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WTWs</th>
<th>Population</th>
<th>Ave. % Actual Operational Determinand Compliance</th>
<th># WTW Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>Albert Luthuli LM</td>
<td>8</td>
<td>227,686</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>12</td>
<td>922,078</td>
<td>91%</td>
<td>5</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>1</td>
<td>41,666</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>1</td>
<td>265,828</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Emakhazi LM</td>
<td>4</td>
<td>43,083</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>7</td>
<td>449,825</td>
<td>96%</td>
<td>4</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>None</td>
<td>343,157</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>2</td>
<td>104,155</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>22</td>
<td>841,433</td>
<td>26%</td>
<td>5</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>5</td>
<td>256,919</td>
<td>76%</td>
<td>2</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>5</td>
<td>166,545</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>22</td>
<td>471,891</td>
<td>96%</td>
<td>13</td>
</tr>
<tr>
<td>Pixley Ka Seme LM</td>
<td>4</td>
<td>92,312</td>
<td>68%</td>
<td></td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>7</td>
<td>199,416</td>
<td>50%</td>
<td>4</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>4</td>
<td>94,116</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Thembisile LM</td>
<td>2</td>
<td>187,007</td>
<td>87%</td>
<td>1</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>1</td>
<td>63,840</td>
<td>80%</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>107</td>
<td>4,770,957</td>
<td>51%</td>
<td>35</td>
</tr>
</tbody>
</table>
The VROOM cost presents a “Very Rough Order of Measurement” cost to return a WTWs functionality to its original design. More detail can be found in the Blue Drop Watch Report 2023.

### Table 171 - %TSA and %BD score, and VROOM cost estimates total and split for civil, mechanical, and electrical

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>TSA Name</th>
<th>%TSA</th>
<th>2023 BD Score (%)</th>
<th>Civil cost estimate</th>
<th>Mechanical cost estimate</th>
<th>Electrical &amp; C&amp;I cost estimate</th>
<th>Total VROOM cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>Carolina</td>
<td>61</td>
<td>19.1%</td>
<td>2,351,250</td>
<td>1,496,250</td>
<td>427,500</td>
<td>4,275,000</td>
</tr>
<tr>
<td>Bushuckridge LM</td>
<td>Inyaka</td>
<td>84</td>
<td>62.2%</td>
<td>350,000</td>
<td>650,000</td>
<td>54,065</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>Fortuna</td>
<td>52</td>
<td>7.0%</td>
<td>324,390</td>
<td>702,845</td>
<td>0</td>
<td>1,081,300</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>Weltevreden</td>
<td>86</td>
<td>53.4%</td>
<td>6,120,000</td>
<td>4,080,000</td>
<td>0</td>
<td>10,200,000</td>
</tr>
<tr>
<td>Emakhazeni LM</td>
<td>Belfast</td>
<td>68</td>
<td>31.2%</td>
<td>1,246,000</td>
<td>2,136,000</td>
<td>178,000</td>
<td>3,560,000</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>Witbank</td>
<td>78</td>
<td>65.7%</td>
<td>13,230,000</td>
<td>4,725,000</td>
<td>945,000</td>
<td>18,900,000</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>No TSA (Rand Water)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>Standerton</td>
<td>51</td>
<td>33.5%</td>
<td>13,616,000</td>
<td>13,616,000</td>
<td>6,808,000</td>
<td>34,040,000</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>Nelspruit (New)</td>
<td>92</td>
<td>69.3%</td>
<td>512,820</td>
<td>2,051,280</td>
<td>0</td>
<td>2,564,100</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>White River Country Estate</td>
<td>67</td>
<td>69.3%</td>
<td>267,850</td>
<td>241,065</td>
<td>26,785</td>
<td>535,700</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>Piet Retief</td>
<td>70</td>
<td>54.5%</td>
<td>915,200</td>
<td>281,600</td>
<td>211,200</td>
<td>1,408,000</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>Ermelo North</td>
<td>51</td>
<td>21.6%</td>
<td>3,906,000</td>
<td>7,161,000</td>
<td>1,953,000</td>
<td>13,020,000</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>Drieckoppies</td>
<td>77</td>
<td>68.6%</td>
<td>2,904,000</td>
<td>1,452,000</td>
<td>484,000</td>
<td>4,840,000</td>
</tr>
<tr>
<td>Pibley Ka Seme LM</td>
<td>Volksrust</td>
<td>55</td>
<td>45.0%</td>
<td>2,486,000</td>
<td>1,130,000</td>
<td>904,000</td>
<td>4,520,000</td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>Vaalbank</td>
<td>87</td>
<td>67.4%</td>
<td>1,215,000</td>
<td>1,080,000</td>
<td>405,000</td>
<td>2,700,000</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>Lydenburg</td>
<td>48</td>
<td>8.2%</td>
<td>544,500</td>
<td>396,000</td>
<td>49,500</td>
<td>990,000</td>
</tr>
<tr>
<td>Thembile LM</td>
<td>Bundu</td>
<td>88</td>
<td>75.3%</td>
<td>3,000,000</td>
<td>800,000</td>
<td>200,000</td>
<td>4,000,000</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>Delmas</td>
<td>64</td>
<td>90.1%</td>
<td>176,440</td>
<td>1,146,860</td>
<td>441,100</td>
<td>1,764,400</td>
</tr>
</tbody>
</table>

| Totals                |                   |      |                   |                     |                          |                               |                  |
|                       | % Split of Cost Items |     | 49%               | 39%                 | 12%                      | 100%                          |

A deviation of >10% between the BD and TSA score is noted for 14 WSAs. A deviation of >20% between the BD and TSA score is noted for 9 WSAs. For the individual WTWs assessed in the province, a total budget of R109.4m is estimated, with the bulk of the work (88%) going towards restoration of mechanical equipment (39%) and civil infrastructure (49%).

### Diagnostic 5: Operation, Maintenance and Refurbishment of Assets

**Aim:** Insufficient financial resources are often cited as a root cause to dysfunctional or non-compliant water treatment works and water networks. Knowledge and monitoring of fiscal spending are therefore a critical part of water services management and municipal governance of public assets. This diagnostic investigates the status of financial information as pertaining to O&M budgets and expenditure, asset figures, and capital funding.

**Findings:** A substantial amount of financial information was presented during the audit process. Unfortunately, the evidence was presented in different formats, levels of detail, or absent for some WSAs. It was observed that WSA teams with financial officials that were present during the audits performed better and had a better understanding of the water services challenges experienced by their technical peers. Discrepancies observed included amongst others - generic or non-ringfenced budgets, contract lump sums for service providers presented as budgets, outdated or incomplete asset registers, and some cost drivers which were lacking. As data credibility presents a significant challenge, the Regulator grouped data into different certainty levels, as summarised at the end of this Diagnostic.

The result of each financial portfolio is discussed hereunder.

**NOTE:** The Regulator regards the financial and asset information with low confidence. Not all WSAs submitted verifiable information or complete financial data sets for the audit year in question.

### Capital, O&M Budget and Actual, and Asset Value

The capital budgets, O&M budgets, O&M actual expenditure, and current asset values are summarised below.

**Table 172 - Summary of the capital budgets, O&M budgets, O&M actual expenditure, and current asset values**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>Capital budget available (R)</th>
<th>O&amp;M budget (R) (2021/22)</th>
<th>O&amp;M expended (R) (2021/22)</th>
<th>% Expended</th>
<th>Total Current Asset Value (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Bushuckridge LM</td>
<td>NI</td>
<td>R190,278,112</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>NI</td>
<td>R8,865,428</td>
<td>R13,112,521</td>
<td>148%</td>
<td>R106,324,978</td>
</tr>
</tbody>
</table>
The Regulatory Comments following in this Chapter list the capital projects with secured funding for each municipality and/or its bulk water provider (WSP). The capital lists are deemed to be a definitive means to address water service inadequacies and ensuring water infrastructure investment. A total capital budget of R707.3m has been reported for the refurbishment and upgrades of water supply system infrastructure for 8 of 17 WSAs. The largest capital budgets are observed for Emalahleni LM (R271.8m), Nkomazi LM (R128m), Steve Tshwete LM (R122.4m), and Thembisile LM (R101.7m).

For the 2021/22 fiscal year, the total O&M budget reported for the province was R2.3b, of which R2.09b (91%) has been expended. There is over-expenditure of 7 WSAs ranging from 111% to 187% and there is under expenditure by Steve Tshwete LM (36%) and Victor Khanye LM (72%) was observed (It should be noted that the Engwenyameni/Klipfontein system failed to provide budget expenditure skewing the %expended for the WSA). The provincial figures exclude 5 WSAs who had no and partial financial information.

The total current asset value for water infrastructure (networks, pump stations, treatment plants) is reportedly R23.933b (excluding 5 WSAs with no information). The highest asset values are observed for Nkomazi LM (R13.45b), followed by Emalahleni LM (R2.39b), Emakhazeni LM (R1.72b) and Mbombela/Umjindi (R1.6b).

O&M Cost Benchmarking

By combining the SALGA and WRC WATCOST models, an estimation of the maintenance cost required per asset type can be done, i.e. civil, buildings, pipelines, mechanical, electrical, and instrumentation.

Table 173 - SALGA-WRC annual maintenance budget guideline and cost estimation

<table>
<thead>
<tr>
<th>Description</th>
<th>% of Current Asset Value</th>
<th>Asset Value Estimate</th>
<th>Modified SALGA Maintenance Guideline</th>
<th>Annual Maintenance Budget Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Asset Value estimate</td>
<td>100%</td>
<td>R23,933,935,871</td>
<td>15.75%</td>
<td>R516,973,015</td>
</tr>
<tr>
<td>Broken down into</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Civil Structures</td>
<td>46%</td>
<td>R11,009,610,501</td>
<td>0.50%</td>
<td>R55,048,053</td>
</tr>
<tr>
<td>2. Buildings</td>
<td>3%</td>
<td>R718,018,076</td>
<td>1.50%</td>
<td>R10,770,271</td>
</tr>
</tbody>
</table>

Figure 131 - Total current asset value reported

The total current asset value for water infrastructure (networks, pump stations, treatment plants) is reportedly R23.933b (excluding 5 WSAs with no information). The highest asset values are observed for Nkomazi LM (R13.45b), followed by Emalahleni LM (R2.39b), Emakhazeni LM (R1.72b) and Mbombela/Umjindi (R1.6b).
The model estimates that R517m (2.16%) is required per year to maintain the assets valued at R23.933b. Notably, this maintenance estimate assumes that all assets are functional. In cases where Blue Drop Certification is not being achieved, it can be assumed that some form of inefficiency or constraint is being experienced, and national benchmarks closer to 7% of the asset value is advocated (R1.675b).

The table below indicates the SALGA maintenance cost estimation in relation to the O&M budget, and O&M actual expended.

**Table 174 - O&M cost estimates by the SALGA versus actual budget and expenditure figures**

<table>
<thead>
<tr>
<th>Cost Reference</th>
<th>O&amp;M Cost Estimate</th>
<th>Period</th>
<th>% of Asset Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified SALGA</td>
<td>R516,973,015</td>
<td>Annually, estimation</td>
<td>2.16%</td>
</tr>
<tr>
<td>O&amp;M Budget</td>
<td>R2,303,939,872</td>
<td>Actual for 2021/22</td>
<td>9.6%</td>
</tr>
<tr>
<td>O&amp;M Spend</td>
<td>R2,090,957,148</td>
<td>Actual for 2021/22</td>
<td>8.7%</td>
</tr>
</tbody>
</table>

In addition, the table below indicates the Blue Drop audit findings on the water supply operations cost determination and water supply O&M budget status.

**Table 175 - BD Audit Water Supply Operations Cost Determination and Water Supply O&M Budget status**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>Water Supply Operations Cost Determination</th>
<th>Water Supply O&amp;M Budget status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert Luthuli LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Bushbuckridge LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>NO PROOF, SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Dipaleseng LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>NO PROOF, SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Dr JS Moroka LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Emakhazeni LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM, NOT SYSTEM SPECIFIC (GLOBAL), NO PROOF (0% SCORE)</td>
<td>NO PROOF, SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Emalahleni LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>NO PROOF, SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Govan Mbeki LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Lekwa LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>NO PROOF, SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Mbombela/Umjindi</td>
<td>NO PROOF (0% SCORE), DETERMINED OF THE WHOLE SYSTEM</td>
<td>NO PROOF, SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Mkhondo LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>BUDGET IS NOT RINGFENCED FOR WATER ONLY</td>
</tr>
<tr>
<td>Msukaligwa LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Nkomazi LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Pixley Ka Seme LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Steve Tshwete LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Thaba Chweu LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Thembsile LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM, NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>SYSTEM SPECIFIC BUDGET, WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Victor Khanye LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
</tbody>
</table>

From the tables above, the cost dynamics can be summarised as follows:

- The SALGA estimations for maintenance budgets is about 22.4% (Modified SALGA divided by O&M Budget) of the actual reported budgets for the 2021/22 fiscal year
- The actual O&M budget (9.6%) does not appear to be adequate when compared with the SALGA guideline (2.16%) or with the government benchmark (7%)
- These figures are impacted by some of the WSAs who did not provide budget and expenditure figures, and by some inaccurate asset values and where no asset values were provided for
- Lastly, the municipalities presents budget and expenditure data at different levels (table above) i.e. financial figures are not always ringfenced per water supply system – thus rendering provincial summaries to be indicative.
10.1 Bushbuckridge Local Municipality

### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>62.23%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>64.24%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>30.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>29.89%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Acornhoek</th>
<th>Dingleydale</th>
<th>Edinburg</th>
<th>Hoxani</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 59.73%</td>
<td>53.41%</td>
<td>59.46%</td>
<td>67.54%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 65.91%</td>
<td>NI</td>
<td>57.95%</td>
<td>68.45%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 47.36%</td>
<td>NI</td>
<td>26.39%</td>
<td>33.59%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% NA</td>
<td>NI</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d 106 000</td>
<td>1 500</td>
<td>3 000</td>
<td>35 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d 106 000</td>
<td>1 500</td>
<td>3 000</td>
<td>27 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d 52 371</td>
<td>176</td>
<td>1 954</td>
<td>22 854</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>% 93.81%</td>
<td>11.73%</td>
<td>65.13%</td>
<td>84.64%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Maxhleco Dam</td>
<td>Casteel Dam via canal</td>
<td>Edinburg Dam</td>
<td>Sabie River</td>
</tr>
<tr>
<td>BDWR 2023</td>
<td>% 40.23%</td>
<td>30.61%</td>
<td>35.98%</td>
<td>27.47%</td>
</tr>
<tr>
<td>BDWR 2022</td>
<td>% 36.50%</td>
<td>35.00%</td>
<td>42.40%</td>
<td>NI</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Inyaka</th>
<th>Marite</th>
<th>Sandriver</th>
<th>Sehlare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 64.29%</td>
<td>58.36%</td>
<td>46.13%</td>
<td>55.26%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 65.82%</td>
<td>6.77%</td>
<td>47.64%</td>
<td>63.23%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 46.85%</td>
<td>13.36%</td>
<td>19.41%</td>
<td>40.01%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% NA</td>
<td>32.15%</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d 100 000</td>
<td>103 000</td>
<td>1 000</td>
<td>1 500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d 100 000</td>
<td>103 000</td>
<td>1 000</td>
<td>1 500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d 33 653</td>
<td>12 791</td>
<td>407</td>
<td>578</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>% 96.46%</td>
<td>92.96%</td>
<td>40.70%</td>
<td>38.53%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Inyaka Dam fed by Ngwarets &amp; Ngwaretsane Rivers</td>
<td>Marite dam</td>
<td>nwandlamuhare river</td>
<td>Nwandlamuhare river</td>
</tr>
<tr>
<td>BDWR 2023</td>
<td>% 33.29%</td>
<td>44.52%</td>
<td>35.25%</td>
<td>34.02%</td>
</tr>
<tr>
<td>BDWR 2022</td>
<td>% 30.10%</td>
<td>46.50%</td>
<td>30.60%</td>
<td>21.10%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Sigagule</td>
<td>Thorndale</td>
<td>Thulamahashi</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------</td>
<td>----------</td>
<td>-----------</td>
<td>--------------</td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>59.56%</td>
<td>50.88%</td>
<td>64.48%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>13.28%</td>
<td>7.12%</td>
<td>63.93%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>13.81%</td>
<td>12.91%</td>
<td>43.34%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>31.32%</td>
<td>25.00%</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 500</td>
<td>1 500</td>
<td>109 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>500</td>
<td>500</td>
<td>106 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>183</td>
<td>76</td>
<td>6 608</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>36.60%</td>
<td>15.20%</td>
<td>90.04%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Sigagule Dam</td>
<td>Thorndale dam</td>
<td>Mutlumuvi river</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>36.29%</td>
<td>33.78%</td>
<td>30.78%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>38.00%</td>
<td>35.10%</td>
<td>30.30%</td>
</tr>
</tbody>
</table>

*Technical Site Assessment: Inyaka Network and WTW – 84%*
# 10.2 Chief Albert Luthuli Local Municipality

## Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>19.09%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>53.16%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>18.40%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>9.78%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Badplaas</th>
<th>Bettygoed</th>
<th>Carolina</th>
<th>Ekulindeni</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

## System Design Capacity

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 000</td>
<td>4 000</td>
<td>4 500</td>
<td>4 000</td>
<td></td>
</tr>
</tbody>
</table>

## System Available Capacity

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 000</td>
<td>4 000</td>
<td>4 500</td>
<td>4 000</td>
<td></td>
</tr>
</tbody>
</table>

## System Input Value

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 000</td>
<td>4 000</td>
<td>4 500</td>
<td>4 000</td>
<td></td>
</tr>
</tbody>
</table>

## Capacity Utilisation

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td></td>
</tr>
</tbody>
</table>

## Resource Abstracted From

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seekoeispruit</td>
<td>74.11%</td>
<td>55.00%</td>
</tr>
<tr>
<td>Lusushwana River</td>
<td>72.33%</td>
<td>36.80%</td>
</tr>
<tr>
<td>Boesmanspruit Dam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Komati River</td>
<td>80.62%</td>
<td>61.70%</td>
</tr>
</tbody>
</table>

## Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Elukwatini</th>
<th>Empuluzi/Mayflower</th>
<th>Fernie</th>
<th>Rudimentary Boreholes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>21.35%</td>
<td>19.75%</td>
<td>12.55%</td>
<td>4.10%</td>
</tr>
</tbody>
</table>

## System Design Capacity

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16 800</td>
<td>8 700</td>
<td>5 000</td>
<td>1 000</td>
<td></td>
</tr>
</tbody>
</table>

## System Available Capacity

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16 800</td>
<td>6 700</td>
<td>0</td>
<td>1 000</td>
<td></td>
</tr>
</tbody>
</table>

## System Input Value

<table>
<thead>
<tr>
<th></th>
<th>kl/d</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16 800</td>
<td>6 700</td>
<td>5 000</td>
<td>1 050</td>
<td></td>
</tr>
</tbody>
</table>

## Capacity Utilisation

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td></td>
</tr>
</tbody>
</table>

## Resource Abstracted From

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tweespruit, a tributary of the Komati River, and the Komati River</td>
<td>76.26%</td>
<td>64.90%</td>
</tr>
<tr>
<td>Mpuluzi River</td>
<td>69.22%</td>
<td>71.50%</td>
</tr>
<tr>
<td>Methula River</td>
<td>70.26%</td>
<td>60.10%</td>
</tr>
<tr>
<td>Groundwater abstraction</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
The Regulator notes the dire state of management and drinking water quality in the Badplaas, Bettysgoed, Carolina, Ekulindeni, Elukwatini, Empuluzi/Mayflower, Fernie and Rudimentary Boreholes water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>7.00%</td>
</tr>
<tr>
<td>2014</td>
<td>10.60%</td>
</tr>
<tr>
<td>2012</td>
<td>40.70%</td>
</tr>
<tr>
<td>2011</td>
<td>6.95%</td>
</tr>
</tbody>
</table>

### Key Performance Area

| Area              | Weight | Greater Dipaleseng
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>7.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>10.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>40.70%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>6.95%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>6 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>6 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>6 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Haarhoff Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>100.00%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>97.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Fortuna WTW – 52%**

The Regulator notes the dire state of management and drinking water quality in the Greater Dipaleseng water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a **detailed corrective action plan within 20 days** of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>53.43%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>89.26%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>92.64%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>84.42%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Weltevreden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>53.43%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>89.26%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>92.64%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>84.42%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>60 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>60 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>30 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>50.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Elands Weir</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>64.19%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>37.20%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Weltevreden WTW – 86%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>31.19%</td>
</tr>
<tr>
<td>2014</td>
<td>50.00%</td>
</tr>
<tr>
<td>2012</td>
<td>79.83%</td>
</tr>
<tr>
<td>2011</td>
<td>83.72%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Category</th>
<th>Belfast (Belfast WTP)</th>
<th>Dullstroom (Dullstroom WTP)</th>
<th>Emgwenya (Waterval Boven WTP)</th>
<th>Entokozweni (Machadodorp WTP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 27.03%</td>
<td>25.88%</td>
<td>34.28%</td>
<td>37.98%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 56.97%</td>
<td>44.56%</td>
<td>46.74%</td>
<td>48.01%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 89.15%</td>
<td>81.57%</td>
<td>68.44%</td>
<td>64.51%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% 84.95%</td>
<td>83.41%</td>
<td>80.42%</td>
<td>84.95%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>4 000</td>
<td>2 000</td>
<td>3 000</td>
<td>2 700</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>4 000</td>
<td>2 000</td>
<td>3 000</td>
<td>2 700</td>
</tr>
<tr>
<td>System Input Value</td>
<td>3 800</td>
<td>1 920</td>
<td>2 850</td>
<td>2 538</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>% 95.00%</td>
<td>96.00%</td>
<td>95.00%</td>
<td>94.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Belfast Dam main source. Small supply from Kraaispruit</td>
<td>Dullstroom Dorpsdam</td>
<td>Elands River</td>
<td>Elands River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>% 63.85%</td>
<td>77.24%</td>
<td>49.10%</td>
<td>30.10%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>% 40.50%</td>
<td>30.30%</td>
<td>33.10%</td>
<td>58.10%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Belfast WTW – 68%

The Regulator notes the dire state of management and drinking water quality in the Belfast and Dullstroom water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### 10.6 Emalahleni Local Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>65.70%</td>
<td>43.84%</td>
<td>37.50%</td>
<td>46.90%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ESKOM</td>
<td></td>
<td>Glencore</td>
<td>Anglo Operations, Nu Water Systems</td>
</tr>
</tbody>
</table>

#### Blue Drop Score 2023

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>84.16%</td>
<td>73.57%</td>
<td>69.24%</td>
<td>61.42%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>73.11%</td>
<td>44.45%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>NI</td>
<td>57.00%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>NI</td>
<td>61.22%</td>
<td>NI</td>
<td>NI</td>
</tr>
</tbody>
</table>

#### System Design Capacity (kL/d)

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>20 160</td>
<td></td>
<td>15 000</td>
<td>9 600</td>
</tr>
<tr>
<td>2012</td>
<td>20 160</td>
<td>15 000</td>
<td>9 600</td>
<td>20 050</td>
</tr>
</tbody>
</table>

#### System Available Capacity (kL/d)

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>20 160</td>
<td>15 000</td>
<td>9 600</td>
<td>70 000</td>
</tr>
<tr>
<td>2012</td>
<td>20 160</td>
<td>15 000</td>
<td>9 600</td>
<td>42 564</td>
</tr>
</tbody>
</table>

#### System Input Value (kL/d)

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>13 640</td>
<td>9 898</td>
<td>12 624</td>
<td>42 564</td>
</tr>
<tr>
<td>2012</td>
<td>13 640</td>
<td>9 898</td>
<td>12 624</td>
<td>42 564</td>
</tr>
</tbody>
</table>

#### Capacity Utilisation (%)

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>67.66%</td>
<td>65.99%</td>
<td>71.73%</td>
<td>63.24%</td>
</tr>
<tr>
<td>2012</td>
<td>67.66%</td>
<td>65.99%</td>
<td>71.73%</td>
<td>63.24%</td>
</tr>
</tbody>
</table>

#### Resource Abstracted From

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>Rietfontein</td>
<td>Usuthu Government Water Scheme</td>
<td>Affected underground mine water from ATC, Boschmans and Witcons</td>
<td>Groundwater from various mining collieries (Anglo); Witbank Dam (NuWater)</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### BDRR 2023

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>27.16%</td>
<td>26.39%</td>
<td>44.32%</td>
<td>56.70%</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### BDRR 2022

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>22.50%</td>
<td>44.20%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Rietspruit</th>
<th>Witbank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>70.52%</td>
<td>63.91%</td>
</tr>
</tbody>
</table>

#### System Design Capacity (kL/d)

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>4 700</td>
<td>90 000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>4 700</td>
<td>90 000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### System Available Capacity (kL/d)

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>4 700</td>
<td>90 000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>4 700</td>
<td>90 000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### System Input Value (kL/d)

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>2 431</td>
<td>113 940</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>2 431</td>
<td>113 940</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Capacity Utilisation (%)

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>51.72%</td>
<td>126.60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Resource Abstracted From

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>Olifants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### BDRR 2023

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>24.99%</td>
<td>65.55%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### BDRR 2022

<table>
<thead>
<tr>
<th></th>
<th>Kendal</th>
<th>Kriel/Ganala</th>
<th>Phola/Ogies</th>
<th>Point B Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>35.90%</td>
<td>54.50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Witbank WTW - 78%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>90.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>77.22%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>77.55%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>77.59%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Greater Govan Mbeki</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Rand Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>90.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>77.22%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>77.55%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>77.59%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>90 525</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>86.37%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>32.35%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>40.80%</td>
</tr>
</tbody>
</table>

*Technical Site Assessment: There are no WTWs to assess.*
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>33.53%</td>
</tr>
<tr>
<td>2014</td>
<td>14.46%</td>
</tr>
<tr>
<td>2012</td>
<td>34.74%</td>
</tr>
<tr>
<td>2011</td>
<td>10.48%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Morgenzon WTW</th>
<th>Standerton WTW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>50.80%</td>
<td>32.50%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>14.46%</td>
<td>20.97%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>29.26%</td>
<td>35.45%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>18.85%</td>
<td>9.92%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 200</td>
<td>37 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 200</td>
<td>27 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 200</td>
<td>37 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Blesbokspruit</td>
<td>Vaal</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>50.18%</td>
<td>80.70%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>40.80%</td>
<td>62.50%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Standerton WTW – 55%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>69.30%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>88.88%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>87.68%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>74.99%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Elandshoek</th>
<th>Hazyview</th>
<th>White River</th>
<th>White River Country &amp; Golf Estates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>20.45%</td>
<td>28.51%</td>
<td>27.40%</td>
<td>21.63%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>71.47%</td>
<td>83.28%</td>
<td>75.33%</td>
<td>84.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>50.04%</td>
<td>87.97%</td>
<td>90.06%</td>
<td>91.54%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>74.61%</td>
<td>60.96%</td>
<td>81.76%</td>
<td>61.82%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 000</td>
<td>6 000</td>
<td>6 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 000</td>
<td>6 000</td>
<td>6 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>214</td>
<td>3 917</td>
<td>13 634</td>
<td>332</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>21.40%</td>
<td>65.28%</td>
<td>75.00%</td>
<td>33.23%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Natural springs</td>
<td>Sabie River</td>
<td>Longmere and Witklip Dams</td>
<td>Longmere Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>85.08%</td>
<td>87.69%</td>
<td>84.59%</td>
<td>83.06%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>20.30%</td>
<td>27.40%</td>
<td>24.20%</td>
<td>16.20%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Mjindini Trust - Madakwa</th>
<th>Rimers - Suid Kaap</th>
<th>Sheba</th>
<th>Mjejane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>16.76%</td>
<td>16.35%</td>
<td>16.20%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>13.23%</td>
<td>18.99%</td>
<td>10.81%</td>
<td>42.47%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>58.40%</td>
<td>76.08%</td>
<td>72.11%</td>
<td>74.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>42.83%</td>
<td>60.43%</td>
<td>56.33%</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 120</td>
<td>20 000</td>
<td>500</td>
<td>2 000 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 120</td>
<td>20 000</td>
<td>500</td>
<td>800</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>872</td>
<td>14 615</td>
<td>262</td>
<td>800</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>57.58%</td>
<td>3.57%</td>
<td>52.41%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>81.30%</td>
<td>65.85%</td>
<td>93.06%</td>
<td>100.00%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>40.40%</td>
<td>45.10%</td>
<td>53.50%</td>
<td>97.80%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Legogote</td>
<td>Nyongane River</td>
<td>Dwaleni</td>
<td>Mshadza</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
<td>----------</td>
<td>----------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>71.80%</td>
<td>70.70%</td>
<td>60.75%</td>
<td>60.48%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>66.70%</td>
<td>59.28%</td>
<td>59.58%</td>
<td>57.91%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>11.14%</td>
<td>12.56%</td>
<td>0.00%</td>
<td>8.95%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 000</td>
<td>14 000</td>
<td>2 000</td>
<td>2 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 000</td>
<td>0</td>
<td>2 000</td>
<td>2 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 000</td>
<td>14 000</td>
<td>2 000</td>
<td>2 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>95.50%</td>
<td>95.90%</td>
<td>94.40%</td>
<td>94.40%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Karino</th>
<th>Matsulu</th>
<th>Nelspruit</th>
<th>Primkop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>96.64%</td>
<td>97.89%</td>
<td>97.27%</td>
<td>96.23%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>95.81%</td>
<td>96.68%</td>
<td>97.13%</td>
<td>95.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>98.25%</td>
<td>96.22%</td>
<td>99.15%</td>
<td>97.97%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>N/A</td>
<td>95.56%</td>
<td>96.11%</td>
<td>91.13%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>3 600</td>
<td>12 000</td>
<td>74 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>3 600</td>
<td>12 000</td>
<td>74 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 842</td>
<td>15 903</td>
<td>49 926</td>
<td>908</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>78.94%</td>
<td>132.53%</td>
<td>68.07%</td>
<td>90.80%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>20.80%</td>
<td>29.92%</td>
<td>30.95%</td>
<td>17.71%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>25.80%</td>
<td>33.60%</td>
<td>40.40%</td>
<td>20.60%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Kanyamazane</th>
<th>Nsikazi South</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>86.29%</td>
<td>90.03%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>89.87%</td>
<td>89.87%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>84.61%</td>
<td>84.61%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>71.75%</td>
<td>71.75%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>6 000</td>
<td>48 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>4 000</td>
<td>48 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 800</td>
<td>49 719</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Kanyamazane</td>
<td>Nsikazi South</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------</td>
<td>-------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>70.00%</td>
<td>103.58%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Crocodile River</td>
<td>Crocodile River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>19.91%</td>
<td>38.30%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>25.30%</td>
<td>38.90%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: White River Country Estate WTW - 66% and Nelspruit New WTW - 92%**

The Regulator notes the dire state of management and drinking water quality in the Elandshoek, Hazyview, White River, White River Country & Golf Estates, Mjindini Trust, Madakwa, Rimers, Suid Kaap, Sheba, Mjejane, Legogote, Nyongane River, Dwaleni and Mshadza water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>54.46%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>32.40%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>11.30%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>5.05%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Amsterdam Water Supply System</th>
<th>Mkhondo Water Supply System No. 1</th>
<th>Mkhondo Water Supply System No. 2</th>
<th>Rural Water Supply System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>50.40%</td>
<td>52.78%</td>
<td>56.93%</td>
<td>29.85%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>38.05%</td>
<td>30.71%</td>
<td>30.71%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>13.61%</td>
<td>13.61%</td>
<td>13.61%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>5.46%</td>
<td>5.46%</td>
<td>5.46%</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>6 300</td>
<td>6 000</td>
<td>6 400</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>6 300</td>
<td>6 400</td>
<td>6 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>5 800</td>
<td>6 653</td>
<td>5 684</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>92.06%</td>
<td>103.95%</td>
<td>94.73%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Gabosch Dam in the Gabosch (Thole) River</td>
<td>Assegaai</td>
<td>Assegaai</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>58.56%</td>
<td>41.79%</td>
<td>33.78%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>39.20%</td>
<td>44.90%</td>
<td>44.90%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Saul Mkhize Water Supply System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
</tr>
</tbody>
</table>
The Regulator notes the dire state of management and drinking water quality in the Rural Water Supply System. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>21.64%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>18.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>21.20%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>10.59%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Breyten water treatment works</th>
<th>Davel water treatment works</th>
<th>Douglas dam water works</th>
<th>Lothair water treatment works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>24.73%</td>
<td>20.35%</td>
<td>21.85%</td>
<td>24.73%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>17.02%</td>
<td>17.75%</td>
<td>17.02%</td>
<td>15.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>19.90%</td>
<td>19.90%</td>
<td>21.40%</td>
<td>Ni</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>3 000</td>
<td>1 000</td>
<td>14 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>3 000</td>
<td>1 000</td>
<td>14 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>3 000</td>
<td>1 000</td>
<td>14 000</td>
<td>1 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Jericho Dam which is in the Usutu Vaal Government WSS (Davel WTW located on divide between Olifants and Vaal)</td>
<td>Government WSS</td>
<td>Willem Brummer</td>
<td>Umpuluzi</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>60.93%</td>
<td>58.24%</td>
<td>68.65%</td>
<td>62.41%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>62.40%</td>
<td>28.70%</td>
<td>54.20%</td>
<td>58.20%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>South works (Noitgedacht farm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>20.55%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>20.43%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>Ni</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>10.59%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>13 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>13 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>13 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>Ni</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Usutu Vaal Government WSS</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>79.10%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>49.20%</td>
</tr>
</tbody>
</table>
The Regulator notes the dire state of management and drinking water quality in the Breyten, Davel, Douglas, Lothair and South works (Noitgedacht farm) water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
## Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>68.63%</td>
<td>51.47%</td>
<td>17.20%</td>
<td>59.48%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Driekoppies/Shoemansdal/Buffelspruit/Shongwe</th>
<th>Fig Tree/Masibekele</th>
<th>Hectorspruit</th>
<th>Komatipoort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>68.74%</td>
<td>68.65%</td>
<td>77.19%</td>
<td>78.92%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>56.65%</td>
<td>42.61%</td>
<td>49.45%</td>
<td>47.95%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>21.61%</td>
<td>11.21%</td>
<td>15.71%</td>
<td>17.36%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>70.48%</td>
<td>32.44%</td>
<td>60.73%</td>
<td>61.42%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>29 000</td>
<td>16 000</td>
<td>2 000</td>
<td>6 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>32 000</td>
<td>16 000</td>
<td>2 000</td>
<td>6 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>27 827</td>
<td>7 988</td>
<td>1 315</td>
<td>5 275</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>114.57%</td>
<td>50.74%</td>
<td>65.75%</td>
<td>87.92%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th></th>
<th>Mlumati</th>
<th>Komati, Komati</th>
<th>Crocodile</th>
<th>Komati</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023</td>
<td>57.62%</td>
<td>40.12%</td>
<td>23.86%</td>
<td>26.89%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>64.90%</td>
<td>42.90%</td>
<td>33.60%</td>
<td>40.10%</td>
</tr>
</tbody>
</table>

## Key Performance Area

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Langeloop</th>
<th>Low Creek</th>
<th>Madadeni</th>
<th>Magudu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>64.47%</td>
<td>66.20%</td>
<td>67.27%</td>
<td>72.94%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>45.10%</td>
<td>45.45%</td>
<td>43.92%</td>
<td>48.70%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>17.29%</td>
<td>11.81%</td>
<td>9.81%</td>
<td>9.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>65.98%</td>
<td>40.24%</td>
<td>53.34%</td>
<td>59.59%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 000</td>
<td>1 000</td>
<td>2 000</td>
<td>2 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 900</td>
<td>1 000</td>
<td>2 000</td>
<td>2 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 780</td>
<td>1 256</td>
<td>1 986</td>
<td>1 422</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>95.86%</td>
<td>159.45%</td>
<td>99.30%</td>
<td>71.10%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th></th>
<th>Mlumati</th>
<th>Lows Creek River;</th>
<th>Komati</th>
<th>Komati</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023</td>
<td>37.32%</td>
<td>57.19%</td>
<td>33.35%</td>
<td>28.17%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>54.20%</td>
<td>34.20%</td>
<td>31.40%</td>
<td>38.60%</td>
</tr>
</tbody>
</table>
### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Malalane</th>
<th>Marloth Park</th>
<th>Mbuzini</th>
<th>Naas/Block C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>66.70%</th>
<th>79.82%</th>
<th>67.60%</th>
<th>68.07%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>47.12%</td>
<td>57.10%</td>
<td>54.55%</td>
<td>33.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>14.36%</td>
<td>17.36%</td>
<td>15.11%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>56.70%</td>
<td>56.70%</td>
<td>46.68%</td>
<td>NI</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kL/d</th>
<th>6 000</th>
<th>3 500</th>
<th>2 000</th>
<th>8 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>6 000</td>
<td>3 500</td>
<td>2 000</td>
<td>10 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>2 415</td>
<td>1 450</td>
<td>1 612</td>
<td>6 952</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>40.25%</td>
<td>41.43%</td>
<td>80.60%</td>
<td>69.52%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th>Crocodile</th>
<th>Crocodile</th>
<th>Mbuzini Dam</th>
<th>Komati</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>30.33%</td>
<td>17.00%</td>
<td>32.21%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>37.20%</td>
<td>29.60%</td>
<td>28.50%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Driekoppies WTW – 71%
## Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>45.01%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>43.40%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>40.70%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>46.09%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Amersfoort</th>
<th>Volksrust WTW</th>
<th>Vukuzakhe</th>
<th>Wakkerstroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 46.88%</td>
<td>45.48%</td>
<td>44.08%</td>
<td>38.33%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 41.53%</td>
<td>43.62%</td>
<td>43.62%</td>
<td>39.73%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 42.11%</td>
<td>40.16%</td>
<td>40.16%</td>
<td>37.61%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% 65.61%</td>
<td>32.48%</td>
<td>33.56%</td>
<td>51.50%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d 4 000</td>
<td>4 000</td>
<td>4 000</td>
<td>2 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d 4 600</td>
<td>4 000</td>
<td>4 000</td>
<td>2 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d 6 125</td>
<td>3 700</td>
<td>5 940</td>
<td>1 144</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>% 133.15%</td>
<td>92.50%</td>
<td>148.50%</td>
<td>57.20%</td>
</tr>
<tr>
<td>Resource Abtracted From</td>
<td>Rietspruit</td>
<td>Mahawane Dam</td>
<td>Mahawane Dam</td>
<td>Martins Dam Wakkerstroom River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>% 74.20%</td>
<td>50.92%</td>
<td>48.20%</td>
<td>51.15%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>% 65.10%</td>
<td>58.40%</td>
<td>47.80%</td>
<td>71.20%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Volksrust WTW - 55%

---

**MPUMALANGA**

Page 336
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>67.38%</td>
</tr>
<tr>
<td>2014</td>
<td>97.14%</td>
</tr>
<tr>
<td>2012</td>
<td>97.35%</td>
</tr>
<tr>
<td>2011</td>
<td>96.60%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Bankfontein-Somaphepa (borehole)</th>
<th>Doornkop #2Kwa-Mapimpane (borehole)</th>
<th>Hendrina</th>
<th>Mafube-Sikhululwiwe (borehole)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 34.17%</td>
<td>42.92%</td>
<td>60.98%</td>
<td>58.72%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 77.24%</td>
<td>88.79%</td>
<td>99.07%</td>
<td>76.52%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% NA</td>
<td>97.66%</td>
<td>98.25%</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% NA</td>
<td>97.98%</td>
<td>97.96%</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d 230</td>
<td>176</td>
<td>5 000</td>
<td>43</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d 225</td>
<td>260</td>
<td>1 533</td>
<td>43</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d 225</td>
<td>260</td>
<td>1 488</td>
<td>144</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>% 100.00%</td>
<td>100.00%</td>
<td>97.06%</td>
<td>334.88%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Borehole - in community</td>
<td>Borehole - in community</td>
<td>Nooitgedagt Dam</td>
<td>Borehole</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>% 53.05%</td>
<td>43.33%</td>
<td>27.77%</td>
<td>17.94%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>% 15.70%</td>
<td>13.90%</td>
<td>22.90%</td>
<td>17.00%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Vaalbank WTW – 87%
### Municipal Blue Drop Score

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>8.20%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>9.09%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>19.03%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>59.40%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Coromandel</th>
<th>Graskop</th>
<th>Lydenburg</th>
<th>Sabie</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>10.30%</td>
<td>7.20%</td>
<td>11.40%</td>
<td>7.20%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>9.21%</td>
<td>8.63%</td>
<td>10.41%</td>
<td>8.84%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>19.26%</td>
<td>19.26%</td>
<td>21.74%</td>
<td>19.26%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>57.85%</td>
<td>57.10%</td>
<td>59.15%</td>
<td>59.80%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>400</td>
<td>6 500</td>
<td>11 000</td>
<td>20 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>400</td>
<td>6 500</td>
<td>9 000</td>
<td>7 400</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>400</td>
<td>6 500</td>
<td>8 000</td>
<td>20 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>87.50%</td>
<td>61.54%</td>
<td>88.89%</td>
<td>162.16%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Spekboom</td>
<td>Mac Mac river</td>
<td>Spekboom</td>
<td>Sabie river</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>93.06%</td>
<td>89.15%</td>
<td>84.37%</td>
<td>86.73%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>85.20%</td>
<td>81.10%</td>
<td>84.40%</td>
<td>91.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Lydenburg WTW – 48%**

The Regulator notes the dire state of management and drinking water quality in the Coromandel, Graskop, Lydenburg and Sabie water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a **detailed corrective action plan within 20 days** of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>75.32%</td>
</tr>
<tr>
<td>2014</td>
<td>67.56%</td>
</tr>
<tr>
<td>2012</td>
<td>78.30%</td>
</tr>
<tr>
<td>2011</td>
<td>27.77%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Thembalethu</th>
<th>Engwenyameni (Klipfontein)</th>
<th>Kwaggafontein</th>
<th>Bomandu previously known as Machipe (Goederede)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Rand Water</td>
<td>Rand Water</td>
<td>Rand Water</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>84.76%</td>
<td>82.06%</td>
<td>83.36%</td>
<td>46.13%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>69.87%</td>
<td>65.02%</td>
<td>67.76%</td>
<td>59.70%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>70.91%</td>
<td>70.91%</td>
<td>70.91%</td>
<td>78.78%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>27.77%</td>
<td>27.77%</td>
<td>27.77%</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
<td>5 427 000</td>
<td>5 427 000</td>
<td>10 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>5 427 000</td>
<td>5 427 000</td>
<td>5 427 000</td>
<td>7 500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>15 145</td>
<td>152</td>
<td>16 229</td>
<td>7 500</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>86.35%</td>
<td>86.35%</td>
<td>86.35%</td>
<td>74.67%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal</td>
<td>Vaal</td>
<td>Vaal</td>
<td>Moses</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>35.57%</td>
<td>48.37%</td>
<td>43.54%</td>
<td>69.08%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>53.80%</td>
<td>46.00%</td>
<td>61.20%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Langkloof</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>19.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>30.64%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>70.91%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>27.77%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>600</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>300</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>1 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Langkloof Boreholes 1, 2 and 3</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>75.54%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>75.10%</td>
</tr>
</tbody>
</table>
The Regulator notes the dire state of management and drinking water quality in the Langkloof water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a **detailed corrective action plan within 20 days** of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>90.13%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>63.48%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>0.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Viktor Khanye</th>
<th>Delmas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Rand Water</td>
<td>Rand Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>90.76%</td>
<td>89.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>63.48%</td>
<td>82.68%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 442 000</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>5 434 775</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>5 000</td>
<td>13 735</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>86.88%</td>
<td>86.28%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal Dam</td>
<td>Vaal Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>30.29%</td>
<td>30.59%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>38.90%</td>
<td>34.50%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Delmas – 64%**
Withoogte clarification: Continuous strive to achieve SANS241 compliance

Withoogte WTW: Inline operational water quality monitoring
11. NORTH WEST PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE

- 10 WSAs & 39 WSSs audited
- 4 Water Boards & 4 WSPs
- 64% ave. TSA score
- 43.9% BDRR - Low risk
- 1 BD Certification
- 7 Critical State systems

North West: Blue Drop Scores 2023 per WSA

North West: Blue Drop Score Trend 2014 vs 2023 per WSA
The North West province provides drinking water to a total population of 2,206,785 persons in South Africa.

An audit attendance record of 100% of the 10 WSAs, with 39 water supply systems across the province, 4 Water Boards (Rand Water, Magalies Water, Bloom Water and Sedibeng Water), Bulk Water Providers (Midvaal Water and City of Tshwane MM) and WSPs (WSSA and Rustenburg Water Services Trust) affirms the province’s commitment to the Blue Drop national incentive-based regulatory programme. Bloom Water has taken over the Sedibeng Water Balkfontein WTW in the Free State and supplies potable water to two water supply systems in the Maquassi Hills LM. It must be noted that Sedibeng Water was still in operation during the blue drop audit period and Bloom Water was not responsible for the respective systems over the audit period. Bloom Water has recently undergone a name change to Vaal Central Water (Government Gazette no. 48954 dated 13 July 2023). The Rand Water Vereeniging and Zuikerbosch WTWs in Gauteng supplies potable water to two water supply systems in the Madibeng LM and Rustenburg LM respectively. Magalies Water supplies potable water to 5 and 1 water supply systems in the Rustenburg LM and Moses Kotane LM respectively. Midvaal Water is the sole bulk water provider in the Matlosana LM. The City of Tshwane MM Temba WTW is the sole bulk water supplier to the Moretele LM.

The Regulator determined that only one water supply system scored more than 95% when measured against the Blue Drop standards and thus qualified for the prestigious Blue Drop Certification. In 2014, one water supply system was awarded Blue Drop status. Using the 2014 audit results as comparative baseline, the province shows no change in excellence for 2023.

Five (5) of 10 WSAs improved on their 2014 scores. The remaining 5 WSAs regressed to lower Blue Drop scores compared to their 2014 baselines. The JB Marks LM, Matlosana LM and Rustenburg LM are the best performing WSAs in the province with only the JB Marks LM achieving one Blue Drop Certification for the Potchefstroom water supply system. The Blue Drop scores of these top WSA performers were supported by excellent technical site assessment scores of 95% for the Midvaal Water Company WTW, followed by the Potchefstroom WTW with a TSA score of 94%. 7 water supply systems were identified to be in a critical state in the province compared with 32 water supply systems in 2014.

The province’s overall Blue Drop performance is characterised by particular strengths when measured against the KPAs. Rand Water, Magalies Water and Midvaal Water stand out for its compliance, good practice and risk management practices that are well embedded in the water supply business. The KPAs that require attention in the province and are reflecting scores below 50% are KPA 3 Financial Management (48.9%) and KPA 4 Technical Management (30.1%).

The provincial Blue Drop Risk Rating (BDRR) improved from 63.5% in 2022 (BD PAT) to 43.9% in 2023. 26 (of 39) water supply systems are situated in the low risk category, 6 WSSs in the medium risk category, 6 WSSs in the high risk category, and 1 WSS in the critical risk category.

The Regulator is optimistic that the 2023 Blue Drop report provides an updated residual basis from where a positive trajectory for water services delivery and improved performance will follow in the next BD audit. Municipalities and their service providers are encouraged to start preparation for the next Blue Drop audit cycle, which is planned to cover the financial year 2023/24 and released in 2025. The 2023 Blue Drop status for WSAs in the province are summarised in the table below.

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2014 BD Score (%)</th>
<th>2023 BD Score (%)</th>
<th>2023 BD Certified ≥95%</th>
<th>2023 Critical State (&lt;31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>30.14%</td>
<td>31.47%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>97.20%</td>
<td>92.60%↓</td>
<td>Potchefstroom</td>
<td></td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>17.62%</td>
<td>21.60%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>58.38%</td>
<td>50.64%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maquassi Hills LM</td>
<td>62.74%</td>
<td>47.85%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>77.29%</td>
<td>87.82%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moretele LM</td>
<td>57.49%</td>
<td>37.50%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>56.61%</td>
<td>69.25%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>27.05%</td>
<td>36.74%↑</td>
<td></td>
<td>Ratlou: Kraaipan Cluster B/H</td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>86.15%</td>
<td>78.31%↓</td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

↑= improvement, ↓= regress, ➔= no change
The Department of Water and Sanitation acknowledges the excellence in water services management achieved for the Blue Drop Audit year of 2021-22. One (1) Blue Drop Certificate is awarded in the North West Province to Potchefstroom water supply system in the JB Marks LM:

<table>
<thead>
<tr>
<th>Province</th>
<th>2023 Blue Drop Certified Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>North West</td>
<td>🔹 JB Marks LM</td>
</tr>
<tr>
<td></td>
<td>○ Potchefstroom</td>
</tr>
</tbody>
</table>

Background to Water Delivery and Distribution Infrastructure

The total volume of water treated in the province is 566,880 kl/d. Ten (10) WSAs, 4 Water Boards (Rand Water, Magalies Water, Bloem Water and Sedibeng Water), Bulk Water Providers (Midvaal Water and City of Tshwane MM) and WSPs (WSSA and Rustenburg Water Services Trust) are responsible for water services through a water network comprising of:

- 33 WTWs and boreholes with the bulk of the water treated and supplied by the Magalies Water Vaalkop WTW and Midvaal Water Company WTW to 3 WSAs and 6 WSSs with a total Average Daily Production of 354,746 kl/d
- 39 WSSs of which 11 WSSs in 6 WSAs are supplied with bulk potable water from Rand Water (Gauteng), Magalies Water, Bloem Water (Sedibeng Water) (Free State), Midvaal Water and City of Tshwane MM (Gauteng)
- 177 pump stations, 825 km bulk water supply lines, 1,989 km reticulation pipe lines, and 311 reservoirs/towers (excluding Magalies Water, Midvaal Water and 5 WSAs that were unable to provide data for the bulk and reticulation water supply lines).

Table 177 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes

<table>
<thead>
<tr>
<th>Micro Size Plants</th>
<th>Small Size Plants</th>
<th>Medium Size Plants</th>
<th>Large Size Plants</th>
<th>Macro Size Plants</th>
<th>Unknown (NI)*</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;500 kl/day</td>
<td>500 - &lt;2,000 kl/day</td>
<td>2,000 - &lt;10,000 kl/day</td>
<td>10,000 - &lt;25,000 kl/day</td>
<td>&gt;25,000 kl/day</td>
<td>None</td>
<td>956,151</td>
</tr>
<tr>
<td>No. of WTWs, Boreholes, Springs</td>
<td>4 (12%)</td>
<td>8 (24%)</td>
<td>9 (28%)</td>
<td>6 (18%)</td>
<td>6 (18%)</td>
<td>33</td>
</tr>
<tr>
<td>Total Design Capacity (kl/day)</td>
<td>1,059</td>
<td>8,292</td>
<td>42,800</td>
<td>90,400</td>
<td>813,600</td>
<td>None</td>
</tr>
<tr>
<td>Total Available Capacity (kl/day)</td>
<td>1,059</td>
<td>7,608</td>
<td>42,500</td>
<td>86,400</td>
<td>743,600</td>
<td>None</td>
</tr>
<tr>
<td>Average Daily Treatment Volume (kl/day)</td>
<td>1,531</td>
<td>5,163</td>
<td>19,006</td>
<td>56,434</td>
<td>484,746</td>
<td>4 NI</td>
</tr>
<tr>
<td>Total SIV (kl/day)</td>
<td>1,531</td>
<td>5,171</td>
<td>27,006</td>
<td>64,434</td>
<td>406,029</td>
<td>504,171</td>
</tr>
<tr>
<td>Design Capacity Utilisation (%)</td>
<td>145%</td>
<td>62%</td>
<td>44%</td>
<td>62%</td>
<td>60%</td>
<td>59%</td>
</tr>
<tr>
<td>Available Capacity Utilisation (%)</td>
<td>145%</td>
<td>68%</td>
<td>45%</td>
<td>65%</td>
<td>65%</td>
<td>64%</td>
</tr>
</tbody>
</table>

* “Unknown” means the number of WTWs with NI (No Information) on design capacity or available capacity or SIV

The audit verified a total installed design capacity of 956,151 kl/d and a total available design capacity of 881,167 kl/d with most of this capacity residing in the macro-sized water treatment plants.

Collectively, the 33 WTWs produce 566,880 kl/d and distributes 504,171 kl/d across the water networks. By comparing the available treatment capacity with the treated water volume, a spare treatment capacity of 314,287 kl/d is available (36%) to meet additional future demands. However, the WUE for the province is slightly high (ave. 228 l/p/d) compared to the international WUE benchmark of 180 l/p/d, indicating a high ratio between effective water use and actual water abstraction. Going forward, the province will have to dedicate significant resources to curb water losses and NRW.
In some cases, a Bulk Water Supplier supplies water across provincial borders and it is difficult to report accurately on design capacity and available capacity at provincial level, as the statistical data may become repetitive. Therefore, the reporting on the total system input volumes (SIV) would provide more accurate figures on the supply of treated water to the various water supply systems. The total SIV in the province is 504,171 kl/d and the average daily treatment volume is 566,880 kl/d and this indicates that the treated volume is more than the total SIV (112%) despite only 4 WTWs not measuring their average daily treatment volumes and noting that the Magalies Water Vaalkop WTW supplies bulk water to WSSAs in the Limpopo province. The largest contributors to the total SIV is Magalies Water Vaalkop WTW and Midvaal Water Company WTW to 6 WSSs with a total SIV contribution of 354,746 kl/d (70%). Diagnostic no. 2 to follow herein will unpack these statistics in more detail.

The water distribution infrastructure is summarised in the table below.

Table 178 - Summary of Water Distribution Reticulation Infrastructure

<table>
<thead>
<tr>
<th>WSA &amp; WB/WSP Name</th>
<th># WSS with no WSP/WB</th>
<th># WSS with WSP/WB</th>
<th># Pump Stations (#)</th>
<th>Bulk Water Supply Lines (km)</th>
<th>Reticulation pipe lines (km)</th>
<th># Reservoirs/ Towers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magalies Water - Vaalkop</td>
<td>-</td>
<td>5 in NW</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>12</td>
</tr>
<tr>
<td>Midvaal Water</td>
<td>-</td>
<td>1</td>
<td>6</td>
<td>NI</td>
<td>NI</td>
<td>10</td>
</tr>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>6</td>
<td>1</td>
<td>56</td>
<td>NI</td>
<td>NI</td>
<td>39</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>8</td>
<td></td>
<td>17</td>
<td>100</td>
<td>549</td>
<td>32</td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>2</td>
<td></td>
<td>1</td>
<td>NI</td>
<td>NI</td>
<td>8</td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>36</td>
<td>NI</td>
<td>21</td>
</tr>
<tr>
<td>Maquassili Hills LM</td>
<td>2</td>
<td></td>
<td>3</td>
<td>NI</td>
<td>NI</td>
<td>5</td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>1</td>
<td></td>
<td>17</td>
<td>NI</td>
<td>NI</td>
<td>17</td>
</tr>
<tr>
<td>Moretele LM</td>
<td>1</td>
<td></td>
<td>3</td>
<td>NI</td>
<td>NI</td>
<td>10</td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>3</td>
<td></td>
<td>24</td>
<td>688</td>
<td>1,440</td>
<td>102</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>5</td>
<td></td>
<td>42</td>
<td>NI</td>
<td>NI</td>
<td>20</td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>NI</td>
<td>35</td>
</tr>
<tr>
<td>Totals</td>
<td>27</td>
<td>12</td>
<td>177</td>
<td>825</td>
<td>1,989</td>
<td>311</td>
</tr>
</tbody>
</table>
Provincial Blue Drop Analysis

The 100% response from the 10 WSAs audited demonstrates a firm commitment to progressive water services management in the province. Local Government reforms resulted in the merging of Ventersdorp LM and Tlokwe LM into JB Marks LM. Therefore, 10 WSAs were audited in 2023 compared to the 11 WSAs in 2014.

Table 179 - Blue Drop Comparative Analysis from 2012 to 2023

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>2012</th>
<th>2014</th>
<th>2023</th>
<th>Performance trend 2014 and 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incentive-based indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WSAs assessed (#)</td>
<td>11 (100%)</td>
<td>11 (100%)</td>
<td>10 (100%)</td>
<td>→</td>
</tr>
<tr>
<td>Water supply systems assessed (#)</td>
<td>50</td>
<td>95</td>
<td>39</td>
<td>↓</td>
</tr>
<tr>
<td>Blue Drop scores ≥50% (#)</td>
<td>19 (38%)</td>
<td>37 (39%)</td>
<td>19 (49%)</td>
<td>↑</td>
</tr>
<tr>
<td>Blue Drop scores &lt;50% (#)</td>
<td>31 (62%)</td>
<td>58 (61%)</td>
<td>20 (51%)</td>
<td>↑</td>
</tr>
<tr>
<td>Blue Drop Certifications (#)</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>→</td>
</tr>
<tr>
<td>Lowest Technical Site Assessment Score (%)</td>
<td>49%</td>
<td>25%</td>
<td>18%</td>
<td>↓</td>
</tr>
<tr>
<td>Highest Technical Site Assessment Score (%)</td>
<td>96%</td>
<td>98%</td>
<td>94%</td>
<td>↓</td>
</tr>
</tbody>
</table>

NA = Not Applied  NI = No Information  ↑= improvement, ↓= regress, →= no change (Note: The performance trend is based on the % not the #)

Figure 133 - Blue Drop trend analysis over the period 2012 to 2023, indicating the percentage BD scores above and below 50%

The trend analysis indicates that:

- The no. of systems audited has decreased significantly from the last BD audit in 2014. The main reason for this can be attributed to the large no. of ‘untreated’ borehole systems registered on IRIS for WSAS in the North West province that were removed from IRIS during the 2021-22 BD audit (Dr Ruth S Mompati DM and the Sedibeng Water systems were collectively reduced from 103 systems to 26 systems overall)
- The no. of systems with BD scores of ≥50% increased from 39% in 2014 to 49% in 2023
- This trend was reversed with no. of systems with a BD score of ≤50% decreasing from 61% in 2014 to 51% in 2023
- Blue Drop Certifications remained the same with 1 award in 2014 and 1 award in 2023
- The lowest TSA score decreased from 25% in 2014 to 18% in 2023, with the highest TSA score decreasing from 98% in 2014 to 94% in 2023
- The overall performance trend indicates an overall progression from 2014 to 2023
- This trajectory still reinforces the need for regular audits to ensure timely turnaround and continued improvement
- The trend also implies that performance has shown some improvement despite the absence of regulatory engagement of the BD audits between 2014 to 2023.

Figure 134 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right)
Comparative analysis of the 2014 and 2023 blue drop scores, indicates that most of the system scores are in the >50-<80% (Average Performance) and in the >31-<50% (Poor Performance) categories. 7 systems in 2023 are in Critical State (<31%).

In summary, trend analysis since 2014 to 2023 indicate as follows:

- Systems in a ‘critical state’ decreased from 32 systems to 7 systems
- Systems in a ‘poor state’ decreased from 26 systems to 13 systems
- Systems in an ‘average state’ decreased from 34 systems to 13 systems
- Systems in the ‘good state’ increased from 2 systems to 5 systems
- Systems in ‘excellent state’ have not changed with only 1 system.

Provincial BDRR Analysis

The Blue Drop Risk Rating (BDRR) analysis assesses the risk across the entire water supply network. The BDRR formular was updated in 2021 to include an added risk indicator, i.e. ‘E: Water Safety Plans’, to address the risk assessment requirements outlined in SANS 241 of 2015. The BDRR now contains 5 risk indicators, i.e. design capacity (A), operational capacity (B), water quality compliance (C), technical capacity (D), and water safety plans (E). The results from the BDRR analyses are summarised in the table and figure following.

Table 180 - Municipal BDRR/BDRRmax Comparative Analysis from 2022 and 2023

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th># WBs/ WSPs</th>
<th>2022 (BD PAT)</th>
<th>2023 (BD Audit)</th>
<th>Performance Trend 2022 and 2023</th>
<th>BDRR Risk Category Split</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>7</td>
<td>1</td>
<td>73.60%</td>
<td>48.1%</td>
<td>↑</td>
<td>4 1 2</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>8</td>
<td>14.40%</td>
<td>26.8%</td>
<td>8</td>
<td>↓</td>
<td>2 1</td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>2</td>
<td>100%</td>
<td>90.2%</td>
<td>↑</td>
<td>6 1</td>
<td></td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>3</td>
<td>34.20%</td>
<td>30.8%</td>
<td>↑</td>
<td>2 1</td>
<td></td>
</tr>
<tr>
<td>Maquassi Hills LM</td>
<td>2</td>
<td>65.20%</td>
<td>58.3%</td>
<td>↑</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>1</td>
<td>41.40%</td>
<td>25.3%</td>
<td>↑</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Moretele LM</td>
<td>1</td>
<td>100%</td>
<td>67.3%</td>
<td>↑</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>4</td>
<td>68.50%</td>
<td>36.2%</td>
<td>↑</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>5</td>
<td>82.50%</td>
<td>62.2%</td>
<td>↑</td>
<td>2 3</td>
<td></td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>6</td>
<td>55.70%</td>
<td>40.3%</td>
<td>↑</td>
<td>5 1</td>
<td></td>
</tr>
<tr>
<td>Totals &amp; %BDRR/BDRRmax</td>
<td>39</td>
<td>12</td>
<td>63.5%</td>
<td>43.9%</td>
<td>↑</td>
<td>26 6 6 1</td>
</tr>
</tbody>
</table>

↑ = improvement, ↓ = regress, → = no change

Trend analysis of the BDRR ratings for 2022 and 2023 indicates that:

- The 2023 audit cycle highlighted a progressive shift with an increase in the no. of low risk WSSs (14 to 26), a decrease in the medium risk WSSs (10 to 6), a decrease in the high risk WSSs (10 to 6), and a decrease in the critical risk WSSs (5 to 1).
Regulatory Enforcement

Water supply systems which fail to achieve the minimum Blue Drop target of 31%, are placed under regulatory focus. The Regulator requires these WSA to submit a detailed corrective action plan (CAP) within 20 working days from publishing of this report. 7 WSSs received Blue Drop scores below 31%, and are placed under regulatory surveillance, in accordance with the Water Services Act (108 of 1997). DWS together with COGTA will through the grant allocation systems ensure priority is given to application of grants to rectify/restore the water services treatment and supply shortcomings identified in this report.

Table 181 - WSSs with <31% Blue Drop scores

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 BD Score</th>
<th>WSSs with &lt;31% score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>31.47%</td>
<td>Bogosing, Majeakgoro, Pudimoe, Schweizer Reneke</td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>21.60%</td>
<td>Koster, Swartruggens</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>36.74%</td>
<td>Ratlou: Kraaipan Cluster B/H</td>
</tr>
</tbody>
</table>

The following WSA and their associated water treatment systems are in high and/or critical BDRR risk positions, which means that some or all the risk indicators are in a precarious state, i.e. operational capacity, design capacity utilisation, water quality compliance, technical capacity, and water safety plans. WTWs in high risk and critical risk positions pose a serious risk to public health. The following WSA will be required to assess their risk contributors and to provide corrective measures in the above mentioned action plans to mitigate these risks.

Table 182 - %BDRR/BDRRmax scores and WSSs in critical and high-risk space

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 Average %BDRR/BDRRmax</th>
<th>WSSs in critical and high-risk space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>48.1%</td>
<td>Bogosing, Schweizer Reneke</td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>90.2%</td>
<td>Koster, Swartruggens</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>62.2%</td>
<td>Mafikeng, Ramotshehe Moloa: Motswedi + Gopane, Ratlou</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>1 of 39 (3%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 of 39 (15%)</td>
</tr>
</tbody>
</table>

Good practice risk management requires that the Water Safety Plans (WaSPs) are informed by meaningful Process and Condition Audits, supported by zealous implementation of corrective measures and ongoing monitoring of risk movement. 7 WSAs have all their water supply systems are in the low and medium risk positions, 2 WSAs have water supply systems in the high risk category, and only one WSA has one water supply system in the critical risk space.

Performance Barometer

The Blue Drop Performance Barometer presents the individual WSA Blue Drop Scores, which essentially reflects the level of mastery that a WSA has achieved in terms of its overall water services business. The bar chart below compares the 2014 and 2023 BD scores, ranked from highest to lowest performing WSA in 2023. The JB Marks LM and Matlosana LM have achieved good performance. Only 5 WSAs improved on their municipal blue drop scores whilst 5 WSAs did not improve on their municipal blue drop scores.

Figure 136 - a) Blue Drop scores 2014 (bar left) and 2023 (bar right); b) Colour legend
The BDRR Risk Barometer expresses the level of risk that a WSA poses in respect of its water supply system. The schematic below presents the BDRR in ascending order – with the low-risk WSAs on the left and higher risk WSAs to the far right. The analysis reveals that there are 3 WSAs in the medium risk category and 1 WSA in the critical risk category. 6 WSAs are situated in the low risk positions.

Figure 137 - a) %BDRR/BDRR\textsubscript{max} Risk Performance Profile/Log 2023; b) Colour legend

Provincial Best Performers

The JB Marks Local Municipality is the BEST PERFORMING WSA in the province, based on the following record of excellence:
- 2023 Blue Drop Score of 92.6%
- 2014 Blue Drop Score of 97.2%
- Regression of the BDRR from 14.4% in 2022 to 26.8% in 2023
- 8 systems (100%) in the low risk position
- TSA score of 94% for Potchefstroom WTW

The Matlosana Local Municipality (Midvaal Water) is the second-best scoring WSA:
- 2023 Blue Drop Score of 87.82%
- 2014 Blue Drop Score of 77.29%
- Improvement on the BDRR from 41.4% in 2022 to 25.3% in 2023
- 1 system (100%) in low risk position
- TSA score of 95% for Midvaal Water Company WTW

The Rustenburg Local Municipality (Rand Water and Magalies Water) is the third-best scoring WSA:
- 2023 Blue Drop Score of 78.31%
- 2014 Blue Drop Score of 86.15%
- Improvement on the BDRR from 55.7% in 2022 to 40.3% in 2023
- 5 systems (83%) in low risk positions
- TSA score 81% for Bospoort WTW
KPA Diagnostics

The BD audit process collects a vast amount of data that yield valuable insight into the state of the water services delivery and water quality in each province. Five focus areas or ‘diagnostics’ have been configured from the 2021/22 audit data and are discussed below.

Table 183 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs

<table>
<thead>
<tr>
<th>Diagnostic #</th>
<th>Diagnostic Description</th>
<th>Diagnostic Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical Competence</td>
<td>KPA 1, 2 &amp; Bonus</td>
</tr>
<tr>
<td>2</td>
<td>Treatment Capacity and Flow Distribution</td>
<td>KPA 4 &amp; Generic Audit data set</td>
</tr>
<tr>
<td>3</td>
<td>Drinking Water Quality (DWQ) Monitoring and Compliance</td>
<td>KPA 2 &amp; 4 &amp; Bonus</td>
</tr>
<tr>
<td>4</td>
<td>Technical Site Assessments</td>
<td>TSA and 2023 Blue Drop Watch Report</td>
</tr>
<tr>
<td>5</td>
<td>Operation, Maintenance and Refurbishment of Assets</td>
<td>KPA 3 &amp; 4</td>
</tr>
</tbody>
</table>

Diagnostic 1: Technical Competence

**Aim:** This focus area assesses the technical human resources capacity that is available to manage and operate water treatment processes and maintain the related water infrastructure. Theory advocates that a correlation exists between human resources capacity and capability (sufficient number of appropriately qualified staff) and a WSI’s performance. Thus, it is hypothesised that high HR capacity would translate to compliant water treatment plants and functional water supply network. Blue Drop assesses technical compliance on two levels: i) WTW plant supervision and process control staff and ii) Technical, scientific and maintenance staff.

(i) Plant Supervisors and Process Controllers

**Findings:** According to regulations, water treatment plants are classified as Class A, B, C, D or E plants. Similarly, Process Controllers and Plant Supervisors are registered as Class I, II, III, IV, V or VI Process Controllers. Higher classed plants require a higher level of Process Controllers due to technology complexity and strict water quality standards. Technical compliance of PCs and Supervisors is determined against the Blue Drop standards, as defined by Reg. 2834 of the Water Act 1956 (Act 54 of 1956) for the erection, enlargement, operation, and registration of water care works and draft Reg. 813 of the Water Services Act (No 108 of 1997). Regulation 2834 has been replaced by Regulation 3630 in 2023 but will only come in effect during the next Blue Drop audit cycle.

Table 184 - No. compliant versus shortfall in Supervisor and Process Controller staff

<table>
<thead>
<tr>
<th>WSA &amp; WB/WSP Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th># Available Compliant Staff</th>
<th>Staff Shortfall</th>
<th>Ratio*</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PCs</td>
<td>Supervisor**</td>
<td>Total</td>
<td>PCs</td>
</tr>
<tr>
<td>Magalies Water - Vaalkop</td>
<td>1</td>
<td>5</td>
<td>8</td>
<td>2</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Midvaal Water</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Dr. Ruth S Mompatti DM</td>
<td>7</td>
<td>7</td>
<td>17</td>
<td>15</td>
<td>31</td>
<td>3</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>8</td>
<td>8</td>
<td>16</td>
<td>16</td>
<td>31</td>
<td>3</td>
</tr>
<tr>
<td>Kgetlengriver LM</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>2</td>
<td>3</td>
<td>7</td>
<td>2</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Maquassi Hills LM</td>
<td>None</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moretele LM</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>3</td>
<td>4</td>
<td>9</td>
<td>4</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>7</td>
<td>5</td>
<td>9</td>
<td>0</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>33</td>
<td>39</td>
<td>79</td>
<td>29</td>
<td>108</td>
<td>31</td>
</tr>
</tbody>
</table>

*Ratio depicts the no. of qualified staff divided by the no. of WTWs operated by this no. of staff. E.g. Dr Ruth S Mompatti has 20 compliant Sups + PCs, divided by 7 WTWs = 2.9 qualified staff per WTW

**NB:** The Supervisor totals will be inflated as it is not possible to differentiate between which Supervisors are shared/roaming with other Class C to E WTWs

Competent human resources are vital enablers in ensuring efficient and sustainable management of water services and delivery of safe water quality to consumers. For the province in general, the operational competencies are found to be excellent for the Supervisory staff and predominantly excellent for the PCs in Magalies Water Vaalkop and Midvaal Water, Madibeng LM and Moses Kotane LM, as illustrated in the table above.
Plant Supervisors: The pie charts indicate that 88% (29 of 33) of Plant Supervisors complies with the Blue Drop standard, with 4 shortfalls.

Process Controllers: Similarly, 72% (79 of 110) of the PC staff complies with the required standards, noting a zero shortfall for Magalies Water, Midvaal Water and 4 WSAs. There is a 28% (31 of 110) shortfall in Process Controllers with the highest shortfalls in the Ngaka Modiri Molema DM and Dr Ruth S Mompati DM.

Blue Drop standards require of Class A and B plants to employ dedicated Supervisors per WTW and Process Controllers per shift per works, whereas Class C to E plants may share Supervisory staff across works. Shifts have been introduced to ensure optimal operations while addressing security risks, particularly as it relates to theft and vandalism. Telemetry also reduces the requirement for on-site staff during night shifts, but these relaxations have to be done within the DWS regulatory guidelines.

The Regulator expects correlation between the competence of an operational team and the performance of a WTW, as measured by the BD score. The data indicates as follows:

- Magalies Water, Midvaal Water and all the WSAs have qualified PCs in place
- 9 WSAs have qualified Supervisors with exception of the Ngaka Modiri Molema DM.
- With the exception of Magalies Water, Midvaal Water and Madibeng LM, 9 WSAs have shortfalls in qualified Process Controllers and 3 WSAs have shortfalls in qualified Supervisors.

It is expected that a correlation would exist between the competence of an operational team and the performance of a water treatment works, as measured by the BD score. The results from the ratio analysis indicate high ratios (>3.0) for Magalies Water, Midvaal Water and 4 WSAs with WTWs.

Overall, the comparative bar chart confirms a reasonably close correlation between Magalies Water, Midvaal Water, Madibeng LM Moses Kotane LM, JB Marks LM and Rustenburg LM with high ratios (ranging from 3.0 to 10.0) and average to high BD scores (ranging from 50.6% to 92.6%). Lower ratios and lower BD scores are also noted for the bottom 3 WSAs in the bar chart above. No extreme variations are noted when comparing the ratios against the BD scores respectively.
(ii) Technical, Scientific and Maintenance staff

In addition to operational capacity (above), good management practice also requires access to qualified engineers, technicians, technologists, MISA appointees, scientists, and maintenance capability (below). Such competencies could reside in-house or accessible through term contracts and external specialists.

Table 185 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff

<table>
<thead>
<tr>
<th>WSA &amp; WB/WSP Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Maintenance Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magalies Water - Vaalikop</td>
<td>1</td>
<td>5 in NW</td>
<td>Internal Team (only); Internal+Term Contract</td>
</tr>
<tr>
<td>Midvaal Water</td>
<td>1</td>
<td>1</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>7</td>
<td>7</td>
<td>Internal+Specific Outsourcing; Internal Team (only); No Capacity</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>8</td>
<td>8</td>
<td>Internal Team (only); Internal+Term Contract</td>
</tr>
<tr>
<td>Kgetlengriver LM</td>
<td>2</td>
<td>2</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>2</td>
<td>3</td>
<td>Internal Team (only); Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Maquassi Hills LM</td>
<td>None</td>
<td>2</td>
<td>Internal+Term Contract; Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>None</td>
<td>1</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Moretele LM</td>
<td>None</td>
<td>1</td>
<td>Internal+Specific Outsourcing; Internal Team (only)</td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>3</td>
<td>4</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>7</td>
<td>5</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>2</td>
<td>6</td>
<td>Internal Team (only); Internal+Specific Outsourcing</td>
</tr>
</tbody>
</table>

Totals: 33 39

<table>
<thead>
<tr>
<th>WSA &amp; WB/WSP Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Qualified Technical Staff (#)</th>
<th>Technical Shortfall (#)</th>
<th>Qualified Scientists (#)</th>
<th>Scientists Shortfall (#)</th>
<th>Ratio*</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magalies Water - Vaalikop</td>
<td>1</td>
<td>5 in NW</td>
<td>1 Technicians 1 Technologists 1 Engineers 1 MISA appointees</td>
<td>0 0 0 1</td>
<td>0 0 0 1</td>
<td>0.8</td>
<td>69.3% ave.</td>
<td></td>
</tr>
<tr>
<td>Midvaal Water</td>
<td>1</td>
<td>1</td>
<td>1 Technicians 1 Technologists 1 Engineers 1 MISA appointees</td>
<td>0 0 0 1</td>
<td>0 0 0 1</td>
<td>0.8</td>
<td>82.8%</td>
<td></td>
</tr>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>7</td>
<td>7</td>
<td>2 Technicians 1 Technologists 1 Engineers 1 MISA appointees</td>
<td>0 0 0 1</td>
<td>0 0 0 1</td>
<td>0.8</td>
<td>21.6%</td>
<td></td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>8</td>
<td>8</td>
<td>1 Technicians 1 Technologists 1 Engineers 1 MISA appointees</td>
<td>4 4 4 4</td>
<td>0 0 0 0</td>
<td>1.0</td>
<td>50.64%</td>
<td></td>
</tr>
<tr>
<td>Kgetlengriver LM</td>
<td>2</td>
<td>2</td>
<td>0 Technicians 0 Technologists 0 Engineers 0 MISA appointees</td>
<td>0 0 0 0</td>
<td>0 0 0 0</td>
<td>0.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>2</td>
<td>3</td>
<td>1 Technicians 1 Technologists 1 Engineers 1 MISA appointees</td>
<td>1 1 1 1</td>
<td>0 0 0 0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Maquassi Hills LM**</td>
<td>None</td>
<td>2</td>
<td>0 Technicians 0 Technologists 0 Engineers 0 MISA appointees</td>
<td>0 0 0 0</td>
<td>0 0 0 0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Matlosana LM**</td>
<td>None</td>
<td>1</td>
<td>2 Technicians 1 Technologists 1 Engineers 1 MISA appointees</td>
<td>4 4 4 4</td>
<td>0 0 0 0</td>
<td>1.0</td>
<td>87.82%</td>
<td></td>
</tr>
<tr>
<td>Moretele LM**</td>
<td>None</td>
<td>1</td>
<td>2 Technicians 1 Technologists 1 Engineers 1 MISA appointees</td>
<td>4 4 4 4</td>
<td>0 0 0 0</td>
<td>1.0</td>
<td>37.50%</td>
<td></td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>3</td>
<td>4</td>
<td>3 Technicians 2 Technologists 1 Engineers 1 MISA appointees</td>
<td>0 0 0 0</td>
<td>0 0 0 0</td>
<td>0.0</td>
<td>69.25%</td>
<td></td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>7</td>
<td>5</td>
<td>1 Technicians 1 Technologists 1 Engineers 1 MISA appointees</td>
<td>2 2 2 2</td>
<td>0 0 0 0</td>
<td>0.0</td>
<td>36.74%</td>
<td></td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>2</td>
<td>6</td>
<td>1 Technicians 1 Technologists 1 Engineers 1 MISA appointees</td>
<td>3 3 3 3</td>
<td>1 1 1 1</td>
<td>0.5</td>
<td>78.31%</td>
<td></td>
</tr>
</tbody>
</table>

Totals: 33 39 18 15 12 9

Note: Bloem Water (Sedibeng Water) Balkfontein WTW in FS supplies potable water to 2 WSSs in Maquassi Hills LM; The City of Tshwane MM Temba WTW in GP is the sole bulk water supplier to Moretele LM; Midvaal Water is the sole bulk water provider in the Matlosana LM

* The single number ratio depicts the no. of qualified technical staff divided by the no. of WSSs that have access to the staff. E.g., JB Marks has 6 qualified staff, divided by 8 WSSs = 0.8 qualified staff per WSS

** Maquassi Hills LM receives potable bulk water from the Balkfontien WTW (Bloem Water now CVW) in the Free State province but still has two other systems in the WSA; Matlosana LM receives potable water from Midvaal Water but still has staff linked to the distribution system; Moretele LM receives potable bulk water from the Pretoria Temba WTW and the Magalies Water Klipdrift WTW both situated in the Gauteng province – there is no indication of any staff linked to the distribution system

Note 1: “Qualified Technical Staff” means staff appointed in positions to support water services, and who has the required qualifications. “Technical Shortfall” is calculated based on a minimum requirement of at least 3 Engineers or more than 1 of each of Engineers, Technologists & Technicians; and at least one 1 Candidate Scientist and 1 Professional Scientist per WSI.

Note 2: “Qualified Scientists” means professional registered scientists (SACNASP) and candidate scientists appointed in positions to support water services. “Scientists shortfall” means that the WSA does not have at least one qualified SACNASP registered scientist and at least one 1 candidate scientist in their employ or contracted.

In terms of maintenance capacity, all the municipalities in the province have a reasonable contingent of qualified technical and maintenance staff. The maintenance staff comprises of a collective of in-house, contracted, or outsourced personnel. The data indicates that:
Midvaal Water have internal maintenance teams supplement with specific outsourced services.
Magalies Water have internal maintenance teams supplemented with term contracts.
4 of 10 (40%) WSAs have in-house maintenance teams.
4 of 10 (40%) WSAs have internal maintenance teams supplemented with term contracts.
6 of 10 (60%) WSAs have internal maintenance teams supplement with specific outsourced services.

In general, the province presents a strong case for qualified professional technical staff as follows:

- A total of 37 qualified staff comprised of 6 Engineers, 18 Technologists, 13 Technicians, no MISA appointees (qualified); and 12 SACNASP registered scientists are assigned to Magalies Water, Midvaal Water and 5 WSAs.
- A total shortfall of 24 persons is identified, consisting of 15 technical staff and 9 scientists.
- Midvaal Water and 6 WSAs have a total shortfall of 15 qualified technical staff with the highest indicated for Kgetlengrivier LM and Maquassi Hills (4 each).
- Magalies Water, Midvaal Water and 8 WSAs have access to credible laboratories that comply with the Blue Drop standards.

Ratio analysis has been done to determine the number of qualified technical and scientific staff assigned per WSS. It is expected that a higher ratio would correspond with well-performing and maintained water supply systems, as represented by the BD score.

The schematic above does show a strong correlation between medium to high ratios (>1.4) and medium to high BD scores for Matlosana LM, Midvaal Water, Moses Kotane LM and Magalies Water (ranging from 69.3% to 87.8%). Similarly, Lower ratios and lower BD scores are associated with Ngaka Modiri Molema DM and Dr Ruth S Mompati DM. In contrast, JB Marks reflects a high BD score (due to the BD certified Potchefstroom WSS) and a lower ratio. Some correlation can be drawn between technical capacity and water supply performance. The involvement of Midvaal Water and Magalies Water have made a significant (positive) impact on the municipal BD scores particularly in the case of the Matlosana LM and Moses Kotane LM.
Overall, the results highlight the inter-dependency between technical capacity and performance. One of the options to enhance operational capacity is through dedicated training programmes. The Blue Drop audit incentivises training of operational staff over the 2-year period prior to the audit date. The results are summarised as follows:

Table 186 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa

<table>
<thead>
<tr>
<th>WSA &amp; WB/WSP Name</th>
<th># WTWs</th>
<th># WTW staff attending training</th>
<th># WTW without training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magalies Water - Vaalikop</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Midvaal Water</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Dr. Ruth S Mompadi DM</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Maquassi Hills LM</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moretele LM</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>7</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>33</td>
<td>16 (48%)</td>
<td>17 (52%)</td>
</tr>
</tbody>
</table>

The results confirm that Magalies Water, Midvaal Water and 5 WSAs had their operational staff attend training over the past 2 years. 16 of 33 WTWs and boreholes had their operational staff attend training over the past 2 years. Investment in human capital through technical skills development is likely to mitigate some of the water quality failures and lower performances noted, and municipalities and water boards should prioritise ongoing skills development of technical staff and appointment of qualified staff that are legible for registration.

Diagnostic 2: Treatment Capacity and Flow Distribution

**Aim:** Diagnostic 2 deals with design and flow related dynamics, comprising of: i) design capacity and operational flow, ii) raw water abstraction, and iii) WUE and SIV.

**(i) Design Capacity and Operational Flow**

This diagnostic assesses the status of plant design capacity and daily water production at the WTWs, as well as SIVs as measured at the outflow from the WTW or inflow to the water distribution network. A capable WTW requires adequate installed design capacity and functional equipment to operate optimally. If the WTW design capacity is exceeded by the average daily production (treatment) volume, the WTW will not be able to deliver SANS compliant water quality. The available design capacity is typically exceeded when the water demand exceeds the installed design capacity, or when unit processes or equipment are dysfunctional, or when electrical supply problems render treatment and pumping of water defective. Typically, the production volume and SIV is the same if 1 WTW supplies 1 WSS, but different if multiple supply systems are feeding from a singular WTW.

**Findings:** Analysis of the design capacity and average daily production/treatment volume indicate a total design capacity of 956,151 kl/d for the province, with a total average daily treatment (operational) volume of 566,880 kl/d. Theoretically, this implies that 59% of the design capacity is used with 41% available to meet additional water demand. However, the full 956,151 kl/d is not available as some infrastructure is dysfunctional, leaving 881,167 kl/d available. The reduced capacity means that the province is closer to its total available capacity (64%) with a 36% surplus available. The capacity differential (difference between the installed and available capacity) will not constrain or impede any further social and economic development in the drainage areas. The WSAs do report and have knowledge of their installed and available capacities, and a higher figure than 36% surplus available cannot be expected.

For the province in general, all the WTWs are operating within their design capacities with the exception of 1 WTW that exceeds their total design capacity (3%). This risk is currently mitigated through operational optimisation and preventative maintenance regimes.
Table 187 - Summary of WTWs design and available capacities, average daily production, % available capacity, and total SIV towards the WSSs

<table>
<thead>
<tr>
<th>WSA &amp; WB/WSP Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Design Capacity (kl/d)</th>
<th>Available Design Capacity (kl/d)</th>
<th>Average Daily Production (kl/d)</th>
<th>Available Variance* (kl/d)</th>
<th>% Use Available Capacity</th>
<th>Total SIV towards the WSS (kl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magalies Water - Vaalkop</td>
<td>1</td>
<td>5 in NW</td>
<td>270,000</td>
<td>270,000</td>
<td>224,746</td>
<td>45,254</td>
<td>83%</td>
<td>64,700</td>
</tr>
<tr>
<td>Midvaal Water</td>
<td>1</td>
<td>1</td>
<td>320,000</td>
<td>250,000</td>
<td>130,000</td>
<td>120,000</td>
<td>52%</td>
<td>98,000</td>
</tr>
<tr>
<td>Dr. Ruth S Mompatai DM</td>
<td>7</td>
<td>7</td>
<td>61,300</td>
<td>60,736</td>
<td>38,988</td>
<td>21,748</td>
<td>64%</td>
<td>38,780</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>8</td>
<td>8</td>
<td>111,057</td>
<td>111,057</td>
<td>64,119</td>
<td>46,938</td>
<td>58%</td>
<td>64,335</td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>2</td>
<td>2</td>
<td>8,000</td>
<td>8,000</td>
<td>0</td>
<td>8,000</td>
<td>0%</td>
<td>8,000</td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>2</td>
<td>3</td>
<td>70,000</td>
<td>68,000</td>
<td>40,000</td>
<td>28,000</td>
<td>59%</td>
<td>62,860</td>
</tr>
<tr>
<td>Maquassi Hills LM</td>
<td>None</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12,819</td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>Midvaal Water</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moretele LM</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12,250</td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>3</td>
<td>4</td>
<td>4,600</td>
<td>4,480</td>
<td>3,119</td>
<td>1,361</td>
<td>70%</td>
<td>76,519</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>7</td>
<td>5</td>
<td>96,694</td>
<td>96,694</td>
<td>55,130</td>
<td>41,564</td>
<td>57%</td>
<td>55,130</td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>2</td>
<td>6</td>
<td>14,500</td>
<td>12,200</td>
<td>10,778</td>
<td>1,422</td>
<td>88%</td>
<td>10,778</td>
</tr>
<tr>
<td>Totals</td>
<td>33</td>
<td>39</td>
<td>956,151</td>
<td>881,167</td>
<td>566,880</td>
<td>314,287</td>
<td>64%</td>
<td>504,171</td>
</tr>
</tbody>
</table>

Note: Bloem Water (Sedibeng Water) Balkfontein WTW in FS supplies potable water to 2 WSSs in Maquassi Hills LM; The City of Tshwane MM Temba WTW in GP is the sole bulk water supplier to Moretele LM; Midvaal Water is the sole bulk water provider in the Matlosana LM

* Difference between the available design capacity and the average daily production

Figure 143 - Design and available capacity, average daily production, available variance and total SIV for the WTWs
(ii) Raw Water Abstraction

This diagnostic takes a snapshot view of the status of water abstraction authorisations from natural water resources across the province. As per the National Water Act (Act no 36 of 1998), Water Use Authorisation (WUA) mandate the maximum abstraction volumes of raw water, and the installation and monitoring of abstraction, inflow and outflow meters, whilst the BD audit requires WSAs to report the flows on IRIS and to calibrate meters annually. Any defects in terms of abstracting water from a resource without an authorisation, or exceeding the authorised volume, or reporting inaccurate volumes, or not monitoring abstraction against authorised volumes, are considered to be a regulatory risk and contravention of the law.

Findings: Data pertaining to the daily abstraction volumes (kl/d) (Authorised), average daily treatment volumes (kl/d), the names of the WTWs exceeding/with no Daily Abstraction Volumes (Authorised) and Average Daily Treatment Volumes (Authorised) is captured in the tables below.

### Table 188 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances & WTWs listed For Enforcement Action

<table>
<thead>
<tr>
<th>WSA &amp; WB/WSP Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Daily Abstraction Volumes (Authorised) (kl/d)</th>
<th>Average Daily Treatment Volume (kl/d)</th>
<th>Average Variance (kl/d) [+ or Minus]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magalies Water - Vaalkop</td>
<td>1</td>
<td>5</td>
<td>248,082</td>
<td>224,746</td>
<td>23,336</td>
</tr>
<tr>
<td>Midvaal Water</td>
<td>1</td>
<td>1</td>
<td>238,000</td>
<td>130,000</td>
<td>108,000</td>
</tr>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>7</td>
<td>7</td>
<td>7,944</td>
<td>38,988</td>
<td>-31,044</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>8</td>
<td>8</td>
<td>26,682</td>
<td>64,119</td>
<td>-37,437</td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>2</td>
<td>2</td>
<td>100,000</td>
<td>40,000</td>
<td>60,000</td>
</tr>
<tr>
<td>Maquassi Hills LM</td>
<td>None</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moretele LM</td>
<td>None</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>3</td>
<td>4</td>
<td>3,333</td>
<td>3,119</td>
<td>214</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>7</td>
<td>5</td>
<td>51,600</td>
<td>55,130</td>
<td>-3,530</td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>2</td>
<td>6</td>
<td>31,400</td>
<td>10,778</td>
<td>20,622</td>
</tr>
<tr>
<td>Totals</td>
<td>33</td>
<td>45</td>
<td>707,041</td>
<td>566,880</td>
<td>140,161</td>
</tr>
</tbody>
</table>

### Table 188 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances & WTWs listed For Enforcement Action

<table>
<thead>
<tr>
<th>WSA &amp; WB/WSP Name</th>
<th>WTW exceeding the Daily Abstraction Volumes (Authorised)</th>
<th>WTW with no Daily Abstraction Volumes (Authorised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>2 WTWs</td>
<td>5 WTWs</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>2 WTWs</td>
<td>6 WTWs</td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>2 WTWs</td>
<td></td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>5 WTWs</td>
<td></td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>1 WTW</td>
<td>4 WTWs</td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>5</td>
<td>18</td>
</tr>
</tbody>
</table>
WTWs that exceed the Daily Abstraction Volumes (Authorised) and WTWs with no Daily Abstraction Volumes (Authorised) are reflected in the 2nd table above. WTWs that are not complying with the regulations will be required to show correction in the next Blue Drop audit cycle. The results conclude that 5 WTWs are exceeding the permitted abstraction limits and 15 WTWs provided authorised water use abstraction volumes. The Daily Abstraction Volumes (Authorised) are not known for 18 water treatment systems resulting in negative average variances that skew the data sets. The negative average variances could be clearly attributed to the Dr Ruth S Mompati DM, JB Marks LM and Ngaka Modiri Molema DM for over abstraction.

For future BD audits, WSA/WSPs will be required to provide ‘actual’ abstraction volumes so that a comparative analysis can be undertaken of the ‘actual’ abstraction volume versus the authorised water use abstraction volumes (maximum). This would require that the WSAs and WSPs/WBs monitor and record all critical path flows (abstraction, raw and final).

(iii) Water Use Efficiency and System Input Value

The Department is committed to consider issues related to water scarcity and security, aiming to ensure there is sufficient water for the population, the economy, and the environment by increasing water use efficiency across all sectors. Water use for services sectors is specifically dealing with the quantity of water used directly by the consumer through the public distribution network and industries connected to the network.

This diagnostic assesses the water use efficiency (i.e., the average daily consumption in litres per person per day) and the individual and collective performance of the water supply systems. WUE indicates how effective water is used by consumers, i.e. the process between effective water use and actual water abstraction. This concept is closely related to the Department’s No Drop Certification assessment, whereby WUE, NRW and water losses are targeted as part of Water Conservation and Water Demand Management strategies by municipalities.

**Findings:** Both the Blue Drop audit and No Drop audit requires an IWA water balance to determine the SIV into each water supply system, and to identify and quantify possible losses from abstraction to the end-of-use point. Maquassi Hills LM, Ngaka Modiri Molema DM and Rustenburg LM systems have full water balances in place for 13 WSSs in total. 9 WSSs in 6 WSAs have partial water balances in place, and 5 WSAs with a total of 17 WSSs do not have water balances in place.

WUE is calculated based on the SIV contributions, population served, and the average daily consumption, as summarised in the following table.
For the province, 504,171 kl/d water is supplied to 2,206,785 consumers. Comparatively, Rustenburg LM distributes 21% of the total provincial SIV, followed by Matlosana LM (19%), JB Marks (13%) and Madibeng LM (12%). An average 228 litre of water is used per person per day, which implies an average per capita water use. Results from the diagnostic data show that 2 WSAs have WUEs of more than 300 l/c/d, which is regarded as extremely high according to national benchmarks. And 1 WSA has WUE between 250–300 l/c/d, which is regarded as poor. No Drop Certification is specifically tasked with plans to curb water losses and improve NRW through water accounting assessments and water conservation and demand management.
Diagnostic 3: Drinking Water Quality (DWQ) Monitoring and Compliance

**Aim:** Blue Drop audits values the principles of “To measure is to know” and “To know is to manage”. The primary objective of a water treatment plant is to produce final water quality that is safe for human consumption at the end of the distribution network. This standard can only be measured and achieved if operational and compliance monitoring and DWQ compliance is executed at the correct frequency, sample point, and determinand type. This diagnostic assesses the i) operational and compliance monitoring status, ii) drinking water quality compliance, and iii) risk defined compliance and laboratory credibility.

(i) Drinking water operational and compliance monitoring

**Findings:** A minimum level of 90% operational monitoring compliance is applied as benchmark, to give weight to the importance of sampling and monitoring of the raw water, process unit water, and final water across the treatment stream. Compliance monitoring is also informed by SANS 241:2015 and the requirement for risk-informed monitoring through the WaSP process at both the WTW final and distribution network. DWQ compliance is calculated against the population size and the mandatory limits set by SANS 241:2015 and the Blue Drop standards, as calculated and reported from data loaded in the IRIS.

**Table 190 - Summary of the KPA 2 WTW operational and WSS compliance monitoring status**

<table>
<thead>
<tr>
<th>WSA &amp; WB/WSP Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>WTW Operational monitoring [KPA 2 sub-KPA 2.b)]</th>
<th>WSS Compliance monitoring [KPA 2 sub-KPA 2.c)]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Satisfactory (BD score &gt;90%)</td>
<td>Not Satisfactory (BD score &lt;90%)</td>
</tr>
<tr>
<td>Magalies Water - Vaalikop</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Midvaal Water</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>7</td>
<td>7</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Maquassi Hills LM</td>
<td>None</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>None</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Moretele LM</td>
<td>None</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>33</strong></td>
<td><strong>39</strong></td>
<td><strong>13 (39%)</strong></td>
<td><strong>20 (61%)</strong></td>
</tr>
</tbody>
</table>

The performance recorded in the table above stems from performance data as measured against the Blue Drop Standard expressed in KPA 2 and sub-KPAs 2.b) and 2.c). Overall, an unsatisfactory sampling and analysis regime is observed for both operational (61%) and compliance (82%) monitoring.

The data indicates that 13 of 33 WTWs (39%) are on par with good practice for operational monitoring of the raw and final water and the respective process units at the WTW. Magalies Water and Midvaal Water are doing well, whilst the 7 WSAs fail to meet the Blue Drop standard. In terms of compliance monitoring, 7 WSSs (18%) are on par with good compliance monitoring practices, and 32 WSSs (82%) are failing the Blue Drop standard.

The latter observation is noted with deep concern. Compliance monitoring is a legal requirement and the only means to measure the DWQ performance of a water supply system. Operational monitoring is the cornerstone of day-to-day process adjustments and optimisation to ensure that the water treatment is efficient and delivers quality final water. The results indicate that 20 WTWs and 32 WSSs are not achieving regulatory and industry standards.

(ii) Drinking water quality compliance

**Findings:** DWQ compliance is measured against the requirements of SANS 241:2015 under KPA 5 of the Blue Drop audit. The tables following summarises the results of the DWQ status for Microbiological and Chemical Compliance, which also carries the highest Blue Drop score weighting of 35.

**Table 191 - Provincial Summary of the DWQ Status for Microbiological Compliance**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Micro Compliance</th>
<th># WSS Micro Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>7</td>
<td>254,217</td>
<td>82.69%</td>
<td>Excellent 1 Good 4 Unacceptable 4</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>8</td>
<td>243,330</td>
<td>99.41%</td>
<td>Excellent 1 Good 1 Unacceptable 2</td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>2</td>
<td>39,500</td>
<td>92.86%</td>
<td>Excellent 1 Good 1 Unacceptable 2</td>
</tr>
</tbody>
</table>

The performance recorded in the table above stems from performance data as measured against the Blue Drop Standard expressed in KPA 2 and sub-KPAs 2.b) and 2.c). Overall, an unsatisfactory sampling and analysis regime is observed for both operational (61%) and compliance (82%) monitoring.
Figure 148 - Provincial Microbiological Drinking Water Quality Status

Out of the 39 WSSs, 22 (56%) systems achieved excellent and good microbiological quality, whilst 17 (44%) systems have an unacceptable microbiological water quality status. The water in these systems pose a serious acute health risk to the community. Failure to produce water that meets microbiological compliance standards can be linked back to poor operations, defective infrastructure, inadequate dosing rates, absence of disinfection chemicals, lack of monitoring, lack of operating and chemistry knowledge, and several other root causes. WSIs that are not monitoring the final water quality at the outlet of the treatment plant or at specific end use points are required to develop a monitoring programme and resume with compliance monitoring as a matter of urgency.
Chemical acute health compliance shows that 31 (79%) systems have excellent, and no systems have good water quality, whilst 8 (21%) systems in 5 WSAs have an unacceptable chemical acute health compliance. Chemical chronic health compliance shows that 29 (74%) systems have excellent, and 1 (3%) system have good water quality, whilst 9 systems (23%) in 4 WSAs have an unacceptable chemical chronic health compliance.

The Water Services Act upholds standards regarding the monitoring and reporting on drinking water quality and issuance of advisory notices to the public when significant DWQ failures are observed. The audit process applies a penalty when DWQ failures are noticed without issuing such Water Quality Alert Notices to forewarn consumers of the status of (unsafe) water quality and to advise communities to source alternative water sources or methods to disinfect water used for drinking water purposes.

The following table reflects the compliance status of the WSAs as regards the issuing of these notices for DWQ failures.

**Table 193 - Summary of Penalties Applied to WSSs for not Issuing Advisory Notices**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSS</th>
<th># WSS No Penalty Applied</th>
<th># WSS Partial Penalty Applied</th>
<th>WSS Names Partial Penalty</th>
<th># WSS Full Penalty Applied</th>
<th>WSS Names Full Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Ruth S Mompatri DM</td>
<td>7</td>
<td>4</td>
<td>2</td>
<td>Bogosining, Pudimoe</td>
<td>1</td>
<td>Schweizer Reneke</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>8</td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>2</td>
<td></td>
<td>2</td>
<td>Koster, Swartruggens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>Brits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maquassi Hills LM</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>1</td>
<td></td>
<td>1</td>
<td>City of Matlosana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moretele LM</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Temba</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 149 - Provincial Chemical Acute Health and Chronic Health Drinking Water Quality Status
No penalties were applied to 21 (54%) WSSs in 5 WSAs. Partial penalties were applied to 14 (36%) WSSs in 7 WSAs and full penalties were applied to 4 (10%) WSSs in 3 WSAs.

(iii) Risk defined compliance and laboratory credibility

**Findings:** Risk-defined compliance standards aim to determine the compliance (to SANS 241) of those parameters that have been found to pose a risk in a specific WSS and need to be included in the routine monitoring programme or frequency as prescribed by SANS 241. The province achieved an average Annual Risk Defined Compliance of 82%. Excellent risk defined compliance was achieved by 7 (18%) systems, good compliance for 7 (18%) systems and bad compliance for 25 (64%) systems with most of these systems residing in Dr. Ruth S Mompati DM, JB Marks LM, Moses Kotane LM and Ngaka Modiri Molema DM.

**Table 194 - Summary of the DWQ Compliance for Risk Defined Compliance**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>Ave. % Risk Defined Compliance</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>7</td>
<td>254,217</td>
<td>71.62%</td>
<td>2</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>8</td>
<td>243,330</td>
<td>93.76%</td>
<td>3</td>
</tr>
<tr>
<td>Gletlengrivier LM</td>
<td>2</td>
<td>39,500</td>
<td>81.58%</td>
<td></td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>3</td>
<td>143,529</td>
<td>87.96%</td>
<td>1</td>
</tr>
<tr>
<td>Maquass Hills LM</td>
<td>2</td>
<td>69,000</td>
<td>59.11%</td>
<td></td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>1</td>
<td>500,000</td>
<td>95.56%</td>
<td></td>
</tr>
<tr>
<td>Moretele LM</td>
<td>1</td>
<td>40,082</td>
<td>89.74%</td>
<td>1</td>
</tr>
<tr>
<td>Mosakote LM</td>
<td>4</td>
<td>246,281</td>
<td>77.64%</td>
<td>4</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>5</td>
<td>251,947</td>
<td>67.05%</td>
<td>5</td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>6</td>
<td>418,899</td>
<td>92.66%</td>
<td>3</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>39</td>
<td>2,206,785</td>
<td>81.7%</td>
<td>7</td>
</tr>
</tbody>
</table>

The aim of operational determinand compliance is to determine the efficiency of the water treatment process, by monitoring those parameters which are used to control the treatment process. Although not necessarily a health risk, these parameters provide good information on the integrity of the WTW. The province achieved an average % Actual Operational Determinand Compliance of 51%, the best performances coming from the Magalies Water and Midvaal Water, and the worst performances coming from the JB Marks LM and Ngaka Modiri Molema DM. Excellent risk defined compliance was achieved by 5 (13%) systems, good compliance for 1 (3%) system and bad compliance for 27 (69%) systems.

**Table 195 - Summary of the Treatment (Operational) Efficiency Index**

<table>
<thead>
<tr>
<th>WSA &amp; WB/WSP Name</th>
<th># WTWs</th>
<th>Population</th>
<th>Ave. % Actual Operational Determinand Compliance</th>
<th># WTW Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>Magalies Water - Vaalkop</td>
<td>1</td>
<td>442,965</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Midvaal Water</td>
<td>1</td>
<td>500,000</td>
<td>97%</td>
<td>1</td>
</tr>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>7</td>
<td>254,217</td>
<td>41%</td>
<td>2</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>8</td>
<td>243,330</td>
<td>30%</td>
<td>2</td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>2</td>
<td>39,500</td>
<td>43%</td>
<td></td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>2</td>
<td>143,529</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>Maquass Hills LM</td>
<td>None</td>
<td>69,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moretele LM</td>
<td>None</td>
<td>40,082</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>3</td>
<td>31,281</td>
<td>22%</td>
<td>3</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>7</td>
<td>251,947</td>
<td>51%</td>
<td>7</td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>2</td>
<td>190,934</td>
<td>49%</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>33</td>
<td>2,206,785</td>
<td>51%</td>
<td>5</td>
</tr>
</tbody>
</table>
The data confirms that 8 (89%) WSAs in the province have access to credible laboratories for compliance and operational analysis. These in-house or contracted laboratories are accredited with SANAS or have Proficiency Testing Schemes with SABS or have inter-laboratory quality checks in place to ensure that suitable analytical methods are applied and that quality assurance processes are followed to ensure credible water quality results. The province is predominantly meeting the regulatory expectation for the WSIs having access to credible analytical services for compliance and operational monitoring.

**Diagnostic 4: Technical Site Assessments**

**Aim:** The BD process makes provision for a Technical Site Assessment (TSA) in order to verify the desktop evidence through field-based inspections. This assessment includes a physical inspection of the entire water treatment plant with all its process units, as well as the reservoir and spot checks of a pumpstation and pipelines. The technical assessment is coupled with an asset condition check to determine an approximate cost (VROOM) to restore existing infrastructure to functional status for the treatment facility (only).

**Findings:** The results of the province’s TSAs are summarised in the table below. A deviation of 10% between the BD and TSA score indicate a misalignment between the administrative aspects and the work on the ground. The Regulator regards a WTW with a TSA score of >80% to have an acceptable level of process control and functional equipment, and a TSA score of 90% as an excellent system that complies with most of the Blue Drop TSA standards. A TSA score of <30% indicates that the treatment facility and network fails in most regards, and is evident of dysfunctional infrastructure, failed process control, absence of record keeping and monitoring, and poor water quality.

The VROOM cost presents a “Very Rough Order of Measurement” cost to return a WTWs functionality to its original design. More detail can be found in the Blue Drop Watch Report 2023.

<table>
<thead>
<tr>
<th>WSA &amp; WB/WSP Name</th>
<th>TSA Name</th>
<th>%TSA</th>
<th>2023 BD Score (%)</th>
<th>Civil cost estimate</th>
<th>Mechanical cost estimate</th>
<th>Electrical &amp; C&amp;I cost estimate</th>
<th>Total VROOM cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>Bogising</td>
<td>18.0</td>
<td>31.47%</td>
<td>307,200</td>
<td>1,075,200</td>
<td>153,600</td>
<td>1,536,000</td>
</tr>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>Pudimo</td>
<td>39.0</td>
<td>31.47%</td>
<td>3,700,000</td>
<td>9,620,000</td>
<td>1,480,000</td>
<td>14,800,000</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>Potchefstroom</td>
<td>94.0</td>
<td>92.60%</td>
<td>2,246,400</td>
<td>280,800</td>
<td>280,800</td>
<td>2,808,000</td>
</tr>
<tr>
<td>Kgetlengriver LM</td>
<td>Koster</td>
<td>44.0</td>
<td>21.60%</td>
<td>29,920,000</td>
<td>3,740,000</td>
<td>3,740,000</td>
<td>37,400,000</td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>Schoemansville</td>
<td>57.0</td>
<td>50.64%</td>
<td>831,600</td>
<td>3,326,400</td>
<td>0</td>
<td>4,158,000</td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>Mofwaal Water Company</td>
<td>95.0</td>
<td>87.82%</td>
<td>320,000</td>
<td>2,560,000</td>
<td>320,000</td>
<td>3,200,000</td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>Madikwe</td>
<td>60.0</td>
<td>69.25%</td>
<td>44,200</td>
<td>353,600</td>
<td>44,200</td>
<td>442,000</td>
</tr>
<tr>
<td>Ngaka Modiri Moleta DM</td>
<td>Mmbabatho</td>
<td>88.0</td>
<td>36.74%</td>
<td>20,000</td>
<td>140,000</td>
<td>40,000</td>
<td>200,000</td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>Bospoort</td>
<td>81.4</td>
<td>78.31%</td>
<td>2,015,640</td>
<td>2,267,595</td>
<td>755,865</td>
<td>5,039,100</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td></td>
<td>39,405,040</td>
<td>23,363,595</td>
<td>6,814,465</td>
<td>69,583,100</td>
</tr>
<tr>
<td>% Split of Cost Items</td>
<td></td>
<td>57%</td>
<td></td>
<td>33%</td>
<td>10%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

A deviation of >10% between the BD and TSA score is noted for only 3 WSAs. A deviation of >20% between the BD and TSA score is noted for Koster (22%) and Mmbabatho (51%). For the individual WTWs assessed in the province, a total budget of R69.6m is estimated, with the bulk of the work (90%) going towards restoration of mechanical equipment (33%) and civil infrastructure (57%).

**Diagnostic 5: Operation, Maintenance and Refurbishment of Assets**

**Aim:** Insufficient financial resources are often cited as a root cause to dysfunctional or non-compliant water treatment works and water networks. Knowledge and monitoring of fiscal spending are therefore a critical part of water services management and municipal governance of public assets. This diagnostic investigates the status of financial information as pertaining to O&M budgets and expenditure, asset figures, and capital funding.

**Findings:** A substantial amount of financial information was presented during the audit process. Unfortunately, the evidence was presented in different formats, levels of detail, or absent for some WSAs. It was observed that WSA teams with financial officials that were present during the audits performed better and had a better understanding of the water services challenges experienced by their technical peers.

Discrepancies observed included amongst others - generic or non-ringfenced budgets, contract lump sums for service providers presented as budgets, outdated or incomplete asset registers, and some cost drivers which were lacking. As data credibility presents a significant challenge, the Regulator grouped data into different certainty levels, as summarised at the end of this Diagnostic.
The result of each financial portfolio is discussed hereunder.

NOTE: The Regulator regards the financial and asset information with low confidence. Not all WSAs submitted verifiable information or complete financial data sets for the audit year in question.

**Capital, O&M Budget and Actual, and Asset Value**

The capital budgets, O&M budgets, O&M actual expenditure, and current asset values are summarised below.

<table>
<thead>
<tr>
<th>WSA &amp; WB/WSP Name</th>
<th>Capital budget available (R)</th>
<th>O&amp;M budget (R) (2021/22)</th>
<th>O&amp;M expended (R) (2021/22)</th>
<th>% Expended</th>
<th>Total Current Asset Value (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magalies Water - Vaalkop</td>
<td>NI</td>
<td>R536,412,521</td>
<td>R547,893,383</td>
<td>102%</td>
<td>R2,552,747,328</td>
</tr>
<tr>
<td>Middvaal Water</td>
<td>NI</td>
<td>R1,251,507,687</td>
<td>R1,290,168,768</td>
<td>103%</td>
<td>R3,155,777,179</td>
</tr>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>R76,018,055</td>
<td>R263,214,968</td>
<td>R141,750,892</td>
<td>54%</td>
<td>R1,368,339,101</td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>NI</td>
<td>R8,818,696</td>
<td>R2,306,488</td>
<td>26%</td>
<td>NI</td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>R105,608,000</td>
<td>R50,736,604</td>
<td>R48,995,373</td>
<td>97%</td>
<td>R3,155,777,179</td>
</tr>
<tr>
<td>Maquassi Hills LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>R261,430,820</td>
<td>R729,836,628</td>
<td>R365,278,926</td>
<td>50%</td>
<td>NI</td>
</tr>
<tr>
<td>Moretele LM</td>
<td>NI</td>
<td>R73,392,643</td>
<td>R91,328,692</td>
<td>124%</td>
<td>NI</td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>R6,000,000</td>
<td>R281,250,847</td>
<td>R160,835,219</td>
<td>57%</td>
<td>NI</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>R125,752,437</td>
<td>R158,462,477</td>
<td>R158,462,477</td>
<td>57%</td>
<td>NI</td>
</tr>
<tr>
<td>Totals</td>
<td>R603,251,101</td>
<td>R3,532,061,302</td>
<td>R2,873,738,524</td>
<td>81%</td>
<td>R7,076,863,608</td>
</tr>
</tbody>
</table>

The Regulatory Comments following in this Chapter list the capital projects with secured funding for each municipality and/or its bulk water provider (WSP). The capital lists are deemed to be a definitive means to address water service inadequacies and ensuring water infrastructure investment. A total capital budget of R603m has been reported for the refurbishment and upgrades of water supply system infrastructure for most of the WSAs. The largest capital budgets are observed for Matlosana LM (R261m), Ngaka Modiri Molema DM (R125.7m), and Madibeng LM (R105.6m).

For the 2021/22 fiscal year, the total O&M budget reported for the province was R3.532b, of which R2.874b (81%) has been expended. The highest over-expenditure of 124% by Moretele LM and the lowest under expenditure by Kgetlengrivier LM (26%) was observed. The provincial figures exclude only 2 WSAs who provided no financial information.

The total current asset value for water infrastructure (networks, pump stations, treatment plants) is reportedly R7.707b (excluding 9 WSAs with no information). The highest asset values are observed for Middvaal Water (R3.16b), followed by Magalies Water (R2.55b).
O&M Cost Benchmarking

By combining the SALGA and WRC WATCOST models, an estimation of the maintenance cost required per asset type can be done, i.e. civil, buildings, pipelines, mechanical, electrical, and instrumentation.

Table 198 - SALGA-WRC annual maintenance budget guideline and cost estimation

<table>
<thead>
<tr>
<th>Description</th>
<th>% of Current Asset Value</th>
<th>Asset Value Estimate</th>
<th>Modified SALGA Maintenance Guideline</th>
<th>Annual Maintenance Budget Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Asset Value estimate</td>
<td>100%</td>
<td>R7,076,863,608</td>
<td>15.75%</td>
<td>R152,860,254</td>
</tr>
<tr>
<td>Broken down into:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Civil Structures</td>
<td>46%</td>
<td>R3,255,357,260</td>
<td>0.50%</td>
<td>R16,276,786</td>
</tr>
<tr>
<td>2. Buildings</td>
<td>3%</td>
<td>R212,305,908</td>
<td>1.50%</td>
<td>R3,184,589</td>
</tr>
<tr>
<td>3. Pipelines</td>
<td>6%</td>
<td>R424,611,816</td>
<td>0.75%</td>
<td>R3,184,589</td>
</tr>
<tr>
<td>4. Mechanical Equipment</td>
<td>30%</td>
<td>R2,123,059,082</td>
<td>4.00%</td>
<td>R84,922,363</td>
</tr>
<tr>
<td>5. Electrical Equipment</td>
<td>11%</td>
<td>R778,454,997</td>
<td>4.00%</td>
<td>R31,138,200</td>
</tr>
<tr>
<td>6. Instrumentation</td>
<td>4%</td>
<td>R283,074,544</td>
<td>5.00%</td>
<td>R14,153,727</td>
</tr>
<tr>
<td>Totals</td>
<td>100%</td>
<td>R7,076,863,608</td>
<td>15.75%</td>
<td>R152,860,254</td>
</tr>
</tbody>
</table>

Minus 20% P&Gs and 10% Installation

R45,858,076

Total

R107,002,178

The model estimates that R152.8m (2.16%) is required per year to maintain the assets valued at R7.707b. Notably, this maintenance estimate assumes that all assets are functional. In cases where Blue Drop Certification is not being achieved, it can be assumed that some form of inefficiency or constraint is being experienced, and national benchmarks closer to 7% of the asset value is advocated (R495.2m).

The table below indicates the SALGA maintenance cost estimation in relation to the O&M budget, and O&M actual expended.

Table 199 - O&M cost estimates by the SALGA versus actual budget and expenditure figures

<table>
<thead>
<tr>
<th>Cost Reference</th>
<th>O&amp;M Cost Estimate</th>
<th>Period</th>
<th>% of Asset Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified SALGA</td>
<td>R152,860,254</td>
<td>Annually, estimation</td>
<td>2.16%</td>
</tr>
<tr>
<td>O&amp;M Budget</td>
<td>R3,532,061,302</td>
<td>Actual for 2021/22</td>
<td>50%</td>
</tr>
<tr>
<td>O&amp;M Spend</td>
<td>R2,873,738,524</td>
<td>Actual for 2021/22</td>
<td>41%</td>
</tr>
</tbody>
</table>

In addition, the table below indicates the Blue Drop audit findings on the water supply operations cost determination and water supply O&M budget status.

Table 200 - BD Audit Water Supply Operations Cost Determination and Water Supply O&M Budget status

<table>
<thead>
<tr>
<th>WSA &amp; WB/WSP Name</th>
<th>Water Supply Operations Cost Determination</th>
<th>Water Supply O&amp;M Budget status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magalies Water - Vaalkop</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Midvaal Water</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Dr. Ruth S Mompati DM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>JB Marks LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL); DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY; SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Kgetlengrivier LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Madibeng LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Maquassi Hills LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Matlosana LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Moretele LM</td>
<td>NO PROOF (0% SCORE); DETERMINED OF THE WHOLE SYSTEM</td>
<td>NO PROOF; SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Moses Kotane LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Ngaka Modiri Molema DM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL); DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Rustenburg LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL); DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY; SYSTEM SPECIFIC BUDGET</td>
</tr>
</tbody>
</table>

From the tables above, the cost dynamics can be summarised as follows:
The SALGA estimations for maintenance budgets is about 4.3% (Modified SALGA divided by O&M Budget) of the actual reported budgets for the 2021/22 fiscal year.

The actual O&M budget (50%) appears to be more than adequate when compared with the SALGA guideline (2.16%) or with the government benchmark (7%).

These figures are impacted by some of the WSAs who did not provide budget and expenditure figures, and by some inaccurate asset values and where no asset values were provided for.

Lastly, the municipalities presents budget and expenditure data at different levels (table above) i.e. financial figures are not always ringfenced per water supply system – thus rendering provincial summaries to be indicative.
11.1 Magalies Water

Introduction

Magalies Water is the bulk water utility in South Africa and supplies potable water to more than 500,000 people in Gauteng, North West, Limpopo. Magalies Water operations cover an area of 42,000 km² across the three provinces with water sourced from two major catchments being the Crocodile and the Pienaars rivers. However, in certain municipalities, Magalies Water serve on an operations and Maintenance contractual agreement where they operate the infrastructure owned by the local authority such as in Ngaka Modiri Molema DM and Dr Ruth Segomotsi Mompati DM in the North West province.

The utility serves the following 6 municipalities:

- City of Tshwane Metropolitan Municipality, supplied with 15.872 Ml/d
- Moses Kotane Local Municipality, supplied with 36 Ml/d
- Rustenburg Local Municipality, supplied with 20 Ml/d
- Modimolle/Mookgopong Local Municipality, supplied with 6.1 Ml/d
- Thabazimbi Local Municipality, supplied with 11 Ml/d
- Bela-Bela Local Municipality, supplied with 7.05 Ml/d

Magalies Water abstracts raw water and channelled to water treatments plants where it is treated before is supplied to its municipal and industrial clients. The Water Board own four WTPs, namely Vaalkop, Klipdrift, Wallmansthal and Cullinan. In total Magalies Water currently has the infrastructure and capacity to supply 314 megalitres or 314 million litres of water per day to all the municipalities mentioned above and the mines in the surrounding areas receiving bulk water from the water utility. Water is transported through pipelines, reservoirs, pumping stations, reticulation systems and owns a South African National Accreditation System (SANAS) accredited laboratory that is authorised and certified to analyse and rate the quality of water supplied to consumers. As such the performance of this bulk water utility is critical to the well-being of the people in area of supply.

Regulator’s Comment

The Blue Drop Audit was well attended by all relevant staff members and the personnel were well prepared, experienced, and understood the requirements of the Blue Drop Audit. Magalies Water is commended for their preparedness and information provided. The scale of the Magalies Water system is significant, and the local municipalities are fortunate to have this utility to assist them in the provision of safe drinking water for their consumers.

Magalies Water proactively seeks to comply with the ISO 14001 certification requirements and ensures that all its areas of operations have no impact on the environment. All the four water treatment works owned and operated by Magalies Water are ISO 14001 certified and have been retained the certification to date. The Water Board is equipped with a laboratory accredited with a South African National Accredited System (SANAS) that is authorised and certified to analyse water quality. The accreditation ensures that credibility of the results from the laboratory is not questionable and follows accredited methods in analytical procedures followed by the laboratory. These results are then submitted to the Departmental owned web-based system where drinking water quality results are submitted called Integrated Regulatory Information Systems (IRIS). The lab results as well as Incident Management Protocol are aligned such that any incidents with respect to failures in the systems are investigated and rectified immediately. The audit team was able to follow any incident within the systems. Therefore, consumers can be assured that the Magalies Water team continuously monitors all potential problems and actively manage these risks to ensure that the drinking water supplied is of excellent quality. The water quality data shows excellent compliance to all the required parameters and consumers within the Magalies Water area of supply are assured of being able to drink water straight from the tap. Water Quality results are published in the Water Boards annual reports and also when incidents are picked up, communication is issued to clients and also placed on Magalies Water website and can be commended for managing these large and complex systems with excellence!

Magalies Water operates and maintains its systems with a vast technical, operational, and scientific team who are qualified and competent in all technical, operational, and scientific aspects of drinking water supply. There are contracts in place for chemical supply, calibration/verification of meters and evidence of Capex budget and expenditure with long term planning. Pipelines equipped with cathodic protection however age analysis and network related audits and planning are still lacking. Operational costs determination based on all the five costs drivers, chemical costs, maintenance costs, compensation of employee, energy costs and raw water costs are in place.

Blue Drop Findings

The Regulator Notes finds that that there were some shortcomings, and the following summarises the collective recommendations as following:
With the exception of Cullinan WTW which had a process audit in place to assess the integrity of the WTW whether it meets all the design specification as originally intended. However all the WTW owned and operated by Magalies Water have condition assessment of the works is done, this is a shortcoming as it is not awarded a full score for the KPA however the Department is comforted by the fact that findings and recommendations of the condition assessments are implemented.

- The available budget was overspent by a small margin.
- Record keeping of maintenance work done and the maintenance planning that is aligned with asset register needs to be improved
- Minor improvements on asset register that is aligned with Blue Drop assessment criteria is required.

**Technical Site Inspection**

The Cullinan WTW is in a good condition with a TSA score of 94%. The Regulator observed that regular routine maintenance is done on site with no significant operational or maintenance issues noted. Both the operational and compliance water quality data show that this plant is producing water which complies with the drinking water standard.

The Magalies Water team was able to show how all divisions of the utility are able to maintain the water treatment processes as efficiently as possible with a large team. With jar Tests conducted on site to address any water quality variation that may occur that may require adjustments of chemical. The documentation provided allowed the audit team to drill down to the water quality results as well as up to identify the control measures and the risks carried by the utility. This included chemical stocks available, adjustments made and dosage rates which will help in estimation of duration it takes for a batch to complete and this helps in supply chain management to ensure there is sufficient stock of treatment chemicals. The team is commended on a job well done, setting a prime example of care, competence, and diligence in providing excellent water quality to consumers.

Refer to the Blue Drop Watch Report 2023 for more detail.
Midvaal Water Company Non-Profit Company (NPC) is the Water Services Provider that is responsible for abstraction, treatment, and distribution of bulk potable water to a number of consumers such as:

1. City of Matlosana Local Municipality (main consumer)
2. Mining Companies
3. other medium to small consumers.

Midvaal Water Company supplies good quality drinking water to approximately 500,000 consumers at the most. It is situated in the Middle Vaal Region, 160km downstream from the Barrage and 115km downstream from Parys. Water is abstracted from the Middle Vaal River approximately 15km South of Stilfontein. The design capacity of the treatment plant is 320 ML and operational capacity of 250 ML/day. The water is fed into a distribution network of over 125km of large diameter pipelines feeding 9 service reservoirs. Midvaal Water Company supply the City of Matlosana with 98,000kl/d of potable water and Midvaal Water consists of 7 pumpstations (South Vaal, Ellaton Endpoint, Vierfontein booster, Vierfontein plant) from where water is pumped to various bulk reservoirs.

**Regulatory Impression**

The Department would like to commend Midvaal Water Company for their readiness, dedicated and competent teamwork, as well as their excellent level of organization. The Blue Drop audit team was officially welcomed by the Chief Executive Officer together with team of experts Chief Operation Officer, Senior Manager Operations, Plant Manager, Plant Foreman, Process Controllers and Safety Officer. The plant well managed and despite the poor raw water quality from the Vaal River, the plant produces an excellent quality drinking water to the consumers. Midvaal Water Company is applauded for offering a WaSP that is detailed and implemented. Midvaal Water Company provided proof of the implementation of interventions and recommendations identified in the Water Safety Plan. Midvaal Water reviews and updates their WaSP on a regular basis, with input from all stakeholders however, the process audit and network findings were not incorporated into the WaSP. Midvaal Water is also commended for good record keeping and placing a logbook on every unit process in order to monitor every stage of production to ensure that each process is performing its intended purification function.

Midvaal Water has its own SANAS accredited laboratory for sample analysis and scientific services personnel that are qualified and experienced. Additionally, they have a workshop onsite as well as technical, operational, engineering staff to maintain its systems. Another accomplishment of Midvaal Water is its work on a trial project to use chlorine dioxide as a disinfectant while NCP is dealing with a chlorination gas shortage. Contracts for chemical supply are in place, and there is evidence of a Capex budget and expenditure with long-term planning. The raw water pumpstation is well-maintained, and no leaks have been discovered. Midvaal Water’s delivery network and booster pumpstation are in an area that has been invaded by the illegal miners also known as zama zamas, thus they have gone above and beyond to strengthen the security and safeguard their assets.

**Midvaal Water Company**

- The team is recognised for being extremely organised and well prepared for the assessments, as well as for their dedication.
- The Supervisory and Process Control staff comply with Regulation 813.
- The process controllers understand their duties and each unit process has a logbook in which the findings from each shift are recorded.
- The findings of the Process Audit and Network study are encouraged to be incorporated into the Water Safety Plan Midvaal Water Company.
- The maintenance schedule for Midvaal Water can be improved.
- Although there are operational issues with the DAF and Ozone units, they are recognised, and there is a plan is in place to address them.
- The available budget was overspent by a small margin.
- During the site visit there was issue of the large, isolated bubbles observed in the DAF and needs to be addressed.
- A small chemical spill occurred, although service staff were already informed of it.
- On the day of the inspection, there was chemical leaking from the dosing pipe joints, but service personnel had been alerted and it was being repaired.

**Technical Site Inspection**

The Midvaal Water Company WTW was inspected to verify the Blue Drop audit findings and received a technical site score of 95%. The plant is well maintained, and Process Controllers understands their duties. The potable water produced by the treatment plant is of high quality and can be used with high confidence. Refer to the Blue Drop Watch Report 2023 for more detail.
Blue Drop team and Midvaal Water Company team of experts

Well maintained raw water pumpstation

Logbook placed at on every unit process

The plant surrounding is well maintained
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>31.47%</td>
</tr>
<tr>
<td>2014</td>
<td>30.14%</td>
</tr>
<tr>
<td>2012</td>
<td>52.94%</td>
</tr>
<tr>
<td>2011</td>
<td>64.16%</td>
</tr>
</tbody>
</table>

### Key Performance Area

#### Bulk/WSP

<table>
<thead>
<tr>
<th>Weight</th>
<th>Bloemhof</th>
<th>Bogosing</th>
<th>Christiana</th>
<th>Kgomotso</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>39.43%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2014</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.08%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2012</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI</td>
<td>48.43%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blue Drop Score 2011</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI</td>
<td>76.23%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Majeakgoro</th>
<th>Pudimoe</th>
<th>Schweizer-Reneke</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>kL/d</td>
<td>kL/d</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td></td>
<td>9 600</td>
<td>20 000</td>
<td>6 000</td>
</tr>
</tbody>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Majeakgoro</th>
<th>Pudimoe</th>
<th>Schweizer-Reneke</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>kL/d</td>
<td>kL/d</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td></td>
<td>9 600</td>
<td>20 000</td>
<td>6 000</td>
</tr>
</tbody>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Majeakgoro</th>
<th>Pudimoe</th>
<th>Schweizer-Reneke</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>kL/d</td>
<td>kL/d</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Input Value</td>
<td></td>
<td>4 776</td>
<td>10 823</td>
<td>4 058</td>
</tr>
</tbody>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Majeakgoro</th>
<th>Pudimoe</th>
<th>Schweizer-Reneke</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>kL/d</td>
<td>kL/d</td>
<td>kL/d</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>49.75%</td>
<td>54.12%</td>
<td>67.63%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Majeakgoro</th>
<th>Pudimoe</th>
<th>Schweizer-Reneke</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal</td>
<td>Vaalharts Scheme (canal)</td>
<td>Vaal</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>30.76%</td>
<td>74.15%</td>
<td>24.86%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>24.90%</td>
<td>41.80%</td>
<td>26.70%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Majeakgoro</th>
<th>Pudimoe</th>
<th>Schweizer-Reneke</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Harts</td>
<td>Vaalharts Scheme (canal)</td>
<td>Wentzel Dam and boresholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>67.44%</td>
<td>48.80%</td>
<td>89.15%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>55.20%</td>
<td>48.30%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
The Regulator notes the dire state of management and drinking water quality in the Bogosing, Majeakgoro, Pudimoe and Schweizer-Reneke water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### 11.4 JB Marks Local Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>92.60%</td>
</tr>
<tr>
<td>2014</td>
<td>97.20%</td>
</tr>
<tr>
<td>2012</td>
<td>98.45%</td>
</tr>
<tr>
<td>2011</td>
<td>96.87%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Boikutsong Village (Borehole)</th>
<th>Boikutso Village (Borehole)</th>
<th>Gamogopa Village (Borehole)</th>
<th>Goedgevonden Village (Borehole)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>%</td>
<td>68.24%</td>
<td>65.74%</td>
<td>67.81%</td>
</tr>
<tr>
<td>2023</td>
<td>16.05%</td>
<td>9.50%</td>
<td>11.10%</td>
<td>10.42%</td>
</tr>
<tr>
<td>2014</td>
<td>36.29%</td>
<td>40.19%</td>
<td>36.29%</td>
<td>39.29%</td>
</tr>
<tr>
<td>2012</td>
<td>NA</td>
<td>38.63%</td>
<td>NA</td>
<td>35.90%</td>
</tr>
<tr>
<td>2011 System Design Capacity</td>
<td>kL/d</td>
<td>346</td>
<td>346</td>
<td>648</td>
</tr>
<tr>
<td>2014 System Available Capacity</td>
<td>kL/d</td>
<td>346</td>
<td>346</td>
<td>648</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>300</td>
<td>864</td>
<td>350</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>86.71%</td>
<td>249.71%</td>
<td>54.01%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Boreholes</td>
<td>Ground water (Borehole)</td>
<td>Groundwater</td>
<td>Boreholes/Groundwater (Vaal Catchment)</td>
</tr>
<tr>
<td>2023 BDRR</td>
<td>%</td>
<td>16.74%</td>
<td>18.72%</td>
<td>18.85%</td>
</tr>
<tr>
<td>2022 BDRR</td>
<td>%</td>
<td>69.20%</td>
<td>77.70%</td>
<td>68.50%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Potchefstroom WTW</th>
<th>Tsetse Village (Borehole)</th>
<th>Venterdsorp WTW</th>
<th>Welgevonden Village (Borehole)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>%</td>
<td>95.59%</td>
<td>72.81%</td>
<td>81.15%</td>
</tr>
<tr>
<td>2023</td>
<td>97.20%</td>
<td>10.42%</td>
<td>27.94%</td>
<td>14.31%</td>
</tr>
<tr>
<td>2014</td>
<td>98.45%</td>
<td>36.59%</td>
<td>56.98%</td>
<td>34.50%</td>
</tr>
<tr>
<td>2011</td>
<td>96.87%</td>
<td>28.88%</td>
<td>34.50%</td>
<td>36.88%</td>
</tr>
<tr>
<td>2023 System Design Capacity</td>
<td>kL/d</td>
<td>93 600</td>
<td>173</td>
<td>14 000</td>
</tr>
<tr>
<td>2014 System Available Capacity</td>
<td>kL/d</td>
<td>93 600</td>
<td>173</td>
<td>14 000</td>
</tr>
<tr>
<td>2011 System Input Value</td>
<td>kL/d</td>
<td>53 000</td>
<td>173</td>
<td>9 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>56.62%</td>
<td>100.00%</td>
<td>64.29%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Potchefstroom</td>
<td>Groundwater (Vaal Catchment)</td>
<td>Skoonspruit river</td>
<td>Ground water (Vaal Catchment)</td>
</tr>
<tr>
<td>2023 BDRR</td>
<td>%</td>
<td>27.13%</td>
<td>14.31%</td>
<td>25.80%</td>
</tr>
<tr>
<td>2022 BDRR</td>
<td>%</td>
<td>13.90%</td>
<td>69.50%</td>
<td>35.70%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Potchefstroom WTW - 94%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>Blue Drop Score 2014</th>
<th>%</th>
<th>Blue Drop Score 2012</th>
<th>%</th>
<th>Blue Drop Score 2011</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2023</strong></td>
<td></td>
<td>21.60%</td>
<td><strong>2014</strong></td>
<td></td>
<td><strong>2012</strong></td>
<td></td>
<td><strong>2011</strong></td>
<td></td>
</tr>
<tr>
<td><strong>2014</strong></td>
<td></td>
<td>17.62%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2012</strong></td>
<td></td>
<td>48.20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2011</strong></td>
<td></td>
<td>24.67%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th></th>
<th>Koster</th>
<th>Swartruggens</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>19.18%</td>
<td>25.63%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>21.96%</td>
<td>12.73%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>46.78%</td>
<td>61.08%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>35.53%</td>
<td>30.68%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>5 000</td>
<td>3 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>5 000</td>
<td>3 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>5 000</td>
<td>3 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Koster Dam</td>
<td>Lindleypoort Dam</td>
</tr>
<tr>
<td><strong>BDRR 2023</strong></td>
<td>97.93%</td>
<td>70.31%</td>
</tr>
<tr>
<td><strong>BDRR 2022</strong></td>
<td>93.10%</td>
<td>95.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Koster WTW - 44%**

The Regulator notes the dire state of management and drinking water quality in the Koster and Swartruggens water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>50.64%</td>
<td>58.38%</td>
<td>57.90%</td>
<td>36.72%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Brits</th>
<th>Hartbeespoort - Schoemansville</th>
<th>Hartbeespoort - Rand Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Brits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>37.80%</td>
<td>47.03%</td>
<td>87.14%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>58.12%</td>
<td>59.90%</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>63.04%</td>
<td>29.75%</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>37.24%</td>
<td>33.66%</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>60 000</td>
<td>10 000</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>60 000</td>
<td>8 000</td>
<td>5 427 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>40 000</td>
<td>8 000</td>
<td>14 860</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>66.67%</td>
<td>NI</td>
<td>86.35%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Crocodile River</td>
<td>Hartbeespoort Dam</td>
<td>Vaal Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>50.04%</td>
<td>35.76%</td>
<td>30.59%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>80.50%</td>
<td>28.20%</td>
<td>34.10%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Schoemansville – 57%**
### 11.7 Maquassi Hills Local Municipality

#### Municipal Blue Drop Score

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>Blue Drop Score 2023</td>
<td>47.85%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>Blue Drop Score 2014</td>
<td>62.74%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>Blue Drop Score 2012</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>Blue Drop Score 2011</td>
<td>0.00%</td>
<td></td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Leeudoringstad-Witpoort System</th>
<th>Tswellelang-Lebaleng System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>Blue Drop Score 2023</td>
<td>47.61%</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>Blue Drop Score 2014</td>
<td>67.74%</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>Blue Drop Score 2012</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>Blue Drop Score 2011</td>
<td>N/A</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>360 000</td>
<td>360 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>360 000</td>
<td>360 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>3 344</td>
<td>9 475</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>58.33%</td>
<td>58.33%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal River</td>
<td>Vaal River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>58.24%</td>
<td>58.30%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>79.90%</td>
<td>57.80%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Leeudoringstad reservoir and pumpstation - 36%**
### 11.8 Matlosana Local Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>87.82%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>77.29%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>95.35%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>95.38%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>City of Matlosana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>Midvaal Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>87.82%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>77.29%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>95.35%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>95.38%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>320 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>250 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>98 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>52.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>25.27%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>41.40%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Midvaal Water Company WTW - 95%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>37.50%</td>
</tr>
<tr>
<td>2014</td>
<td>57.49%</td>
</tr>
<tr>
<td>2012</td>
<td>59.72%</td>
</tr>
<tr>
<td>2011</td>
<td>33.08%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Moretele LM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>City of Tshwane MM, Magalies Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>37.50%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>57.49%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>59.72%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>33.08%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>172,000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>162,000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>12,250</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>59.11%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Apies River and Roodeplaat Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>67.30%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Moretele WTW – 31%**
### Municipal Blue Drop Score

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>69.25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>56.61%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>68.59%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>31.51%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Madikwe WTP</th>
<th>Molatedi WTP</th>
<th>Pella WTP</th>
<th>Vaalkop WTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Magalies Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>50.30%</td>
<td>53.87%</td>
<td>38.53%</td>
<td>70.79%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>33.82%</td>
<td>19.14%</td>
<td>30.85%</td>
<td>65.56%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>26.88%</td>
<td>21.43%</td>
<td>31.20%</td>
<td>69.25%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>26.29%</td>
<td>28.34%</td>
<td>23.62%</td>
<td>31.78%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 600</td>
<td>600</td>
<td>1 400</td>
<td>270 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 600</td>
<td>480</td>
<td>1 400</td>
<td>270 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>1 810</td>
<td>341</td>
<td>968</td>
<td>45 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>69.62%</td>
<td>71.04%</td>
<td>69.14%</td>
<td>83.24%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Madikwe Dam</td>
<td>Molatedi Dam</td>
<td>Pella Dam</td>
<td>Vaalkop Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>25.99%</td>
<td>24.00%</td>
<td>34.94%</td>
<td>36.35%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>57.80%</td>
<td>49.40%</td>
<td>59.00%</td>
<td>68.60%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Madikwe WTW - 60%**
## Ngaka Modiri Molema District Municipality

### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td></td>
<td>36.74%</td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td>27.05%</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td>40.72%</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td>0.66%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Ditsobotla: Itsoseng B/H / Lichtenburg</th>
<th>Mafikeng BH + WTW + Mmabatho WTW</th>
<th>Ramotshere Moiloa: Dinokana + Lehurutshe</th>
<th>Ramotshere Moiloa: Motswedi + Gopane</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>35.43%</td>
<td>37.30%</td>
<td>32.90%</td>
<td>41.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>33.72%</td>
<td>31.12%</td>
<td>34.71%</td>
<td>33.46%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>57.84%</td>
<td>46.00%</td>
<td>34.04%</td>
<td>50.53%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>5.14%</td>
<td>8.89%</td>
<td>NA</td>
<td>8.85%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>25 000</td>
<td>65 000</td>
<td>3 500</td>
<td>2 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>25 000</td>
<td>65 000</td>
<td>3 500</td>
<td>2 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>5 000</td>
<td>47 000</td>
<td>337</td>
<td>1 599</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>20.00%</td>
<td>72.35%</td>
<td>9.63%</td>
<td>79.95%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Crocodile West Catchment</td>
<td>Molopo + Grootfontein boreholes</td>
<td>Crocodile West Marico Catchment</td>
<td>Sebojwane Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>42.29%</td>
<td>70.56%</td>
<td>36.07%</td>
<td>72.83%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>76.80%</td>
<td>78.60%</td>
<td>84.80%</td>
<td>84.70%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Ratlou: Kraaipan BH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>15.70%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>16.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>12.33%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>1 194</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>1 194</td>
</tr>
<tr>
<td>System Input Value</td>
<td>1 194</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>100.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Limpopo WMA in Crocodile West Marico Catchment</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>82.93%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>95.74%</td>
</tr>
</tbody>
</table>
The Regulator notes the dire state of management and drinking water quality in the Ratlou: Kraaipan BH water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a **detailed corrective action plan within 20 days** of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>78.31%</td>
<td>86.15%</td>
<td>91.55%</td>
<td>93.24%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Rustenburg North</th>
<th>Vaalkop-Boitekong</th>
<th>Vaalkop North-La Patrie</th>
<th>Vaalkop South-Kortbegrip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Magalies Water</td>
<td>Magalies Water</td>
<td>Magalies Water</td>
<td>Magalies Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>68.71%</td>
<td>68.02%</td>
<td>68.71%</td>
<td>70.48%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>NA</td>
<td>77.47%</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>NA</td>
<td>88.75%</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>NA</td>
<td>93.60%</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>282 000</td>
<td>270 000</td>
<td>270 000</td>
<td>270 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>280 000</td>
<td>270 000</td>
<td>270 000</td>
<td>270 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>13 179</td>
<td>10 500</td>
<td>3 500</td>
<td>2 700</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>97.57%</td>
<td>83.24%</td>
<td>83.24%</td>
<td>83.24%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Vaalkop &amp; Bospoort Dams</td>
<td>Vaalkop Dam</td>
<td>Vaalkop Dam</td>
<td>Vaalkop Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>43.01%</td>
<td>41.82%</td>
<td>50.35%</td>
<td>34.00%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>64.30%</td>
<td>81.20%</td>
<td>72.90%</td>
<td>72.90%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Bospoort WTW – 81%
George WTW: Construction underway to expand the water treatment capacity to meet the growing demand.

Chemical dosing pumps at the new George WTW.
12. NORTHERN CAPE PROVINCE: MUNICIPAL WATER MANAGEMENT PERFORMANCE

- 26 WSAs & 176 systems audited
- 2 Water Boards
- 55.9% TSA score
- 62.8% BDRR - Medium risk
- No BD Certifications
- 23 Critical State systems
**Provincial Synopsis**

The Northern Cape province provides drinking water to a total population of 1,129,644 persons in South Africa.

An audit attendance record of 100% of the 26 WSAs, with 176 water supply systems across the province and the 2 Water Board (Bloem Water and Sedibeng Water) affirms the province's commitment to the Blue Drop national incentive-based regulatory programme. Bloem Water has taken over the Sedibeng water supply systems and water treatment systems in the Free State and Northern Cape. It must be noted that Sedibeng Water was still in operation during the blue drop audit period and Bloem Water was not responsible for the respective systems over the audit period. Bloem Water has recently undergone a name change to Vaal Central Water.

The 2023 Blue Drop status for WSAs in the province are summarised in the table below. The Regulator is optimistic that the water services delivery and improved performance will follow in the next BD audit. Municipalities and their service providers are encouraged to start preparation for the next Blue Drop Certification. In 2014, two water supply systems were awarded Blue Drop status. Using the 2014 audit results as comparative baseline, the province shows a decline in excellence for 2023.

Two (2) of 26 WSAs improved on their 2014 scores, namely !Kheis LM and Gamagara LM although Gamagara LM has improved it still falls within the low risk category. The remaining 24 WSAs regressed to lower Blue Drop scores compared to their 2014 baselines. The Dawid Kruiper LM, Thembelihle LM and Tsantsabane LM are the best performing WSAs in the province. Excellent technical site assessment scores of 94% were achieved for the Vaal Gamagara and Calvinia WTWs, followed by the AH September WTW with a TSA score of 85%. 123 (of 176) water supply systems were identified to be in a critical state in the province compared with 34 water supply systems in 2014.

The province’s overall Blue Drop performance is characterised by particular strengths when measured against the KPAs. Neither Sedibeng Water or the WSAs, with some exception for the Dawid Kruiper LM, stand out for its compliance, good practice and risk management practices that are well embedded in the water supply business. All five KPAs require attention and are reflecting scores below 50% - KPA 1 Capacity Management (38.0%), KPA 2 DWQ Risk Management (19.9%), KPA 3 Financial Management (23.8%), KPA 4 Technical Management (29.8%) and KPA 5 Drinking Water Quality Compliance (31.4%).

The provincial Blue Drop Risk Rating (BDRR) remained in the medium risk category but regressed from 51.5% in 2022 (BD PAT) to 62.8% in 2023. 71 (of 176) water supply systems are situated in the low risk category, 28 WSSs in the medium risk category, 29 WSSs in the high risk category, and 48 WSSs in the critical risk category.

The Regulator is optimistic that the 2023 Blue Drop report provides an updated residual basis from where a positive trajectory for water services delivery and improved performance will follow in the next BD audit. Municipalities and their service providers are encouraged to start preparation for the next Blue Drop audit cycle, which is planned to cover the financial year 2023/24 and released in 2025. The 2023 Blue Drop status for WSAs in the province are summarised in the table below.

**Table 201 - 2023 Blue Drop Summary**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2014 BD Score (%)</th>
<th>2023 BD Score (%)</th>
<th>2023 BD Certified &gt;95%</th>
<th>2023 Critical State (&lt;31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>!Kai! Garib LM</td>
<td>71.42%</td>
<td>16.20%↓</td>
<td>All 16 WSSs</td>
<td></td>
</tr>
<tr>
<td>!Kheis LM</td>
<td>27.79%</td>
<td>29.31%↑</td>
<td>Gariep, Grootdrink, Winddraai</td>
<td></td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>95.66%</td>
<td>83.85%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>61.28%</td>
<td>18.73%↓</td>
<td>Barkley West, Windsorton</td>
<td></td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>74.84%</td>
<td>11.94%↓</td>
<td>All 3 WSSs</td>
<td></td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>50.10%</td>
<td>54.71%↑</td>
<td>Dibeng</td>
<td></td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>40.62%</td>
<td>25.92%↓</td>
<td>23 of 24 WSSs</td>
<td></td>
</tr>
<tr>
<td>Hantam LM</td>
<td>84.60%</td>
<td>47.64%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>57.61%</td>
<td>17.57%↓</td>
<td>17 of 18 WSSs</td>
<td></td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>40.54%</td>
<td>8.02%↓</td>
<td>All 16 WSSs</td>
<td></td>
</tr>
<tr>
<td>Kareebong LM</td>
<td>52.91%</td>
<td>18.42%↓</td>
<td>All 3 WSSs</td>
<td></td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>49.28%</td>
<td>21.62%↓</td>
<td>All 3 WSSs</td>
<td></td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>77.10%</td>
<td>27.60%↓</td>
<td>Danielskull</td>
<td></td>
</tr>
<tr>
<td>Khe-Ma LM</td>
<td>76.53%</td>
<td>15.19%↓</td>
<td>All 4 WSSs</td>
<td></td>
</tr>
<tr>
<td>Magareng LM</td>
<td>29.00%</td>
<td>26.45%↓</td>
<td>Warrenton</td>
<td></td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>63.94%</td>
<td>36.61%↓</td>
<td>Buffelsrivier, Carolusberg, Goodhouse, Kommagas, Rooiwal, Vloolsdrift</td>
<td></td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>71.59%</td>
<td>19.85%↓</td>
<td>Hartswater, Jan Kempdorp</td>
<td></td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>38.06%</td>
<td>9.20%↓</td>
<td>All 3 WSSs</td>
<td></td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>42.25%</td>
<td>21.94%↓</td>
<td>All 5 WSSs</td>
<td></td>
</tr>
</tbody>
</table>
The Department of Water and Sanitation acknowledges the excellence in water services management achieved for the Blue Drop Audit year of 2021-22. No Blue Drop Certificates are awarded in the Northern Cape Province.

Background to Water Delivery and Distribution Infrastructure

The total volume of water treated in the province is 338,721 kld/d. Twenty six (26) WSAs and one WBs (Sedibeng Water now Bloem Water with a new name change Vaal Central Water) are responsible for water services through a water network comprising of:

- 158 WTWs, boreholes, etc. with the bulk of the water treated and supplied by Sol Plaatje LM, Dawid Kruiper LM and Sedibeng Water to a total of 41 WSSs with a total Average Daily Production of 198,738 kld/d
- 22 WSSs in 7 WSAs are provided with bulk potable water via the Vaal Gamagara, Henkries and Pelladrift WTWs owned by Sedibeng Water
- 150 pump stations, 2,039 km bulk water supply lines, 764 km reticulation pipe lines, and 278 reservoirs/towers (excluding many systems that were unable to provide data).

Table 202 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2014 BD Score (%)</th>
<th>2023 BD Score (%)</th>
<th>2023 BD Certified ≥95%</th>
<th>2023 Critical State (&lt;31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siyancuma LM</td>
<td>54.02%</td>
<td>26.38% ↓</td>
<td>All 4 WSSs</td>
<td></td>
</tr>
<tr>
<td>Siyathembwa LM</td>
<td>62.36%</td>
<td>46.26% ↓</td>
<td>Marydale</td>
<td></td>
</tr>
<tr>
<td>Sol Plaatje LM</td>
<td>81.46%</td>
<td>52.04% ↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>73.23%</td>
<td>59.52% ↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>70.07%</td>
<td>56.00% ↓</td>
<td>Skeyfontein</td>
<td></td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>82.37%</td>
<td>14.17% ↓</td>
<td>All 5 WSSs</td>
<td></td>
</tr>
<tr>
<td>Umsobombvu LM</td>
<td>53.90%</td>
<td>24.17% ↓</td>
<td>All 3 WSSs</td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>123</td>
</tr>
</tbody>
</table>

↑ = improvement, ↓ = regress, → = no change

The audit verified a total installed design capacity of 570,646 kld/d and a total available design capacity of 539,520 kld/d with most of this capacity residing in the medium and macro-sized water treatment plants. Collectively, the 158 WTWs produce 338,721 kld/d and distributes 318,060 kld/d across the water networks. By comparing the available treatment capacity with the average treated water volume, a spare treatment capacity of 200,799 kld/d is available (37%) to meet additional future demands. However, the WUE for the province is extremely high (ave. 392 l/p/d) compared to the international WUE benchmark of 180 l/p/d, indicating a high ratio between effective water use and actual water abstraction. Going forward, the province will have to dedicate significant resources to curb water losses and NRW.
In some cases, a Bulk Water Supplier supplies water across provincial borders and it is difficult to report accurately on design capacity and available capacity at provincial level, as the statistical data may become repetitive. Therefore, the reporting on the total system input volumes (SIV) would provide more accurate figures on the supply of treated water to the various water supply systems.

The total SIV in the province is 318,060 kl/d and the average daily treatment volume is 338,721 kl/d and this indicates that the treated volume is more than the total SIV (106%) despite 31 WTWs and boreholes not measuring their average daily treatment volumes. The largest contributors to the total SIV for 41 WSSs are from Sol Plaatje LM, Dawid Kruiper LM and Sedibeng Water with a total SIV contribution of 198,738 kl/d (62%). Diagnostic no. 2 to follow herein will unpack these statistics in more detail.

The data shows that 11 WTWs daily average treatment volume exceeds the available design capacity. 7 WTWs have daily production volumes that exceed the authorised daily abstraction volumes.

The water distribution infrastructure is summarised in the table below.

**Figure 151 - Capacities, Daily Production and SIV Distribution** - (a) micro to medium sized WTWs, (b) large WTWs, and (c) macro sized WTWs

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WSS with no WSP/WB</th>
<th># WSS with WSP/WB</th>
<th># Pump Stations (#)</th>
<th>Bulk Water Supply Lines (km)</th>
<th>Retirculation pipe lines (km)</th>
<th># Reservoirs/Towers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>-</td>
<td>22</td>
<td>12</td>
<td>1,740.0</td>
<td>24.0</td>
<td>14</td>
</tr>
<tr>
<td>!Kail Garib LM</td>
<td>16</td>
<td>18</td>
<td>18</td>
<td>41.0</td>
<td>0.5</td>
<td>20</td>
</tr>
<tr>
<td>!Kheis LM</td>
<td>7</td>
<td>10</td>
<td>10</td>
<td>Ni</td>
<td>Ni</td>
<td>17</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>11</td>
<td>31</td>
<td>11</td>
<td>87.0</td>
<td>356.8</td>
<td>38</td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2.0</td>
<td>Ni</td>
<td>10</td>
</tr>
<tr>
<td>Emthandeni LM</td>
<td>3</td>
<td>7</td>
<td>3</td>
<td>120.0</td>
<td>170.0</td>
<td>2</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>0.5</td>
<td>57.0</td>
<td>11</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>24</td>
<td>6</td>
<td>24</td>
<td>21.0</td>
<td>82.8</td>
<td>32</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>6</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>2</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>17</td>
<td>5</td>
<td>17</td>
<td>Ni</td>
<td>Ni</td>
<td>27</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>16</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
</tr>
<tr>
<td>Kareebeg LM</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>Ni</td>
<td>Ni</td>
<td>3</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>3</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
<td>Ni</td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3.0</td>
<td>62.0</td>
<td>2</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>0.0</td>
<td>0.0</td>
<td>7</td>
</tr>
</tbody>
</table>
Provincial Blue Drop Analysis

The 100% response from the 26 WSAs audited demonstrates a firm commitment to progressive water services management in the province. Local Government reforms resulted in the merging of Khara Hais LM and Mier LM into Dawid Kruiper LM. Therefore, 26 WSAs were audited in 2023 compared to the 27 WSAs in 2014.

Table 204 - Blue Drop Comparative Analysis from 2012 to 2023

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WSS with no WSP/WB</th>
<th># WSS with WSP/WB</th>
<th>Water Distribution Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td># Pump Stations (#)</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>1</td>
<td>3</td>
<td>1.7</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>5</td>
<td>10</td>
<td>NI</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>3</td>
<td>2</td>
<td>NI</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>3</td>
<td>3</td>
<td>NI</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>5</td>
<td>7</td>
<td>22.6</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>4</td>
<td>7</td>
<td>22.6</td>
</tr>
<tr>
<td>Siyathemba LM</td>
<td>3</td>
<td>2</td>
<td>NI</td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>2</td>
<td>2</td>
<td>NI</td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>2</td>
<td>3</td>
<td>NI</td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>4</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>5</td>
<td>4</td>
<td>NI</td>
</tr>
<tr>
<td>Umsobomvu LM</td>
<td>3</td>
<td>1</td>
<td>NI</td>
</tr>
<tr>
<td>Totals</td>
<td>154</td>
<td>22</td>
<td>150</td>
</tr>
</tbody>
</table>

Table 204 - Blue Drop Comparative Analysis from 2012 to 2023

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>2012</th>
<th>2014</th>
<th>2023</th>
<th>Performance trend 2014 and 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incentive-based indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WSAs assessed (#)</td>
<td>27 (100%)</td>
<td>27 (100%)</td>
<td>26 (100%)</td>
<td>→</td>
</tr>
<tr>
<td>Water supply systems assessed (#)</td>
<td>143</td>
<td>173</td>
<td>176</td>
<td>↑</td>
</tr>
<tr>
<td>Blue Drop scores ≥50% (#)</td>
<td>68 (48%)</td>
<td>91 (53%)</td>
<td>23 (13%)</td>
<td>↓</td>
</tr>
<tr>
<td>Blue Drop scores &lt;50% (#)</td>
<td>75 (52%)</td>
<td>82 (47%)</td>
<td>153 (87%)</td>
<td>↓</td>
</tr>
<tr>
<td>Blue Drop Certifications (#)</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>↓</td>
</tr>
<tr>
<td>Lowest Technical Site Assessment Score (%)</td>
<td>NA</td>
<td>23%</td>
<td>27%</td>
<td>↑</td>
</tr>
<tr>
<td>Highest Technical Site Assessment Score (%)</td>
<td>NA</td>
<td>100%</td>
<td>94%</td>
<td>↓</td>
</tr>
</tbody>
</table>

Figure 152 - Blue Drop trend analysis over the period 2012 to 2023, indicating the percentage BD scores above and below 50%

The trend analysis indicates that:

- The no. of systems audited has increased from 173 in 2014 to 176 in 2023
- The no. of systems with BD scores of ≥50% decreased from 91 (53%) in 2014 to 23 (13%) in 2023
- This trend was reversed with no. of systems with a BD score of ≤50% increasing from 82 (47%) in 2014 to 153 (87%) in 2023
- Blue Drop Certifications decreased from 2 awards in 2014 to no awards in 2023
- The lowest TSA score increased from 23% in 2014 to 27% in 2023, with the highest TSA score decreasing from 100% in 2014 to 49% in 2023
- The overall performance trend indicates a regression from 2014 to 2023
This negative trajectory reinforces the need for regular audits to ensure timely turnaround and continued improvement.

The negative trend also implies that performance has declined in the absence of regulatory engagement of the BD audits between 2014 to 2023.

![Figure 153 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right)]

Comparative analysis of the 2014 and 2023 blue drop scores, indicates that most of the system scores are in the <31% (Critical Performance) category followed by the >31–<50% (Poor Performance) category. It is very concerning that 123 systems in 2023 reside in Critical Performance category.

In summary, trend analysis since 2014 to 2023 indicate as follows:

- Systems in a ‘critical state’ are 123
- Systems in a ‘poor state’ decreased from 48 systems to 30 systems
- Systems in an ‘average state’ decreased from 76 systems to 18 systems
- Systems in the ‘good state’ decreased from 13 systems to 5 systems
- Systems in the ‘excellent state’ decreased from 2 systems to 0 systems.

Provincial BDRR Analysis

The Blue Drop Risk Rating (BDRR) analysis assesses the risk across the entire water supply network. The BDRR formular was updated in 2021 to include an added risk indicator, i.e. ‘E: Water Safety Plans’, to address the risk assessment requirements outlined in SANS 241 of 2015. The BDRR now contains 5 risk indicators, i.e. design capacity (A), operational capacity (B), water quality compliance (C), technical capacity (D), and water safety plans (E). The results from the BDRR analyses are summarised in the table and figure following.

![Table 205 - Municipal BDRR/BDRRmax Comparative Analysis from 2022 and 2023](chart.png)
**Trend analysis of the BDRR ratings for 2022 and 2023 indicates that:**

- The 2023 audit cycle highlighted a progressive shift with a decrease in the no. of low risk WSSs (92 to 72), a decrease in the medium risk WSSs (40 to 27), an increase in high risk WSSs (23 to 29), and an increase in critical risk WSSs (16 to 48).

**Regulatory Enforcement**

Water supply systems which fail to achieve the minimum Blue Drop target of 31%, are placed under regulatory focus. The Regulator requires these WSAs to submit a detailed corrective action plan (CAP) within 20 working days from publishing of this report. 123 WSSs received Blue Drop scores below 31%, hence are placed under regulatory surveillance, in accordance with the Water Services Act (108 Of 1997).

DWS together with COGTA will through the grant allocation systems ensure priority is given to application of grants to rectify/restore the water services treatment and supply shortcomings identified in this report.

**Figure 154 - a) WSS risk distribution and trends for 2022 and 2023; b) Colour legend**

- ↑= improvement, ↓= regress, →= no change

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th># WBs/WSPs</th>
<th>2022 (BD PAT)</th>
<th>2023 (BD Audit)</th>
<th>Performance Trend 2022 and 2023</th>
<th>BDRR Risk Category Split</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tsantsabane LM</td>
<td>5</td>
<td>1</td>
<td>50.0%</td>
<td>41.4%</td>
<td>↑</td>
<td>4</td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>5</td>
<td>1</td>
<td>55.9%</td>
<td>71.7%</td>
<td>↓</td>
<td>3</td>
</tr>
<tr>
<td>Umsobomvu LM</td>
<td>3</td>
<td>1</td>
<td>60.5%</td>
<td>38.4%</td>
<td>↑</td>
<td>2</td>
</tr>
<tr>
<td>Totals &amp; %BDRR/BDRRmax</td>
<td>176</td>
<td>22</td>
<td>51.5%</td>
<td>62.8%</td>
<td>↓</td>
<td>71 28 29 48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 206 - WSSs with &lt;31% Blue Drop scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSA Name</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>I Kail Garib LM</td>
</tr>
<tr>
<td>I Kheis LM</td>
</tr>
<tr>
<td>Dikgatlong LM</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
</tr>
<tr>
<td>Gamagara LM</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
</tr>
<tr>
<td>Kareebng LM</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
</tr>
<tr>
<td>Kgatelopele LM</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
</tr>
<tr>
<td>Magareng LM</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
</tr>
<tr>
<td>Phokwane LM</td>
</tr>
</tbody>
</table>
WSA Name | 2023 BD Score | WSSs with <31% score
---|---|---
Renosterberg LM | 9.20% | All 3 WSSs
Richtersveld LM | 21.94% | All 5 WSSs
Siyancuma LM | 26.38% | All 4 WSSs
Siyathemba LM | 46.26% | Marydale
Tsantsabane LM | 56.00% | Skeyfontein
Ubuntu LM | 14.17% | All 5 WSSs
Umsobomvu LM | 24.17% | All 3 WSSs

Totals | 22 WSA | 123 of 176 (70%)

The following WSAs and their associated water treatment systems are in high and/or critical BDSS risk positions, which means that some or all the risk indicators are in a precarious state, i.e. operational capacity, design capacity utilisation, water quality compliance, technical capacity, and water safety plans. WTWs in high risk and critical risk positions pose a serious risk to public health. The following WSAs will be required to assess their risk contributors and to provide corrective measures in the above mentioned action plans to mitigate these risks.

Table 207 - %BDSS/BDRmax scores and WSSs in critical and high-risk space

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 Average %BDSS/BDRmax</th>
<th>WSSs in critical and high-risk space</th>
<th>Critical Risk (90-100%)</th>
<th>High Risk (70-90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>!Kai! Garib LM</td>
<td>69.4%</td>
<td></td>
<td>Alheit, Bloemsmond, Cillie, Eendui, Keimoes, Lennertville, Lutzburg, Marchand, Riemvasmaak-Sending, Soverby</td>
<td></td>
</tr>
<tr>
<td>!Kheis LM</td>
<td>51.7%</td>
<td></td>
<td>Wegdraai</td>
<td></td>
</tr>
<tr>
<td>Dawid Kuiper LM</td>
<td>45.9%</td>
<td></td>
<td>Philiandersbron</td>
<td></td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>72.6%</td>
<td>Windsorton</td>
<td>Barkley West, Koopmansfontein</td>
<td></td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>99.4%</td>
<td>Brittstown, De Aar, Hanover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>40.4%</td>
<td>Dibeng</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>47.9%</td>
<td>Lokaleng, Thamoyanche</td>
<td>Bankhara-Bodulong, Mokalamosesane, Mothibistad, Sedibeng</td>
<td></td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>84.2%</td>
<td>Bothetheletsa, Bothithong, Churchill, Dithakong, Gasehunelo, Gasehe, Heiso, Kikahela, Laxey, Maipeng, Mamatwan/Hotazel, Manyeding, Manyeding Lower, Metsetswaneng, Tsineng, Van Zylsras, Ward 1 Heuningvlei</td>
<td>Hotazel</td>
<td></td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>94.6%</td>
<td>Garies, Hondeklipbaai, Kamassies, Kamieskroon, Kharkams, Kheis, Klipfontein, Koiningnaas, Lellefontein, Lepelfontein, Nourivier, Paulshoek, Roosfontein, Soebatsfontein, Spoegrivier, Tweerivier</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>53.0%</td>
<td></td>
<td>Sutherland</td>
<td></td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>85.5%</td>
<td>Onsepkans (Melkbosrand), Onsepkans (RK), Witbank</td>
<td>Pofadder/Aggeneys (Pelladrift)</td>
<td></td>
</tr>
<tr>
<td>Magareng LM</td>
<td>75.7%</td>
<td></td>
<td>Warrenton</td>
<td></td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>48.1%</td>
<td></td>
<td>Carolusberg</td>
<td></td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>51.4%</td>
<td></td>
<td>Hartswater, Jan Kempdorp</td>
<td></td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>94.6%</td>
<td>Phillipstown, Vanderkloof</td>
<td>Petrusville (from Vanderkloof)</td>
<td></td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>46.6%</td>
<td>Vanderkloof, Sanddrift</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>56.6%</td>
<td></td>
<td>Schmidtsdrift</td>
<td></td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>41.4%</td>
<td>Skeyfontein</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>71.7%</td>
<td></td>
<td>Merriman, Victoria West</td>
<td></td>
</tr>
</tbody>
</table>

Good practice risk management requires that the Water Safety Plans (WaSPs) are informed by meaningful Process and Condition Audits, supported by zealous implementation of corrective measures and ongoing monitoring of risk movement. Hantam LM, Kareeberg LM, Kgatelopele LM, Siyathemba LM, Sol Plaatjie LM, Umsobomvu LM and Thembelihle LM have no systems in the high or critical risks positions. The remaining WSAs all have water supply systems in the high and critical risk positions with Joe Morolong LM and Kamiesberg LM having the highest number of systems (16 and 17 respectively) in the critical risk positions.
Performance Barometer

The Blue Drop Performance Barometer on the following page presents the individual WSA Blue Drop Scores, which essentially reflects the level of mastery that a WSA has achieved in terms of its overall water services business. The bar chart below compares the 2014 and 2023 BD scores, ranked from highest to lowest performing WSA in 2023. Only Dawid Kruiper achieved a good performance municipal blue drop score, followed by Thembelihle LM, Tsantsabane LM, Gamagara LM and Sol Plaatjie LM who achieved an average performance municipal blue drop scores where Gamagara LM was the only WSA to slightly improve on their 2014 municipal blue drop score. The remaining 21 WSAs achieved municipal blue drop scores <50% (poor and critical performance categories).

The BDRR Risk Barometer on the following page expresses the level of risk that a WSA poses in respect of its water supply system. The schematic below presents the BDRR in ascending order – with the low-risk WSAs on the left and higher risk WSAs to the far right. The analysis reveals that there are 6 medium, 5 high or 3 critical risk WSAs in the province. 12 WSAs are situated in the low risk positions.

![WSA Blue Drop Scores 2014 and 2023](chart.png)

**Figure 155 - a) Blue Drop scores 2014 (bar bottom) and 2023 (bar top); b) Colour legend**
Provincial Best Performers

The Dawid Kruiper Local Municipality [Bloem Water now Vaal Central Water (Sedibeng Water)] is the BEST PERFORMING WSA in the province, based on the following record of excellence:
✓ 2023 Blue Drop Score of 83.85%
✓ 2014 Blue Drop Score of 95.66%
✓ Regression on the BDRR from 25.8% in 2022 to 45.9% in 2023
✓ 14 systems (82%) in the low risk position
✓ TSA score of 85% for AH September WTW

The Thembelihle Local Municipality is the second-best scoring WSA:
✓ 2023 Blue Drop Score of 59.52%
✓ 2014 Blue Drop Score of 73.23%
✓ Improvement on the BDRR from 25.7% in 2022 to 24.8% in 2023
✓ 2 systems (100%) in low risk position
✓ TSA score of 75% for Hopetown WTW

The Tsantsabane Local Municipality [Bloem Water now Vaal Central Water (Sedibeng Water)] is the third-best scoring WSA:
✓ 2023 Blue Drop Score of 56.0%
✓ 2014 Blue Drop Score of 70.07%
✓ Improvement on the BDRR from 50.0% in 2022 to 41.4% in 2023
✓ 4 systems (80%) in low risk positions
✓ TSA score of 94% for Vaal Gamagara WTW
The BD audit process collects a vast amount of data that yield valuable insight into the state of the water services delivery and water quality in each province. Five focus areas or ‘diagnostics’ have been configured from the 2021/22 audit data and are discussed below.

Table 208 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs

<table>
<thead>
<tr>
<th>Diagnostic #</th>
<th>Diagnostic Description</th>
<th>Diagnostic Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical Competence</td>
<td>KPA 1, 2 &amp; Bonus</td>
</tr>
<tr>
<td>2</td>
<td>Treatment Capacity and Flow Distribution</td>
<td>KPA 4 &amp; Generic Audit data set</td>
</tr>
<tr>
<td>3</td>
<td>Drinking Water Quality (DWQ) Monitoring and Compliance</td>
<td>KPA 2 &amp; 4 &amp; Bonus</td>
</tr>
<tr>
<td>4</td>
<td>Technical Site Assessments</td>
<td>TSA and 2023 Blue Drop Watch Report</td>
</tr>
<tr>
<td>5</td>
<td>Operation, Maintenance and Refurbishment of Assets</td>
<td>KPA 3 &amp; 4</td>
</tr>
</tbody>
</table>

Diagnostic 1: Technical Competence

**Aim:** This focus area assesses the technical human resources capacity that is available to manage and operate water treatment processes and maintain the related water infrastructure. Theory advocates that a correlation exists between human resources capability and capacity (sufficient number of appropriately qualified staff) and a WSI’s performance. Thus, it is hypothesised that high HR capacity would translate to compliant water treatment plants and functional water supply network. Blue Drop assesses technical compliance on two levels: i) WTW plant supervision and process control staff and ii) Technical, scientific and maintenance staff.

(i) Plant Supervisors and Process Controllers

**Findings:** According to regulations, water treatment plants are classified as Class A, B, C, D or E plants. Similarly, Process Controllers and Plant Supervisors are registered as Class I, II, III, IV, V or VI Process Controllers. Higher classed plants require a higher level of Process Controllers due to technology complexity and strict water quality standards. Technical compliance of PCs and Supervisors is determined against the Blue Drop standards, as defined by Reg. 2834 of the Water Act 1956 (Act 54 of 1956) for the erection, enlargement, operation, and registration of water care works and draft Reg. 813 of the Water Services Act (No 108 of 1997). Regulation 2834 has been replaced by Regulation 3630 in 2023 but will only come in effect during the next Blue Drop audit cycle.

Table 209 - No. compliant versus shortfall in Supervisor and Process Controller staff

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th># Available Compliant Staff</th>
<th>Staff Shortfall</th>
<th>Ratio*</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PCs</td>
<td>Supervisor</td>
<td>Total</td>
<td>PCs</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>3</td>
<td>22</td>
<td>10</td>
<td>3</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>Ikali Garib LM</td>
<td>16</td>
<td>16</td>
<td>0</td>
<td>15</td>
<td>15</td>
<td>38</td>
</tr>
<tr>
<td>Ikheis LM</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Dawid Kruper LM</td>
<td>11</td>
<td>17</td>
<td>10</td>
<td>16</td>
<td>26</td>
<td>16</td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>22</td>
<td>24</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>18</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>36</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>16</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>Kareeb LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Nama Khi LM</td>
<td>5</td>
<td>15</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Siyathembwa LM</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Umsobomvu LM</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>
Competent human resources are vital enablers in ensuring efficient and sustainable management of water services and delivery of safe water quality to consumers. For the province in general, the operational competencies are found to be excellent for the Supervisory staff and predominantly excellent for the PCs in 2 of the 26 municipalities as illustrated in the table above.

![Figure 157 - Schematic illustration of compliant and shortfall of Supervisors (a) and Process Controllers (b)](image)

**Plant Supervisors:** The pie charts indicate that 69% (52 of 75) of Plant Supervisors complies with the Blue Drop standard, with 23 shortfalls.

**Process Controllers:** Similarly, 14% (52 of 360) of the PC staff complies with the required standards, noting a zero shortfall for Magareng LM and Thembelihle LM. There is an 86% (318 of 360) shortfall in Process Controllers with the highest shortfall in Ga-Segonyana LM, Joe Morolong LM and Kamiesberg LM (2 each).

Blue Drop standards require of Class A and B plants to employ dedicated Supervisors per WTW and Process Controllers per shift per works, whereas Class C to E plants may share Supervisory staff across works. Shifts have been introduced to ensure optimal operations while addressing security risks, particularly as it relates to theft and vandalism. Telemetry also reduces the requirement for on-site staff during night shifts, but these relaxations have to be done within the DWS regulatory guidelines.

The Regulator expects correlation between the competence of an operational team and the performance of a WTW, as measured by the BD score. The data indicates as follows:

- 11 WSAs and Bloem Water now CSV (Sedibeng) have qualified PCs in place, with the exception of WTWs in 15 WSAs with no qualified PCs
- 8 WSAs and Bloem Water now CSV (Sedibeng) have qualified Supervisors in place, with the exception of WTWs in 18 WSAs with no qualified PCs. It should be noted that the qualified Supervisory staff totals will be inflated as it is not possible to differentiate between what Supervisors are shared/roaming with other Class C to E WTWs

It is expected that a correlation would exist between the competence of an operational team and the performance of a water treatment works, as measured by the BD score. The results from the ratio analysis indicate high ratios for only 4 WSAs with WTWs. Overall, the comparative bar chart below confirms a reasonably close correlation between Thembisile LM and Dawid Kruiper LM with medium-to-high ratios (>2.0) and medium-high BD scores (ranging from 59% to 83%). Extreme variations are noted when comparing the ratios against the BD scores respectively.
Figure 158 - Ratio of compliant operational staff to no. of WTWs and Comparison of Ratios with BD scores

(ii) Technical, Scientific and Maintenance staff

In addition to operational capacity (above), good management practice also requires access to qualified engineers, technicians, technologists, MISA appointees, scientists, and maintenance capability (below). Such competencies could reside in-house or accessible through term contracts and external specialists.

Table 210 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Maintenance Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water</td>
<td>3</td>
<td>22</td>
<td>Internal Team (only); Internal+Specific Outsourcing; Partially Capacitated</td>
</tr>
<tr>
<td>(Sedibeng Water)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ikail Garib LM</td>
<td>16</td>
<td>16</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Ikheis LM</td>
<td>7</td>
<td>7</td>
<td>Inadequate Capacity; Partially Capacitated</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>11</td>
<td>17</td>
<td>Internal Team (only)</td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>2</td>
<td>4</td>
<td>Internal+Specific Outsourcing; Internal Team (only); Partially Capacitated</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>3</td>
<td>3</td>
<td>Internal Team (only)</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>3</td>
<td>3</td>
<td>Internal Team (only)</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>22</td>
<td>24</td>
<td>Internal+Specific Outsourcing; Internal Team (only); Inadequate Capacity</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>6</td>
<td>6</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>18</td>
<td>18</td>
<td>Internal Team (only)</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>16</td>
<td>16</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Kareeberg LM</td>
<td>3</td>
<td>3</td>
<td>Internal Team (only)</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>3</td>
<td>3</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>1</td>
<td>1</td>
<td>No Capacity</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>3</td>
<td>4</td>
<td>Inadequate Capacity</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>1</td>
<td>1</td>
<td>Inadequate Capacity</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>5</td>
<td>15</td>
<td>Internal+Specific Outsourcing; Internal Team (only)</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>3</td>
<td>3</td>
<td>Internal Team (only); No Capacity</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>2</td>
<td>3</td>
<td>Internal+Specific Outsourcing; Internal Team (only)</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>5</td>
<td>5</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>4</td>
<td>4</td>
<td>Partially Capacitated; Inadequate Capacity</td>
</tr>
<tr>
<td>Siyathemba LM</td>
<td>3</td>
<td>3</td>
<td>Internal Team (only)</td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>2</td>
<td>2</td>
<td>Internal Team (only); Internal+Term Contract</td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>3</td>
<td>2</td>
<td>Partially Capacitated; Inadequate Capacity</td>
</tr>
</tbody>
</table>
In general, the province presents a strong case for qualified professional technical staff as follows:

- **Bloem Water now Vaal Central Water (Sedibeng Water)** have internal maintenance teams supplemented with specific outsourced services, and partially capacitated for one of the water supply systems in the province.
- 13 of 26 (50%) WSAs have in-house maintenance teams.
- 2 of 26 (8%) WSAs have internal maintenance teams supplemented with term contracts.
- 10 of 26 (38%) WSAs have internal maintenance teams supplement with specific outsourced services.

In terms of maintenance capacity, all the municipalities in the province have a reasonable contingent of qualified technical and maintenance staff. The maintenance staff comprises of a collective of in-house, contracted, or outsourced personnel. The data indicates that:

- **Bloem Water now Vaal Central Water (Sedibeng Water)** have internal maintenance teams supplemented with specific outsourced services.
- 13 of 26 (50%) WSAs have in-house maintenance teams.
- 2 of 26 (8%) WSAs have internal maintenance teams supplemented with term contracts.
- 10 of 26 (38%) WSAs have internal maintenance teams supplement with specific outsourced services.

In general, the province presents a strong case for qualified professional technical staff as follows:

- A total of 55 qualified staff comprised of 7 Engineers, 34 Technologists, 14 Technicians, and no MISA appointees (qualified); and 5 SACNASP registered scientists are assigned to Bloem Water now Vaal Central Water (Sedibeng Water) and 26 WSAs.
- A total shortfall of 111 persons is identified, consisting of 62 technical staff and 49 scientists.
o 25 WSAs have a total shortfall of 62 qualified technical staff with the highest indicated for 4 WSAs (4 each)
o Bloem Water now VCW (Sedibeng) and 20 WSAs have access to credible laboratories that comply with the BD standards.

Figure 159 - Graphic illustration of the number and %: a) qualified engineering/technical staff; b) professional scientists; c) access to credible laboratory services that complies with Blue Drop standards

Ratio analysis has been done to determine the number of qualified technical and scientific staff assigned per WSS. It is expected that a higher ratio would correspond with well-performing and maintained water supply systems, as represented by the BD score.

![Graph showing the ratio of compliant technical staff to no. of WSSs and Comparison of Ratios with BD scores]

The schematic does not show a strong correlation between high ratios and high BD scores as can be seen with Dawid Kruiper LM and Tsantsabane LM. Unlike the Green Drop 2022 diagnostics, no firm correlation can be drawn between technical capacity and water supply performance, mostly as result of the complexity of the WSA/Bulk Water Provider arrangement. It appears that Sedibeng Water made an insignificant impact on the municipal BD scores.

Overall, the results highlight the inter-dependency between technical capacity and performance. One of the options to enhance operational capacity is through dedicated training programmes. The Blue Drop audit incentivises training of operational staff over the 2-year period prior to the audit date. The results are summarised as follows:
Table 211 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WTW staff attending training</th>
<th># WTW without training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Water (Sedibeng Water)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IKail Garib LM</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>IKheis LM</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>11</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>22</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Kareeberg LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Siyathemba LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Umsobomvu LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>158</strong></td>
<td><strong>10 (6%)</strong></td>
<td><strong>148 (94%)</strong></td>
</tr>
</tbody>
</table>

Figure 161 - %WTWs that have trained operational staff over the past two years

The results confirm that only 3 WSAs had their operational staff attend training over the past 2 years. 10 WTWs (6%) and boreholes in Dawid Kruiper LM, Magareng LM and Sol Plaatjie LM had their operational staff attend training over the past 2 years. Investment in human capital through technical skills development is likely to mitigate some of the water quality failures and lower performances noted, and municipalities and water boards should prioritise ongoing skills development of technical staff and appointment of qualified staff that are eligible for registration.

Diagnostic 2: Treatment Capacity and Flow Distribution

**Aim:** Diagnostic 2 deals with design and flow related dynamics, comprising of: i) design capacity and operational flow, ii) raw water abstraction, and iii) WUE and SIV.

(i) Design Capacity and Operational Flow

This diagnostic assesses the status of plant design capacity and daily water production at the WTWs, as well as SIVs as measured at the outflow from the WTW or inflow to the water distribution network. A capable WTW requires adequate installed design capacity and functional equipment to operate optimally. If the WTW design capacity is exceeded by the average daily production (treatment) volume, the WTW will not be able to deliver SANS compliant water quality. The available design capacity is typically exceeded when the water demand exceeds the installed design capacity, or when unit processes or equipment are dysfunctional, or when electrical supply problems render treatment and pumping of water defective. Typically, the production volume and SIV is the same if 1 WTW supplies 1 WSS, but different if multiple supply systems are feeding from a singular WTW.

**Findings:** Analysis of the design capacity and average daily production/treatment volume indicate a total design capacity of 570,646 kl/d for the province, with a total average daily treatment (operational) volume of 338,721 kl/d. Theoretically, this implies that 59% of the design capacity is used with 41% available to meet additional water demand. However, the full 570,646 kl/d is not available as some infrastructure is dysfunctional, leaving 539,520 kl/d available. The reduced capacity means that the province is closer to its total available capacity (63%) with a 37% surplus available. The capacity differential (difference between the installed and available capacity) will not constrain or impede any further social and economic development in the drainage areas. WSAs do report and have knowledge of their installed and available capacities, and a higher figure than 37% surplus available cannot be expected.
Most WSAs have their full installed capacity available with the exception of some of the water treatment systems. For the province in general, 147 WTWs are operating within their design capacities with the exception of 11 WTWs that exceeds their total design capacity (7%). This risk is currently mitigated through operational optimisation and preventative maintenance regimes.

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Design Capacity (kl/d)</th>
<th>Available Design Capacity (kl/d)</th>
<th>Average Daily Production (kl/d)</th>
<th>Available Variance* (kl/d)</th>
<th>% Use Available Capacity</th>
<th>Total SIV towards the WSS (kl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>3</td>
<td>22</td>
<td>81,000</td>
<td>78,000</td>
<td>53,082</td>
<td>24,918</td>
<td>68%</td>
<td>20,019</td>
</tr>
<tr>
<td>Ikali Garib LM</td>
<td>16</td>
<td>16</td>
<td>26,520</td>
<td>26,520</td>
<td>21,814</td>
<td>4,706</td>
<td>82%</td>
<td>21,814</td>
</tr>
<tr>
<td>Ikheis LM</td>
<td>7</td>
<td>7</td>
<td>4,383</td>
<td>4,383</td>
<td>3,167</td>
<td>1,216</td>
<td>72%</td>
<td>3,167</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>11</td>
<td>17</td>
<td>87,550</td>
<td>87,549</td>
<td>57,847</td>
<td>29,702</td>
<td>66%</td>
<td>44,375</td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>2</td>
<td>4</td>
<td>9,000</td>
<td>9,000</td>
<td>0</td>
<td>9,000</td>
<td>0%</td>
<td>4,462</td>
</tr>
<tr>
<td>Enthlanjeni LM</td>
<td>3</td>
<td>3</td>
<td>278</td>
<td>295</td>
<td>295</td>
<td>295</td>
<td>0%</td>
<td>278</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>3</td>
<td>3</td>
<td>7,530</td>
<td>7,947</td>
<td>9,610</td>
<td>1,663</td>
<td>121%</td>
<td>9,610</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>22</td>
<td>24</td>
<td>55,787</td>
<td>37,887</td>
<td>24,227</td>
<td>13,660</td>
<td>64%</td>
<td>25,753</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>6</td>
<td>6</td>
<td>7,095</td>
<td>7,095</td>
<td>5,255</td>
<td>1,840</td>
<td>74%</td>
<td>5,255</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>18</td>
<td>18</td>
<td>8,576</td>
<td>8,576</td>
<td>207</td>
<td>8,369</td>
<td>2%</td>
<td>7,663</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>16</td>
<td>16</td>
<td>2,875</td>
<td>1,662</td>
<td>1,742</td>
<td>-80</td>
<td>105%</td>
<td>1,742</td>
</tr>
<tr>
<td>Kareeberg LM</td>
<td>3</td>
<td>3</td>
<td>1,367</td>
<td>1,367</td>
<td>1,367</td>
<td>0</td>
<td>100%</td>
<td>1,367</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>3</td>
<td>3</td>
<td>5,600</td>
<td>5,600</td>
<td>5,600</td>
<td>0</td>
<td>100%</td>
<td>5,600</td>
</tr>
<tr>
<td>Kgalagadi LM</td>
<td>1</td>
<td>1</td>
<td>461</td>
<td>461</td>
<td>461</td>
<td>0</td>
<td>461%</td>
<td>461</td>
</tr>
<tr>
<td>Khi-Ma LM</td>
<td>3</td>
<td>4</td>
<td>1,500</td>
<td>1,500</td>
<td>0</td>
<td>1,500</td>
<td>0%</td>
<td>1,500</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>1</td>
<td>1</td>
<td>8,400</td>
<td>8,400</td>
<td>4,750</td>
<td>3,650</td>
<td>57%</td>
<td>4,750</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>5</td>
<td>15</td>
<td>4,016</td>
<td>380</td>
<td>2,154</td>
<td>15%</td>
<td>380%</td>
<td>2,154</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>3</td>
<td>3</td>
<td>19,600</td>
<td>19,600</td>
<td>4,776</td>
<td>14,824</td>
<td>24%</td>
<td>14,766</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>2</td>
<td>3</td>
<td>2,730</td>
<td>2,730</td>
<td>0</td>
<td>2,730</td>
<td>100%</td>
<td>2,730</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>5</td>
<td>5</td>
<td>4,840</td>
<td>2,790</td>
<td>2,040</td>
<td>750</td>
<td>73%</td>
<td>2,040</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>4</td>
<td>4</td>
<td>12,388</td>
<td>13,446</td>
<td>-1,053</td>
<td>105%</td>
<td>105%</td>
<td>13,446</td>
</tr>
<tr>
<td>Siyathemba LM</td>
<td>3</td>
<td>3</td>
<td>17,180</td>
<td>16,606</td>
<td>10,045</td>
<td>6,561</td>
<td>60%</td>
<td>10,045</td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>2</td>
<td>2</td>
<td>166,881</td>
<td>166,881</td>
<td>87,809</td>
<td>79,072</td>
<td>53%</td>
<td>87,809</td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>3</td>
<td>2</td>
<td>6,273</td>
<td>6,273</td>
<td>5,799</td>
<td>474</td>
<td>92%</td>
<td>5,799</td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>5</td>
<td>5</td>
<td>13,150</td>
<td>13,150</td>
<td>10,045</td>
<td>3,095</td>
<td>23%</td>
<td>13,150</td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>5</td>
<td>5</td>
<td>5,490</td>
<td>5,490</td>
<td>5,490</td>
<td>0</td>
<td>100%</td>
<td>5,490</td>
</tr>
<tr>
<td>Umsobomvu LM</td>
<td>3</td>
<td>3</td>
<td>10,176</td>
<td>4,836</td>
<td>4,389</td>
<td>447</td>
<td>91%</td>
<td>4,389</td>
</tr>
</tbody>
</table>

| Totals                                            | 158    | 176    | 570,646                | 539,520                          | 338,721                        | 200,799                    | 63%                      | 318,060                          |

* Difference between the available design capacity and the average daily production

Figure 162 - % available capacity
(ii) Raw Water Abstraction

This diagnostic takes a snapshot view of the status of water abstraction authorisations from natural water resources across the province. As per the National Water Act (Act no 36 of 1998), Water Use Authorisation (WUA) mandate the maximum abstraction volumes of raw water, and the installation and monitoring of abstraction, inflow and outflow meters, whilst the BD audit requires WSAs to report the flows on IRIS and to calibrate meters annually. Any defects in terms of abstracting water from a resource without an authorisation, or exceeding the authorised volume, or reporting inaccurate volumes, or not monitoring abstraction against authorised volumes, are considered to be a regulatory risk and contravention of the law.

**Findings:** Data pertaining to the daily abstraction volumes (kl/d) (Authorised), average daily treatment volumes (kl/d), the names of the WTWs exceeding/with no Daily Abstraction Volumes (Authorised) and Average Daily Treatment Volumes (Authorised) is captured in the tables below.
<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Daily Abstraction Volumes (Authorised) (kl/d)</th>
<th>Average Daily Treatment Volume (kl/d)</th>
<th>Average Variance (kl/d) [+ or Minus]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>3</td>
<td>22</td>
<td>37,534</td>
<td>53,082</td>
<td>-15,548</td>
</tr>
<tr>
<td>!Kai! Garib LM</td>
<td>16</td>
<td>16</td>
<td>0</td>
<td>21,814</td>
<td>-21,814</td>
</tr>
<tr>
<td>!Kheis LM</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>3,167</td>
<td>-3,167</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>11</td>
<td>17</td>
<td>68,493</td>
<td>57,847</td>
<td>10,646</td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>2</td>
<td>4</td>
<td>476</td>
<td>0</td>
<td>476</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>3</td>
<td>3</td>
<td>15,990</td>
<td>9,610</td>
<td>6,380</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>22</td>
<td>24</td>
<td>0</td>
<td>24,227</td>
<td>-24,227</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td>5,255</td>
<td>-5,255</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>10</td>
<td>18</td>
<td>0</td>
<td>207</td>
<td>-207</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>16</td>
<td>16</td>
<td>0</td>
<td>1,742</td>
<td>-1,742</td>
</tr>
<tr>
<td>Kareeberg LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>1,367</td>
<td>-1,367</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>5,600</td>
<td>-5,600</td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>1</td>
<td>1</td>
<td>9,786</td>
<td>4,750</td>
<td>5,036</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>5</td>
<td>15</td>
<td>0</td>
<td>380</td>
<td>-380</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>4,776</td>
<td>-4,776</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2,730</td>
<td>-2,730</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>2,040</td>
<td>-2,040</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>4</td>
<td>4</td>
<td>2,607</td>
<td>13,446</td>
<td>-10,839</td>
</tr>
<tr>
<td>Siyathemba LM</td>
<td>3</td>
<td>3</td>
<td>6,807</td>
<td>10,045</td>
<td>-3,238</td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>2</td>
<td>2</td>
<td>61,214</td>
<td>87,809</td>
<td>-26,595</td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>3</td>
<td>2</td>
<td>5,126</td>
<td>5,799</td>
<td>-673</td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>13,150</td>
<td>-13,150</td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>5,490</td>
<td>-5,490</td>
</tr>
<tr>
<td>Umsobomvu LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>4,389</td>
<td>-4,389</td>
</tr>
<tr>
<td>Totals</td>
<td>158</td>
<td>176</td>
<td>208,033</td>
<td>338,721</td>
<td>-130,688</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>WTW exceeding the Daily Abstraction Volumes (Authorised)</th>
<th>WTW with no Daily Abstraction Volumes (Authorised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>2 WTWs</td>
<td>2 WTWs</td>
</tr>
<tr>
<td>!Kai! Garib LM</td>
<td>All 16 WTWs</td>
<td>All 16 WTWs</td>
</tr>
<tr>
<td>!Kheis LM</td>
<td>All 7 WTWs</td>
<td>All 7 WTWs</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>10 WTWs</td>
<td>10 WTWs</td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>1 WTW</td>
<td>1 WTW</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>All 3 WTWs</td>
<td>All 3 WTWs</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>1 WTW</td>
<td>1 WTW</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>All 22 WTWs</td>
<td>All 22 WTWs</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>All 18 WTWs</td>
<td>All 18 WTWs</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>All 16 WTWs</td>
<td>All 16 WTWs</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>All 16 WTWs</td>
<td>All 16 WTWs</td>
</tr>
<tr>
<td>Kareeberg LM</td>
<td>All 3 WTWs</td>
<td>All 3 WTWs</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>All 3 WTWs</td>
<td>All 3 WTWs</td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>1 WTW</td>
<td>1 WTW</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>All 3 WTWs</td>
<td>All 3 WTWs</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>All 5 WTWs</td>
<td>All 5 WTWs</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>All 3 WTWs</td>
<td>All 3 WTWs</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>Both WTWs</td>
<td>Both WTWs</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>All 5 WTWs</td>
<td>All 5 WTWs</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>2 WTWs</td>
<td>2 WTWs</td>
</tr>
<tr>
<td>Siyathemba LM</td>
<td>2 WTWs</td>
<td>2 WTWs</td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>2 WTWs</td>
<td>2 WTWs</td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>All 5 WTWs</td>
<td>All 5 WTWs</td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>All 5 WTWs</td>
<td>All 5 WTWs</td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>All 3 WTWs</td>
<td>All 3 WTWs</td>
</tr>
<tr>
<td>Umsobomvu LM</td>
<td>All 3 WTWs</td>
<td>All 3 WTWs</td>
</tr>
<tr>
<td>Totals</td>
<td>7</td>
<td>143</td>
</tr>
</tbody>
</table>
WTWs that exceed the Daily Abstraction Volumes (Authorised) and WTWs with no Daily Abstraction Volumes (Authorised) are reflected in the 2nd table above. WTWs that are not complying with the regulations will be required to show correction in the next Blue Drop audit cycle. The results conclude that 7 WTWs in 4 WSAs are exceeding the permitted abstraction limits and 15 WTWs provided authorised water use abstraction volumes. The Daily Abstraction Volumes (Authorised) are not known for 143 water treatment systems resulting in negative average variances that skew the data sets. Negative average variances can only be clearly attributed to 7 WTWs for over abstraction.

For future BD audits, WSA/WSPs will be required to provide 'actual' abstraction volumes so that a comparative analysis can be undertaken of the 'actual' abstraction volume versus the authorised water use abstraction volumes (maximum). This would require that the WSAs and WSPs/WBs monitor and record all critical path flows (abstraction, raw and final).
(iii) Water Use Efficiency and System Input Value

The Department is committed to consider issues related to water scarcity and security, aiming to ensure there is sufficient water for the population, the economy, and the environment by increasing water use efficiency across all sectors. Water use for services sectors is specifically dealing with the quantity of water used directly by the consumer through the public distribution network and industries connected to the network.

This diagnostic assesses the water use efficiency (i.e., the average daily consumption in litres per person per day) and the individual and collective performance of the water supply systems. WUE indicates how effective water is used by consumers, i.e. the process between effective water use and actual water abstraction. This concept is closely related to the Department’s No Drop Certification assessment, whereby WUE, NRW and water losses are targeted as part of Water Conservation and Water Demand Management strategies by municipalities.

Findings: Both the Blue Drop audit and No Drop audit requires an IWA water balance to determine the SIV into each water supply system, and to identify and quantify possible losses from abstraction to the end-of-use point. 4 WSAs and 23 systems have full water balances in place. 20 WSSs in 8 WSAs have partial water balances in place, and 19 WSAs with a total of 133 WSSs do not have water balances in place.

WUE is calculated based on the SIV contributions, population served, and the average daily consumption, as summarised in the following table.

### Table 214 - Summary of total SIV, total population served, average daily consumption, WUE status and performance trend

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Total Population</th>
<th>Total SIV (kl/d)</th>
<th>2023 WUE (I/p/d)</th>
<th>2023 Blue Drop WUE Range and Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ikai! Garib LM</td>
<td>16</td>
<td>40,090</td>
<td>21,814</td>
<td>544</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Ikheis LM</td>
<td>7</td>
<td>18,946</td>
<td>3,167</td>
<td>167</td>
<td>&gt;150</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>17</td>
<td>110,020</td>
<td>45,289</td>
<td>412</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>4</td>
<td>52,577</td>
<td>6,834</td>
<td>130</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Ernhanjeni LM</td>
<td>3</td>
<td>35,600</td>
<td>278</td>
<td>8</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>3</td>
<td>34,603</td>
<td>11,016</td>
<td>318</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>24</td>
<td>112,747</td>
<td>25,753</td>
<td>228</td>
<td>&gt;200-250</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>6</td>
<td>21,449</td>
<td>5,255</td>
<td>245</td>
<td>&gt;200-250</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>18</td>
<td>90,882</td>
<td>9,117</td>
<td>100</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>16</td>
<td>9,527</td>
<td>1,742</td>
<td>183</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Kareeb LM</td>
<td>3</td>
<td>11,400</td>
<td>1,367</td>
<td>120</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>3</td>
<td>9,279</td>
<td>5,600</td>
<td>604</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>1</td>
<td>12,717</td>
<td>461</td>
<td>36</td>
<td>&gt;150-300</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>1</td>
<td>13,405</td>
<td>3,723</td>
<td>278</td>
<td>&gt;200-250</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>1</td>
<td>20,858</td>
<td>4,750</td>
<td>228</td>
<td>&gt;200-250</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>15</td>
<td>48,102</td>
<td>6,647</td>
<td>138</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>3</td>
<td>64,317</td>
<td>14,766</td>
<td>230</td>
<td>&gt;200-250</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>3</td>
<td>14,839</td>
<td>2,730</td>
<td>184</td>
<td>&lt;150-200</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>5</td>
<td>12,815</td>
<td>2,040</td>
<td>159</td>
<td>&lt;150-200</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>4</td>
<td>45,182</td>
<td>13,446</td>
<td>298</td>
<td>&gt;250-300</td>
</tr>
<tr>
<td>Siyathemba LM</td>
<td>3</td>
<td>18,300</td>
<td>10,045</td>
<td>549</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>2</td>
<td>264,850</td>
<td>87,809</td>
<td>322</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>2</td>
<td>13,500</td>
<td>5,799</td>
<td>430</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>5</td>
<td>4,937</td>
<td>18,733</td>
<td>3,794</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>5</td>
<td>15,942</td>
<td>5,490</td>
<td>344</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Umsobomvu LM</td>
<td>3</td>
<td>32,760</td>
<td>4,389</td>
<td>134</td>
<td>&lt;150</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>176</strong></td>
<td><strong>1,129,644</strong></td>
<td><strong>318,060</strong></td>
<td><strong>392</strong></td>
<td></td>
</tr>
</tbody>
</table>
For the province, 318,060 kl/d water is supplied to 1,129,644 consumers. Comparatively, Sol Plaatjie LM (highest) and Dawid Kruiper LM (2nd highest) combined distribute 42% of the total provincial SIV. An average 392 litre of water is used per person per day, which implies an extremely high per capita water use. Results from the diagnostic data show that 9 WSAs have WUEs of more than 300 l/c/d, which is regarded as extremely high according to national benchmarks. Only 2 WSAs have WUEs between 250 – 300 l/c/d, which is regarded as poor. No Drop Certification is specifically tasked with plans to curb water losses and improve NRW through water accounting assessments and water conservation and demand management.

**Diagnostic 3: Drinking Water Quality (DWQ) Monitoring and Compliance**

**Aim:** Blue Drop audits values the principles of “To measure is to know” and “To know is to manage”. The primary objective of a water treatment plant is to produce final water quality that is safe for human consumption at the end of the distribution network. This standard can only be measured and achieved if operational and compliance monitoring and DWQ compliance is executed at the correct frequency, sample point, and determinand type. This diagnostic assesses the i) operational and compliance monitoring status, ii) drinking water quality compliance, and iii) risk defined compliance and laboratory credibility.

(i) Drinking water operational and compliance monitoring

**Findings:** A minimum level of 90% operational monitoring compliance is applied as benchmark, to give weight to the importance of sampling and monitoring of the raw water, process unit water, and final water across the treatment stream. Compliance monitoring is also informed by SANS 241:2015 and the requirement for risk-informed monitoring through the WaSP process at both the WTW final and distribution network. DWQ compliance is calculated against the population size and the mandatory limits set by SANS 241:2015 and the Blue Drop standards, as calculated and reported from data loaded in the IRIS.
Table 215 - Summary of the KPA 2 WTW operational and WSS compliance monitoring status

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>WTW Operational monitoring [KPA 2 sub-KPA 2.b)]</th>
<th>WSS Compliance monitoring [KPA 2 sub-KPA 2.c)]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Satisfactory (BD score &gt;90%)</td>
<td>Not Satisfactory (BD score &lt;90%)</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>3</td>
<td>22</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I Kail Garib LM</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>7</td>
</tr>
<tr>
<td>I Kheis LM</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>11</td>
<td>17</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Dikgotlong LM</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>22</td>
<td>24</td>
<td>22</td>
<td>24</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>6</td>
<td>6</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>18</td>
<td>18</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Kareeberg LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>5</td>
<td>15</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Siyathemba LM</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Umsobomvu LM</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Totals</td>
<td>158</td>
<td>176</td>
<td>21 (13%)</td>
<td>137 (87%)</td>
</tr>
</tbody>
</table>

The performance recorded in the table above stems from performance data as measured against the Blue Drop Standard expressed in KPA 2 and sub-KPAs 2.b) and 2.c). Overall, a very unsatisfactory sampling and analysis regime is observed for both operational (87%) and compliance (94%) monitoring.

The data indicates that 21 of 158 WTWs (13%) are on par with good practice for operational monitoring of the raw and final water and the respective process units at the WTW. Only Bloem Water now Vaal Central Water (Sedibeng Water) and Dawid Kruiper LM are doing fairly well, whilst the remaining WSAs fail to meet the Blue Drop standard. In terms of compliance monitoring, 10 WSSs (6%) are on par with good compliance monitoring practices, and 166 WSSs (94%) are failing the Blue Drop standard.

The latter observation is noted with deep concern. Compliance monitoring is a legal requirement and the only means to measure the DWQ performance of a water supply system. Operational monitoring is the cornerstone of day-to-day process adjustments and optimisation to ensure that the water treatment is efficient and delivers quality final water. The results indicate that 137 WTWs and 166 WSSs are not achieving regulatory and industry standards.

(ii) Drinking water quality compliance

Findings: DWQ compliance is measured against the requirements of SANS 241:2015 under KPA 5 of the Blue Drop audit. The tables following summarises the results of the DWQ status for Microbiological and Chemical Compliance, which also carries the highest Blue Drop score weighting of 35%.

Table 216 - Provincial Summary of the DWQ Status for Microbiological Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Micro Compliance</th>
<th># WSS Micro Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Kail Garib LM</td>
<td>16</td>
<td>40,090</td>
<td>74.99%</td>
<td>Excellent (5)</td>
</tr>
<tr>
<td>I Kheis LM</td>
<td>7</td>
<td>18,946</td>
<td>98.69%</td>
<td>Excellent (6)</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>17</td>
<td>110,020</td>
<td>96.07%</td>
<td>Excellent (10)</td>
</tr>
<tr>
<td>Dikgotlong LM</td>
<td>4</td>
<td>52,577</td>
<td>94.13%</td>
<td>Excellent (2)</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>3</td>
<td>35,600</td>
<td>33.33%</td>
<td>Excellent (3)</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>3</td>
<td>34,603</td>
<td>82.92%</td>
<td>Excellent (2)</td>
</tr>
<tr>
<td>WSA Name</td>
<td># WSSs</td>
<td>Population</td>
<td>% Ave. Micro Compliance</td>
<td># WSS Micro Performance Status</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------</td>
<td>------------</td>
<td>-------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>24</td>
<td>112,747</td>
<td>87.45%</td>
<td>16 1 7</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>6</td>
<td>21,449</td>
<td>93.85%</td>
<td>2 1 3</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>18</td>
<td>90,882</td>
<td>5.51%</td>
<td>1 17</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>16</td>
<td>9,527</td>
<td>0.00%</td>
<td>16</td>
</tr>
<tr>
<td>Kareeberg LM</td>
<td>3</td>
<td>11,400</td>
<td>98.66%</td>
<td>2 1</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>3</td>
<td>9,279</td>
<td>95.39%</td>
<td>1 2</td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>1</td>
<td>12,717</td>
<td>90.54%</td>
<td>1</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>4</td>
<td>13,405</td>
<td>25.00%</td>
<td>1 3</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>1</td>
<td>20,858</td>
<td>86.36%</td>
<td>1</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>15</td>
<td>48,102</td>
<td>90.73%</td>
<td>5 2 8</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>3</td>
<td>64,317</td>
<td>69.78%</td>
<td>1 2</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>3</td>
<td>14,839</td>
<td>0.00%</td>
<td>3</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>5</td>
<td>12,815</td>
<td>59.99%</td>
<td>3 2</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>4</td>
<td>45,182</td>
<td>75.33%</td>
<td>4</td>
</tr>
<tr>
<td>Siyathemba LM</td>
<td>3</td>
<td>18,300</td>
<td>76.56%</td>
<td>3</td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>2</td>
<td>264,850</td>
<td>97.48%</td>
<td>2</td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>2</td>
<td>13,500</td>
<td>98.89%</td>
<td>2</td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>5</td>
<td>4,937</td>
<td>79.60%</td>
<td>4 1</td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>3</td>
<td>12,717</td>
<td>90.54%</td>
<td>1</td>
</tr>
<tr>
<td>Umsobomvu LM</td>
<td>3</td>
<td>32,760</td>
<td>83.60%</td>
<td>3</td>
</tr>
<tr>
<td>Totals</td>
<td>176</td>
<td>1,129,644</td>
<td>72.26%</td>
<td>62 10 104</td>
</tr>
</tbody>
</table>

Out of the 176 WSSs, 72 (41%) systems achieved excellent and good microbiological quality, whilst 104 (59%) systems have an unacceptable microbiological water quality status. The water in these systems pose a serious acute health risk to the community. Failure to produce water that meets microbiological compliance standards can be linked back to poor operations, defective infrastructure, inadequate dosing rates, absence of disinfection chemicals, lack of monitoring, lack of operating and chemistry knowledge, and several other root causes. WSIs that are not monitoring the final water quality at the outlet of the treatment plant or at specific end use points are required to develop a monitoring programme and resume with compliance monitoring as a matter of urgency.
<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Chem Acute Health Compliance</th>
<th># WSS Chem Acute Health Performance Status</th>
<th>% Ave. Chem Chronic Health Compliance</th>
<th># WSS Chem Chronic Health Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
<td>Good</td>
<td>Unacceptable</td>
</tr>
<tr>
<td>Ikali Garib LM</td>
<td>16</td>
<td>40,090</td>
<td>0.0%</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ikheis LM</td>
<td>7</td>
<td>18,946</td>
<td>100.0%</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>17</td>
<td>110,020</td>
<td>89.5%</td>
<td>14</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Dilgatlong LM</td>
<td>4</td>
<td>52,577</td>
<td>24.8%</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>3</td>
<td>35,600</td>
<td>0.0%</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>3</td>
<td>34,603</td>
<td>95.7%</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>24</td>
<td>112,747</td>
<td>86.4%</td>
<td>16</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Hantam LM</td>
<td>6</td>
<td>21,449</td>
<td>100.0%</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>18</td>
<td>90,882</td>
<td>2.8%</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>16</td>
<td>9,527</td>
<td>0.0%</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kareeberg LM</td>
<td>3</td>
<td>11,400</td>
<td>87.4%</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>3</td>
<td>9,279</td>
<td>0.0%</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>1</td>
<td>12,717</td>
<td>99.4%</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>4</td>
<td>13,405</td>
<td>0.0%</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magareng LM</td>
<td>1</td>
<td>20,858</td>
<td>0.0%</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>15</td>
<td>48,102</td>
<td>36.7%</td>
<td>5</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>3</td>
<td>64,317</td>
<td>51.5%</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>3</td>
<td>14,839</td>
<td>0.0%</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>5</td>
<td>12,815</td>
<td>0.0%</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>4</td>
<td>45,182</td>
<td>81.3%</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Siyathembha LM</td>
<td>3</td>
<td>18,300</td>
<td>65.2%</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>2</td>
<td>264,850</td>
<td>100.0%</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>2</td>
<td>13,500</td>
<td>98.9%</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>5</td>
<td>4,937</td>
<td>20.0%</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>5</td>
<td>15,942</td>
<td>97.3%</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Umsobombvu LM</td>
<td>3</td>
<td>32,760</td>
<td>0.0%</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>176</strong></td>
<td><strong>1,129,644</strong></td>
<td><strong>47.6%</strong></td>
<td><strong>63</strong></td>
<td><strong>1</strong></td>
<td><strong>112</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHEM Acute Health: Population &lt;100,000</th>
<th>CHEM Acute Health: Population &gt;100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Status</td>
</tr>
<tr>
<td>Excellent</td>
<td>&gt;97%</td>
</tr>
<tr>
<td>Good</td>
<td>≥95 - &lt;97%</td>
</tr>
<tr>
<td>Unacceptable</td>
<td>&lt;95%</td>
</tr>
</tbody>
</table>
Chemical acute health compliance shows that 63 (36%) systems have excellent, and 1 (1%) system has good water quality, whilst 112 (63%) systems in 21 WSAs have an unacceptable chemical acute health compliance. Chemical chronic health compliance shows that 89 (51%) systems have excellent, and 2 (1%) systems have good water quality, whilst 85 (48%) systems in 17 WSAs have an unacceptable chemical chronic health compliance.

The Water Services Act upholds standards regarding the monitoring and reporting on drinking water quality and issuance of advisory notices to the public when significant DWQ failures are observed. The audit process applies a penalty when DWQ failures are noticed without issuing such Water Quality Alert Notices to forewarn consumers of the status of (unsafe) water quality and to advise communities to source alternative water sources or methods to disinfect water used for drinking water purposes.

The following table reflects the compliance status of the WSAs as regards the issuing of these notices for DWQ failures.

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSS</th>
<th># WSS</th>
<th># WSS</th>
<th># WSS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No Penalty Applied</td>
<td>Partial Penalty Applied</td>
<td>Full Penalty Applied</td>
</tr>
<tr>
<td>IKail Garib LM</td>
<td>16</td>
<td>3</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>IKheis LM</td>
<td>7</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>17</td>
<td>9</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Dikgotlong LM</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>24</td>
<td>6</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Hantam LM</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>18</td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>16</td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Kareeberg LM</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magareng LM</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>15</td>
<td></td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>3</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>5</td>
<td></td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>4</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Siyathembha LM</td>
<td>3</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Umsobomvu LM</td>
<td>3</td>
<td>2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>176</td>
<td>50</td>
<td>68</td>
<td>58</td>
</tr>
</tbody>
</table>

Note: The names of the WSSs with partial and full penalties were just too many to record in the table above and hence were excluded here.

No penalties were applied to 50 (28%) WSSs in 15 WSAs. Partial penalties were applied to 68 (39%) WSSs in 12 WSAs and full penalties were applied to 58 (33%) WSSs in 14 WSAS.

(iii) Risk defined compliance and laboratory credibility

**Findings:** Risk-defined compliance standards aim to determine the compliance (to SANS 241) of those parameters that have been found to pose a risk in a specific WSS and need to be included in the routine monitoring programme or frequency as prescribed by SANS 241. The province achieved an average Annual Risk Defined Compliance of 70.3%, with the best performances coming from Kgatelopele LM, Thembelihle LM, and Gamagara LM and the worst performances coming from Joe Morolong LM, Kamiesberg LM, Khai-Ma LM and Renosterberg LM. Excellent risk defined compliance was achieved by 39 (22%) systems, good compliance for 8 (5%) systems and bad compliance for 129 (73%) systems residing in 24 WSAs.
The aim of operational determinand compliance is to determine the efficiency of the water treatment process, by monitoring those parameters which are used to control the treatment process. Although not necessarily a health risk, these parameters provide good information on the integrity of the WTW. The province achieved an average % Actual Operational Determinand Compliance of 10%, the best performance coming from Dawid Kruiper LM (82%) only and the worst performances coming 19 WSAs (0%). Excellent Operational Determinand compliance was achieved by 3 (2%) systems, good compliance for 12 (8%) systems and bad compliance for 143 (90%) systems with most of these systems residing in !Kail Garib LM, Ga-Segonyana LM, Joe Morolong LM and Kamiesberg LM.

Table 219 - Summary of the DWQ Compliance for Risk Defined Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>Ave. % Risk Defined Compliance</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>!Kail Garib LM</td>
<td>16</td>
<td>40,090</td>
<td>68.21%</td>
<td>1</td>
</tr>
<tr>
<td>!Kheis LM</td>
<td>7</td>
<td>18,946</td>
<td>89.36%</td>
<td>7</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>17</td>
<td>110,020</td>
<td>81.99%</td>
<td>1</td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>4</td>
<td>52,577</td>
<td>73.34%</td>
<td>4</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>3</td>
<td>35,600</td>
<td>38.89%</td>
<td>3</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>3</td>
<td>34,603</td>
<td>93.69%</td>
<td>1</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>24</td>
<td>112,747</td>
<td>87.87%</td>
<td>19</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>6</td>
<td>21,449</td>
<td>90.94%</td>
<td>2</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>18</td>
<td>90,882</td>
<td>3.16%</td>
<td>18</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>16</td>
<td>9,527</td>
<td>0.00%</td>
<td>16</td>
</tr>
<tr>
<td>Kareeberg LM</td>
<td>3</td>
<td>11,400</td>
<td>89.04%</td>
<td>3</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>3</td>
<td>9,279</td>
<td>94.63%</td>
<td>2</td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>1</td>
<td>12,717</td>
<td>100.00%</td>
<td>1</td>
</tr>
<tr>
<td>Kha-Ma LM</td>
<td>4</td>
<td>13,405</td>
<td>12.67%</td>
<td>4</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>1</td>
<td>20,858</td>
<td>69.70%</td>
<td>1</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>15</td>
<td>48,102</td>
<td>87.39%</td>
<td>3</td>
</tr>
<tr>
<td>Phakwane LM</td>
<td>3</td>
<td>64,317</td>
<td>81.57%</td>
<td>1</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>3</td>
<td>14,839</td>
<td>0.00%</td>
<td>3</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>5</td>
<td>12,815</td>
<td>57.60%</td>
<td>2</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>4</td>
<td>45,182</td>
<td>79.10%</td>
<td>4</td>
</tr>
<tr>
<td>Siyathemba LM</td>
<td>3</td>
<td>18,300</td>
<td>90.47%</td>
<td>3</td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>2</td>
<td>264,850</td>
<td>81.79%</td>
<td>2</td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>2</td>
<td>13,500</td>
<td>95.98%</td>
<td>2</td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>5</td>
<td>4,937</td>
<td>78.99%</td>
<td>3</td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>5</td>
<td>15,942</td>
<td>89.51%</td>
<td>2</td>
</tr>
<tr>
<td>Umsobomvu LM</td>
<td>3</td>
<td>45,182</td>
<td>91.81%</td>
<td>2</td>
</tr>
<tr>
<td>Totals</td>
<td>176</td>
<td>1,129,644</td>
<td>70.30%</td>
<td>39</td>
</tr>
</tbody>
</table>

The aim of operational determinand compliance is to determine the efficiency of the water treatment process, by monitoring those parameters which are used to control the treatment process. Although not necessarily a health risk, these parameters provide good information on the integrity of the WTW. The province achieved an average % Actual Operational Determinand Compliance of 10%, the best performance coming from Dawid Kruiper LM (82%) only and the worst performances coming 19 WSAs (0%). Excellent Operational Determinand compliance was achieved by 3 (2%) systems, good compliance for 12 (8%) systems and bad compliance for 143 (90%) systems with most of these systems residing in !Kail Garib LM, Ga-Segonyana LM, Joe Morolong LM and Kamiesberg LM.

Table 220 - Summary of the Treatment (Operational) Efficiency Index

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th>Population</th>
<th>Ave. % Actual Operational Determinand Compliance</th>
<th># WTW Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>3</td>
<td>81,487</td>
<td>33%</td>
<td>1</td>
</tr>
<tr>
<td>!Kail Garib LM</td>
<td>16</td>
<td>40,090</td>
<td>0%</td>
<td>16</td>
</tr>
<tr>
<td>!Kheis LM</td>
<td>7</td>
<td>18,946</td>
<td>0%</td>
<td>7</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>11</td>
<td>105,608</td>
<td>82%</td>
<td>1</td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>2</td>
<td>42,429</td>
<td>0%</td>
<td>2</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>3</td>
<td>35,600</td>
<td>0%</td>
<td>3</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>3</td>
<td>25,000</td>
<td>33%</td>
<td>1</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>22</td>
<td>112,747</td>
<td>0%</td>
<td>22</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>6</td>
<td>21,449</td>
<td>15%</td>
<td>1</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>18</td>
<td>89,382</td>
<td>0%</td>
<td>18</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>16</td>
<td>9,527</td>
<td>0%</td>
<td>16</td>
</tr>
<tr>
<td>Kareeberg LM</td>
<td>3</td>
<td>11,400</td>
<td>0%</td>
<td>3</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>3</td>
<td>9,279</td>
<td>0%</td>
<td>3</td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>1</td>
<td>12,717</td>
<td>0%</td>
<td>1</td>
</tr>
<tr>
<td>Kha-Ma LM</td>
<td>3</td>
<td>3,205</td>
<td>0%</td>
<td>3</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>1</td>
<td>20,858</td>
<td>0%</td>
<td>1</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>5</td>
<td>6,478</td>
<td>18%</td>
<td>1</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>3</td>
<td>64,317</td>
<td>0%</td>
<td>3</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>2</td>
<td>14,839</td>
<td>0%</td>
<td>2</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>5</td>
<td>12,815</td>
<td>0%</td>
<td>5</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>4</td>
<td>45,182</td>
<td>0%</td>
<td>4</td>
</tr>
</tbody>
</table>

The aim of operational determinand compliance is to determine the efficiency of the water treatment process, by monitoring those parameters which are used to control the treatment process. Although not necessarily a health risk, these parameters provide good information on the integrity of the WTW. The province achieved an average % Actual Operational Determinand Compliance of 10%, the best performance coming from Dawid Kruiper LM (82%) only and the worst performances coming 19 WSAs (0%). Excellent Operational Determinand compliance was achieved by 3 (2%) systems, good compliance for 12 (8%) systems and bad compliance for 143 (90%) systems with most of these systems residing in !Kail Garib LM, Ga-Segonyana LM, Joe Morolong LM and Kamiesberg LM.
The data confirms that 20 (77%) WSAs in the province have access to credible laboratories for compliance and operational analysis. These in-house or contracted laboratories are accredited with SANAS or have Proficiency Testing Schemes with SABS or have inter-laboratory quality checks in place to ensure that suitable analytical methods are applied and that quality assurance processes are followed to ensure credible water quality results. The province is predominantly meeting the regulatory expectation for the WSIs having access to credible analytical services for compliance and operational monitoring.

### Diagnostic 4: Technical Site Assessments

**Aim:** The Blue Drop process makes provision for a Technical Site Assessment (TSA) in order to verify the desktop evidence through field-based inspections. This assessment includes a physical inspection of the entire water treatment plant with all its process units, as well as the reservoir and spot checks of a pumpstation and pipelines. The technical assessment is coupled with an asset condition check to determine an approximate cost (VROOM) to restore existing infrastructure to functional status for the treatment facility (only).

**Findings:** The results of the province’s TSAs are summarised in the table below. A deviation of 10% between the BD and TSA score indicate a misalignment between the administrative aspects and the work on the ground. The Regulator regards a WTW with a TSA of >80% to have an acceptable level of process control and functional equipment, and a TSA score of 90% as an excellent system meeting the regulatory expectation and is evident of dysfunctional infrastructure, failed process control, absence of record keeping and monitoring, and poor water quality.

The VROOM cost presents a “Very Rough Order of Measurement” cost to return a WTWs functionality to its original design. More detail can be found in the Blue Drop Watch Report 2023.

### Table 221 - %TSA and %BD score, and VROOM cost estimates total and split for civil, mechanical, and electrical

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>TSA Name</th>
<th>%TSA</th>
<th>2023 BD Score (%)</th>
<th>Civil cost estimate</th>
<th>Mechanical cost estimate</th>
<th>Electrical &amp; C&amp;I cost estimate</th>
<th>Total VROOM cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>Vaal Gamagara</td>
<td>94.0%</td>
<td>54.71%</td>
<td>2,160,000</td>
<td>17,280,000</td>
<td>2,160,000</td>
<td>21,600,000</td>
</tr>
<tr>
<td>Ikai! Garib LM</td>
<td>Kakamas</td>
<td>34.0%</td>
<td>16.20%</td>
<td>11,424,000</td>
<td>6,854,400</td>
<td>4,569,600</td>
<td>22,848,000</td>
</tr>
<tr>
<td>I!heis LM</td>
<td>Groblershoop</td>
<td>40.0%</td>
<td>29.31%</td>
<td>718,520</td>
<td>718,520</td>
<td>359,260</td>
<td>1,796,300</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>AH September</td>
<td>85.0%</td>
<td>83.85%</td>
<td>6,240,000</td>
<td>46,800,000</td>
<td>9,360,000</td>
<td>62,400,000</td>
</tr>
<tr>
<td>Dikgatalogo LM</td>
<td>Barkly West</td>
<td>52.0%</td>
<td>18.73%</td>
<td>7,078,993</td>
<td>6,292,438</td>
<td>2,359,664</td>
<td>15,731,096</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>De Aar</td>
<td>43.0%</td>
<td>11.94%</td>
<td>92,800</td>
<td>81,200</td>
<td>58,000</td>
<td>232,000</td>
</tr>
<tr>
<td>Gamagama LM</td>
<td>Kathu</td>
<td>57.0%</td>
<td>54.71%</td>
<td>7,350,750</td>
<td>3,341,250</td>
<td>2,673,000</td>
<td>13,365,000</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>Kuruman Reservoirs</td>
<td>48.0%</td>
<td>25.92%</td>
<td>168,000</td>
<td>756,000</td>
<td>756,000</td>
<td>1,680,000</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>Mothibistad</td>
<td>36.0%</td>
<td>25.92%</td>
<td>281,793</td>
<td>1,549,862</td>
<td>986,276</td>
<td>2,817,930</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>Calvina</td>
<td>94.0%</td>
<td>47.64%</td>
<td>1,144,880</td>
<td>143,110</td>
<td>143,110</td>
<td>1,431,100</td>
</tr>
<tr>
<td>Joe Morelong LM</td>
<td>Hotazel</td>
<td>59.0%</td>
<td>17.57%</td>
<td>360,000</td>
<td>864,000</td>
<td>216,000</td>
<td>1,440,000</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>Garies</td>
<td>68.0%</td>
<td>8.02%</td>
<td>62,586</td>
<td>506,685</td>
<td>62,586</td>
<td>625,856</td>
</tr>
<tr>
<td>Kareebberg LM</td>
<td>Carnarvon</td>
<td>28.0%</td>
<td>18.42%</td>
<td>280,800</td>
<td>124,800</td>
<td>218,400</td>
<td>624,000</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>Sutherland</td>
<td>82.0%</td>
<td>21.62%</td>
<td>42,350</td>
<td>190,575</td>
<td>190,575</td>
<td>423,500</td>
</tr>
<tr>
<td>Kgatelopele LM</td>
<td>Danielskuil</td>
<td>71.0%</td>
<td>27.60%</td>
<td>33,192</td>
<td>66,384</td>
<td>66,384</td>
<td>165,960</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>Onseepkans (Melkosbrand)</td>
<td>27.0%</td>
<td>15.19%</td>
<td>100,000</td>
<td>250,000</td>
<td>150,000</td>
<td>500,000</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>Warrenton</td>
<td>55.0%</td>
<td>26.45%</td>
<td>1,470,000</td>
<td>525,000</td>
<td>105,000</td>
<td>2,100,000</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>Vloorsdrift</td>
<td>62.0%</td>
<td>36.61%</td>
<td>71,500</td>
<td>500,500</td>
<td>143,000</td>
<td>715,000</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>Hartswater</td>
<td>45.0%</td>
<td>19.85%</td>
<td>2,121,075</td>
<td>3,393,720</td>
<td>2,969,505</td>
<td>8,484,300</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>Vanderkloof</td>
<td>42.0%</td>
<td>9.20%</td>
<td>746,200</td>
<td>5,969,600</td>
<td>746,200</td>
<td>7,462,000</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>Port Nolloth / Alexander Baai (Alexcor &amp; 8 My)</td>
<td>43.0%</td>
<td>21.94%</td>
<td>1,430</td>
<td>11,440</td>
<td>1,430</td>
<td>14,300</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>Douglas</td>
<td>51.0%</td>
<td>26.38%</td>
<td>19,200,000</td>
<td>2,400,000</td>
<td>2,400,000</td>
<td>24,000,000</td>
</tr>
<tr>
<td>Siyathemba LM</td>
<td>Flippie Holtzhausen WTW Prieska</td>
<td>65.0%</td>
<td>46.26%</td>
<td>1,207,500</td>
<td>1,552,500</td>
<td>690,000</td>
<td>3,450,000</td>
</tr>
</tbody>
</table>
WSA & WB Name | TSA Name | %TSA | 2023 BD Score (%) | Civil cost estimate | Mechanical cost estimate | Electrical & C&I cost estimate | Total VROOM cost
--- | --- | --- | --- | --- | --- | --- | ---
Sol Plaatjie LM | Kby Zone A-E : Ritchie | 65.0% | 52.04% | 2,493,039 | 311,630 | 311,630 | 3,116,299
Thembelihle LM | Hopetown | 75.0% | 59.52% | 128,800 | 450,800 | 708,400 | 1,288,000
Ubuntu LM | Victoria West | 32.0% | 14.17% | 4,624,960 | 3,361,995 | 0 | 3,116,299
Umsobomvu LM | Colesberg | 56.0% | 24.17% | 1,293,075 | 3,361,995 | 517,230 | 5,172,300

% Split of Cost Items | 34% | 50% | 16% | 100%

Totals | R70,896,243 | R105,446,649 | R32,921,250 | R209,264,141

A deviation of >10% between the BD and TSA score is noted for 24 of the 27 (89%) WTWs assessed. A deviation of >20% between the BD and TSA score is noted for 16 of the 27 (59%) WTWs assessed. For the individual WTWs assessed in the province, a total budget of R209.3m is estimated, with the bulk of the work (84%) going towards restoration of mechanical equipment (50%) and civil infrastructure (34%).

**Diagnostic 5: Operation, Maintenance and Refurbishment of Assets**

**Aim:** Insufficient financial resources are often cited as a root cause to dysfunctional or non-compliant water treatment works and water networks. Knowledge and monitoring of fiscal spending are therefore a critical part of water services management and municipal governance of public assets. This diagnostic investigates the status of financial information as pertaining to O&M budgets and expenditure, asset figures, and capital funding.

**Findings:** A substantial amount of financial information was presented during the audit process. Unfortunately, the evidence was presented in different formats, levels of detail, or absent for some WSAs. It was observed that WSA teams with financial officials that were present during the audits performed better and had a better understanding of the water services challenges experienced by their technical peers.

Discrepancies observed included amongst others - generic or non-ringfenced budgets, contract lump sums for service providers presented as budgets, outdated or incomplete asset registers, and some cost drivers which were lacking. As data credibility presents a significant challenge, the Regulator grouped data into different certainty levels, as summarised at the end of this Diagnostic.

The result of each financial portfolio is discussed hereunder.

**NOTE:** The Regulator regards the financial and asset information with low confidence. Not all WSAs submitted verifiable information or complete financial data sets for the audit year in question.

**Capital, O&M Budget and Actual, and Asset Value**

The capital budgets, O&M budgets, O&M actual expenditure, and current asset values are summarised below.

**Table 222 - Summary of the capital budgets, O&M budgets, O&M actual expenditure, and current asset values**

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Capital budget available (R)</th>
<th>O&amp;M budget (R) (2021/22)</th>
<th>O&amp;M expended (R) (2021/22)</th>
<th>% Expended</th>
<th>Total Current Asset Value (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>NI</td>
<td>R217,323,175</td>
<td>R143,741,686</td>
<td>66%</td>
<td>R1,156,701,374</td>
</tr>
<tr>
<td>IKail Garib LM</td>
<td>R2,673,052</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>R85,697,134</td>
</tr>
<tr>
<td>IKheis LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>R5,378,570</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>R23,918,894</td>
<td>R43,019,239</td>
<td>R42,085,000</td>
<td>98%</td>
<td>R372,585,866</td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>R80,547,000</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>R11,123,095</td>
<td>R20,987,750</td>
<td>R17,072,321</td>
<td>81%</td>
<td>NI</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>R42,277,000</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>NI</td>
<td>R18,195,078</td>
<td>R18,199,771</td>
<td>100%</td>
<td>R267,052,316</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>R897,172,000</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>NI</td>
<td>R1,603,684</td>
<td>R1,603,684</td>
<td>NI</td>
<td>R96,628,649</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>R11,539,755</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Khahlapele LM</td>
<td>R137,921</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>R152,432,432</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>R54,688,000</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>R13,041,000</td>
<td>R3,003,010</td>
<td>R2,691,041</td>
<td>90%</td>
<td>R15,919,435</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>NI</td>
<td>R22,110,476</td>
<td>R66,987,693</td>
<td>303%</td>
<td>NI</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
</tbody>
</table>
The Regulatory Comments following in this Chapter list the capital projects with secured funding for each municipality and/or its bulk water provider (WSP). The capital lists are deemed to be a definitive means to address water service inadequacies and ensuring water infrastructure investment. A total capital budget of R140.1m has been reported for the refurbishment and upgrades of water supply system infrastructure for 9 WSAs only. The largest capital budgets are observed for Tsantsabane LM (R47.1m) and Dawid Kruiper LM (R23.9m).

For the 2021/22 fiscal year, the total O&M budget reported for the province was R711.8m, of which R685.3m (96%%) has been expended. The highest over-expenditure of 303% by the Magareng LM and the lowest under expenditure of 66% by the Bloem Water now Vaal Central Water (Sedibeng Water) was observed. The provincial figures exclude for 17 WSAs who had no and partial financial information.

The total current asset value for water infrastructure (networks, pump stations, treatment plants) is reportedly R3.769b (excluding 11 WSAs with no information). The highest asset values are observed for Bloem Water now Vaal Central Water (Sedibeng Water) (R1.157b), followed by Joe Morolong LM (R897m), Dawid Kruiper LM (R373m) and Hantam LM (R267m).

**O&M Cost Benchmarking**

By combining the SALGA and WRC WATCOST models, an estimation of the maintenance cost required per asset type can be done, i.e. civil, buildings, pipelines, mechanical, electrical, and instrumentation.

**Table 223 - SALGA-WRC annual maintenance budget guideline and cost estimation**

<table>
<thead>
<tr>
<th>Description</th>
<th>% of Current Asset Value</th>
<th>Asset Value Estimate</th>
<th>Modified SALGA Maintenance Guideline</th>
<th>Annual Maintenance Budget Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Asset Value estimate</strong></td>
<td>100%</td>
<td>R3,768,919,880</td>
<td>15.75%</td>
<td>R81,408,669</td>
</tr>
<tr>
<td><strong>Broken down into:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Civil Structures</td>
<td>46%</td>
<td>R1,733,703,145</td>
<td>0.50%</td>
<td>R8,668,516</td>
</tr>
<tr>
<td>2. Buildings</td>
<td>3%</td>
<td>R113,067,596</td>
<td>1.50%</td>
<td>R1,696,014</td>
</tr>
<tr>
<td>3. Pipelines</td>
<td>6%</td>
<td>R226,135,193</td>
<td>0.75%</td>
<td>R1,696,014</td>
</tr>
<tr>
<td>4. Mechanical Equipment</td>
<td>30%</td>
<td>R1,130,675,964</td>
<td>4.00%</td>
<td>R45,227,039</td>
</tr>
<tr>
<td>5. Electrical Equipment</td>
<td>11%</td>
<td>R414,581,187</td>
<td>4.00%</td>
<td>R16,583,247</td>
</tr>
</tbody>
</table>

The model estimates that R81.4m (2.16%) is required per year to maintain the assets valued at R3.769b. Notably, this maintenance estimate assumes that all assets are functional. In cases where Blue Drop Certification is not being achieved, it can be assumed that some form of inefficiency or constraint is being experienced, and national benchmarks closer to 7% of the asset value is advocated (R264m).

The table below indicates the SALGA maintenance cost estimation in relation to the O&M budget, and O&M actual expended.

**Table 224 - O&M cost estimates by the SALGA versus actual budget and expenditure figures**

<table>
<thead>
<tr>
<th>Cost Reference</th>
<th>O&amp;M Cost Estimate</th>
<th>Period</th>
<th>% of Asset Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified SALGA</td>
<td>R81,408,669</td>
<td>Annually, estimation</td>
<td>2.16%</td>
</tr>
<tr>
<td>O&amp;M Budget</td>
<td>R711,831,973</td>
<td>Actual for 2021/22</td>
<td>18.9%</td>
</tr>
<tr>
<td>O&amp;M Spend</td>
<td>R685,269,386</td>
<td>Actual for 2021/22</td>
<td>18.2%</td>
</tr>
</tbody>
</table>

In addition, the table below indicates the Blue Drop audit findings on the water supply operations cost determination and water supply O&M budget status.

**Table 225 - BD Audit Water Supply Operations Cost Determination and Water Supply O&M Budget status**

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Water Supply Operations Cost Determination</th>
<th>Water Supply O&amp;M Budget status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloem Water now Vaal Central Water (Sedibeng Water)</td>
<td>DETERMINED OF THE WHOLE SYSTEM; NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY; SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Ikai Garib LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Ikheis LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL); DETERMINED OF THE WHOLE SYSTEM</td>
<td>BUDGET IS NOT RINGFENCED FOR WATER ONLY; NO PROOF</td>
</tr>
<tr>
<td>Dawid Kruiper LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Dikgatlong LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>BUDGET IS NOT RINGFENCED FOR WATER ONLY</td>
</tr>
<tr>
<td>Emthanjeni LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Gamagara LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Ga-Segonyana LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Hantam LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Joe Morolong LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>BUDGET IS NOT RINGFENCED FOR WATER ONLY</td>
</tr>
<tr>
<td>Kamiesberg LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Kareeberg LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Karoo Hoogland LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Kgatlolepole LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Khai-Ma LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Magareng LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>BUDGET IS NOT RINGFENCED FOR WATER ONLY</td>
</tr>
<tr>
<td>Nama Khoi LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Phokwane LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Renosterberg LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Richtersveld LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Siyancuma LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Siyathemba LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Sol Plaatjie LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Thembelihle LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Tsantsabane LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Ubuntu LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>WSA &amp; WB Name</td>
<td>Water Supply Operations Cost Determination</td>
<td>Water Supply O&amp;M Budget status</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Umsobomvu LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>NO PROOF</td>
</tr>
</tbody>
</table>

From the tables above, the cost dynamics can be summarised as follows:

- The SALGA estimations for maintenance budgets is about 11.4% (Modified SALGA divided by O&M Budget) of the actual reported budgets for the 2021/22 fiscal year.
- The actual O&M budget (18.9%) appears to be adequate when compared with the SALGA guideline (2.16%) or with the government benchmark (7%).
- These figures are impacted by the WSAs who did not provide budget and expenditure figures, and by some inaccurate asset values and where no asset values were provided for.
- Lastly, the municipalities presents budget and expenditure data at different levels (table above) i.e. financial figures are not always ringfenced per water supply system – thus rendering provincial summaries to be indicative.)
### 12.1 Dikgatlong Local Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>18.73%</td>
</tr>
<tr>
<td>2014</td>
<td>61.28%</td>
</tr>
<tr>
<td>2012</td>
<td>55.32%</td>
</tr>
<tr>
<td>2011</td>
<td>67.48%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Barkley West</th>
<th>Delportshoop and Longlands</th>
<th>Koopmansfontein</th>
<th>Windsorton (Vaalharts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>11.18%</td>
<td>35.80%</td>
<td>34.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>28.61%</td>
<td>64.77%</td>
<td>64.21%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>72.78%</td>
<td>92.44%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>23.87%</td>
<td>72.78%</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>8 000</td>
<td>36 000</td>
<td>36 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>8 000</td>
<td>36 000</td>
<td>36 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>3 762</td>
<td>2 146</td>
<td>26</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal River</td>
<td>Vaal River</td>
<td>Vaal River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>86.54%</td>
<td>56.94%</td>
<td>79.45%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>75.30%</td>
<td>31.20%</td>
<td>80.20%</td>
</tr>
</tbody>
</table>

#### Technical Site Assessment: Barkley West WTW – 52%

The Regulator note the dire state of management and drinking water quality in the Barkley West and Windsorton (Vaalharts) water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>83.85%</td>
</tr>
<tr>
<td>2014</td>
<td>95.66%</td>
</tr>
<tr>
<td>2012</td>
<td>71.70%</td>
</tr>
<tr>
<td>2011</td>
<td>43.57%</td>
</tr>
</tbody>
</table>

### Key Performance Area

#### Weight

<table>
<thead>
<tr>
<th>Area</th>
<th>Askham</th>
<th>Groot Mier</th>
<th>Karos</th>
<th>Klein Mier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>-</td>
<td>Sedibeng Water</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Score 2023</th>
<th>%</th>
<th>Score 2014</th>
<th>%</th>
<th>Score 2012</th>
<th>%</th>
<th>Score 2011</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Askham</td>
<td>57.05%</td>
<td>22.94%</td>
<td>37.86%</td>
<td>27.72%</td>
<td>36.000</td>
<td>95.66%</td>
<td>36.91%</td>
</tr>
<tr>
<td>Groot Mier</td>
<td>49.60%</td>
<td>25.92%</td>
<td>36.91%</td>
<td>25.96%</td>
<td>36.000</td>
<td>95.66%</td>
<td>25.92%</td>
</tr>
<tr>
<td>Karos</td>
<td>79.93%</td>
<td>91.17%</td>
<td>66.15%</td>
<td>37.51%</td>
<td>288</td>
<td>95.66%</td>
<td>25.92%</td>
</tr>
<tr>
<td>Klein Mier</td>
<td>41.96%</td>
<td>25.92%</td>
<td>36.51%</td>
<td>25.96%</td>
<td>36.000</td>
<td>36.51%</td>
<td>36.51%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>Capacity</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Askham</td>
<td>36 000</td>
</tr>
<tr>
<td>Groot Mier</td>
<td>36 000</td>
</tr>
<tr>
<td>Karos</td>
<td>288</td>
</tr>
<tr>
<td>Klein Mier</td>
<td>36 000</td>
</tr>
</tbody>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>Capacity</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Askham</td>
<td>36 000</td>
</tr>
<tr>
<td>Groot Mier</td>
<td>36 000</td>
</tr>
<tr>
<td>Karos</td>
<td>288</td>
</tr>
<tr>
<td>Klein Mier</td>
<td>36 000</td>
</tr>
</tbody>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>Capacity</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Askham</td>
<td>97</td>
</tr>
<tr>
<td>Groot Mier</td>
<td>156</td>
</tr>
<tr>
<td>Karos</td>
<td>266</td>
</tr>
<tr>
<td>Klein Mier</td>
<td>89</td>
</tr>
</tbody>
</table>

### Resource Utilisation

<table>
<thead>
<tr>
<th>Utilisation</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Askham</td>
<td>58.88%</td>
</tr>
<tr>
<td>Groot Mier</td>
<td>58.88%</td>
</tr>
<tr>
<td>Karos</td>
<td>92.36%</td>
</tr>
<tr>
<td>Klein Mier</td>
<td>58.88%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Askham</td>
<td>Vaal River</td>
</tr>
<tr>
<td>Groot Mier</td>
<td>Vaal River</td>
</tr>
<tr>
<td>Karos</td>
<td>Orange River</td>
</tr>
<tr>
<td>Klein Mier</td>
<td>Vaal River</td>
</tr>
</tbody>
</table>

### BDRR 2023

<table>
<thead>
<tr>
<th>BDRR</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Askham</td>
<td>33.65%</td>
</tr>
<tr>
<td>Groot Mier</td>
<td>48.05%</td>
</tr>
<tr>
<td>Karos</td>
<td>19.39%</td>
</tr>
<tr>
<td>Klein Mier</td>
<td>68.27%</td>
</tr>
</tbody>
</table>

### BDRR 2022

<table>
<thead>
<tr>
<th>BDRR</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Askham</td>
<td>88.50%</td>
</tr>
<tr>
<td>Groot Mier</td>
<td>39.00%</td>
</tr>
<tr>
<td>Karos</td>
<td>15.70%</td>
</tr>
<tr>
<td>Klein Mier</td>
<td>68.27%</td>
</tr>
</tbody>
</table>

### Key Performance Area

#### Weight

<table>
<thead>
<tr>
<th>Area</th>
<th>Lambrechtsdrift</th>
<th>Leekrans</th>
<th>Leseding</th>
<th>Loubos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Sedibeng Water</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Score 2023</th>
<th>%</th>
<th>Score 2014</th>
<th>%</th>
<th>Score 2012</th>
<th>%</th>
<th>Score 2011</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lambrechtsdrift</td>
<td>81.40%</td>
<td>90.65%</td>
<td>46.90%</td>
<td>26.97%</td>
<td>288</td>
<td>90.65%</td>
<td>22.94%</td>
</tr>
<tr>
<td>Leekrans</td>
<td>80.46%</td>
<td>89.99%</td>
<td>64.14%</td>
<td>33.72%</td>
<td>288</td>
<td>90.65%</td>
<td>31.64%</td>
</tr>
<tr>
<td>Leseding</td>
<td>64.49%</td>
<td>55.78%</td>
<td>57.82%</td>
<td>33.28%</td>
<td>432</td>
<td>36 000</td>
<td>25.96%</td>
</tr>
<tr>
<td>Loubos</td>
<td>57.21%</td>
<td>36 000</td>
<td>432</td>
<td>36 000</td>
<td>36 000</td>
<td>36 000</td>
<td>58.88%</td>
</tr>
</tbody>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>Utilisation</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lambrechtsdrift</td>
<td>83.33%</td>
</tr>
<tr>
<td>Leekrans</td>
<td>87.50%</td>
</tr>
<tr>
<td>Leseding</td>
<td>64.35%</td>
</tr>
<tr>
<td>Loubos</td>
<td>58.88%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lambrechtsdrift</td>
<td>Orange River</td>
</tr>
<tr>
<td>Leekrans</td>
<td>Orange River</td>
</tr>
<tr>
<td>Leseding</td>
<td>Orange River</td>
</tr>
<tr>
<td>Loubos</td>
<td>Vaal River</td>
</tr>
</tbody>
</table>

### BDRR 2023

<table>
<thead>
<tr>
<th>BDRR</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lambrechtsdrift</td>
<td>21.05%</td>
</tr>
<tr>
<td>Leekrans</td>
<td>21.05%</td>
</tr>
<tr>
<td>Leseding</td>
<td>31.87%</td>
</tr>
<tr>
<td>Loubos</td>
<td>35.80%</td>
</tr>
</tbody>
</table>

### BDRR 2022

<table>
<thead>
<tr>
<th>BDRR</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lambrechtsdrift</td>
<td>14.40%</td>
</tr>
<tr>
<td>Leekrans</td>
<td>Ni</td>
</tr>
<tr>
<td>Leseding</td>
<td>16.80%</td>
</tr>
<tr>
<td>Loubos</td>
<td>20.90%</td>
</tr>
</tbody>
</table>

### Key Performance Area

#### Weight

<table>
<thead>
<tr>
<th>Area</th>
<th>Louisvale</th>
<th>Noenieput</th>
<th>Ntsikelelo</th>
<th>Philandersbron</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>Sedibeng Water</td>
<td>-</td>
<td>Sedibeng Water</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Score 2023</th>
<th>%</th>
<th>Score 2014</th>
<th>%</th>
<th>Score 2012</th>
<th>%</th>
<th>Score 2011</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Louisvale</td>
<td>68.00%</td>
<td>80.13%</td>
<td>46.90%</td>
<td>26.97%</td>
<td>288</td>
<td>90.65%</td>
<td>22.94%</td>
</tr>
<tr>
<td>Noenieput</td>
<td>57.21%</td>
<td>89.99%</td>
<td>64.14%</td>
<td>33.72%</td>
<td>288</td>
<td>90.65%</td>
<td>31.64%</td>
</tr>
<tr>
<td>Ntsikelelo</td>
<td>82.73%</td>
<td>55.78%</td>
<td>57.82%</td>
<td>33.28%</td>
<td>432</td>
<td>36 000</td>
<td>25.96%</td>
</tr>
<tr>
<td>Philandersbron</td>
<td>50.60%</td>
<td>36 000</td>
<td>432</td>
<td>36 000</td>
<td>36 000</td>
<td>36 000</td>
<td>58.88%</td>
</tr>
</tbody>
</table>
## Key Performance Area

### Weight

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Louisvale</th>
<th>Noenieput</th>
<th>Ntsikelelo</th>
<th>Philandersbron</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>55.35%</td>
<td>17.36%</td>
<td>37.61%</td>
<td>18.94%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>27.63%</td>
<td>24.24%</td>
<td>32.94%</td>
<td>29.88%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>288</td>
<td>36 000</td>
<td>288</td>
<td>36 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>288</td>
<td>36 000</td>
<td>288</td>
<td>36 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>243</td>
<td>193</td>
<td>250</td>
<td>186</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>84.38%</td>
<td>NI</td>
<td>86.81%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Orange</td>
<td>Vaal River</td>
<td>Orange River</td>
<td>Vaal River;</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>31.87%</td>
<td>46.21%</td>
<td>18.24%</td>
<td>69.80%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>25.70%</td>
<td>77.70%</td>
<td>19.00%</td>
<td>24.20%</td>
</tr>
</tbody>
</table>

### Blue Drop Score 2023

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Raaswater</th>
<th>Rietfontein</th>
<th>Swartkopdam</th>
<th>Upington</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>81.40%</td>
<td>56.91%</td>
<td>59.75%</td>
<td>85.38%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>77.83%</td>
<td>22.94%</td>
<td>6.12%</td>
<td>96.17%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>57.82%</td>
<td>37.91%</td>
<td>8.96%</td>
<td>72.32%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>44.22%</td>
<td>32.94%</td>
<td>NI</td>
<td>43.96%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 776</td>
<td>3 360</td>
<td>500</td>
<td>80 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 775</td>
<td>3 360</td>
<td>500</td>
<td>80 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>572</td>
<td>344</td>
<td>500</td>
<td>41 405</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>32.23%</td>
<td>10.24%</td>
<td>100.00%</td>
<td>68.60%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Orange River</td>
<td>Orange River</td>
<td>Orange River</td>
<td>Orange River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>19.55%</td>
<td>34.69%</td>
<td>23.57%</td>
<td>32.93%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>15.90%</td>
<td>75.00%</td>
<td>87.20%</td>
<td>21.20%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Welkom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
</tr>
</tbody>
</table>

---

**Technical Site Assessment:**

AH September WTW – 84%
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>11.94%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>74.84%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>63.18%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>60.42%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Britstown</th>
<th>De Aar</th>
<th>Hanover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>11.80%</td>
<td>12.00%</td>
<td>11.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>75.34%</td>
<td>77.79%</td>
<td>63.97%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>63.68%</td>
<td>62.47%</td>
<td>68.39%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>78.11%</td>
<td>56.72%</td>
<td>75.10%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>40</td>
<td>200</td>
<td>38</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>40</td>
<td>8,703</td>
<td>55</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>40</td>
<td>200</td>
<td>38</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Groundwater</td>
<td>Ground water</td>
<td>Ground water</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>99.11%</td>
<td>99.11%</td>
<td>99.11%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>55.10%</td>
<td>55.10%</td>
<td>55.10%</td>
</tr>
</tbody>
</table>

#### Technical Site Assessment: De Aar WTW – 43%

The Regulator notes the dire state of management and drinking water quality in the Britstown, De Aar and Hanover water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### 12.4 Ga-Segonyana Local Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>2023</th>
<th>%</th>
<th>25.92%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>2014</td>
<td>%</td>
<td>40.62%</td>
</tr>
<tr>
<td>Blue Drop Score</td>
<td>2012</td>
<td>%</td>
<td>72.27%</td>
</tr>
<tr>
<td>Blue Drop Score</td>
<td>2011</td>
<td>%</td>
<td>37.32%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Bankhara-Bodulong</th>
<th>Batlhosas</th>
<th>Ditshoswaneng</th>
<th>Galotolo</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>26.30%</td>
<td>29.75%</td>
<td>29.75%</td>
<td>23.35%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>14.06%</td>
<td>60.51%</td>
<td>49.83%</td>
<td>57.42%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>64.16%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>34.18%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>1 000</td>
<td>2 300</td>
<td>580</td>
<td>345</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>1 000</td>
<td>2 300</td>
<td>580</td>
<td>345</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>1 092</td>
<td>5 417</td>
<td>139</td>
<td>47</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>109.20%</td>
<td>235.52%</td>
<td>23.97%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>4 x Boreholes</td>
<td>4 Boreholes</td>
<td>2 x Boreholes</td>
<td>1 x Borehole</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>78.72%</td>
<td>44.29%</td>
<td>33.98%</td>
<td>31.99%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>49.80%</td>
<td>45.50%</td>
<td>48.70%</td>
<td>49.70%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Mothibistad</th>
<th>Ncweng</th>
<th>Pietbos</th>
<th>Sedibeng</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>7.60%</td>
<td>28.25%</td>
<td>22.23%</td>
<td>14.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>62.17%</td>
<td>67.39%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>6 873</td>
<td>864</td>
<td>432</td>
<td>389</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>6 873</td>
<td>864</td>
<td>432</td>
<td>389</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>1 338</td>
<td>138</td>
<td>126</td>
<td>121</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>19.47%</td>
<td>15.97%</td>
<td>29.17%</td>
<td>31.11%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>3 x Boreholes</td>
<td>2 x Boreholes</td>
<td>1 x Borehole</td>
<td>1 x Borehole</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>72.33%</td>
<td>26.82%</td>
<td>56.28%</td>
<td>77.48%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>NI</td>
<td>44.70%</td>
<td>61.10%</td>
<td>50.50%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Magobe</th>
<th>Magojaneng</th>
<th>Mapoteng</th>
<th>Maruping</th>
<th>Mokalamosesane</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>22.75%</td>
<td>28.25%</td>
<td>26.75%</td>
<td>12.50%</td>
<td></td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Magobe Magojaneng</td>
<td>Mapoteng</td>
<td>Maruping</td>
<td>Mokalamosesane</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
<td>-------------------</td>
<td>----------</td>
<td>----------</td>
<td>--------------</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td></td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 730</td>
<td>864</td>
<td>1 814</td>
<td>520</td>
<td></td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 730</td>
<td>864</td>
<td>1 814</td>
<td>520</td>
<td></td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>573</td>
<td>712</td>
<td>1 814</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>33.12%</td>
<td>82.41%</td>
<td>NI</td>
<td>12.88%</td>
<td></td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>2 x Boreholes</td>
<td>1.00</td>
<td>4 x Boreholes</td>
<td>1 x Borehole</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>37.36%</td>
<td>46.11%</td>
<td>36.36%</td>
<td>73.75%</td>
<td></td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>47.10%</td>
<td>54.50%</td>
<td>NI</td>
<td>42.30%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Gamopedi</th>
<th>Gantatelang</th>
<th>Gareule</th>
<th>Gasebolao</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>29.75%</td>
<td>32.25%</td>
<td>29.75%</td>
<td>28.25%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>57.92%</td>
<td>54.45%</td>
<td>55.93%</td>
<td>56.07%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 123</td>
<td>950</td>
<td>345</td>
<td>1 210</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 123</td>
<td>950</td>
<td>345</td>
<td>1 210</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>463</td>
<td>190</td>
<td>56</td>
<td>30</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>41.23%</td>
<td>20.00%</td>
<td>16.23%</td>
<td>2.48%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>1 x Borehole</td>
<td>Boreholes</td>
<td>2 x Boreholes</td>
<td>1 x Borehole</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>33.98%</td>
<td>23.04%</td>
<td>28.01%</td>
<td>39.55%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>60.20%</td>
<td>39.90%</td>
<td>75.10%</td>
<td>45.50%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Seven miles</th>
<th>Slouya</th>
<th>Thamoyanche</th>
<th>Vergenoeg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>24.85%</td>
<td>28.25%</td>
<td>3.00%</td>
<td>29.75%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>55.69%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>520</td>
<td>432</td>
<td>430</td>
<td>950</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>520</td>
<td>432</td>
<td>430</td>
<td>950</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>82</td>
<td>20</td>
<td>250</td>
<td>239</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>15.77%</td>
<td>4.63%</td>
<td>58.14%</td>
<td>25.16%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>3 x Boreholes</td>
<td>2 x Boreholes</td>
<td>2 x Boreholes</td>
<td>1 x Borehole</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>33.98%</td>
<td>20.50%</td>
<td>95.58%</td>
<td>24.43%</td>
</tr>
</tbody>
</table>
### Key Performance Areas

<table>
<thead>
<tr>
<th>Weight</th>
<th>Seven miles</th>
<th>Slouya</th>
<th>Thamoyanche</th>
<th>Vergenoeg</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>54.30%</td>
<td>67.50%</td>
<td>46.10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th>Gasehubane</th>
<th>Kagung</th>
<th>Kuruman-Wrenchville</th>
<th>Lokaleng</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>-</td>
<td>Sedibeng Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>28.25%</td>
<td>21.85%</td>
<td>26.75%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>NI</td>
<td>60.40%</td>
<td>17.19%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>64.16%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>8.55%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>86</td>
<td>1 728</td>
<td>30 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>86</td>
<td>1 728</td>
<td>12 100</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>65</td>
<td>579</td>
<td>12 100</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>33.51%</td>
<td>103.31%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>1 x Borehole</td>
<td>2 x Boreholes</td>
<td>Boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>45.24%</td>
<td>32.59%</td>
<td>44.51%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>29.60%</td>
<td>42.30%</td>
<td>40.50%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Kuruman Water System (WSA) – 55% and Mothibistad Water System – 64%**

The Regulator notes the dire state of management and drinking water quality in the Bankhara-Bodulong, Batharos, Ditshoswaneng, Galotolo, Mothibistad, Ncweng, Pietbos, Sedibeng, Magobe Magojaneng, Mapoteng, Maruping, Mokalamosesane, Gamopedi, Garuele, Gasebolao, Seven miles, Slouya, Thamoyanche, Vergenoeg, Gasehubane, Kagung, Kuruman-Wrenchville and Lokaleng water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>54.71%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>50.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>40.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>49.79%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Dibeng</th>
<th>Kathu</th>
<th>Olifantshoek</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>21.73%</td>
<td>60.41%</td>
<td>55.52%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>35.95%</td>
<td>38.60%</td>
<td>65.98%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>25.06%</td>
<td>26.16%</td>
<td>55.96%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>12.60%</td>
<td>67.01%</td>
<td>68.35%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>1030</td>
<td>6500</td>
<td>36000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>1447</td>
<td>6500</td>
<td>36000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>1447</td>
<td>8163</td>
<td>1406</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>132.62%</td>
<td>58.88%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Groundwater</td>
<td>Ga-Mogara</td>
<td>Vaal River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>96.02%</td>
<td>42.94%</td>
<td>38.40%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>93.50%</td>
<td>78.50%</td>
<td>31.10%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Kathu Water Supply System – 57%

The Regulator notes the dire state of management and drinking water quality in the Dibeng water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### 12.6 Hantam Local Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>2023</td>
<td>47.64%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>84.60%</td>
<td>81.64%</td>
<td>75.07%</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Brandvlei</th>
<th>Calvinia</th>
<th>Loeriesfontein</th>
<th>Middelpos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>2023</td>
<td>39.05%</td>
<td>45.88%</td>
<td>39.95%</td>
<td>43.55%</td>
</tr>
<tr>
<td>2014</td>
<td>60.00%</td>
<td>97.00%</td>
<td>69.00%</td>
<td>57.00%</td>
</tr>
<tr>
<td>2012</td>
<td>74.00%</td>
<td>88.00%</td>
<td>69.00%</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>69.00%</td>
<td>78.00%</td>
<td>60.00%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kL/d</th>
<th>500</th>
<th>4000</th>
<th>600</th>
<th>360</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>500</td>
<td>4000</td>
<td>600</td>
<td>360</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>500</td>
<td>2160</td>
<td>600</td>
<td>360</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>54.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th>Borehole</th>
<th>Karee Dam/Boreholes</th>
<th>Borehole</th>
<th>Borehole</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>32.23%</td>
<td>27.48%</td>
<td>32.20%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>21.80%</td>
<td>20.60%</td>
<td>18.80%</td>
</tr>
</tbody>
</table>

#### Technical Site Assessment: Calvinia WTW – 94%
### Key Performance Area

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>16.05%</td>
<td>16.05%</td>
<td>16.05%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>19.18%</td>
<td>36.50%</td>
<td>28.55%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>40.36%</td>
<td>29.64%</td>
<td>26.64%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>74.33%</td>
<td>54.13%</td>
<td>51.39%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 170</td>
<td>432</td>
<td>181</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 170</td>
<td>432</td>
<td>181</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>550</td>
<td>432</td>
<td>181</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>0.00%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>2 x Boreholes</td>
<td>7 x Boreholes</td>
<td>2 x Boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>97.25%</td>
<td>98.03%</td>
<td>96.94%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>32.30%</td>
<td>69.50%</td>
<td>22.20%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Gasehunelo Groundwater Management Area: D41L-M9</th>
<th>Gasese Groundwater Management Area D41L-K10</th>
<th>Heiso Groundwater Management Area: D41L-M8</th>
<th>Hotazel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td>Sedibeng Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>13.75%</td>
<td>11.25%</td>
<td>11.65%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>28.10%</td>
<td>35.30%</td>
<td>35.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>37.89%</td>
<td>40.66%</td>
<td>25.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>59.08%</td>
<td>74.33%</td>
<td>50.63%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>894</td>
<td>35</td>
<td>130</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>894</td>
<td>35</td>
<td>130</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>894</td>
<td>35</td>
<td>130</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>3 x Boreholes</td>
<td>2 x Boreholes</td>
<td>1 x Borehole</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>43.50%</td>
<td>70.00%</td>
<td>20.50%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Kikahela Groundwater Management Area: D41L-M1</td>
<td>Laxey Groundwater Management Area D41G-05</td>
<td>Maipeng Groundwater Management Area D41L-K9</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>--------</td>
<td>---------------------------------------------</td>
<td>------------------------------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td><img src="image1" alt="Image" /></td>
<td><img src="image2" alt="Image" /></td>
<td><img src="image3" alt="Image" /></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td><img src="image5" alt="Image" /></td>
<td><img src="image6" alt="Image" /></td>
<td><img src="image7" alt="Image" /></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>35.60%</td>
<td>34.10%</td>
<td>17.98%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>39.24%</td>
<td>30.24%</td>
<td>26.86%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>68.90%</td>
<td>54.13%</td>
<td>73.17%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>454</td>
<td>405</td>
<td>486</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>454</td>
<td>405</td>
<td>486</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>454</td>
<td>405</td>
<td>486</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>2 x Boreholes</td>
<td>6 x Boreholes</td>
<td>2 x Boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td><img src="image9" alt="Image" /></td>
<td><img src="image10" alt="Image" /></td>
<td><img src="image11" alt="Image" /></td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td><img src="image13" alt="Image" /></td>
<td><img src="image14" alt="Image" /></td>
<td><img src="image15" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Manyeding A Groundwater Management Area: D41L-M5</th>
<th>Manyeding Lower Groundwater Management Area: D41L-M6</th>
<th>Metsetswaneng Groundwater Management Area: D41L-M7</th>
<th>Tsineng Groundwater Management Area: D41L-M11</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td><img src="image17" alt="Image" /></td>
<td><img src="image18" alt="Image" /></td>
<td><img src="image19" alt="Image" /></td>
<td><img src="image20" alt="Image" /></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td><img src="image21" alt="Image" /></td>
<td><img src="image22" alt="Image" /></td>
<td><img src="image23" alt="Image" /></td>
<td><img src="image24" alt="Image" /></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>17.98%</td>
<td>35.60%</td>
<td>NI</td>
<td>35.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>73.81%</td>
<td>52.63%</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>35.86%</td>
<td>30.36%</td>
<td>35.86%</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>691</td>
<td>143</td>
<td>350</td>
<td>259</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>691</td>
<td>143</td>
<td>350</td>
<td>259</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>691</td>
<td>143</td>
<td>350</td>
<td>259</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>2 x Boreholes</td>
<td>2 x Boreholes</td>
<td>3 x Boreholes;</td>
<td>2 x Boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td><img src="image25" alt="Image" /></td>
<td><img src="image26" alt="Image" /></td>
<td><img src="image27" alt="Image" /></td>
<td><img src="image28" alt="Image" /></td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td><img src="image29" alt="Image" /></td>
<td><img src="image30" alt="Image" /></td>
<td><img src="image31" alt="Image" /></td>
<td><img src="image32" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Van Zylsrus (Boreholes)</th>
<th>Ward 1 Heuningvlei Area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td><img src="image33" alt="Image" /></td>
<td><img src="image34" alt="Image" /></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td><img src="image35" alt="Image" /></td>
<td><img src="image36" alt="Image" /></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>36.58%</td>
<td>34.85%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>36.41%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>68.19%</td>
<td>NI</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Van Zylsrus (Boreholes)</td>
<td>Ward 1 Heuningvlei Area</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------</td>
<td>-------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>500</td>
<td>2 030</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>500</td>
<td>2 030</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>207</td>
<td>2 030</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>41.40%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>3 x Boreholes</td>
<td>8 x Boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>92.84%</td>
<td>100.00%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>18.60%</td>
<td>27.70%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Hotazel WTW – 59%**

The Regulator notes the dire state of management and drinking water quality in the Bothetheletsa, Bothithong, Churchill, Dithakong, Gasehunelo, Gasese, Heiso, Van Zylsrus, Ward 1 Heuningvlei Area, Kikahela, Laxey, Maipeng, Mamatwan/Hotazel, Manyeding, Manyeding, Metsetswaneng and Tsineng water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>8.02%</td>
<td>40.54%</td>
<td>35.63%</td>
<td>53.18%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Garies</th>
<th>Hondeklipbaai</th>
<th>Kamassies</th>
<th>Kamieskroon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>10.13%</td>
<td>7.13%</td>
<td>7.13%</td>
<td>7.13%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>38.00%</td>
<td>41.00%</td>
<td>38.00%</td>
<td>47.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>28.00%</td>
<td>0.00%</td>
<td>37.00%</td>
<td>41.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>43.00%</td>
<td>59.00%</td>
<td>53.00%</td>
<td>51.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>420</td>
<td>300</td>
<td>55</td>
<td>500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>1,500</td>
<td>135</td>
<td>55</td>
<td>130</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>500</td>
<td>135</td>
<td>55</td>
<td>130</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>33.33%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Borehole</td>
<td>Borehole</td>
<td>Borehole</td>
<td>Borehole</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>97.79%</td>
<td>93.38%</td>
<td>95.58%</td>
<td>93.38%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>96.90%</td>
<td>82.90%</td>
<td>44.30%</td>
<td>96.90%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Kharkams</th>
<th>Kheis</th>
<th>Klipfontein</th>
<th>Koingnaas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>7.13%</td>
<td>7.13%</td>
<td>7.13%</td>
<td>7.13%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>46.00%</td>
<td>45.00%</td>
<td>45.00%</td>
<td>33.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>52.00%</td>
<td>52.00%</td>
<td>52.00%</td>
<td>34.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>43.00%</td>
<td>63.00%</td>
<td>63.00%</td>
<td>58.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>210</td>
<td>132</td>
<td>96</td>
<td>163</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>178</td>
<td>115</td>
<td>96</td>
<td>163</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>178</td>
<td>115</td>
<td>96</td>
<td>163</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Borehole</td>
<td>Borehole</td>
<td>Borehole</td>
<td>Borehole</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>95.58%</td>
<td>95.58%</td>
<td>95.58%</td>
<td>95.58%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>96.90%</td>
<td>97.40%</td>
<td>39.60%</td>
<td>82.90%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Leliefontein</th>
<th>Lepelfontein</th>
<th>Nourivier</th>
<th>Paulshoek</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>7.13%</td>
<td>7.13%</td>
<td>7.13%</td>
<td>7.13%</td>
</tr>
</tbody>
</table>
### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Leliefontein</th>
<th>Lepelfontein</th>
<th>Nourivier</th>
<th>Paulshoek</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>46.00%</td>
<td>44.00%</td>
<td>39.00%</td>
<td>38.00%</td>
</tr>
<tr>
<td>%</td>
<td>37.00%</td>
<td>52.00%</td>
<td>37.00%</td>
<td>37.00%</td>
</tr>
<tr>
<td>%</td>
<td>42.00%</td>
<td>53.00%</td>
<td>53.00%</td>
<td>42.00%</td>
</tr>
<tr>
<td>kL/d</td>
<td>210</td>
<td>72</td>
<td>80</td>
<td>228</td>
</tr>
<tr>
<td>kL/d</td>
<td>60</td>
<td>23</td>
<td>60</td>
<td>105</td>
</tr>
<tr>
<td>kL/d</td>
<td>60</td>
<td>23</td>
<td>60</td>
<td>105</td>
</tr>
<tr>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Borehole/Groundwater</td>
<td>Borehole/Groundwater</td>
<td>Borehole/Groundwater</td>
<td>Groundwater/Borehole</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>93.38%</td>
<td>93.38%</td>
<td>95.58%</td>
<td>93.38%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>26.20%</td>
<td>39.50%</td>
<td>36.80%</td>
<td>96.90%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Rooifontein</th>
<th>Soebatsfontein</th>
<th>Spoegrivier</th>
<th>Tweerivier</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>7.13%</td>
<td>7.13%</td>
<td>10.13%</td>
<td>7.13%</td>
</tr>
<tr>
<td>%</td>
<td>51.00%</td>
<td>41.00%</td>
<td>45.00%</td>
<td>38.00%</td>
</tr>
<tr>
<td>%</td>
<td>50.00%</td>
<td>52.00%</td>
<td>35.00%</td>
<td>NA</td>
</tr>
<tr>
<td>%</td>
<td>53.00%</td>
<td>53.00%</td>
<td>68.00%</td>
<td>NA</td>
</tr>
<tr>
<td>kL/d</td>
<td>181</td>
<td>60</td>
<td>108</td>
<td>60</td>
</tr>
<tr>
<td>kL/d</td>
<td>28</td>
<td>17</td>
<td>17</td>
<td>60</td>
</tr>
<tr>
<td>kL/d</td>
<td>28</td>
<td>17</td>
<td>17</td>
<td>60</td>
</tr>
<tr>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Borehole</td>
<td>Groundwater</td>
<td>Groundwater</td>
<td>Groundwater</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>93.38%</td>
<td>93.38%</td>
<td>93.38%</td>
<td>95.58%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>26.20%</td>
<td>38.30%</td>
<td>39.50%</td>
<td>47.40%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Garies WTW – 69%**

The Regulator note the dire state of management and drinking water quality in the Garies, Hondeklipbaai, Kamassies, Kamieskroon, Kharkams, Kheis, Klipfontein, Koingnaas, Leliefontein, Lepelfontein, Nourivier, Paulshoek, Rooifontein, Soebatsfontein, Spoegrivier and Tweerivier water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
12.9 Kareeberg Local Municipality

### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td></td>
<td>18.42%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td></td>
<td>52.91%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td></td>
<td>39.35%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td></td>
<td>35.06%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Carnarvon</th>
<th>Vanwyksvlei</th>
<th>Vosburg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>17.33%</td>
<td>23.35%</td>
<td>19.50%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>53.10%</td>
<td>37.99%</td>
<td>57.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>39.66%</td>
<td>38.16%</td>
<td>38.16%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>39.54%</td>
<td>35.99%</td>
<td>34.16%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>800</td>
<td>67</td>
<td>500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>800</td>
<td>67</td>
<td>500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>800</td>
<td>67</td>
<td>500</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Groundwater</td>
<td>Groundwater</td>
<td>Groundwater</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>40.74%</td>
<td>27.57%</td>
<td>35.52%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>25.80%</td>
<td>23.50%</td>
<td>20.90%</td>
</tr>
</tbody>
</table>

The Regulator notes the dire state of management and drinking water quality in the Carnarvon, Vanwyksvlei and Vosburg water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td>21.62%</td>
<td></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2014</strong></td>
<td>%</td>
<td>49.28%</td>
<td></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2012</strong></td>
<td>%</td>
<td>39.96%</td>
<td></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2011</strong></td>
<td>%</td>
<td>50.63%</td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Fraserburg</th>
<th>Sutherland</th>
<th>Williston</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td>29.25%</td>
<td>13.35%</td>
<td>18.75%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2014</strong></td>
<td>%</td>
<td>52.00%</td>
<td>49.00%</td>
<td>49.00%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2012</strong></td>
<td>%</td>
<td>40.00%</td>
<td>37.00%</td>
<td>43.00%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2011</strong></td>
<td>%</td>
<td>47.00%</td>
<td>53.00%</td>
<td>52.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>2 300</td>
<td>1 500</td>
<td>1 800</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>2 300</td>
<td>1 500</td>
<td>1 800</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>2 300</td>
<td>1 500</td>
<td>1 800</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Boreholes</td>
<td>Borehole</td>
<td>Borehole</td>
</tr>
<tr>
<td><strong>BDRR 2023</strong></td>
<td>%</td>
<td>28.64%</td>
<td>79.41%</td>
<td>62.11%</td>
</tr>
<tr>
<td><strong>BDRR 2022</strong></td>
<td>%</td>
<td>39.90%</td>
<td>18.70%</td>
<td>36.10%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Sutherland WTW – 80%**

The Regulator notes the dire state of management and drinking water quality in the Fraserburg, Sutherland and Williston water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Danielskuil (Boreholes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>27.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>77.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>66.03%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>54.21%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Danielskuil (Boreholes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>27.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>77.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>66.03%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>54.21%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>461</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>461</td>
</tr>
<tr>
<td>System Input Value</td>
<td></td>
<td>461</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Groundwater</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>50.98%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>18.70%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Danielskuil borehole system – 71%

The Regulator notes the dire state of management and drinking water quality in the Danielskuil water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
## Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>15.19%</td>
<td>76.53%</td>
<td>53.11%</td>
<td>46.62%</td>
</tr>
</tbody>
</table>

## Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Onseepkans (Melkbosrand TW)</th>
<th>Onseepkans (RK)</th>
<th>Pofadder (Pella drift)</th>
<th>Witbank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Sedibeng Water</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>5.65%</td>
<td>5.65%</td>
<td>21.68%</td>
<td>5.45%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>19.38%</td>
<td>26.82%</td>
<td>87.78%</td>
<td>19.83%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>23.24%</td>
<td>10.61%</td>
<td>56.25%</td>
<td>6.50%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>27.24%</td>
<td>27.06%</td>
<td>49.01%</td>
<td>26.62%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>500</td>
<td>500</td>
<td>27 000</td>
<td>500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>500</td>
<td>500</td>
<td>24 000</td>
<td>500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>500</td>
<td>500</td>
<td>2 223</td>
<td>500</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>94.90%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Orange River</td>
<td>Orange River</td>
<td>Orange River</td>
<td>Orange River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>84.68%</td>
<td>100.00%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>92.00%</td>
<td>92.00%</td>
<td>70.60%</td>
<td>92.00%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Onseepkans WTW – 27%

The Regulator notes the dire state of management and drinking water quality in the Onseepkans (Melkbosrand TW), Onseepkans (RK), Pofadder (Pella drift) and Witbank water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td></td>
<td>16.20%</td>
<td>71.42%</td>
<td>68.99%</td>
<td>47.08%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td></td>
<td></td>
<td>60.28%</td>
<td>70.31%</td>
<td>69.52%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td></td>
<td></td>
<td>69.52%</td>
<td>53.35%</td>
<td>47.30%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td></td>
<td></td>
<td>47.30%</td>
<td>47.08%</td>
<td>24.45%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Weight</th>
<th>Alheit</th>
<th>Augrabies</th>
<th>Bloemsmond</th>
<th>Cillie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>9.30%</td>
<td>15.70%</td>
<td>10.80%</td>
<td>10.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>60.28%</td>
<td>60.11%</td>
<td>73.30%</td>
<td>61.11%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>69.52%</td>
<td>70.31%</td>
<td>69.52%</td>
<td>65.88%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>47.30%</td>
<td>53.35%</td>
<td>52.78%</td>
<td>29.41%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>1560</td>
<td>1000</td>
<td>1080</td>
</tr>
</tbody>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>1560</td>
<td>1000</td>
<td>1080</td>
</tr>
</tbody>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>1560</td>
<td>500</td>
<td>864</td>
</tr>
</tbody>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>%</th>
<th>%</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>40.00%</td>
<td>100.00%</td>
<td>50.00%</td>
<td>80.00%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th>Orange River</th>
<th>Orange River</th>
<th>Orange River</th>
<th>Orange River</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>73.27%</td>
<td>68.89%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>48.90%</td>
<td>56.10%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Weight</th>
<th>Currieskamp</th>
<th>Eenduin</th>
<th>Eksteenkuil</th>
<th>Kakamas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>24.45%</td>
<td>8.70%</td>
<td>21.30%</td>
<td>23.40%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>68.20%</td>
<td>NI</td>
<td>NI</td>
<td>83.31%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>67.34%</td>
<td>NI</td>
<td>NI</td>
<td>71.89%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>52.18%</td>
<td>NI</td>
<td>NI</td>
<td>53.35%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>1000</td>
<td>1000</td>
<td>6400</td>
</tr>
</tbody>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>1000</td>
<td>1000</td>
<td>6400</td>
</tr>
</tbody>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>175</td>
<td>400</td>
<td>400</td>
<td>7000</td>
</tr>
</tbody>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>%</th>
<th>%</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>35.00%</td>
<td>40.00%</td>
<td>40.00%</td>
<td>109.38%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th>Orange River</th>
<th>Orange River</th>
<th>Orange River</th>
<th>Orange River</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>20.19%</td>
<td>85.80%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>37.10%</td>
<td>84.50%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Weight</th>
<th>Keimoes</th>
<th>Lennertsville</th>
<th>Lutzburg</th>
<th>Marchand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>10.80%</td>
<td>11.80%</td>
<td>10.80%</td>
<td>10.80%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Keimoes</td>
<td>Lennertsville</td>
<td>Lutzburg</td>
<td>Marchand</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------</td>
<td>---------</td>
<td>---------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>68.46%</td>
<td>70.15%</td>
<td>59.90%</td>
<td>73.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>69.47%</td>
<td>69.11%</td>
<td>67.30%</td>
<td>66.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>53.26%</td>
<td>29.09%</td>
<td>45.70%</td>
<td>53.20%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 800</td>
<td>2 880</td>
<td>1 080</td>
<td>2 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 800</td>
<td>2 880</td>
<td>1 080</td>
<td>2 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>3 115</td>
<td>2 160</td>
<td>1 080</td>
<td>1 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>111.25%</td>
<td>75.00%</td>
<td>100.00%</td>
<td>50.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Orange River</td>
<td>Orange River</td>
<td>Orange River</td>
<td>Orange River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>81.11%</td>
<td>75.68%</td>
<td>89.77%</td>
<td>85.80%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>28.80%</td>
<td>NI</td>
<td>39.40%</td>
<td>25.90%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Riemvasmaak - Sending</th>
<th>Riemvasmaak - Vredesvallei</th>
<th>Soverby</th>
<th>Warmsand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>11.40%</td>
<td>19.20%</td>
<td>10.80%</td>
<td>19.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>62.90%</td>
<td>76.70%</td>
<td>73.63%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>33.20%</td>
<td>62.80%</td>
<td>68.06%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>31.40%</td>
<td>52.18%</td>
<td>52.45%</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 720</td>
<td>500</td>
<td>1 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 720</td>
<td>500</td>
<td>1 000</td>
<td>1 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>860</td>
<td>600</td>
<td>700</td>
<td>1 000</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>50.00%</td>
<td>120.00%</td>
<td>70.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Orange River</td>
<td>Orange River</td>
<td>Orange River</td>
<td>Orange River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>85.80%</td>
<td>44.26%</td>
<td>89.77%</td>
<td>47.50%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>23.50%</td>
<td>37.10%</td>
<td>56.90%</td>
<td>59.40%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Kakamas WTW – 34%**

The Regulator notes the dire state of management and drinking water quality in the Alheit, Augrabies, Bloemsmond, Cillie, Currieskamp, Eenduin, Eksteenskuil Kakamas, Keimoes, Lennertsville, Lutzburg, Marchand, Riemvasmaak-Sending, Riemvasmaak-Vredesvallei, Soverby and Warmsand water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>%</td>
<td>29.31%</td>
</tr>
<tr>
<td>2014</td>
<td>%</td>
<td>27.79%</td>
</tr>
<tr>
<td>2012</td>
<td>%</td>
<td>50.33%</td>
</tr>
<tr>
<td>2011</td>
<td>%</td>
<td>53.43%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Brandboom</th>
<th>Boegoeberg</th>
<th>Gariep</th>
<th>Groblershoop</th>
<th>Grootdrink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>%</td>
<td>33.73%</td>
</tr>
<tr>
<td>2014</td>
<td>%</td>
<td>28.32%</td>
</tr>
<tr>
<td>2012</td>
<td>%</td>
<td>53.40%</td>
</tr>
<tr>
<td>2011</td>
<td>%</td>
<td>40.79%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kl/d</th>
<th>763</th>
<th>100</th>
<th>1 000</th>
<th>724</th>
</tr>
</thead>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>System Available Capacity</th>
<th>kl/d</th>
<th>763</th>
<th>100</th>
<th>1 000</th>
<th>724</th>
</tr>
</thead>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>System Input Value</th>
<th>kl/d</th>
<th>295</th>
<th>57</th>
<th>1 400</th>
<th>492</th>
</tr>
</thead>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>Capacity Utilisation</th>
<th>%</th>
<th>38.66%</th>
<th>50.09%</th>
<th>67.96%</th>
</tr>
</thead>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th>%</th>
<th>40.74%</th>
<th>44.57%</th>
<th>50.09%</th>
</tr>
</thead>
</table>

### BDRR 2023

<table>
<thead>
<tr>
<th>BDRR 2023</th>
<th>%</th>
<th>40.74%</th>
<th>44.57%</th>
<th>50.09%</th>
<th>46.11%</th>
</tr>
</thead>
</table>

### BDRR 2022

<table>
<thead>
<tr>
<th>BDRR 2022</th>
<th>%</th>
<th>56.10%</th>
<th>23.90%</th>
<th>51.30%</th>
<th>56.10%</th>
</tr>
</thead>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Opwag: Zuma Valley</th>
<th>Topline</th>
<th>Wegdraai</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>%</td>
<td>32.53%</td>
</tr>
<tr>
<td>2014</td>
<td>%</td>
<td>28.32%</td>
</tr>
<tr>
<td>2012</td>
<td>%</td>
<td>53.40%</td>
</tr>
<tr>
<td>2011</td>
<td>%</td>
<td>40.79%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kl/d</th>
<th>500</th>
<th>610</th>
<th>686</th>
</tr>
</thead>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>System Available Capacity</th>
<th>kl/d</th>
<th>500</th>
<th>610</th>
<th>686</th>
</tr>
</thead>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>System Input Value</th>
<th>kl/d</th>
<th>50</th>
<th>239</th>
<th>634</th>
</tr>
</thead>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>Capacity Utilisation</th>
<th>%</th>
<th>10.00%</th>
<th>39.18%</th>
<th>92.42%</th>
</tr>
</thead>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th>%</th>
<th>40.16%</th>
<th>40.74%</th>
<th>79.52%</th>
</tr>
</thead>
</table>

### BDRR 2023

<table>
<thead>
<tr>
<th>BDRR 2023</th>
<th>%</th>
<th>40.74%</th>
<th>40.74%</th>
<th>79.52%</th>
</tr>
</thead>
</table>

### BDRR 2022

<table>
<thead>
<tr>
<th>BDRR 2022</th>
<th>%</th>
<th>56.10%</th>
<th>23.90%</th>
<th>51.30%</th>
<th>56.10%</th>
</tr>
</thead>
</table>
The Regulator notes the dire state of management and drinking water quality in the Gariep, Grootdrink and Wegdraai water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a **detailed corrective action plan within 20 days** of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>26.45%</td>
</tr>
<tr>
<td>2014</td>
<td>29.00%</td>
</tr>
<tr>
<td>2012</td>
<td>72.66%</td>
</tr>
<tr>
<td>2011</td>
<td>65.56%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Warrenton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>26.45%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>29.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>72.66%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>65.56%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>8,400</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>8,400</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>4,750</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>56.55%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vaal</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>75.68%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>62.10%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Warrenton WTW – 55%

The Regulator notes the dire state of management and drinking water quality in the Warrenton water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>36.61%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>63.94%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>63.47%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>57.96%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Buffelsrivier</th>
<th>Goodhouse</th>
<th>Kommagas</th>
<th>Rooiwal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Blue Drop Score 2023

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>28.38%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>63.40%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>63.95%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>57.95%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>2000</th>
<th>346</th>
<th>670</th>
<th>500</th>
</tr>
</thead>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>518</th>
<th>346</th>
<th>670</th>
<th>500</th>
</tr>
</thead>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>kl/d</th>
<th>80</th>
<th>30</th>
<th>40</th>
<th>123</th>
</tr>
</thead>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.44%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

- Groundwater
- Surface Water
- Groundwater
- Groundwater

### BDRR 2023

<table>
<thead>
<tr>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>55.45%</td>
</tr>
</tbody>
</table>

### BDRR 2022

<table>
<thead>
<tr>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>42.30%</td>
</tr>
</tbody>
</table>

---

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Vioolsdrift</th>
<th>Bergsig</th>
<th>Bulletrap</th>
<th>Carolusberg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
</tr>
</tbody>
</table>

### Blue Drop Score 2023

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>29.48%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>64.34%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>64.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>57.48%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>500</th>
<th>18000</th>
<th>18000</th>
<th>18000</th>
</tr>
</thead>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>kl/d</th>
<th>500</th>
<th>18000</th>
<th>18000</th>
<th>18000</th>
</tr>
</thead>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>kl/d</th>
<th>107</th>
<th>526</th>
<th>55</th>
<th>264</th>
</tr>
</thead>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.40%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

- Orange
- Lower Orange
- Lower Orange
- Lower Orange

### BDRR 2023

<table>
<thead>
<tr>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>61.58%</td>
</tr>
</tbody>
</table>

### BDRR 2022

<table>
<thead>
<tr>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.00%</td>
</tr>
</tbody>
</table>

---

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Concordia</th>
<th>Fonteintjie</th>
<th>Matjeskloof</th>
<th>Nababeep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
<td>Sedibeng Water</td>
</tr>
</tbody>
</table>

### Blue Drop Score 2023

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>34.62%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>40.92%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>35.92%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>35.51%</td>
</tr>
</tbody>
</table>
### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Concordia</th>
<th>Fonteintjie</th>
<th>Matjieskloof</th>
<th>Nababeep</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>60.00%</td>
<td>65.00%</td>
<td>62.00%</td>
<td>65.00%</td>
</tr>
</tbody>
</table>

| %      | 57.00%    | NA          | NA           | 59.00%   |

| %      | NA        | NA          | NA           | NA       |

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kL/d</th>
<th>18 000</th>
<th>18 000</th>
<th>18 000</th>
<th>18 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>18 000</td>
<td>18 000</td>
<td>18 000</td>
<td>18 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>460</td>
<td>180</td>
<td>350</td>
<td>992</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>50.62%</td>
<td>50.62%</td>
<td>50.62%</td>
<td>50.62%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Lower Orange</td>
<td>Lower Orange</td>
<td>Lower Orange</td>
<td>Lower Orange</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>66.67%</td>
<td>31.84%</td>
<td>51.74%</td>
<td>49.25%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>25.60%</td>
<td>54.70%</td>
<td>26.80%</td>
<td>26.80%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Okiep</th>
<th>Springbok</th>
<th>Steinkopf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>42.81%</td>
<td>37.42%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>65.00%</td>
<td>62.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>71.00%</td>
<td>57.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>18 000</td>
<td>18 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>18 000</td>
<td>18 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>716</td>
<td>2 143</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>50.62%</td>
<td>50.62%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Lower Orange</td>
<td>Lower Orange</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>31.84%</td>
<td>49.25%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>25.60%</td>
<td>26.80%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Vioolsdrift WTW – 62%**

The Regulator notes the dire state of management and drinking water quality in the Buffelsrivier, Goodhouse, Kommagas, Rooiwal, Vioolsdrift and Carolusberg water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>19.85%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>71.59%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>60.16%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>49.44%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Hartswater</th>
<th>Jan Kempdorp</th>
<th>Pampierstad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>-</td>
<td>-</td>
<td>Sedibeng Water</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>11.80%</td>
<td>11.80%</td>
<td>36.75%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>72.08%</td>
<td>62.27%</td>
<td>83.74%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>42.88%</td>
<td>48.10%</td>
<td>87.38%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>22.83%</td>
<td>24.21%</td>
<td>89.48%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>5 000</td>
<td>5 000</td>
<td>9 600</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>5 000</td>
<td>5 000</td>
<td>9 600</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>5 000</td>
<td>5 000</td>
<td>4 766</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>NI</td>
<td>NI</td>
<td>49.75%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Harts</td>
<td>Harts</td>
<td>Harts</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>63.75%</td>
<td>63.75%</td>
<td>30.54%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>54.40%</td>
<td>58.20%</td>
<td>25.00%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Hartswater WTW – 45%

The Regulator notes the dire state of management and drinking water quality in the Hartswater and Jan Kempdorp water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>9.20%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>38.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>17.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>25.36%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Petrusville</th>
<th>Phillipstown</th>
<th>Vanderkloof</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>9.40%</td>
<td>5.10%</td>
<td>9.40%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>38.58%</td>
<td>32.91%</td>
<td>38.58%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>17.39%</td>
<td>18.24%</td>
<td>17.39%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>36.88%</td>
<td>16.34%</td>
<td>36.88%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>2 600</td>
<td>130</td>
<td>2 600</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>2 600</td>
<td>130</td>
<td>2 600</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>1 560</td>
<td>130</td>
<td>1 040</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>NI</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Vanderkloof Dam</td>
<td>Groundwater</td>
<td>Vanderkloof Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>89.15%</td>
<td>95.58%</td>
<td>100.00%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>63.80%</td>
<td>64.60%</td>
<td>63.80%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Vanderkloof WTW – 42%

The Regulator notes the dire state of management and drinking water quality in the Petrusville, Phillipstown and Vanderkloof water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>21.94%</td>
</tr>
<tr>
<td>2014</td>
<td>42.25%</td>
</tr>
<tr>
<td>2012</td>
<td>36.77%</td>
</tr>
<tr>
<td>2011</td>
<td>36.44%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Eksteenfontein</th>
<th>Kuboes</th>
<th>Lekkersing</th>
<th>Port Nolloth / Alexander Baai (Alexcor &amp; 8 Myl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>29.75%</td>
<td>10.90%</td>
<td>28.25%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>39.00%</td>
<td>43.00%</td>
<td>36.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>44.00%</td>
<td>29.00%</td>
<td>41.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>45.00%</td>
<td>26.00%</td>
<td>44.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>240</td>
<td>300</td>
<td>200</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>240</td>
<td>300</td>
<td>200</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>240</td>
<td>300</td>
<td>200</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Average Daily Consumption</td>
<td>l/p/d</td>
<td>300</td>
<td>274</td>
<td>294</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Borehole</td>
<td>Borehole</td>
<td>Borehole</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>22.40%</td>
<td>95.58%</td>
<td>46.12%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>96.90%</td>
<td>96.90%</td>
<td>96.90%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Port Nolloth Borehole Supply System (Ag Myl WTW) - 43%
The Regulator notes the dire state of management and drinking water quality in the Eksteenfontein, Kuboes, Lekkersing, Port Nolloth/ Alexander Baai (Alexcor & 8 Myl) and Sanddrift water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>26.38%</td>
</tr>
<tr>
<td>2014</td>
<td>54.02%</td>
</tr>
<tr>
<td>2012</td>
<td>19.66%</td>
</tr>
<tr>
<td>2011</td>
<td>29.49%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Campbell</th>
<th>Douglas</th>
<th>Griekwastad</th>
<th>Schmidtsdrift</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Campbell</th>
<th>Douglas</th>
<th>Griekwastad</th>
<th>Schmidtsdrift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>24.33%</td>
<td>29.65%</td>
<td>24.25%</td>
<td>20.25%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>44.00%</td>
<td>53.00%</td>
<td>65.90%</td>
<td>47.32%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>18.00%</td>
<td>23.00%</td>
<td>18.85%</td>
<td>17.55%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>14.00%</td>
<td>36.00%</td>
<td>16.58%</td>
<td>33.49%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>574</td>
<td>5 000</td>
<td>5 800</td>
<td>1 014</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>574</td>
<td>5 000</td>
<td>5 800</td>
<td>1 014</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>574</td>
<td>6 058</td>
<td>5 800</td>
<td>1 014</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>121.16%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Groundwater (fountains)</td>
<td>Orange, Vaal</td>
<td>Groundwater</td>
<td>Vaal</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>52.19%</td>
<td>58.32%</td>
<td>52.89%</td>
<td>72.34%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>72.10%</td>
<td>63.80%</td>
<td>50.80%</td>
<td>81.80%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Douglas Water Supply System – 51%

The Regulator notes the dire state of management and drinking water quality in the Campbell, Douglas, Griekwastad and Schmidtsdrift water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>46.26%</td>
</tr>
<tr>
<td>2014</td>
<td>62.36%</td>
</tr>
<tr>
<td>2012</td>
<td>62.40%</td>
</tr>
<tr>
<td>2011</td>
<td>40.94%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Marydale</th>
<th>Niekerkshoop</th>
<th>Prieska</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>30.38%</td>
<td>31.68%</td>
<td>49.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>43.75%</td>
<td>38.58%</td>
<td>65.12%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>40.00%</td>
<td>45.19%</td>
<td>65.25%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>50.85%</td>
<td>56.56%</td>
<td>37.52%</td>
</tr>
</tbody>
</table>

| System Design Capacity | kl/d  | 1 200 | 980 | 15 000 |
| System Available Capacity | kl/d  | 1 200 | 406 | 15 000 |
| System Input Value     | kl/d  | 840  | 735 | 8 470  |
| Capacity Utilisation   | %     | 70.00% | 181.00% | 56.47% |

| Resource Abstracted From |        | Groundwater | Groundwater | Orange River |
| BDRR 2023               | %      | 53.34%      | 51.07%      | 39.11%      |
| BDRR 2022               | %      | 30.30%      | 41.00%      | 20.80%      |

**Technical Site Assessment: Flippie Holtshauzen WTW - 63%**

The Regulator notes the dire state of management and drinking water quality in the Marydale water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
12.22 Sol Plaatje Local Municipality

Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>52.04%</td>
</tr>
<tr>
<td>2014</td>
<td>81.46%</td>
</tr>
<tr>
<td>2012</td>
<td>72.10%</td>
</tr>
<tr>
<td>2011</td>
<td>84.23%</td>
</tr>
</tbody>
</table>

Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Kby Zone 16: Riverton</th>
<th>Kby Zone A-E : Ritchie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 52.13%</td>
<td>% 46.68%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 81.59%</td>
<td>% 78.31%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 72.34%</td>
<td>% 65.61%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% 84.74%</td>
<td>% 65.28%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d 162 000</td>
<td>kL/d 4 881</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d 162 000</td>
<td>kL/d 4 881</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d 86 431</td>
<td>kL/d 1 378</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>% 53.35%</td>
<td>% 28.23%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Vaal River</td>
<td>Modder</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>% 48.70%</td>
<td>% 41.24%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>% 59.00%</td>
<td>% 53.10%</td>
</tr>
</tbody>
</table>

Technical Site Assessment: Ritchie WTW – 65%
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>2023</td>
<td>59.52%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>73.23%</td>
<td>72.82%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>72.82%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>45.87%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th></th>
<th>Hopetown</th>
<th>Strydenburg</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>2023</td>
<td>60.32%</td>
<td>53.43%</td>
</tr>
<tr>
<td>2014</td>
<td>74.00%</td>
<td>65.00%</td>
</tr>
<tr>
<td>2012</td>
<td>77.00%</td>
<td>62.00%</td>
</tr>
<tr>
<td>2011</td>
<td>54.00%</td>
<td>29.00%</td>
</tr>
<tr>
<td><strong>System Design Capacity</strong></td>
<td>kL/d</td>
<td>5 600</td>
</tr>
<tr>
<td><strong>System Available Capacity</strong></td>
<td>kL/d</td>
<td>5 600</td>
</tr>
<tr>
<td><strong>System Input Value</strong></td>
<td>kL/d</td>
<td>5 126</td>
</tr>
<tr>
<td><strong>Capacity Utilisation</strong></td>
<td>%</td>
<td>91.54%</td>
</tr>
<tr>
<td><strong>Resource Abstracted From</strong></td>
<td></td>
<td>Orange</td>
</tr>
<tr>
<td><strong>BDRR 2023</strong></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>23.82%</td>
<td>32.93%</td>
<td></td>
</tr>
<tr>
<td><strong>BDRR 2022</strong></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>26.00%</td>
<td>16.40%</td>
<td></td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Hopetown WTW – 75%**
The Regulator notes the dire state of management and drinking water quality in the Skeyfontein water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>14.17%</td>
</tr>
<tr>
<td>2014</td>
<td>82.37%</td>
</tr>
<tr>
<td>2012</td>
<td>72.63%</td>
</tr>
<tr>
<td>2011</td>
<td>67.15%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Hutchinson</th>
<th>Loxton</th>
<th>Merrimian</th>
<th>Richmond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>8.35%</td>
<td>11.75%</td>
<td>14.20%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>62.14%</td>
<td>84.86%</td>
<td>61.42%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NI</td>
<td>87.85%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>61.89%</td>
<td>81.76%</td>
<td>54.94%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>500</td>
<td>500</td>
<td>10</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>500</td>
<td>500</td>
<td>10</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>500</td>
<td>500</td>
<td>10</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Groundwater</td>
<td>Groundwater</td>
<td>Groundwater</td>
<td>Groundwater</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>67.76%</td>
<td>67.76%</td>
<td>76.37%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>57.20%</td>
<td>38.60%</td>
<td>77.30%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Victoria borehole scheme – 32%

The Regulator notes the dire state of management and drinking water quality in the Hutchinson, Loxton, Merrimian, Richmond, and Victoria West water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>24.17%</td>
</tr>
<tr>
<td>2014</td>
<td>53.90%</td>
</tr>
<tr>
<td>2012</td>
<td>15.76%</td>
</tr>
<tr>
<td>2011</td>
<td>35.81%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Colesberg</th>
<th>Norvalspont</th>
<th>Noupoort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>24.90%</td>
<td>15.53%</td>
<td>18.28%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>55.79%</td>
<td>45.67%</td>
<td>40.43%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>18.41%</td>
<td>10.93%</td>
<td>12.63%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>35.81%</td>
<td>3.13%</td>
<td>8.63%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kl/d</td>
<td>8 210</td>
<td>174</td>
<td>1 792</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kl/d</td>
<td>4 500</td>
<td>174</td>
<td>162</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kl/d</td>
<td>4 000</td>
<td>227</td>
<td>162</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>88.89%</td>
<td>130.34%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Orange River</td>
<td>Orange River</td>
<td>Ground water</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>38.32%</td>
<td>56.06%</td>
<td>36.96%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>63.40%</td>
<td>50.70%</td>
<td>48.00%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Colesberg WTW – 56%

The Regulator notes the dire state of management and drinking water quality in the Colesberg, Norvalspont and Noupoort water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
City of Cape Town: Faure WTW lime dosing in prime condition, exemplary of a clean well operated plant

Drakenstein: Welvanpas WTW chemical dosing – textbook: *a clean plant is a safe plant is a productive plant*
- 25 WSAs & 124 systems audited
- 1 Water Board & 5 WSPs
- 81% TSA score
- 27.4% BDRR - Low risk
- 15 BD Certifications
- 8 Critical State systems
The Western Cape province provides drinking water to a total population of 6,241,092 persons in South Africa.

An audit attendance record of 100% of the 25 WSAs, with 124 water supply systems across the province, 1 Water Board (Overberg Water), 2 Bulk Water Service Providers (City of Cape Town MM and West Coast DM Bulk) and 3 WSPs (Nu Water, Veolia and IKUSASA), affirms the province’s commitment to the Blue Drop national incentive-based regulatory programme. The main Bulk Water Suppliers are the City of Cape Town MM who supply potable water to the City of Cape Town, and 5 water supply systems in the Drakenstein LM and Stellenbosch LM, followed by the West Coast DM Bulk who supplies potable water to 7 water supply systems in the Bergrivier LM, Drakenstein LM, Saldanha Bay LM and Swartland LM, and finally Overberg Water that supplies potable water to 6 water supply systems in the Cape Agulhas LM, Hessequa LM and Theewaterskloof LM.

The Regulator determined that 15 water supply systems scored more than 95% when measured against the Blue Drop standards and thus qualified for the prestigious Blue Drop Certification. In 2014, 8 water supply systems were awarded Blue Drop status. Using the 2014 audit results as comparative baseline, the province shows an improvement in excellence for 2023.

Fifteen (15) of 25 WSAs improved on their 2014 scores as can be seen in the table below. The remaining 10 WSAs regressed to lower Blue Drop scores compared to their 2014 baselines. The Overstrand LM, City of Cape Town MM and George LM are the best performing WSAs in the province, all achieving Blue Drop Certifications for 10 water supply systems in total. The Blue Drop scores of these top WSA performers were supported by excellent technical site assessment scores of 94% for Buffelsriver and Preekstool WTWs (both in Overstrand LM), followed by 98% for Faure and 95% for Steenbras WTWs, and 84% for George Municipal New WTW. A total of 8 water supply systems were identified to be in a critical state in the province compared with 9 water supply systems in 2014.

The province’s overall Blue Drop performance is characterised by particular strengths when measured against the KPAs. The WSAs with Blue Drop scores in the excellent and good performance categories stand out for its compliance, good practice and risk management practices that are well embedded in the water supply business. All five Blue Drop KPAs in the province achieved averages above 50% - KPA 1 Capacity Management (70.9%), KPA 2 DWQ Risk Management (62.3%), KPA 3 Financial Management (70.7%), KPA 4 Technical Management (56.3%) and KPA 5 Drinking Water Quality Compliance (73.7%). There are at least 10 WSAs that need to give specific attention to the various KPAs that are reflecting scores below 50%.

The provincial Blue Drop Risk Rating (BDRR) remained in the low risk category and improved from 34.8% in 2022 (BD PAT) to 27.4% in 2023. 115 (of 124) water supply systems are situated in the low risk category, 8 WSSs in the medium risk category, 1 WSS in the high risk category, and no WSSs in the critical risk category.

The Regulator is optimistic that the 2023 Blue Drop report provides an updated residual basis from where a positive trajectory for water services delivery and improved performance will follow in the next BD audit. Municipalities and their service providers are encouraged to start preparation for the next Blue Drop audit cycle, which is planned to cover the financial year 2023/24 and released in 2025. The 2023 Blue Drop status for WSAs in the province are summarised in the table below.

### Table 226 - 2023 Blue Drop Summary

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2014 BD Score (%)</th>
<th>2023 BD Score (%)</th>
<th>2023 BD Certified ≥95%</th>
<th>2023 Critical State (&lt;31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaufort West LM</td>
<td>89.5%</td>
<td>53.0%↓</td>
<td></td>
<td>Murraysburg, Nelspoort</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>63.8%</td>
<td>85.1%↑</td>
<td>Velddrif (West Coast DM Bulk)</td>
<td></td>
</tr>
<tr>
<td>Bitou LM</td>
<td>90.4%</td>
<td>81.7%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>89.2%</td>
<td>60.0%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>69.5%</td>
<td>90.0%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>40.0%</td>
<td>35.9%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>95.9%</td>
<td>98.1%↑</td>
<td>Cape Town</td>
<td></td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>72.1%</td>
<td>94.1%↑</td>
<td>Hermon (City of Cape Town MM)</td>
<td></td>
</tr>
<tr>
<td>George LM</td>
<td>82.8%</td>
<td>94.95%↑</td>
<td>George</td>
<td></td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>55.2%</td>
<td>50.1%↓</td>
<td></td>
<td>Jongsfontein</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>31.7%</td>
<td>25.8%↓</td>
<td></td>
<td>Ladismith, Van Wyksdorp, Zoar</td>
</tr>
<tr>
<td>Knysna LM</td>
<td>61.6%</td>
<td>78.9%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>26.1%</td>
<td>47.8%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>72.3%</td>
<td>44.7%↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>48.6%</td>
<td>55.2%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>78.8%</td>
<td>87.4%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>51.3%</td>
<td>63.9%↑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>90.8%</td>
<td>99.99%↑</td>
<td>Baardskeerdersbos, Buffelsjags Bay, Buffelsriver, Greater Gansbaai, Greater Hermanus, Kleinmond, Pearly Beach, Stanford</td>
<td></td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>34.1%</td>
<td>28.2%↓</td>
<td></td>
<td>Klaarstroom, Prince Albert</td>
</tr>
</tbody>
</table>
The Department of Water and Sanitation acknowledges the excellence in water services management achieved for the Blue Drop Audit year of 2021-22. Fifteen (15) Blue Drop Certificates are awarded in the Western Cape Province to the water supply systems of Berg Rivier LM, City of Cape Town MM, Drakenstein LM, George LM, Overstrand LM, Saldanha Bay LM, Swartland LM and Theewaterskloof LM:

### Western Cape

#### 2023 Blue Drop Certified Systems

- Berg Rivier LM (West Coast DM Bulk)
  - Velddrif
- City of Cape Town MM
  - Cape Town
- Drakenstein LM (City of Cape Town MM)
  - Hermon
- George LM
  - George
- Overstrand LM
  - Baardskeerdersbos
  - Buffeljags Bay
  - Buffelsrivier
  - Greater Gansbaai
  - Greater Hermanus
  - Kleinmond
  - Pearly Beach
  - Stanford
- Saldanha Bay LM (West Coast DM Bulk)
  - Hopefield
- Swartland LM (West Coast DM Bulk)
  - Withoogte
- Theewaterskloof LM
  - Botrivier

### Background to Water Delivery and Distribution Infrastructure

The total volume of water treated in the province is 1,162,422 kl/d. Twenty five (25) WSAs, 1 WB, 2 Bulk Water Service Providers (CoCT MM and WCDM Bulk) and 3 WSPs (Nu Water, Veolia and IKUSASA) are responsible for water services through a water network comprising of:

- 126 WTWs, boreholes and springs with the bulk of the water treated and supplied by the 12 City of Cape Town WTWs to 3 WSAs (City of Cape Town MM, Drakenstein LM and Stellenbosch LM) with a total Average Daily Production of 808,423 kl/d
- 124 WSSs of which 18 WSSs in 10 WSAs are provided with bulk potable water from City of Cape Town MM, West Coast DM Bulk and Overberg Water
- 348 pump stations, 14,087 km bulk water supply lines, 6,563 km reticulation pipe lines (very low as NI for City of Cape Town MM), and 1,102 reservoirs/towers (excluding the systems that were unable to provide data).
Table 227 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes

<table>
<thead>
<tr>
<th>Micro Size Plants</th>
<th>Small Size Plants</th>
<th>Medium Size Plants</th>
<th>Large Size Plants</th>
<th>Macro Size Plants</th>
<th>Unknown (NI)*</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;500 kl/day</td>
<td>500 - &lt;2,000 kl/day</td>
<td>2,000 - &lt;10,000 kl/day</td>
<td>10,000 - &lt;25,000 kl/day</td>
<td>&gt;25,000 kl/day</td>
<td>Excluding 6 Reservoirs</td>
<td>126</td>
</tr>
<tr>
<td>No. of WTWs, Boreholes, Springs</td>
<td>20 (16%)</td>
<td>33 (26%)</td>
<td>45 (36%)</td>
<td>13 (10%)</td>
<td>15 (12%)</td>
<td>None</td>
</tr>
<tr>
<td>Total Design Capacity (kl/day)</td>
<td>4,738</td>
<td>38,638</td>
<td>199,896</td>
<td>210,960</td>
<td>2,000,200</td>
<td>None</td>
</tr>
<tr>
<td>Total Available Capacity (kl/day)</td>
<td>4,602</td>
<td>42,767</td>
<td>193,801</td>
<td>195,210</td>
<td>1,727,164</td>
<td>None</td>
</tr>
<tr>
<td>Average Daily Treatment Volume (kl/day)</td>
<td>3,620</td>
<td>22,650</td>
<td>98,681</td>
<td>75,976</td>
<td>961,494</td>
<td>2 NI</td>
</tr>
<tr>
<td>Total SIV (kl/day)</td>
<td>3,769</td>
<td>24,747</td>
<td>389,181</td>
<td>199,795</td>
<td>446,299</td>
<td>1,063,791</td>
</tr>
<tr>
<td>Design Capacity Utilisation (%)</td>
<td>76%</td>
<td>59%</td>
<td>49%</td>
<td>36%</td>
<td>48%</td>
<td>47%</td>
</tr>
<tr>
<td>Available Capacity Utilisation (%)</td>
<td>79%</td>
<td>53%</td>
<td>51%</td>
<td>39%</td>
<td>56%</td>
<td>54%</td>
</tr>
</tbody>
</table>

* “Unknown” means the number of WTWs with NI (No Information) on design capacity or available capacity or SIV

The audit verified a total installed design capacity of 2,454,432 kl/d and a total available design capacity of 2,163,544. kl/d with most of this capacity residing in the macro-sized water treatment plants. Collectively, the 126 WTWs produce 1,162,422 kl/d and distributes 1,063,791 kl/d across the water networks. By comparing the available treatment capacity with the treated water volume, a spare treatment capacity of 1,001,122 kl/d is available (46%) to meet additional future demands. However, the WUE for the province is fairly high (ave. 243 l/p/d) compared to the international WUE benchmark of 180 l/p/d, indicating a high ratio between effective water use and actual water abstraction. Going forward, the province will have to dedicate significant resources to curb water losses and NRW.
Diagnostic no. 2 to follow herein will unpack these statistics in more detail. The data shows that the Hessequa LM and Prince Albert LM daily average treatment volumes exceed the available design capacities. 12 water supply systems in 10 WSAs have daily production volumes that exceed the authorised daily abstraction volumes.

The water distribution infrastructure is summarised in the table below.

### Table 228 - Summary of Water Distribution Reticulation Infrastructure

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WSS with no WSP/WB</th>
<th># WSS with WSP/WB</th>
<th>Water Distribution Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td># Pump Stations (#)</td>
</tr>
<tr>
<td>Overberg Water</td>
<td>-</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>4</td>
<td>6</td>
<td>84</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>5</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>26</td>
<td>104</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>4</td>
<td>5</td>
<td>NI</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>7</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>6</td>
<td>0</td>
<td>NI</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>1</td>
<td>93</td>
<td>11,023</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>2</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>George LM</td>
<td>4</td>
<td>19</td>
<td>82</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>7</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>4</td>
<td>0</td>
<td>NI</td>
</tr>
<tr>
<td>Knersa LM</td>
<td>5</td>
<td>26</td>
<td>NI</td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>2</td>
<td>0</td>
<td>31</td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>5</td>
<td>0</td>
<td>NI</td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>8</td>
<td>24</td>
<td>NI</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>5</td>
<td>18</td>
<td>144</td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>3</td>
<td>1</td>
<td>77</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>8</td>
<td>26</td>
<td>114</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>3</td>
<td>0</td>
<td>NI</td>
</tr>
<tr>
<td>Saldana Bay LM</td>
<td>3</td>
<td>7</td>
<td>193</td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>2</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Swartland LM</td>
<td>2</td>
<td>24</td>
<td>566</td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>4</td>
<td>0</td>
<td>NI</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>9</td>
<td>1</td>
<td>26</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>5</td>
<td>0</td>
<td>56</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>106</strong></td>
<td><strong>18</strong></td>
<td><strong>348</strong></td>
</tr>
</tbody>
</table>

**Provincial Blue Drop Analysis**

The 100% response from the 25 WSAs audited demonstrates a firm commitment to progressive water services management in the province. 25 WSAs were audited in 2023 compared to the 25 WSAs in 2014.

### Table 229 - Blue Drop Comparative Analysis from 2012 to 2023

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>2012</th>
<th>2014</th>
<th>2023</th>
<th>Performance trend 2014 and 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WSAs assessed (#)</strong></td>
<td>25 (100%)</td>
<td>25 (100%)</td>
<td>25 (100%)</td>
<td>→</td>
</tr>
<tr>
<td><strong>Water supply systems assessed (#)</strong></td>
<td>117</td>
<td>122</td>
<td>124</td>
<td>↑</td>
</tr>
<tr>
<td><strong>Blue Drop scores ≥50% (#)</strong></td>
<td>103 (88%)</td>
<td>88 (72%)</td>
<td>96 (77%)</td>
<td>↑</td>
</tr>
<tr>
<td><strong>Blue Drop scores &lt;50% (#)</strong></td>
<td>14 (12%)</td>
<td>34 (28%)</td>
<td>28 (23%)</td>
<td>↑</td>
</tr>
<tr>
<td><strong>Blue Drop Certifications (#)</strong></td>
<td>33</td>
<td>8</td>
<td>15</td>
<td>↑</td>
</tr>
<tr>
<td><strong>Lowest Technical Site Assessment Score (%)</strong></td>
<td>36%</td>
<td>48%</td>
<td>50%</td>
<td>↑</td>
</tr>
<tr>
<td><strong>Highest Technical Site Assessment Score (%)</strong></td>
<td>95%</td>
<td>97%</td>
<td>98%</td>
<td>↑</td>
</tr>
</tbody>
</table>

NA = Not Applied   NI = No Information  ↑= improvement, ↓= regress, →= no change
The trend analysis indicates that:

- The no. of systems audited has increased from the last BD audit in 2014.
- The no. of systems with BD scores of ≥50% increased from 88 (72%) in 2014 to 96 (77%) in 2023.
- This trend was reversed with no. of systems with a BD score of ≤50% decreasing from 34 (28%) in 2014 to 28 (23%) in 2023.
- Blue Drop Certifications increased from 8 awards in 2014 to 15 awards in 2023.
- The lowest TSA score increased from 48% in 2014 to 50% in 2023, with the highest TSA score increasing from 97% in 2014 to 98% in 2023.
- The overall performance trend indicates a progression from 2014 to 2023.
- Despite this positive trajectory, 10 WSAs still need regular audits to ensure timely turnaround and continued improvement.
- The positive trend for 15 WSAs implies that performance has improved despite the absence of regulatory engagement of the BD audits between 2014 to 2023.

Comparative analysis of the 2014 and 2023 blue drop scores, indicates that system scores are predominantly in the >80–<95% (Good Performance) category, with the >50–<80% (Average Performance) being the next largest category. 20 systems in 2023 reside in the Poor Performance category and 8 systems are in Critical State (<31%) that shows an improvement from 34 systems in 2014 to 28 systems in 2023.

In summary, trend analysis since 2014 to 2023 indicate as follows:

- Systems in a ‘critical state’ are 8
- Systems in a ‘poor state’ decreased from 25 systems to 20 systems
- Systems in an ‘average state’ decreased from 61 systems to 34 systems
- Systems in the ‘excellent and good state’ increased from 27 systems (22%) to 62 systems (50%).

**Provincial BDRR Analysis**

The Blue Drop Risk Rating (BDRR) analysis assesses the risk across the entire water supply network. The BDRR formula was updated in 2021 to include an added risk indicator, i.e. ‘E: Water Safety Plans’, to address the risk assessment requirements outlined in SANS 241 of 2015. The BDRR now contains 5 risk indicators, i.e. design capacity (A), operational capacity (B), water quality compliance (C), technical capacity (D), and water safety plans (E). The results from the BDRR analyses are summarised in the table and figure following.
### Table 230 - Municipal BDRR/BDRRmax Comparative Analysis from 2022 and 2023

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th># WBs/WSPs</th>
<th>2022 (BD PAT)</th>
<th>2023 (BD Audit)</th>
<th>Performance Trend 2022 and 2023</th>
<th>BDRR Risk Category Split</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2022</td>
<td>2023</td>
<td></td>
<td>0-&lt;50%</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>4</td>
<td>2</td>
<td>17.6%</td>
<td>23.7%</td>
<td>↑</td>
<td>3</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>6</td>
<td>1</td>
<td>30.0%</td>
<td>20.6%</td>
<td>↓</td>
<td>6</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>3</td>
<td>19.4%</td>
<td>21.3%</td>
<td>↓</td>
<td>3</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>4</td>
<td>2</td>
<td>43.2%</td>
<td>38.7%</td>
<td>↑</td>
<td>4</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>9</td>
<td>2</td>
<td>35.2%</td>
<td>22.5%</td>
<td>↑</td>
<td>8</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>6</td>
<td>2</td>
<td>27.9%</td>
<td>29.2%</td>
<td>↓</td>
<td>6</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>1</td>
<td>3</td>
<td>25.7%</td>
<td>31.0%</td>
<td>↓</td>
<td>1</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>5</td>
<td>3</td>
<td>33.6%</td>
<td>25.3%</td>
<td>↑</td>
<td>5</td>
</tr>
<tr>
<td>George LM</td>
<td>4</td>
<td>4</td>
<td>40.1%</td>
<td>28.3%</td>
<td>↑</td>
<td>4</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>10</td>
<td>3</td>
<td>39.9%</td>
<td>38.2%</td>
<td>↑</td>
<td>8</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>4</td>
<td>5</td>
<td>89.5%</td>
<td>52.4%</td>
<td>↑</td>
<td>2</td>
</tr>
<tr>
<td>Knysna LM</td>
<td>5</td>
<td>5</td>
<td>29.8%</td>
<td>22.8%</td>
<td>↑</td>
<td>5</td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>2</td>
<td>2</td>
<td>50.6%</td>
<td>29.6%</td>
<td>↑</td>
<td>2</td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>5</td>
<td>5</td>
<td>22.2%</td>
<td>39.6%</td>
<td>↓</td>
<td>4</td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>8</td>
<td>8</td>
<td>32.1%</td>
<td>29.7%</td>
<td>↑</td>
<td>8</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>5</td>
<td>5</td>
<td>28.4%</td>
<td>23.6%</td>
<td>↑</td>
<td>5</td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>3</td>
<td>3</td>
<td>48.9%</td>
<td>30.5%</td>
<td>↑</td>
<td>3</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>8</td>
<td>8</td>
<td>19.1%</td>
<td>17.8%</td>
<td>↑</td>
<td>8</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>3</td>
<td>3</td>
<td>46.4%</td>
<td>49.6%</td>
<td>↓</td>
<td>1</td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>3</td>
<td>3</td>
<td>27.2%</td>
<td>19.4%</td>
<td>↑</td>
<td>3</td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>5</td>
<td>5</td>
<td>26.1%</td>
<td>24.8%</td>
<td>↑</td>
<td>5</td>
</tr>
<tr>
<td>Swartland LM</td>
<td>2</td>
<td>2</td>
<td>25.0%</td>
<td>21.1%</td>
<td>↑</td>
<td>2</td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>4</td>
<td>4</td>
<td>33.1%</td>
<td>30.6%</td>
<td>↑</td>
<td>4</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>10</td>
<td>1</td>
<td>36.8%</td>
<td>27.7%</td>
<td>↑</td>
<td>10</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>5</td>
<td>5</td>
<td>25.3%</td>
<td>22.8%</td>
<td>↑</td>
<td>5</td>
</tr>
<tr>
<td><strong>Totals &amp; %BDRR/BDRRmax</strong></td>
<td><strong>124</strong></td>
<td><strong>18</strong></td>
<td><strong>34.8%</strong></td>
<td><strong>27.4%</strong></td>
<td>↑</td>
<td>115</td>
</tr>
</tbody>
</table>

↑ = improvement, ↓ = regress, → = no change

**Figure 172** - a) WSS risk distribution and trends for 2022 and 2023; b) Colour legend

Trend analysis of the BDRR ratings for 2022 and 2023 indicates that:

- The 2023 audit cycle highlighted a slightly progressive shift with an increase in the number of low risk WSSs (110 to 115), an increase in the medium risk WSSs (5 to 8), a decrease in the high risk WSSs (2 to 1), and a decrease in the critical risk WSSs (2 to zero).

### Regulatory Enforcement

Water supply systems which fail to achieve the minimum Blue Drop target of 31%, are placed under regulatory focus. The Regulator requires these WSAs to submit a detailed corrective action plan (CAP) within 20 working days from publishing of this report. 8 WSSs received Blue Drop scores below 31%, and hence are placed under regulatory surveillance, in accordance with the Water Services Act (108 of 1997). DWS together with COGTA will through the grant allocation systems ensure priority is given to application of grants to rectify/restore the water services treatment and supply shortcomings identified in this report.
### Table 231 - WSSs with <31% Blue Drop scores

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 BD Score</th>
<th>WSSs with &lt;31% score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaufort West LM</td>
<td>53.0%</td>
<td>Murraysburg, Nelspoort</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>50.1%</td>
<td>Jongensfontein</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>25.8%</td>
<td>Ladismith, Van Wyksdorp, Zoar</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>28.2%</td>
<td>Klaarstroom, Prince Albert</td>
</tr>
</tbody>
</table>

The following WSAs and their associated water treatment systems are in high and/or critical BDRR risk positions, which means that some or all the risk indicators are in a precarious state, i.e. operational capacity, design capacity utilisation, water quality compliance, technical capacity, and water safety plans. WTWs in high risk and critical risk positions pose a serious risk to public health. The following WSAs will be required to assess their risk contributors and to provide corrective measures in the above mentioned action plans to mitigate these risks.

### Table 232 - %BDRR/BDRRmax scores and WSSs in critical and high-risk space

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>2023 Average %BDRR/BDRRmax</th>
<th>WSSs in critical and high-risk space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kannaland LM</td>
<td>52.4%</td>
<td>Van Wyksdorp</td>
</tr>
</tbody>
</table>

Good practice risk management requires that the Water Safety Plans (WaSPs) are informed by meaningful Process and Condition Audits, supported by zealous implementation of corrective measures and ongoing monitoring of risk movement. With the exception of only 1 water supply system in Kannaland LM, all the remaining water supply systems are in the low and medium risk positions – an exemplary status.

### Performance Barometer

The Blue Drop Performance Barometer presents the individual WSA Blue Drop Scores, which essentially reflects the level of mastery that a WSA has achieved in terms of its overall water services business. The bar chart below compares the 2014 and 2023 BD scores, ranked from highest to lowest performing WSA in 2023. The City of Cape Town MM is commended for maintaining excellent performance and the Overstrand LM is commended for achieving excellent performance. 15 WSAs improved on their municipal blue drop scores that includes the City of Cape Town MM and Overstrand LM. The remaining 10 WSAs regressed on their municipal blue drop scores.

The BDRR Risk Barometer expresses the level of risk that a WSA poses in respect of its water supply system. The schematic below presents the BDRR in ascending order – with the low-risk WSAs on the left and higher risk WSAs to the far right. The analysis reveals that 24 of 25 WSAs are in low risk positions whilst only 1 WSA is in the medium position in the province.

### Provincial Best Performers

The Overstrand Local Municipality is the BEST PERFORMING WSA in the province, based on the following record of excellence:

- 2023 Blue Drop Score of 99.99%
- 2014 Blue Drop Score of 90.8%
- Improvement on the BDRR from 19.1% in 2022 to 17.8% in 2023
- 8 systems (100%) in the low risk position
- TSA score of 94% for Buffelsriver and Preekstoel

The City of Cape Town Metropolitan Municipality is the second-best scoring WSA:

- 2023 Blue Drop Score of 98.1%
- 2014 Blue Drop Score of 95.9%
- Low risk BDRR of 31% in 2023
- 1 system (100%) in low risk position
- TSA score of 98% for Faure and 95% for Steenbras

The George Local Municipality is the third-best scoring WSA:

- 2023 Blue Drop Score of 94.95%
- 2014 Blue Drop Score of 82.8%
- Low risk BDRR of 28.3% in 2023
- 4 systems (100%) in low risk positions
- TSA score 84% for George Municipal New
Blue Drop Scores 2014 and 2023

- Kannaland LM: 25.8%, 31.7%
- Prince Albert LM: 28.2%, 34.1%
- Cederberg LM: 35.9%, 40.0%
- Langeberg LM: 44.7%, 72.3%
- Laingsburg LM: 26.1%, 47.8%
- Hessequa LM: 50.1%, 55.2%
- Beaufort West LM: 53.0%, 89.5%
- Matzikama LM: 55.2%, 48.6%
- Swellendam LM: 58.6%, 57.3%
- Breede Valley LM: 60.0%, 89.2%
- Oudtshoorn LM: 63.9%, 51.3%
- Stellenbosch LM: 69.9%, 80.1%
- Knysna LM: 61.6%, 78.9%
- Witzenberg LM: 81.0%, 95.8%
- Bitou LM: 81.7%, 90.4%
- Berggrivier LM: 63.8%, 85.1%
- Mossel Bay LM: 78.8%, 78.4%
- Theewaterskloof LM: 87.4%, 89.6%
- Cape Agulhas LM: 90.0%, 69.5%
- Swartland LM: 93.8%, 74.3%
- Drakenstein LM: 94.1%, 72.1%
- Saldanha Bay LM: 94.6%, 74.4%
- George LM: 94.95%, 82.8%
- City of Cape Town MM: 98.1%, 95.9%
- Overstrand LM: 99.9%, 90.8%

2023 BD Score (%)

PROVINCIAL RISK LOG

- Overstrand LM: 17.8%
- Saldanha Bay LM: 19.4%
- Berggrivier LM: 20.6%
- Swartland LM: 21.1%
- Bitou LM: 21.3%
- Cape Agulhas LM: 22.5%
- Witzenberg LM: 22.8%
- Knysna LM: 22.8%
- Mossel Bay LM: 23.6%
- Beaufort West LM: 23.7%
- Stellenbosch LM: 24.8%
- Drakenstein LM: 25.3%
- Theewaterskloof LM: 27.7%
- George LM: 28.3%
- Cederberg LM: 29.2%
- Laingsburg LM: 29.6%
- Matzikama LM: 29.7%
- Oudtshoorn LM: 30.5%
- Swellendam LM: 30.6%
- City of Cape Town MM: 31.0%
- Hessequa LM: 38.2%
- Breede Valley LM: 38.7%
- Langeberg LM: 39.6%
- Prince Albert LM: 49.6%
- Kannaland LM: 52.4%

90 – 100% Critical risk
70 - <90% High Risk
50-70% Medium risk
<50% Low Risk

Figure 173 (Left) - a) Blue Drop scores 2014 (bar bottom) and 2023 (bar top); b) Colour legend

Figure 174 (Right) - a) %BDRR/BDRRmax Risk Performance Profile/Log 2023; b) Colour legend
The BD audit process collects a vast amount of data that yield valuable insight into the state of the water services delivery and water quality in each province. Five focus areas or ‘diagnostics’ have been configured from the 2021/22 audit data and are discussed below.

### Table 233 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs

<table>
<thead>
<tr>
<th>Diagnostic #</th>
<th>Diagnostic Description</th>
<th>Diagnostic Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical Competence</td>
<td>KPA 1, 2 &amp; Bonus</td>
</tr>
<tr>
<td>2</td>
<td>Treatment Capacity and Flow Distribution</td>
<td>KPA 4 &amp; Generic Audit data set</td>
</tr>
<tr>
<td>3</td>
<td>Drinking Water Quality (DWQ) Monitoring and Compliance</td>
<td>KPA 2 &amp; 4 &amp; Bonus</td>
</tr>
<tr>
<td>4</td>
<td>Technical Site Assessments</td>
<td>TSA and 2023 Blue Drop Watch Report</td>
</tr>
<tr>
<td>5</td>
<td>Operation, Maintenance and Refurbishment of Assets</td>
<td>KPA 3 &amp; 4</td>
</tr>
</tbody>
</table>

### Diagnostic 1: Technical Competence

**Aim:** This focus area assesses the technical human resources capacity that is available to manage and operate water treatment processes and maintain the related water infrastructure. Theory advocates that a correlation exists between human resources capacity and capability (sufficient number of appropriately qualified staff) and a WSI’s performance. Thus, it is hypothesised that high HR capacity would translate to compliant water treatment plants and functional water supply network. Blue Drop assesses technical compliance on two levels: i) WTW plant supervision and process control staff and ii) Technical, scientific and maintenance staff.

**Findings:** According to regulations, water treatment plants are classified as Class A, B, C, D or E plants. Similarly, Process Controllers and Plant Supervisors are registered as Class I, II, III, IV, V or VI Process Controllers. Higher classed plants require a higher level of Process Controllers due to technology complexity and strict water quality standards. Technical compliance of PCs and Supervisors is determined against the Blue Drop standards, as defined by Reg. 2834 of the Water Act 1956 (Act 54 of 1956) for the erection, enlargement, operation, and registration of water care works and draft Reg. 813 of the Water Services Act Act (No 108 of 1997). Regulation 2834 has been replaced by Regulation 3630 in 2023 but will only come in effect during the next Blue Drop audit cycle.

### Table 234 - No. compliant versus shortfall in Supervisor and Process Controller staff

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th># Available Compliant Staff</th>
<th>Staff Shortfall</th>
<th>Ratio</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PCs</td>
<td>Supervisor***</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overberg Water</td>
<td>3</td>
<td>6</td>
<td>14</td>
<td>4</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>5</td>
<td>4</td>
<td>8</td>
<td>2</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Bergriver LM</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>7</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Breed Valley LM</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>2</td>
<td>9</td>
<td>19</td>
<td>12</td>
<td>31</td>
<td>3</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>12</td>
<td>1</td>
<td>39</td>
<td>15</td>
<td>54</td>
<td>12</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>George LM</td>
<td>5</td>
<td>4</td>
<td>14</td>
<td>9</td>
<td>23</td>
<td>4</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>7</td>
<td>10</td>
<td>7</td>
<td>0</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Knysna LM</td>
<td>5</td>
<td>5</td>
<td>8</td>
<td>12</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>Laingsburg LM*</td>
<td>None</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>8</td>
<td>8</td>
<td>3</td>
<td>8</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>7</td>
<td>5</td>
<td>26</td>
<td>11</td>
<td>37</td>
<td>1</td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>9</td>
<td>8</td>
<td>41</td>
<td>79</td>
<td>120</td>
<td>1</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Saldanha Bay LM**</td>
<td>None</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>3</td>
<td>5</td>
<td>18</td>
<td>0</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Swartland LM</td>
<td>2</td>
<td>2</td>
<td>13</td>
<td>2</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>WSA &amp; WB Name</td>
<td># WTWs</td>
<td># WSSs</td>
<td># Available Compliant Staff</td>
<td>Staff Shortfall</td>
<td>Ratio</td>
<td>2023 BD Score (%)</td>
</tr>
<tr>
<td>---------------</td>
<td>--------</td>
<td>--------</td>
<td>-----------------------------</td>
<td>----------------</td>
<td>-------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PCs</td>
<td>Supervisor***</td>
<td>Total</td>
<td>PCs</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>10</td>
<td>10</td>
<td>14</td>
<td>42</td>
<td>56</td>
<td>12</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>5</td>
<td>5</td>
<td>9</td>
<td>11</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>126</strong></td>
<td><strong>124</strong></td>
<td><strong>272</strong></td>
<td><strong>230</strong></td>
<td><strong>484</strong></td>
<td><strong>143</strong></td>
</tr>
</tbody>
</table>

* Water supplied by 2 Main Reservoirs - no conventional WTWs in Laingsburg LM. The WSI operates two basic water supply systems where groundwater is simply abstracted and disinfected before distribution so they PC staff in place

** Water supplied by Withoogte WTW - No WTWs in Saldanha Bay LM

*** NB: The Supervisor totals will be inflated as it is not possible to differentiate between which Supervisors are shared/roaming with other Class C to E WTWs

Ratio depicts the no. of qualified staff divided by the no. of WTWs operated by this no. of staff. E.g., Beaufort West LM has 10 compliant Sups + PCs, divided by ... WTWs = 2.0 qualified staff per WTW

Note: “Compliant staff” means qualified and registered staff that meets the BD standard for a particular Class Works. “Staff shortfall” means staff that do not meet the BD standard for a particular Class of works (+1 for a shift) and/or staffing gaps exist at the respective WTWs.

Competent human resources are vital enablers in ensuring efficient and sustainable management of water services and delivery of safe water quality to consumers. For the province in general, the operational competencies are found to be excellent for the Supervisory staff and excellent/good for the PCs in Overberg Water and in 6 of the 24 municipalities (Cederberg LM, Hessequa LM, Kannaland LM, Langeberg LM, Prince Albert LM and Stellenbosch LM excluding Saldanha Bay LM) as illustrated in the table above.

![Figure 175 - Schematic illustration of compliant and shortfall of Supervisors (a) and Process Controllers (b)](image)

**Plant Supervisors:** The pie charts indicate that 93% (230 of 247) of Plant Supervisors complies with the Blue Drop standard, with 17 shortfalls.

**Process Controllers:** Similarly, 66% (272 of 415) of the PC staff complies with the required standards, noting a zero shortfall for Overberg Water and Stellenbosch LM. There is a 34% (143 of 415) shortfall in Process Controllers with the highest shortfall (>10 No.) for 6 WSAs (City of Cape Town MM, Drakenstein LM, Hessequa LM, Langeberg LM, Matzikama LM and Theewaterskloof LM).

Blue Drop standards require of Class A and B plants to employ dedicated Supervisors per WTW and Process Controllers per shift per works, whereas Class C to E plants may share Supervisory staff across works. Shifts have been introduced to ensure optimal operations while addressing security risks, particularly as it relates to theft and vandalism. Telemetry also reduces the requirement for on-site staff during night shifts, but these relaxations have to be done within the DWS regulatory guidelines.

The Regulator expects correlation between the competence of an operational team and the performance of a WTW, as measured by the BD score. The data indicates as follows:

- All 24 WSAs (Saldanha Bay LM excluded) have qualified PCs in place. With the exception of Overberg Water, only 1 WSA does not have a shortfall in qualified PCs
- 17 WSAs (Saldanha Bay LM excluded) have qualified Supervisors in place. With the exception of Overberg Water, 15 WSAs do not have a shortfall in qualified Supervisors.

It is expected that a correlation would exist between the competence of an operational team and the performance of a water treatment works, as measured by the BD score. The results from the ratio analysis indicate high ratios (>4.0) for the Overberg Water WTWs and 10 WSAs with WTWs.
Overall, the comparative bar chart confirms a reasonably close correlation between Overberg Water and the WSAs with high ratios (ranging from 2.7 to 15.5) and high BD scores (ranging from 69.9% to 99.9%) with the exception of Stellenbosch LM that does receive some of their potable water supply from the City of Cape Town MM. There are anomalies with Bergrivier LM and Drakenstein LM with lower ratios but high BD scores and this may be due to the fact that these WSAs receive potable water supply from West Coast DM Bulk and City of Cape Town MM respectively. At the lower end, lower ratios and lower BD scores are reflected from Prince Albert LM to Laingsburg LM.

(ii) Technical, Scientific and Maintenance staff

In addition to operational capacity (above), good management practice also requires access to qualified engineers, technicians, technologists, MISA appointees, scientists, and maintenance capability (below). Such competencies could reside in-house or accessible through term contracts and external specialists.

Table 235 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Maintenance Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overberg Water</td>
<td>3</td>
<td>6</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>5</td>
<td>4</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>5</td>
<td>6</td>
<td>Internal+Specific Outsourcing; Internal Team (only)</td>
</tr>
<tr>
<td>WSA &amp; WB Name</td>
<td># WTWs</td>
<td># WSSs</td>
<td>Maintenance Arrangement</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------</td>
<td>--------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>3</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>4</td>
<td>4</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>2</td>
<td>9</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>6</td>
<td>6</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>12</td>
<td>1</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>6</td>
<td>5</td>
<td>Internal+Specific Outsourcing; Internal Team (only)</td>
</tr>
<tr>
<td>George LM</td>
<td>5</td>
<td>4</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>7</td>
<td>10</td>
<td>Internal Team (only); Internal+Term Contract</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>4</td>
<td>4</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Knysna LM</td>
<td>5</td>
<td>5</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>None</td>
<td>2</td>
<td>Internal+Specific Outsourcing; Internal Team (only)</td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>5</td>
<td>5</td>
<td>Internal Team (only)</td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>8</td>
<td>8</td>
<td>Partially Capacitated</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>7</td>
<td>5</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>3</td>
<td>3</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>9</td>
<td>8</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>3</td>
<td>3</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>None</td>
<td>3</td>
<td>Internal+Specific Outsourcing; Internal Team (only); Internal+Term Contract</td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>3</td>
<td>5</td>
<td>Internal+Specific Outsourcing; Internal+Term Contract</td>
</tr>
<tr>
<td>Swartland LM</td>
<td>2</td>
<td>2</td>
<td>Internal+Specific Outsourcing; Internal Team (only); Internal+Term Contract</td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>4</td>
<td>4</td>
<td>Partially Capacitated; Inadequate Capacity</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>10</td>
<td>10</td>
<td>Internal+Term Contract</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>5</td>
<td>5</td>
<td>Internal+Specific Outsourcing</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>126</td>
<td>124</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Qualified Technical Staff (#)</th>
<th>Technical Shortfall (#)</th>
<th>Qualified Scientists (#)</th>
<th>Scientists Shortfall (#)</th>
<th>Ratio*</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overberg Water</td>
<td>3</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>2</td>
<td>9</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>6</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>12</td>
<td>1</td>
<td>9</td>
<td>9</td>
<td>0</td>
<td>27</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>George LM</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>7</td>
<td>10</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Knysna LM</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>None</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>9</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>None</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Swartland LM</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>10</td>
<td>10</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>126</td>
<td>124</td>
<td>51</td>
<td>61</td>
<td>39</td>
<td>7</td>
<td>158</td>
<td>22</td>
</tr>
</tbody>
</table>

* The single number ratio depicts the no. of qualified technical staff divided by the no. of WSSs that have access to the staff. E.g., Bergrivier LM has 7 qualified staff, divided by 6 WSSs = 1.2 qualified staff per WSS

Note 1: “Qualified Technical Staff” means staff appointed in positions to support water services, and who has the required qualifications. “Technical Shortfall” is calculated based on a minimum requirement of at least 3 Engineers or more than 1 of each of Engineers, Technologists & Technicians; and at least one 1 Candidate Scientist and 1 Professional Scientist per WSI.
In terms of maintenance capacity, all the municipalities in the province have a reasonable contingent of qualified technical and maintenance staff. The maintenance staff comprises of a collective of in-house, contracted, or outsourced personnel. The data indicates that:

- Overberg Water, City of Cape Town MM and West Coast DM Bulk have internal maintenance teams supplemented with specific outsourced services and term contracts
- 13 of 25 (52%) WSAs have internal maintenance teams supplemented with term contracts
- 5 of 25 (20%) WSAs have in-house maintenance teams
- 12 of 25 (48%) WSAs have internal maintenance teams supplement with specific outsourced services
- 2 of 25 (8%) WSAs are partially capacitated and/or inadequately capacitated for some of their water supply systems.

In general, the province presents a strong case for qualified professional technical staff as follows:

- A total of 158 qualified staff comprised of 39 Engineers, 61 Technologists, 51 Technicians, 7 MISA appointees (qualified); and 39 SACNASP registered scientists are assigned to Overberg Water and 13 WSAs
- A total shortfall of 52 persons is identified, consisting of 22 technical staff and 30 scientists
- 14 WSAs have a total shortfall of 22 qualified technical staff with the highest indicated for Breede Valley LM and Prince Albert LM (4 each), Kannaland LM (3), and Beaufort West LM, Knysna LM, and Langeberg LM (2 each)
- Overberg Water and 24 WSAs have access to credible laboratories that comply with the Blue Drop standards.

Figure 177 - Graphic illustration of the number and %: a) qualified engineering/technical staff; b) professional scientists; c) access to credible laboratory services that complies with Blue Drop standards

Ratio analysis has been done to determine the number of qualified technical and scientific staff assigned per WSS. It is expected that a higher ratio would correspond with well-performing and maintained water supply systems, as represented by the BD score.

The schematic on the following page does show a strong correlation between high ratios (≥ 1.0) and high BD scores for City of Cape Town to Drakenstein LM (ranging from 81.0% to 98.1%) with Laingsburg LM excluded which may be due to them managing Reservoirs and related infrastructure in the distribution system only. Overstrand LM being the other anomaly with a low ratio (1.0) and the highest BD score (99.9). In the bottom half of the schematic, lower ratios and lower BD scores are reflected from Stellenbosch LM to Prince Albert LM with the only anomaly being Cape Agulhas that has a low ratio of 0.7 and a high BD score of 90%.

With the exception of the 4 WSAs mentioned above, a reasonable correlation can be drawn between technical capacity and water supply performance, despite the complexity of the WSA/Bulk Water Provider, and the associated delivery and distribution infrastructure arrangements. The involvement of the City of Cape Town MM, the West Coast DM Bulk and Overberg Water have made a significant (positive) impact on the municipal BD scores for the WSAs they are providing water services.
Overall, the results highlight the inter-dependency between technical capacity and performance. One of the options to enhance operational capacity is through dedicated training programmes. The Blue Drop audit incentivises training of operational staff over the 2-year period prior to the audit date. The results are summarised as follows:

**Figure 178 - Ratio of compliant technical staff to no. of WSSs and Comparison of Ratios with BD scores**

**Table 236 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa**
Table 237 - Summary of WTWs design and available capacities, average daily production, % available capacity, and total SIV towards the WSSs

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Design Capacity (kl/d)</th>
<th>Available Design Capacity (kl/d)</th>
<th>Average Daily Production (kl/d)</th>
<th>Available Variance* (kl/d)</th>
<th>% Use Available Capacity</th>
<th>Total SIV towards the WSS (kl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overberg Water</td>
<td>3</td>
<td>6</td>
<td>19,200</td>
<td>19,100</td>
<td>11,280</td>
<td>7,820</td>
<td>59%</td>
<td>9,029</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>5</td>
<td>4</td>
<td>23,524</td>
<td>17,024</td>
<td>9,459</td>
<td>7,565</td>
<td>56%</td>
<td>9,459</td>
</tr>
<tr>
<td>Bergvrijv LK</td>
<td>5</td>
<td>6</td>
<td>6,080</td>
<td>6,080</td>
<td>3,541</td>
<td>2,539</td>
<td>58%</td>
<td>6,152</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>3</td>
<td>28,648</td>
<td>27,968</td>
<td>11,347</td>
<td>16,621</td>
<td>41%</td>
<td>11,347</td>
</tr>
</tbody>
</table>

Figure 179 - %WTWs that have trained operational staff over the past two years

The results confirm that Overberg Water and 18 WSAs had their operational staff attend training over the past 2 years with the exception of operational staff from 5 WSAs. 78 of 126 WTWs (63%) had their operational staff attend training over the past 2 years. Investment in human capital through technical skills development is likely to mitigate some of the water quality failures and lower performances noted, and municipalities and water boards should prioritise ongoing skills development of technical staff and appointment of qualified staff that are eligible for registration.

Diagnostic 2: Treatment Capacity and Flow Distribution

**Aim:** Diagnostic 2 deals with design and flow related dynamics, comprising of: i) design capacity and operational flow, ii) raw water abstraction, and iii) WUE and SIV.

(i) Design Capacity and Operational Flow

This diagnostic assesses the status of plant design capacity and daily water production at the WTWs, as well as SIVs as measured at the outflow from the WTW or inflow to the water distribution network. A capable WTW requires adequate installed design capacity and functional equipment to operate optimally. If the WTW design capacity is exceeded by the average daily production (treatment) volume, the WTW will not be able to deliver SANS compliant water quality. The available design capacity is typically exceeded when the water demand exceeds the installed design capacity, or when unit processes or equipment are dysfunctional, or when electrical supply problems render treatment and pumping of water defective. Typically, the production volume and SIV is the same if 1 WTW supplies 1 WSS, but different if multiple supply systems are feeding from a singular WTW.

**Findings:** Analysis of the design capacity and average daily production/treatment volume indicate a total design capacity of 2,454,432 kl/d for the province, with a total average daily treatment (operational) volume of 1,162,422 kl/d. Theoretically, this implies that 47% of the design capacity is used with 53% available to meet additional water demand. However, the full 2,454,432 kl/d is not available as some infrastructure is dysfunctional, leaving 2,163,544 kl/d available. The reduced capacity means that the province is closer to its total available capacity (54%) with a 46% surplus available. The capacity differential (difference between the installed and available capacity) will not constrain or impede any further social and economic development in the drainage areas. The WSAs do report or have knowledge of their installed and available capacities, and a higher figure than 46% surplus available cannot be expected. For the province in general, 110 WTWs are operating within their available design capacities with the exception of 16 WTWs that exceeds their total available capacity (13%). This risk is currently mitigated through operational optimisation and preventative maintenance regimes.
**Capacities, Production, SIV and Variance**

![Diagram of capacites, production, SIV and variance](image)

**Figure 180 - Design and available capacity, average daily production, available variance and total SIV for the WTWs**
Figure 181 - % available capacity

(ii) Raw Water Abstraction

This diagnostic takes a snapshot view of the status of water abstraction authorisations from natural water resources across the province. As per the National Water Act (Act no 36 of 1998), Water Use Authorisation (WUA) mandate the maximum abstraction volumes of raw water, and the installation and monitoring of abstraction, inflow and outflow meters, whilst the BD audit requires WSAs to report the flows on IRIS and to calibrate meters annually. Any defects in terms of abstracting water from a resource without an authorisation, or exceeding the authorised volume, or reporting inaccurate volumes, or not monitoring abstraction against authorised volumes, are considered to be a regulatory risk and contravention of the law.

Findings: Data pertaining to the daily abstraction volumes (kl/d) (Authorised), average daily treatment volumes (kl/d), the names of the WTWs exceeding/with no Daily Abstraction Volumes (Authorised) and Average Daily Treatment Volumes (Authorised) is captured in the tables below.

Table 238 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances & WTWs listed For Enforcement Action

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Daily Abstraction Volumes (Authorised) (kl/d)</th>
<th>Average Daily Treatment Volume (kl/d)</th>
<th>Average Variance (kl/d) [+ or Minus]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overberg Water</td>
<td>3</td>
<td>6</td>
<td>11,075</td>
<td>11,280</td>
<td>-205</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>5</td>
<td>4</td>
<td>600</td>
<td>9,459</td>
<td>-8,859</td>
</tr>
<tr>
<td>Bergvier LM</td>
<td>5</td>
<td>6</td>
<td>4,909</td>
<td>3,541</td>
<td>1,368</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>3</td>
<td>3,531</td>
<td>11,347</td>
<td>-7,816</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>4</td>
<td>4</td>
<td>32,847</td>
<td>9,459</td>
<td>-25,388</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>2</td>
<td>9</td>
<td>0</td>
<td>6,280</td>
<td>-6,280</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>6</td>
<td>6</td>
<td>8,733</td>
<td>8,292</td>
<td>442</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>12</td>
<td>1</td>
<td>766,298</td>
<td>808,423</td>
<td>-42,125</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>6</td>
<td>5</td>
<td>11,711</td>
<td>6,417</td>
<td>5,294</td>
</tr>
<tr>
<td>George LM</td>
<td>5</td>
<td>4</td>
<td>56,438</td>
<td>31,332</td>
<td>25,106</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>7</td>
<td>10</td>
<td>4,120</td>
<td>11,969</td>
<td>-7,849</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>5,159</td>
<td>-5,159</td>
</tr>
<tr>
<td>Knysna LM</td>
<td>5</td>
<td>5</td>
<td>18,558</td>
<td>10,538</td>
<td>8,020</td>
</tr>
<tr>
<td>Laingsburg LM*</td>
<td>None</td>
<td>2</td>
<td>9,469</td>
<td>2,366</td>
<td>7,103</td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>5</td>
<td>5</td>
<td>4,110</td>
<td>16,584</td>
<td>-12,475</td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>8</td>
<td>8</td>
<td>0</td>
<td>8,081</td>
<td>-8,081</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>7</td>
<td>5</td>
<td>96,919</td>
<td>25,721</td>
<td>71,198</td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>3</td>
<td>3</td>
<td>22,012</td>
<td>14,769</td>
<td>7,243</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>9</td>
<td>8</td>
<td>35,542</td>
<td>20,328</td>
<td>15,214</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>2,179</td>
<td>-2,179</td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>None</td>
<td>3</td>
<td>0</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>3</td>
<td>5</td>
<td>8,200</td>
<td>22,907</td>
<td>-14,707</td>
</tr>
<tr>
<td>Swartland LM</td>
<td>2</td>
<td>2</td>
<td>89,451</td>
<td>51,000</td>
<td>38,451</td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>5,057</td>
<td>-5,057</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>10</td>
<td>10</td>
<td>18,380</td>
<td>10,471</td>
<td>7,909</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>5</td>
<td>5</td>
<td>36,926</td>
<td>19,008</td>
<td>17,918</td>
</tr>
<tr>
<td>Totals</td>
<td>126</td>
<td>124</td>
<td>1,239,829</td>
<td>1,162,422</td>
<td>77,407</td>
</tr>
</tbody>
</table>

* No conventional WTWs in Laingsburg LM. The WSI operates two basic water supply systems where groundwater is simply abstracted and disinfected

<table>
<thead>
<tr>
<th>WSA Name</th>
<th>WTW exceeding the Daily Abstraction Volumes (Authorised)</th>
<th>WTW with no Daily Abstraction Volumes (Authorised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaufort West LM</td>
<td>Murraysburg</td>
<td>Beaufort West, Beaufort West WRP, Merweville, Nelspoort</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>Redelinghuys</td>
<td></td>
</tr>
</tbody>
</table>
**Abstraction Volumes (Authorised), Ave. Treatment volumes, and Variances**

- **Bitou LM**: Plettenberg Bay, Kurland, Natures Valley
- **Breed River LM**: Bokrivier, De Doorns, Fairy Glen (De Koppen)
- **Cape Agulhas LM**: Bredasdorp, Spanjaards Kloof
- **Cederberg LM**: Leipoldtville
- **City of Cape Town MM**: Blackheath, Steenbras
- **Drakenstein LM**: Saron
- **George LM**: Haarlem, Uniondale, Wilderness
- **Hessequa LM**: Garcia, Jongsensfontein, Melkhoutfontein, Stilbay
- **Kannaland LM**: All 4 WTWs
- **Knsyna LM**: Rheenendal, Buffalo Bay, Karatara
- **Langeberg LM**: Bonnievale, McGregor, Montagu, Robertson
- **Matzikama LM**: All 8 WTWs
- **Mossel Bay LM**: Lodewyksteen, Ruiterbos
- **Oudtshoorn LM**: De Rust, Dysseldorp
- **Prince Albert LM**: All 3 WTWs
- **Stellenbosch LM**: Paradyksloof, Franschhoek, Idas Valley
- **Swellendam LM**: All 4 WTWs
- **Theewaterskloof LM**: Ruensveld West, Berekoven, Genadendal, Riviersonderend, Tesslaardsl, Voorstekraal
- **Witzenberg LM**: Op-Die-Berg, Tulbagh

**Figure 182 - Abstraction Volumes (Authorised), Average Daily Treatment Volumes, and Variances**

- **Overberg Water**
  - City of Cape Town MM
    - Ave. Variance (kl/d): -42,125
    - Ave. Daily Treatment (kl/d): 8,081
    - Daily Abstraction (kl/d): 766,208
WTWs that exceed the Daily Abstraction Volumes (Authorised) and WTWs with no Daily Abstraction Volumes (Authorised) are reflected in the 2nd table above. WTWs that are not complying with the regulations will be required to show correction in the next Blue Drop audit cycle. The results conclude that 12 WTWs are exceeding the permitted abstraction limits and 72 WTWs provided authorised water use abstraction volumes. The Daily Abstraction Volumes (Authorised) are not known for 54 water treatment systems resulting in negative average variances that skew the data sets.

For future BD audits, WSA/WSPs will be required to provide ‘actual’ abstraction volumes so that a comparative analysis can be undertaken of the ‘actual’ abstraction volume versus the authorised water use abstraction volumes (maximum). This would require that the WSA’s and WSPs/WBs monitor and record all critical path flows (abstraction, raw and final).

(iii) Water Use Efficiency and System Input Value

The Department is committed to consider issues related to water scarcity and security, aiming to ensure there is sufficient water for the population, the economy, and the environment by increasing water use efficiency across all sectors. Water use for services sectors is specifically dealing with the quantity of water used directly by the consumer through the public distribution network and industries connected to the network.

This diagnostic assesses the water use efficiency (i.e., the average daily consumption in litres per person per day) and the individual and collective performance of the water supply systems. WUE indicates how effective water is used by consumers, i.e. the process between effective water use and actual water abstraction. This concept is closely related to the Department’s No Drop Certification assessment, whereby WUE, NRW and water losses are targeted as part of Water Conservation and Water Demand Management strategies by municipalities.

Findings: Both the Blue Drop audit and No Drop audit requires an IWA water balance to determine the SIV into each water supply system, and to identify and quantify possible losses from abstraction to the end-of-use point. Overberg Water and 13 WSAs have full water balances in place for 68 WSSs in total. 10 WSAs have partial water balances in place for 42 WSSs, and 4 WSAs with a total of 14 WSSs do not have water balances in place.

WUE is calculated based on the SIV contributions, population served, and the average daily consumption, as summarised in the following table.

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WSSs</th>
<th>Total Population</th>
<th>Total SIV (kl/d)</th>
<th>2023 WUE (l/p/d)</th>
<th>2023 Blue Drop WUE Range and Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaufort West LM</td>
<td>4</td>
<td>53,984</td>
<td>9,459</td>
<td>175</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Bergriver LM</td>
<td>6</td>
<td>39,622</td>
<td>6,152</td>
<td>155</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>65,495</td>
<td>11,347</td>
<td>173</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>4</td>
<td>169,000</td>
<td>39,914</td>
<td>236</td>
<td>&gt;200-250</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>9</td>
<td>28,770</td>
<td>8,919</td>
<td>310</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>6</td>
<td>21,080</td>
<td>8,292</td>
<td>393</td>
<td>&gt;300</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>1</td>
<td>4,420,472</td>
<td>655,463</td>
<td>148</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>5</td>
<td>200,052</td>
<td>38,702</td>
<td>193</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>George LM</td>
<td>4</td>
<td>188,087</td>
<td>31,332</td>
<td>167</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>10</td>
<td>30,717</td>
<td>15,131</td>
<td>493</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>4</td>
<td>14,400</td>
<td>5,159</td>
<td>358</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Knysna LM</td>
<td>5</td>
<td>73,700</td>
<td>10,538</td>
<td>143</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>2</td>
<td>7,886</td>
<td>2,366</td>
<td>300</td>
<td>&gt;250-300</td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>5</td>
<td>70,565</td>
<td>36,584</td>
<td>518</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>8</td>
<td>45,365</td>
<td>8,081</td>
<td>178</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>5</td>
<td>81,473</td>
<td>25,721</td>
<td>316</td>
<td>&gt;300</td>
</tr>
<tr>
<td>Oudthooorn LM</td>
<td>3</td>
<td>83,390</td>
<td>14,769</td>
<td>177</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>8</td>
<td>109,703</td>
<td>20,328</td>
<td>185</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>3</td>
<td>12,000</td>
<td>2,179</td>
<td>182</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>3</td>
<td>99,210</td>
<td>28,863</td>
<td>291</td>
<td>&gt;250-300</td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>5</td>
<td>126,795</td>
<td>31,840</td>
<td>251</td>
<td>&gt;250-300</td>
</tr>
<tr>
<td>Swartland LM</td>
<td>2</td>
<td>81,349</td>
<td>14,860</td>
<td>183</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>4</td>
<td>25,384</td>
<td>4,937</td>
<td>194</td>
<td>&gt;150-200</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>10</td>
<td>110,824</td>
<td>13,848</td>
<td>125</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>5</td>
<td>81,769</td>
<td>19,008</td>
<td>232</td>
<td>&gt;200-250</td>
</tr>
</tbody>
</table>

Totals 124 6,241,092 1,063,792 243
### WUE (l/cap/day) performance categories

<table>
<thead>
<tr>
<th>Colour</th>
<th>WUE Range</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>&gt;300</td>
<td>Extremely high per capita water use</td>
</tr>
<tr>
<td>Orange</td>
<td>&gt;250-300</td>
<td>Poor per capita water use</td>
</tr>
<tr>
<td>Yellow</td>
<td>&gt;200-250</td>
<td>Average per capita water use with potential for marked improvement</td>
</tr>
<tr>
<td>Green</td>
<td>&gt;150-200</td>
<td>Good per capita water use but some improvement may be possible subject to economic benefits</td>
</tr>
<tr>
<td>Dark Blue</td>
<td>&gt;150</td>
<td>Excellent per capita water use management</td>
</tr>
</tbody>
</table>

### Figure 183 - Total SIV towards the WSSs

- Prince Albert LM
- Laingsburg LM
- Swellendam LM
- Kannaland LM
- Bergrivier LM
- Matzikama LM
- Cederberg LM
- Cape Agulhas LM
- Beaufort West LM
- Knysna LM
- Bitou LM
- Theewaterskloof LM
- Oudtshoorn LM
- Swartland LM
- Hessequa LM
- Wittenberg LM
- Overstrand LM
- Mossel Bay LM
- Saldanha Bay LM
- George LM
- Stellenbosch LM
- Langeberg LM
- Drakenstein LM
- Breede Valley LM

**Legend:**
- City of Cape Town MM
- Breede Valley LM
- Drakenstein LM
- Langeberg LM
- Saldanha Bay LM
- Mossel Bay LM
- Overstrand LM
- Wittenberg LM
- George LM
- Stellenbosch LM
- Bitou LM
- Theewaterskloof LM
- Knysna LM
- Bitou LM
- Cape Agulhas LM
- Beaufort West LM
- Hessequa LM
- Theewaterskloof LM
- Oudtshoorn LM
- Swartland LM
- Knysna LM
- Beaufort West LM
- Breede Valley LM

**Note:** The values represent the total SIV towards the WSSs.
For the province, 1,063,792 kl/d water is supplied to 6,241,092 consumers. Comparatively, the City of Cape Town MM distributes 62% of the total provincial SIV followed by Breede Valley LM (4%). An average 243 litre of water is used per person per day, which implies a high (average) per capita water use. Results from the diagnostic data show that 6 WSAs have a WUE of more than 300 l/c/d, which is regarded as extremely high according to national benchmarks, and 3 WSAs have a WUE between 250–300 l/c/d, which is regarded as poor. No Drop Certification is specifically tasked with plans to curb water losses and improve NRW through water accounting assessments and water conservation and demand management.

**Diagnostic 3: Drinking Water Quality (DWQ) Monitoring and Compliance**

**Aim:** Blue Drop audits values the principles of “To measure is to know” and “To know is to manage”. The primary objective of a water treatment plant is to produce final water quality that is safe for human consumption at the end of the distribution network. This standard can only be measured and achieved if operational and compliance monitoring and DWQ compliance is executed at the correct frequency, sample point, and determinand type. This diagnostic assesses the i) operational and compliance monitoring status, ii) drinking water quality compliance, and iii) risk defined compliance and laboratory credibility.

(i) **Drinking water operational and compliance monitoring**

**Findings:** A minimum level of 90% operational monitoring compliance is applied as benchmark, to give weight to the importance of sampling and monitoring of the raw water, process unit water, and final water across the treatment stream. Compliance monitoring is also informed by SANS 241:2015 and the requirement for risk-informed monitoring through the WaSP process at both the WTW final and distribution network. DWQ compliance is calculated against the population size and the mandatory limits set by SANS 241:2015 and the Blue Drop standards, as calculated and reported from data loaded in the IRIS.
### Table 240 - Summary of the KPA 2 WTW operational and WSS compliance monitoring status

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>WTW Operational monitoring [KPA 2 sub-KPA 2.b)]</th>
<th>WSS Compliance monitoring [KPA 2 sub-KPA 2.c)]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Satisfactory [BD score &gt;90%]</td>
<td>Not Satisfactory [BD score &lt;90%]</td>
</tr>
<tr>
<td>Overberg Water</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>2</td>
<td>9</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>12</td>
<td>1</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>George LM</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>7</td>
<td>10</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Knysna LM</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>None</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>8</td>
<td>8</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>9</td>
<td>8</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>None</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Swartland LM</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>10</td>
<td>10</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>126</strong></td>
<td><strong>124</strong></td>
<td><strong>62 (49%)</strong></td>
<td><strong>64 (51%)</strong></td>
</tr>
</tbody>
</table>

The performance recorded in the table above stems from performance data as measured against the BD Standard expressed in KPA 2 and sub-KPAs 2.b) and 2.c). Overall, an unsatisfactory sampling and analysis regime is observed for both operational (51%) and compliance (62%) monitoring. The data indicates that 62 of 126 WTWs (49%) are on par with good practice for operational monitoring of the raw and final water and the respective process units at the WTW. Overberg Water and 7 WSAs are doing well, whilst the remaining WSAs fail to meet the BD standard. In terms of compliance monitoring, 47 WSSs (38%) are on par with good compliance monitoring practices, and 77 WSSs (62%) are failing the BD standard. The latter observation is noted with concern. Compliance monitoring is a legal requirement and the only means to measure the DWQ performance of a water supply system. Operational monitoring is the cornerstone of day-to-day process adjustments and optimisation to ensure that the water treatment is efficient and delivers quality final water. The results indicate that 64 WTWs and 77 WSSs are not achieving regulatory and industry standards.

(ii) Drinking water quality compliance

**Findings:** DWQ compliance is measured against the requirements of SANS 241:2015 under KPA 5 of the Blue Drop audit. The tables following summarises the results of the DWQ status for Microbiological and Chemical Compliance, which also carries the highest Blue Drop score weighting of 35%.

### Table 241 - Provincial Summary of the DWQ Status for Microbiological Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Micro Compliance</th>
<th># WSS Micro Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>4</td>
<td>53,984</td>
<td>98.95%</td>
<td>3</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>6</td>
<td>39,622</td>
<td>97.49%</td>
<td>5</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>65,495</td>
<td>99.99%</td>
<td>3</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>4</td>
<td>169,000</td>
<td>97.49%</td>
<td>1</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>9</td>
<td>28,770</td>
<td>97.40%</td>
<td>6</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>6</td>
<td>21,080</td>
<td>99.99%</td>
<td>6</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>1</td>
<td>4,420,472</td>
<td>99.70%</td>
<td>1</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>5</td>
<td>200,052</td>
<td>97.00%</td>
<td>2</td>
</tr>
<tr>
<td>George LM</td>
<td>4</td>
<td>188,087</td>
<td>99.99%</td>
<td>4</td>
</tr>
</tbody>
</table>
## Micro Compliance (%)  

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Micro Compliance</th>
<th>Excellent</th>
<th>Good</th>
<th>Unacceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hessequa LM</td>
<td>10</td>
<td>30,717</td>
<td>95.31%</td>
<td>6</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>4</td>
<td>14,400</td>
<td>78.65%</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knysna LM</td>
<td>5</td>
<td>73,700</td>
<td>99.68%</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>2</td>
<td>7,886</td>
<td>91.58%</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>5</td>
<td>70,565</td>
<td>97.02%</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>8</td>
<td>45,365</td>
<td>99.49%</td>
<td>7</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>5</td>
<td>81,473</td>
<td>99.94%</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>3</td>
<td>83,390</td>
<td>88.72%</td>
<td>1</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>8</td>
<td>109,703</td>
<td>99.04%</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>3</td>
<td>12,000</td>
<td>90.05%</td>
<td>1</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>3</td>
<td>99,210</td>
<td>98.70%</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>5</td>
<td>126,795</td>
<td>98.44%</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swartland LM</td>
<td>2</td>
<td>81,349</td>
<td>99.38%</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>4</td>
<td>25,384</td>
<td>97.07%</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>10</td>
<td>110,824</td>
<td>98.29%</td>
<td>7</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>5</td>
<td>81,769</td>
<td>99.99%</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>124</td>
<td>6,241,092</td>
<td>96.89%</td>
<td>90</td>
<td>7</td>
<td>27</td>
</tr>
</tbody>
</table>

### MICRO: Population <100,000

<table>
<thead>
<tr>
<th>Colour</th>
<th>Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excellent</td>
<td>≥97%</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>≥96 - &lt;97%</td>
</tr>
<tr>
<td></td>
<td>Unacceptable</td>
<td>&lt;96%</td>
</tr>
</tbody>
</table>

### MICRO: Population >100,000

<table>
<thead>
<tr>
<th>Colour</th>
<th>Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excellent</td>
<td>≥99%</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>≥98 - &lt;99%</td>
</tr>
<tr>
<td></td>
<td>Unacceptable</td>
<td>&lt;98%</td>
</tr>
</tbody>
</table>

---

*Figure 185 - Provincial Microbiological Drinking Water Quality Status*
Out of the 124 WSSs, 97 (78%) systems achieved excellent and good microbiological quality, whilst 27 (22%) systems have an unacceptable microbiological water quality status. The water in these systems pose a serious acute health risk to the community. Failure to produce water that meets microbiological compliance standards can be linked back to poor operations, defective infrastructure, inadequate dosing rates, absence of disinfection chemicals, lack of monitoring, lack of operating and chemistry knowledge, and several other root causes. WSSs that are not monitoring the final water quality at the outlet of the treatment plant or at specific end use points are required to develop a monitoring programme and resume with compliance monitoring as a matter of urgency.

Table 242 - Provincial Summary of the DWQ Status for Chemical Acute Health and Chronic Health Compliance

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Compl</th>
<th># WSS Chem Acute Health Performance Status</th>
<th>% Ave. Compl</th>
<th># WSS Chem Chronic Health Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
<td>Good</td>
<td>Unacceptable</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>4</td>
<td>53,984</td>
<td>25.0%</td>
<td>1</td>
<td>3</td>
<td>74.9%</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>6</td>
<td>39,622</td>
<td>100.0%</td>
<td>6</td>
<td></td>
<td>98.5%</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>65,495</td>
<td>100.0%</td>
<td>3</td>
<td></td>
<td>99.8%</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>4</td>
<td>169,000</td>
<td>100.0%</td>
<td>4</td>
<td></td>
<td>100.0%</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>9</td>
<td>28,770</td>
<td>100.0%</td>
<td>9</td>
<td></td>
<td>99.3%</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>6</td>
<td>21,080</td>
<td>0.0%</td>
<td>6</td>
<td></td>
<td>100.0%</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>1</td>
<td>4,420,472</td>
<td>100.0%</td>
<td>1</td>
<td></td>
<td>99.9%</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>5</td>
<td>200,052</td>
<td>100.0%</td>
<td>5</td>
<td></td>
<td>100.0%</td>
</tr>
<tr>
<td>George LM</td>
<td>4</td>
<td>188,087</td>
<td>100.0%</td>
<td>4</td>
<td></td>
<td>99.7%</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>10</td>
<td>30,717</td>
<td>45.0%</td>
<td>3</td>
<td>7</td>
<td>99.7%</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>4</td>
<td>14,400</td>
<td>0.0%</td>
<td>4</td>
<td></td>
<td>0.0%</td>
</tr>
<tr>
<td>Knysna LM</td>
<td>5</td>
<td>73,700</td>
<td>99.0%</td>
<td>4</td>
<td>1</td>
<td>99.0%</td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>2</td>
<td>7,886</td>
<td>100.0%</td>
<td>2</td>
<td></td>
<td>99.5%</td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>5</td>
<td>70,565</td>
<td>100.0%</td>
<td>5</td>
<td></td>
<td>100.0%</td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>8</td>
<td>45,365</td>
<td>99.9%</td>
<td>8</td>
<td></td>
<td>100.0%</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>5</td>
<td>81,473</td>
<td>100.0%</td>
<td>5</td>
<td></td>
<td>100.0%</td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>3</td>
<td>83,390</td>
<td>100.0%</td>
<td>3</td>
<td></td>
<td>100.0%</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>8</td>
<td>109,703</td>
<td>100.0%</td>
<td>8</td>
<td></td>
<td>98.7%</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>3</td>
<td>12,000</td>
<td>30.3%</td>
<td>3</td>
<td></td>
<td>97.7%</td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>3</td>
<td>99,210</td>
<td>100.0%</td>
<td>3</td>
<td></td>
<td>99.3%</td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>5</td>
<td>126,795</td>
<td>100.0%</td>
<td>5</td>
<td></td>
<td>100.0%</td>
</tr>
<tr>
<td>Swartland LM</td>
<td>2</td>
<td>81,349</td>
<td>100.0%</td>
<td>2</td>
<td></td>
<td>99.6%</td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>4</td>
<td>25,384</td>
<td>90.0%</td>
<td>3</td>
<td>1</td>
<td>99.3%</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>10</td>
<td>110,824</td>
<td>100.0%</td>
<td>10</td>
<td></td>
<td>99.3%</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>5</td>
<td>81,769</td>
<td>100.0%</td>
<td>5</td>
<td></td>
<td>99.7%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>124</td>
<td>6,241,092</td>
<td>83.6%</td>
<td>99</td>
<td>1</td>
<td>24</td>
</tr>
</tbody>
</table>

- **Beaufort West LM**: 4 WSSs, 53,984 population, 25.0% compliance.
- **Bergrivier LM**: 6 WSSs, 39,622 population, 100.0% compliance.
- **Bitou LM**: 3 WSSs, 65,495 population, 100.0% compliance.
- **Breede Valley LM**: 4 WSSs, 169,000 population, 100.0% compliance.
- **Cape Agulhas LM**: 9 WSSs, 28,770 population, 100.0% compliance.
- **Cederberg LM**: 6 WSSs, 21,080 population, 0.0% compliance.
- **City of Cape Town MM**: 1 WSS, 4,420,472 population, 100.0% compliance.
- **Drakenstein LM**: 5 WSSs, 200,052 population, 100.0% compliance.
- **George LM**: 4 WSSs, 188,087 population, 100.0% compliance.
- **Hessequa LM**: 10 WSSs, 30,717 population, 45.0% compliance.
- **Kannaland LM**: 4 WSSs, 14,400 population, 0.0% compliance.
- **Knysna LM**: 5 WSSs, 73,700 population, 99.0% compliance.
- **Laingsburg LM**: 2 WSSs, 7,886 population, 100.0% compliance.
- **Langeberg LM**: 5 WSSs, 70,565 population, 100.0% compliance.
- **Matzikama LM**: 8 WSSs, 45,365 population, 99.9% compliance.
- **Mossel Bay LM**: 5 WSSs, 81,473 population, 100.0% compliance.
- **Oudtshoorn LM**: 3 WSSs, 83,390 population, 100.0% compliance.
- **Overstrand LM**: 8 WSSs, 109,703 population, 100.0% compliance.
- **Prince Albert LM**: 3 WSSs, 12,000 population, 30.3% compliance.
- **Saldanha Bay LM**: 3 WSSs, 99,210 population, 100.0% compliance.
- **Stellenbosch LM**: 5 WSSs, 126,795 population, 100.0% compliance.
- **Swartland LM**: 2 WSSs, 81,349 population, 100.0% compliance.
- **Swellendam LM**: 4 WSSs, 25,384 population, 90.0% compliance.
- **Theewaterskloof LM**: 10 WSSs, 110,824 population, 100.0% compliance.
- **Witzenberg LM**: 5 WSSs, 81,769 population, 100.0% compliance.

**Totals**: 124 WSSs, 6,241,092 population, 83.6% compliance.
CHEM Chronic Health: Population <100,000

<table>
<thead>
<tr>
<th>Colour</th>
<th>Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>&gt;95%</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>&gt;93 - &lt;95%</td>
<td></td>
</tr>
<tr>
<td>Unacceptable</td>
<td>&lt;93%</td>
<td></td>
</tr>
</tbody>
</table>

CHEM Chronic Health: Population >100,000

<table>
<thead>
<tr>
<th>Colour</th>
<th>Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>&gt;97%</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>&gt;95 - &lt;97%</td>
<td></td>
</tr>
<tr>
<td>Unacceptable</td>
<td>&lt;95%</td>
<td></td>
</tr>
</tbody>
</table>

Figure 186 - Provincial Chemical Acute Health and Chronic Health Drinking Water Quality Status

Chemical acute health compliance shows that 99 (80%) systems have excellent, and 1 (1%) system has good water quality, whilst 24 (19%) systems in 6 WSAs have an unacceptable chemical acute health compliance. Chemical chronic health compliance shows that 118 (96%) systems have excellent, and 1 (1%) system has good water quality, whilst 4 (3%) systems in 2 WSAs have an unacceptable chemical chronic health compliance.

The Water Services Act upholds standards regarding the monitoring and reporting on drinking water quality and issuance of advisory notices to the public when significant DWQ failures are observed. The audit process applies a penalty when DWQ failures are noticed without issuing such Water Quality Alert Notices to forewarn consumers of the status of (unsafe) water quality and to advise communities to source alternative water sources or methods to disinfect water used for drinking water purposes.

The following table reflects the compliance status of the WSAs as regards the issuing of these notices for DWQ failures.

Table 243 - Summary of Penalties Applied to WSSs for not Issuing Advisory Notices

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSS</th>
<th># WSS No Penalty Applied</th>
<th># WSS Partial Penalty Applied</th>
<th>WSS Names Partial Penalty</th>
<th># WSS Full Penalty Applied</th>
<th>WSS Names Full Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaufort West LM</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>Merweville, Murraysburg, Nelspoort</td>
<td>1</td>
<td>Piketberg</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>6</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>9</td>
<td>5</td>
<td>2</td>
<td>Klipdale, L’Agulhas</td>
<td>2</td>
<td>Protem, Spanjaardskloof</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>Bainskloof, Saron, Drakenstein</td>
<td></td>
<td></td>
</tr>
<tr>
<td>George LM</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>10</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>4</td>
<td>3</td>
<td></td>
<td>Calitzdorp, Ladismith, Zoar</td>
<td>2</td>
<td>Gouritsmond, Witsand</td>
</tr>
<tr>
<td>Knysna LM</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>2</td>
<td>2</td>
<td></td>
<td>Laingsburg Main Reservoir, Matjiesfontein</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>Ashton, Montagu</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>8</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>8</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>Klaarstroom, Prince Albert</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>Langebaan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>Blackheath</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swartland LM</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>Buffelsjagrivier</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>10</td>
<td>8</td>
<td>1</td>
<td>Tesselaarsdal</td>
<td>1</td>
<td>Genadendal</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>124</td>
<td>96</td>
<td>21</td>
<td></td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

Chem Chronic Compliance (%)
No penalties were applied to 96 (77%) WSSs in 22 WSAs. Partial penalties were applied to 21 (17%) WSSs in 11 WSAs, and Full penalties were applied to 7 (6%) WSSs in 4 WSAs.

(iii) Risk defined compliance and laboratory credibility

**Findings:** Risk-defined compliance standards aim to determine the compliance (to SANS 241) of those parameters that have been found to pose a risk in a specific WSS and need to be included in the routine monitoring programme or frequency as prescribed by SANS 241. The province achieved an average Annual Risk Defined Compliance of 91.6%, with the best performances coming from Bitou LM, Overstrand LM and City of Cape Town MM, and the worst performances coming from Kannaland LM and Prince Albert LM. Excellent risk defined compliance was achieved by 54 (44%) systems, good compliance for 18 (14%) systems and bad compliance for 52 (42%) systems with most of these systems (>3 no.) residing in 9 of the WSAs.

**Table 244 - Summary of the DWQ Compliance for Risk Defined Compliance**

<table>
<thead>
<tr>
<th>WSA Name</th>
<th># WSSs</th>
<th>Population</th>
<th>Ave. %Risk Defined Compliance</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>4</td>
<td>53,984</td>
<td>86.43%</td>
<td>2</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>6</td>
<td>39,622</td>
<td>93.96%</td>
<td>2</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>65,495</td>
<td>99.88%</td>
<td>3</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>4</td>
<td>169,000</td>
<td>95.50%</td>
<td>2</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>9</td>
<td>28,770</td>
<td>92.55%</td>
<td>5</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>6</td>
<td>21,080</td>
<td>88.19%</td>
<td>3</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>1</td>
<td>4,420,472</td>
<td>97.41%</td>
<td>1</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>5</td>
<td>200,052</td>
<td>95.79%</td>
<td>3</td>
</tr>
<tr>
<td>George LM</td>
<td>4</td>
<td>188,087</td>
<td>96.94%</td>
<td>3</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>10</td>
<td>30,717</td>
<td>92.71%</td>
<td>4</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>4</td>
<td>14,400</td>
<td>78.65%</td>
<td>1</td>
</tr>
<tr>
<td>Knysna LM</td>
<td>5</td>
<td>73,700</td>
<td>89.76%</td>
<td>1</td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>2</td>
<td>7,886</td>
<td>94.90%</td>
<td>1</td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>5</td>
<td>70,565</td>
<td>93.58%</td>
<td>2</td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>8</td>
<td>45,365</td>
<td>84.95%</td>
<td>2</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>5</td>
<td>81,473</td>
<td>92.26%</td>
<td>1</td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>3</td>
<td>83,390</td>
<td>81.64%</td>
<td>1</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>8</td>
<td>109,703</td>
<td>98.79%</td>
<td>8</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>3</td>
<td>12,000</td>
<td>80.23%</td>
<td>3</td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>3</td>
<td>99,210</td>
<td>95.84%</td>
<td>3</td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>5</td>
<td>126,795</td>
<td>95.35%</td>
<td>3</td>
</tr>
<tr>
<td>Swartland LM</td>
<td>2</td>
<td>81,349</td>
<td>95.37%</td>
<td>1</td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>4</td>
<td>25,384</td>
<td>95.21%</td>
<td>3</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>10</td>
<td>110,824</td>
<td>87.82%</td>
<td>2</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>5</td>
<td>81,769</td>
<td>85.35%</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>124</strong></td>
<td><strong>6,241,092</strong></td>
<td><strong>91.56%</strong></td>
<td><strong>54</strong></td>
</tr>
</tbody>
</table>

The aim of operational determinand compliance is to determine the efficiency of the water treatment process, by monitoring those parameters which are used to control the treatment process. Although not necessarily a health risk, these parameters provide good information on the integrity of the WTW. The province achieved an average % Actual Operational Determinand Compliance of 51%, the best performances coming from Overberg Water, George LM, Swartland LM and Overstrand LM and the worst performances coming from Beaufort West LM, Cederberg LM, Hessequa LM, Kannaland LM, Prince Albert LM and Stellenbosch LM. Excellent risk defined compliance was achieved by 44 (35%) systems, good compliance for 23 (18%) systems and bad compliance for 59 (47%) systems with most of these systems (>3 no.) residing in 11 WSAs.

**Table 245 - Summary of the Treatment (Operational) Efficiency Index**

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th>Population</th>
<th>Ave. % Actual Operational Determinand Compliance</th>
<th># WTW Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>Overberg Water</td>
<td>3</td>
<td>28,700</td>
<td>97%</td>
<td>3</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>5</td>
<td>53,984</td>
<td>0%</td>
<td>5</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>5</td>
<td>39,622</td>
<td>36%</td>
<td>1</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>3</td>
<td>65,495</td>
<td>63%</td>
<td>1</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>4</td>
<td>169,000</td>
<td>30%</td>
<td>1</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>2</td>
<td>27,770</td>
<td>50%</td>
<td>1</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>6</td>
<td>21,080</td>
<td>0%</td>
<td>6</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>12</td>
<td>4,420,472</td>
<td>89%</td>
<td>10</td>
</tr>
</tbody>
</table>
The data confirms that 24 of 25 WSIs in the province have access to credible laboratories for compliance and operational analysis. These in-house or contracted laboratories are accredited with SANAS or have Proficiency Testing Schemes with SABS or have inter-laboratory quality checks in place to ensure that suitable analytical methods are applied and that quality assurance processes are followed to ensure credible water quality results. The province is meeting the regulatory expectation for the WSIs having access to credible analytical services for compliance and operational monitoring.

### Diagnostic 4: Technical Site Assessments

**Aim:** The BD process makes provision for a Technical Site Assessment (TSA) in order to verify the desktop evidence through field-based inspections. This assessment includes a physical inspection of the entire water treatment plant with all its process units, as well as the reservoir and spot checks of a pumpstation and pipelines. The technical assessment is coupled with an asset condition check to determine an approximate cost (VROOM) to restore existing infrastructure to functional status for the treatment facility (only).

**Findings:** The results of the province’s TSAs are summarised in the table below. A deviation of 10% between the BD and TSA score indicate a misalignment between the administrative aspects and the work on the ground. The Regulator regards a WTW with a TSA score of >80% to have an acceptable level of process control and functional equipment, and a TSA score of 90% as an excellent system that complies with most of the Blue Drop TSA standards. A TSA score of <30% indicates that the treatment facility and network fails in most regards, and is evident of dysfunctional infrastructure, failed process control, absence of record keeping and monitoring, and poor water quality.

The VROOM cost presents a “Very Rough Order of Measurement” cost to return a WTWs functionality to its original design. More detail can be found in the Blue Drop Watch Report 2023.

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th># WTWs</th>
<th>Population</th>
<th>Ave. % Actual Operational Determinand Compliance</th>
<th># WTW Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excellent  Good  Bad</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>6</td>
<td>200,052</td>
<td>92%</td>
<td>2  3  1</td>
</tr>
<tr>
<td>George LM</td>
<td>5</td>
<td>188,087</td>
<td>97%</td>
<td>4  1</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>7</td>
<td>21,041</td>
<td>0%</td>
<td>7</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>4</td>
<td>14,400</td>
<td>0%</td>
<td>4</td>
</tr>
<tr>
<td>Knyrna LM</td>
<td>5</td>
<td>73,700</td>
<td>88%</td>
<td>2  2  1</td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>None</td>
<td>7,886</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>5</td>
<td>70,565</td>
<td>90%</td>
<td>5</td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>8</td>
<td>45,365</td>
<td>42%</td>
<td>3  5</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>7</td>
<td>81,473</td>
<td>83%</td>
<td>4  2  1</td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>3</td>
<td>83,390</td>
<td>33%</td>
<td>1  2</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>9</td>
<td>109,703</td>
<td>97%</td>
<td>8  1</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>3</td>
<td>12,000</td>
<td>0%</td>
<td>3</td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>None</td>
<td>99,210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>3</td>
<td>126,795</td>
<td>0%</td>
<td>3</td>
</tr>
<tr>
<td>Swartland LM</td>
<td>2</td>
<td>81,349</td>
<td>98%</td>
<td>2</td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>4</td>
<td>25,384</td>
<td>16%</td>
<td>4</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>10</td>
<td>92,800</td>
<td>86%</td>
<td>3  1  6</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>5</td>
<td>81,769</td>
<td>94%</td>
<td>2  3</td>
</tr>
<tr>
<td>Totals</td>
<td>126</td>
<td>6,241,092</td>
<td>51%</td>
<td>44  23  59</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th># WSA &amp; WB Name</th>
<th>%TS@</th>
<th>2023 BD Score (%)</th>
<th>Civil cost estimate</th>
<th>Mechanical cost estimate</th>
<th>Electrical &amp; C&amp;I cost estimate</th>
<th>Total VROOM cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overberg Water</td>
<td>82%</td>
<td>82.8% ave</td>
<td>1,596,000</td>
<td>2,736,000</td>
<td>228,000</td>
<td>4,560,000</td>
</tr>
<tr>
<td>Overberg Water</td>
<td>82%</td>
<td>82.8% ave</td>
<td>840,000</td>
<td>1,440,000</td>
<td>120,000</td>
<td>2,400,000</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>70%</td>
<td>53.0%</td>
<td>1,362,000</td>
<td>1,589,000</td>
<td>1,589,000</td>
<td>4,540,000</td>
</tr>
<tr>
<td>Bergriver LM</td>
<td>88%</td>
<td>85.1%</td>
<td>757,240</td>
<td>1,135,860</td>
<td>0</td>
<td>1,893,100</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>80%</td>
<td>81.7%</td>
<td>1,417,500</td>
<td>2,835,000</td>
<td>1,417,500</td>
<td>5,670,000</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>90%</td>
<td>60.0%</td>
<td>140,690</td>
<td>1,125,520</td>
<td>140,690</td>
<td>1,406,900</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>91%</td>
<td>90.0%</td>
<td>720,000</td>
<td>720,000</td>
<td>0</td>
<td>1,440,000</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>51%</td>
<td>35.9%</td>
<td>4,199,800</td>
<td>10,499,500</td>
<td>6,299,700</td>
<td>20,999,000</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>98%</td>
<td>98.1%</td>
<td>1,200,000</td>
<td>300,000</td>
<td>0</td>
<td>1,500,000</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>95%</td>
<td>98.1%</td>
<td>459,360</td>
<td>114,840</td>
<td>0</td>
<td>574,200</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>96%</td>
<td>94.1%</td>
<td>8,000</td>
<td>64,000</td>
<td>8,000</td>
<td>80,000</td>
</tr>
<tr>
<td>George LM</td>
<td>84%</td>
<td>94.95%</td>
<td>920,000</td>
<td>2,300,000</td>
<td>1,380,000</td>
<td>4,600,000</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>77%</td>
<td>50.1%</td>
<td>78,800</td>
<td>591,000</td>
<td>118,200</td>
<td>788,000</td>
</tr>
</tbody>
</table>
The capital budgets, O&M budgets, O&M actual expenditure, and current asset values are summarised below.

**Diagnostic 5: Operation, Maintenance and Refurbishment of Assets**

**Aim:** Insufficient financial resources are often cited as a root cause to dysfunctional or non-compliant water treatment works and water networks. Knowledge and monitoring of fiscal spending are therefore a critical part of water services management and municipal governance of public assets. This diagnostic investigates the status of financial information as pertaining to O&M budgets and expenditure, asset figures, and capital funding.

**Findings:** A substantial amount of financial information was presented during the audit process. Unfortunately, the evidence was presented in different formats, levels of detail, or absent for some WSAs. It was observed that WSA teams with financial officials that were present during the audits performed better and had a better understanding of the water services challenges experienced by their technical peers.

Discrepancies observed included amongst others - generic or non-ringfenced budgets, contract lump sums for service providers presented as budgets, outdated or incomplete asset registers, and some cost drivers which were lacking. As data credibility presents a significant challenge, the Regulator grouped data into different certainty levels, as summarised at the end of this Diagnostic.

The result of each financial portfolio is discussed hereunder.

NOTE: The Regulator regards the financial and asset information with low confidence. Not all WSAs submitted verifiable information or complete financial data sets for the audit year in question.

**Capital, O&M Budget and Actual, and Asset Value**

The capital budgets, O&M budgets, O&M actual expenditure, and current asset values are summarised below.

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Capital budget available (R)</th>
<th>O&amp;M budget (R) (2021/22)</th>
<th>O&amp;M expended (R) (2021/22)</th>
<th>% Expended</th>
<th>Total Current Asset Value (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overberg Water</td>
<td>NI</td>
<td>R82,561,000</td>
<td>R80,565,083</td>
<td>98%</td>
<td>R86,914,942</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>NI</td>
<td>R30,792,117</td>
<td>R25,802,644</td>
<td>84%</td>
<td>R329,664,000</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>R42,200,000</td>
<td>R24,480,000</td>
<td>R22,950,000</td>
<td>94%</td>
<td>R67,453,082</td>
</tr>
<tr>
<td>WSA &amp; WB Name</td>
<td>Capital budget available (R)</td>
<td>O&amp;M budget (R) (2021/22)</td>
<td>O&amp;M expended (R) (2021/22)</td>
<td>% Expended</td>
<td>Total Current Asset Value (R)</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------------------</td>
<td>--------------------------</td>
<td>-----------------------------</td>
<td>------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>R16,985,000</td>
<td>R30,887,902</td>
<td>R38,182,274</td>
<td>124%</td>
<td>R211,856,000</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>R131,754,669</td>
<td>R112,627,382</td>
<td>R119,417,372</td>
<td>106%</td>
<td>NI</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>R5,652,000</td>
<td>R25,682,590</td>
<td>R24,808,706</td>
<td>97%</td>
<td>R323,496,000</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>R19,143,000</td>
<td>R837,553,060</td>
<td>R759,826,473</td>
<td>91%</td>
<td>NI</td>
</tr>
<tr>
<td>City of Cape Town MM</td>
<td>R577,600,000</td>
<td>R1,404,217,099</td>
<td>R1,391,487,740</td>
<td>99%</td>
<td>R1,12,392,355,000</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>R16,680,000</td>
<td>R189,597,850</td>
<td>R181,596,988</td>
<td>96%</td>
<td>R1,008,761,913</td>
</tr>
<tr>
<td>George LM</td>
<td>R79,375,000</td>
<td>R206,730,363</td>
<td>R199,543,369</td>
<td>97%</td>
<td>R378,192,335</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>R6,000,000</td>
<td>R13,932,246</td>
<td>NI</td>
<td></td>
<td>R30,169,661</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>R14,439,990</td>
<td>NI</td>
<td>NI</td>
<td></td>
<td>R30,169,661</td>
</tr>
<tr>
<td>Knsyna LM</td>
<td>R15,770,000</td>
<td>R55,211,615</td>
<td>R54,485,125</td>
<td>98%</td>
<td>R346,167,000</td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>R4,500,000</td>
<td>R3,697,321</td>
<td>R3,556,787</td>
<td>96%</td>
<td>R13,081,000</td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>R36,947,104</td>
<td>NI</td>
<td>NI</td>
<td></td>
<td>NI</td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>R36,518,510</td>
<td>R13,869,206</td>
<td>NI</td>
<td></td>
<td>NI</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>R1,411,616</td>
<td>R67,813,440</td>
<td>R53,306,627</td>
<td>79%</td>
<td>R308,669,705</td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>R49,500,000</td>
<td>R38,672,200</td>
<td>R41,730,440</td>
<td>108%</td>
<td>R237,671,000</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>R37,330,000</td>
<td>R100,735,388</td>
<td>R99,979,166</td>
<td>99%</td>
<td>R502,705,000</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>R6,552,000</td>
<td>R2,298,400</td>
<td>R2,101,532</td>
<td>91%</td>
<td>R53,781,000</td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>R52,200,000</td>
<td>R131,937,720</td>
<td>R129,210,346</td>
<td>98%</td>
<td>R468,670,686</td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>R13,544,622</td>
<td>R119,809,227</td>
<td>R129,534,051</td>
<td>108%</td>
<td>NI</td>
</tr>
<tr>
<td>Swartland LM</td>
<td>R5,300,000</td>
<td>R206,978,785</td>
<td>R191,048,512</td>
<td>92%</td>
<td>R872,940,278</td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>R43,354,787</td>
<td>R24,141,512</td>
<td>R24,656,352</td>
<td>102%</td>
<td>NI</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>R29,800,000</td>
<td>R32,484,895</td>
<td>R32,172,482</td>
<td>99%</td>
<td>R130,767,234</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>R21,135,257</td>
<td>R37,522,794</td>
<td>R39,382,760</td>
<td>105%</td>
<td>NI</td>
</tr>
<tr>
<td>Totals</td>
<td>R1,258,393,555</td>
<td>R3,794,544,112</td>
<td>R3,659,893,775</td>
<td>96.5%</td>
<td>R17,763,315,836</td>
</tr>
</tbody>
</table>

The Regulatory Comments following in this Chapter list the capital projects with secured funding for each municipality and/or its bulk water provider (WSP). The capital lists are deemed to be a definitive means to address water service inadequacies and ensuring water infrastructure investment. A total capital budget of R1.26b has been reported for the refurbishment and upgrades of water supply system infrastructure for most of the WSAs. The largest capital budgets are observed for City of Cape Town MM (R577.6m), Breede Valley LM (R131.7m), and George LM (R79.4m).

For the 2021/22 fiscal year, the total O&M budget reported for the province was R3.794m, of which R3.66m (96.5%) has been expended. Over-expenditure of 124% by Bitou LM and under expenditure by Mossel Bay LM (79%) was observed. The provincial figures exclude Kannaland LM, Langeberg LM and Hessequa LM who had no and partial financial information.

The total current asset value for water infrastructure (networks,泵站, treatment plants) is reportedly R17.76b (excluding 8 WSAs with no information). The highest asset values are observed for City of Cape Town MM (R12.4b), Drakenstein LM (R873m), Overstrand LM (R503m), and Saldanha Bay LM (R469m).
By combining the SALGA and WRC WATCOST models, an estimation of the maintenance cost required per asset type can be done, i.e. civil, buildings, pipelines, mechanical, electrical, and instrumentation.

The model estimates that R383.7m (2.16%) is required per year to maintain the assets valued at R17.76b. Notably, this maintenance estimate assumes that all assets are functional. In cases where Blue Drop Certification is not being achieved, it can be assumed that some form of inefficiency or constraint is being experienced, and national benchmarks closer to 7% of the asset value is advocated (R1.243b).

The table below indicates the SALGA maintenance cost estimation in relation to the O&M budget, and O&M actual expended.

<table>
<thead>
<tr>
<th>Description</th>
<th>% of Current Asset Value</th>
<th>Asset Value Estimate</th>
<th>Modified SALGA Maintenance Guideline</th>
<th>Annual Maintenance Budget Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Asset Value estimate</td>
<td>100%</td>
<td>R17,763,315,836</td>
<td>15.75%</td>
<td>R383,687,622</td>
</tr>
</tbody>
</table>

**Broken down into:**

1. Civil Structures: 46% R8,171,125,285 0.50% R40,855,626
2. Buildings: 3% R532,899,475 1.50% R7,993,492
3. Pipelines: 6% R1,065,798,950 0.75% R7,993,492
4. Mechanical Equipment: 30% R5,328,994,751 4.00% R213,159,790
5. Electrical Equipment: 11% R1,953,964,742 4.00% R78,158,590
6. Instrumentation: 4% R710,532,633 5.00% R35,526,632

**Totals:**

100% R17,763,315,836 15.75% R383,687,622

<table>
<thead>
<tr>
<th>Description</th>
<th>O&amp;M Cost Estimate</th>
<th>Period</th>
<th>% of Asset Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified SALGA</td>
<td>R383,687,622</td>
<td>Annually, estimation</td>
<td>2.16%</td>
</tr>
<tr>
<td>O&amp;M Budget</td>
<td>R3,794,544,112</td>
<td>Actual for 2021/22</td>
<td>21.3%</td>
</tr>
<tr>
<td>O&amp;M Spend</td>
<td>R3,659,893,775</td>
<td>Actual for 2021/22</td>
<td>20.6%</td>
</tr>
</tbody>
</table>

In addition, the table below indicates the Blue Drop audit findings on the water supply operations cost determination and water supply O&M budget status.

<table>
<thead>
<tr>
<th>WSA &amp; WB Name</th>
<th>Water Supply Operations Cost Determination</th>
<th>Water Supply O&amp;M Budget status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overberg Water</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Beaufort West LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Bergrivier LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Bitou LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Breede Valley LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Cape Agulhas LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Cederberg LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>City of Cape Town</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Drakenstein LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>George LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Hessequa LM</td>
<td>DETERMINED FOR PART OF SYSTEM; NOT SYSTEM SPECIFIC (GLOBAL); NO PROOF (0% SCORE)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Kannaland LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Knersna LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Laingsburg LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Langeberg LM</td>
<td>DETERMINED FOR PART OF SYSTEM</td>
<td>NO PROOF</td>
</tr>
<tr>
<td>Matzikama LM</td>
<td>DETERMINED FOR PART OF SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Mossel Bay LM</td>
<td>DETERMINED FOR PART OF SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Oudtshoorn LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL); DETERMINED FOR PART OF SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Prince Albert LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Stellenbosch LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM; NO PROOF (0% SCORE)</td>
<td>SYSTEM SPECIFIC BUDGET: WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>WSA &amp; WB Name</td>
<td>Water Supply Operations Cost Determination</td>
<td>Water Supply O&amp;M Budget status</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------------------</td>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td>Swartland LM</td>
<td>NOT SYSTEM SPECIFIC (GLOBAL)</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
<tr>
<td>Swellendam LM</td>
<td>NO PROOF (0% SCORE)</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Theewaterskloof LM</td>
<td>DETERMINED OF THE WHOLE SYSTEM</td>
<td>SYSTEM SPECIFIC BUDGET</td>
</tr>
<tr>
<td>Witzenberg LM</td>
<td>DETERMINED FOR PART OF SYSTEM</td>
<td>WSI GLOBAL BUDGET FOR ALL SYSTEMS - BUT IS RINGFENCE FOR WATER ONLY</td>
</tr>
</tbody>
</table>

From the tables above, the cost dynamics can be summarised as follows:

- The SALGA estimations for maintenance budgets is about 10% (Modified SALGA divided by O&M Budget) of the actual reported budgets for the 2021/22 fiscal year
- The actual O&M budget (21.3%) appears to be more than adequate when compared with the SALGA guideline (2.16%) or with the government benchmark (7%)
- These figures may be impacted by the 3 WSAs who did not provide budget and expenditure figures, and by the 8 WSAs where no asset values were provided for
- Lastly, the municipalities presents budget and expenditure data at different levels (table above) i.e. financial figures are not always ringfenced per water supply system – thus rendering provincial summaries to be indicative.)
13.1 West Coast DM Bulk

Introduction

The West Coast District Municipality consists of the Matzikama, Cederberg, Bergrivier, Saldanha Bay and Swartland Local Municipalities and this entity operates two treatment plants to provide water to the following 4 municipalities:

1. Bergrivier Local Municipality
2. Saldanha Bay Local Municipality
3. Swartland Local Municipality
4. Drakenstein Local Municipality

The WCDM operates the 29.1 Ml/d Swartland Treatment Plant at around 15 Ml/d and produces potable water from the Voëlvlei Dam. The bulk of this final water is distributed to the Swartland LM through a network of 210 km bulk lines, 8 pumpstations and 11 reservoirs while about 4% of this final water is distributed to the Drakenstein LM into its Gouda system. The Withoogte Treatment Plant operates at about 50% of its designed 72 Ml/d capacity and distributes about 86% of its output to the Saldanha Bay LM, 6 % to the Swartland LM and the remaining 8% to the Bergrivier LM through a network of 314 km bulk lines, 3 pumpstations and 11 reservoirs.

Regulator’s Comment

The WCDM was well prepared for the Blue Drop assessment and was represented by their Chemical Engineering Technologist and accompanied by the Plant Manager. They were well informed with the requirements for the Blue Drop process and have undergone similar previous exercises. The required information was uploaded in advance and any missing information was dealt with immediately and forwarded to the team in further correspondence. The WCDM operates and maintain the two plants on behalf of its local municipalities and have a well-functioning supply chain management programme which enables the entity to provide for the required services and products for effective operations and maintenance. The Regulator would like to see a larger complement of scientific personnel to oversee water quality compliance programs. The WCDM’s capital expenses was focussed on laboratory equipment to improve monitoring, as well as movable items such as machinery and valves to attend to bulk pipeline repairs. Larger capital expenses forms part of the various local municipality’s planning.

Blue Drop Findings

The Regulator noted the following:

- Both Water Treatment Plants has sufficient process controller attendance, as well as a competent supervisory section.
- Implementation of the water safety plan and the process audit findings are taking place, with specifically the use of chlorine dioxide at both plants mentioned as an initiative to counter deteriorating raw water qualities.
- The WCDM is aware of the importance of water demand management and work done in this regard is commended where leakages are attended to, and losses are monitored and logged.
- Systems are in place to monitor water qualities on a regular basis.

Technical Site Inspection

Both plants from the WCDM were inspected to verify the Blue Drop audit findings and the Swartland WTP received a technical site score of 92%, while the Withoogte WTP received a technical site score of 95%. Both plants were found to be neat, well operated, and regularly monitored for performance. Both plants have been testing the addition of chlorine dioxide to its treatment train, with the view of taste and odour removal, as well as ensuring a residual in the pipeline. This was also installed to counter the risk of low supplies of chlorine gas. At the Swartland WTP, the installation of lights at the sludge dams, and additional handrails at the filters to ensure safe working conditions, as well as the installation of one more air blower can be considered. The Withoogte plant should install emergency washes at the flocculant dosing station, while the filter backwash pumps should be regularly maintained to ensure sufficient standby.

The WCDM takes deep pride in their work which was evident in the discussions held on site with the various process controllers. In general, however, a need for more training was expressed amongst the process controllers. Apart from this, the workplace satisfaction is high and inspire good performance.
Sedimentation tank at Swartland WTP

Service and High Lift Pumpstation at Swartland WTP

Flocculation channels at Withoogte WTP

Backwashing of filters at Withoogte WTP
13.2 Overberg Water

Introduction

Overberg Water Board came into being in 1993 when the former Duivenhoks and Ruensveld water boards amalgamated. Overberg Water Board is a National Government Business Enterprise as defined in Schedule 3B of the Public Finance Management Act (PFMA). This entity operates three treatment plants to provide water to the following 3 municipalities:

1. Hessequa Local Municipality
2. Cape Agulhas Local Municipality
3. Theewaterskloof Local Municipality

Overberg Water operates the 5 Ml/d Duivenhoks Treatment Plant at 63% of its capacity and produces potable water from the Duivenhoks Dam. The final water is distributed to the Hessequa LM through a network of 462 km bulk lines and 10 reservoirs. The Ruensveld East Treatment Plant operates at about 51% of its designed 4.7 Ml/d capacity and provides water to the Protem system of the Cape Agulhas. The Ruensveld West Treatment Plant has a design capacity of 9.5 Ml/d and operates at around 61% of its capacity to supply water to the Theewaterskloof LM as well as the Cape Agulhas’ Protem system. Both Ruensveld systems extract water from the Riversonderend river/weir, and these systems have an estimated 437 km of bulk lines with 2 pumpstations and 8 reservoirs.

Regulator’s Comment

Overberg Water prepared well for the Blue Drop assessment and was represented by a total complement of 7 technical people with head office personnel assisted by the three plant managers. All information required was at hand and supplemented with additional documentation when requested for it. All three plants are adequately staffed and complies with National regulations on the Process Controller and supervisory staff requirements. Water Safety Plans and Process Audits have been compiled for all the plants and the Regulator observed ongoing implementation of recommendations from these documents.

Overberg Water has a well-functioning Supply Chain Management process to ensure timeous procurement of services and products for its operations. A total capital budget of R 8.7 million rand has been earmarked mainly for the supply of generators at strategic points to ensure surety of supply of potable water.

Blue Drop Findings

The Regulator noted the following:

- All three Water Treatment Plants has sufficient process controller attendance, as well as a competent supervisory section.
- No planned training is currently taking place and Overberg Water is urged to attend to this important aspect of career development. The same issue was raised during the technical site assessment exercise.
- All plants are equipped with inhouse monitoring equipment and a well set out monitoring programme is followed for water quality, water quantity and chemical stock usage.
- Water demand management procedures are practiced and water balances across its delivery network is done on a regular basis.

Technical Site Inspection

The Ruensveld West WTP was inspected to verify the Blue Drop audit findings and received a technical site assessment score of 84%. The works comprises an 9.5 Ml/d conventional treatment plant. The works was found to be operational and although the majority of the plant seems to be in fairly good condition, well managed and maintained, there is concern about the fact that the sand filters are not operating satisfactorily due to the outage of air blowers. Refurbishment of the filters as well as installing duty and standby air-blowers should be implemented urgently. Chemical dosing takes place downstream of the hydraulic jump (weir overflow), moving the dosing point upstream should be considered to allow for sufficient turbulent conditions. Increased security should be considered at the command reservoir as the telemetry was out of order due to vandalism. All considered the total VROOM amount comes to R 568 000/Ml/d. In addition, it seems that the disinfection regime can be improved with a 96.7% compliance figure for Microbiological Acute Health (samples taken fortnightly at sufficient sampling points). A backup disinfection system should also be considered. The Chemical compliance (Acute and Chronic Health) is excellent at >99.90%. The workplace satisfaction is adequate, but the lack of training is of concern.

For more details, the Blue Drop Watch Report 2023 can be consulted.
Raw water pipe at Ruensveld West WTP

Sludge ponds at the Ruensveld West WTP

Backwash water sump next to the high lift pumpstation

High lift Pumps at Ruensveld West WTP
### 13.3 Beaufort West Local Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>53.02%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>89.52%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>94.91%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>92.01%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Beaufort West</th>
<th>Merweville</th>
<th>Murraysburg</th>
<th>Nelspoort</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>56.90%</td>
<td>34.85%</td>
<td>26.65%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>95.22%</td>
<td>78.33%</td>
<td>48.36%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>96.30%</td>
<td>86.40%</td>
<td>N/A</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>95.40%</td>
<td>79.70%</td>
<td>N/A</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>22 144</td>
<td>280</td>
<td>600</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>15 644</td>
<td>280</td>
<td>600</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>8 148</td>
<td>160</td>
<td>749</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>52.23%</td>
<td>57.14%</td>
<td>124.83%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Boreholes / Gamka Dam / Reclaimed Water</td>
<td>Boreholes</td>
<td>Boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>22.97%</td>
<td>17.76%</td>
<td>56.42%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>15.70%</td>
<td>29.10%</td>
<td>39.40%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Beaufort West WTW – 70%**

The Regulator noted the dire state of management and drinking water quality in the Murraysburg and Nelspoort water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>85.08%</td>
<td>63.79%</td>
<td>90.60%</td>
<td>85.20%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Redelinghuys</th>
<th>Velddrif</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>West Coast DM Bulk</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>87.43%</td>
<td>95.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>54.80%</td>
<td>67.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>73.30%</td>
<td>97.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>52.70%</td>
<td>93.20%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>260</td>
<td>72 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>260</td>
<td>72 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>156</td>
<td>2 611</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>60.00%</td>
<td>50.00%</td>
</tr>
</tbody>
</table>

### Resource Abstraction

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th>Underground water</th>
<th>Waboomfontein Spring and borehole</th>
<th>Bergrivier 90% and 10% Voelvleispring</th>
<th>Three fountains from the mountains - Waterfall stream and North/South springs from Winterhoek mountain</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>15.32%</td>
<td>21.51%</td>
<td>36.79%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>16.10%</td>
<td>15.60%</td>
<td>32.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Piketberg WTP – 89%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>81.66%</td>
</tr>
<tr>
<td>2014</td>
<td>90.44%</td>
</tr>
<tr>
<td>2012</td>
<td>97.74%</td>
</tr>
<tr>
<td>2011</td>
<td>96.12%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Kurland</th>
<th>Nature’s Valley</th>
<th>Plettenberg Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>80.45%</td>
<td>75.65%</td>
<td>81.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>81.96%</td>
<td>83.62%</td>
<td>90.86%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>97.40%</td>
<td>97.80%</td>
<td>97.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>95.00%</td>
<td>95.00%</td>
<td>96.20%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Weight</th>
<th>Kurland</th>
<th>Nature’s Valley</th>
<th>Plettenberg Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>648</td>
<td>1000</td>
<td>27000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>648</td>
<td>320</td>
<td>27000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>590</td>
<td>154</td>
<td>10603</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>91.05%</td>
<td>48.13%</td>
<td>39.27%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Wit River</td>
<td>Grootrivier</td>
<td>Keurboomsriver, Palmietrivier</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>20.04%</td>
<td>16.07%</td>
<td>21.56%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>17.70%</td>
<td>13.70%</td>
<td>19.60%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Plettenberg Bay WTW – 80%
### 13.6 Breede Valley Local Municipality

#### Municipal Blue Drop Score

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>59.95%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>89.16%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>89.02%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>85.93%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Bokrivier (Touwsrivier)</th>
<th>De Doorns</th>
<th>De Koppen (Fairyglen)</th>
<th>Worcester/Rawsonville</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>58.08%</td>
<td>61.58%</td>
<td>54.42%</td>
<td>60.38%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>85.95%</td>
<td>89.27%</td>
<td>89.86%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>87.60%</td>
<td>90.70%</td>
<td>90.70%</td>
<td>NI</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>74.70%</td>
<td>90.30%</td>
<td>82.00%</td>
<td>NI</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 500</td>
<td>4 800</td>
<td>10 000</td>
<td>60 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 500</td>
<td>4 800</td>
<td>10 000</td>
<td>60 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>1 790</td>
<td>4 830</td>
<td>3 194</td>
<td>30 100</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>119.33%</td>
<td>100.63%</td>
<td>31.94%</td>
<td>50.17%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Touws River</td>
<td>Touws River</td>
<td>Touws River</td>
<td>Stettynskloof Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>46.01%</td>
<td>47.28%</td>
<td>30.64%</td>
<td>39.20%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>41.00%</td>
<td>47.00%</td>
<td>31.10%</td>
<td>45.20%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: De Koppen (Fairyglen) WTW – 90%**
### 13.7 Cape Agulhas Local Municipality

#### Municipal Blue Drop Score

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td>89.17%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2014</strong></td>
<td>%</td>
<td>69.48%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2012</strong></td>
<td>%</td>
<td>86.64%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2011</strong></td>
<td>%</td>
<td>73.01%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Aniston/ Waenhuskran</th>
<th>Bredasdorp</th>
<th>Klipdale</th>
<th>L’Agulhas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Overberg Water</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>86.33%</td>
<td>94.68%</td>
<td>86.23%</td>
<td>88.03%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>76.20%</td>
<td>74.40%</td>
<td>75.60%</td>
<td>54.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>75.60%</td>
<td>91.20%</td>
<td>87.30%</td>
<td>79.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>82.90%</td>
<td>64.00%</td>
<td>82.00%</td>
<td>82.40%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>750</td>
<td>8000</td>
<td>9500</td>
<td>1200</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>750</td>
<td>8000</td>
<td>9500</td>
<td>1200</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>319</td>
<td>3250</td>
<td>150</td>
<td>350</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>42.53%</td>
<td>40.63%</td>
<td>60.81%</td>
<td>29.17%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Two boreholes</td>
<td>Klein Sanddrift Dam via the Vleikloof Dam, boreholes and the Uitvlught spring</td>
<td>Sonderend river</td>
<td>Two boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>13.74%</td>
<td>16.71%</td>
<td>26.60%</td>
<td>13.74%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>25.90%</td>
<td>34.20%</td>
<td>NI</td>
<td>19.70%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Napier</th>
<th>Protem</th>
<th>Spanjaardskloof</th>
<th>Struisbaai</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Overberg Water</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>81.13%</td>
<td>86.71%</td>
<td>59.10%</td>
<td>89.83%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>46.40%</td>
<td>74.60%</td>
<td>42.30%</td>
<td>66.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>87.10%</td>
<td>75.60%</td>
<td>68.00%</td>
<td>84.50%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>79.90%</td>
<td>80.30%</td>
<td>N/A</td>
<td>61.10%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1000</td>
<td>4000</td>
<td>149</td>
<td>1000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1290</td>
<td>4600</td>
<td>149</td>
<td>2150</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>850</td>
<td>2340</td>
<td>149</td>
<td>1436</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>65.89%</td>
<td>50.87%</td>
<td>NI</td>
<td>66.79%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Boreholes</td>
<td>Riviersonderend</td>
<td>Oog - Spring</td>
<td>Three boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>27.46%</td>
<td>25.16%</td>
<td>35.73%</td>
<td>24.67%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>25.90%</td>
<td>NI</td>
<td>21.50%</td>
<td>32.60%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Suiderstrand</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>--------</td>
<td>--------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td><strong>88.08%</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>62.30%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>83.80%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>70.40%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>50.00%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Two boreholes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td><strong>12.10%</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td><strong>17.80%</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Technical Site Assessment: Bredasdorp WTW (Cape Agulhas LM) – 91.4% and Ruensveld West WTW (Overberg Water Board) – 84%*
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>35.87%</td>
</tr>
<tr>
<td>2014</td>
<td>39.96%</td>
</tr>
<tr>
<td>2012</td>
<td>80.39%</td>
</tr>
<tr>
<td>2011</td>
<td>51.05%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Citrusdal</th>
<th>Clanwilliam</th>
<th>Elands Bay</th>
<th>Graafwater</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>38.05%</td>
</tr>
<tr>
<td>2014</td>
<td>45.29%</td>
</tr>
<tr>
<td>2012</td>
<td>82.92%</td>
</tr>
<tr>
<td>2011</td>
<td>55.76%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>32.80%</td>
</tr>
<tr>
<td>2014</td>
<td>37.48%</td>
</tr>
<tr>
<td>2012</td>
<td>73.43%</td>
</tr>
<tr>
<td>2011</td>
<td>40.22%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>32.80%</td>
</tr>
<tr>
<td>2014</td>
<td>27.54%</td>
</tr>
<tr>
<td>2012</td>
<td>79.57%</td>
</tr>
<tr>
<td>2011</td>
<td>53.33%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>35.58%</td>
</tr>
<tr>
<td>2014</td>
<td>56.10%</td>
</tr>
<tr>
<td>2012</td>
<td>82.20%</td>
</tr>
<tr>
<td>2011</td>
<td>51.49%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>Year</th>
<th>Capacity kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>8 300</td>
</tr>
<tr>
<td>2014</td>
<td>6 900</td>
</tr>
<tr>
<td>2012</td>
<td>1 000</td>
</tr>
<tr>
<td>2011</td>
<td>750</td>
</tr>
</tbody>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>Year</th>
<th>Capacity kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>8 300</td>
</tr>
<tr>
<td>2014</td>
<td>6 900</td>
</tr>
<tr>
<td>2012</td>
<td>1 000</td>
</tr>
<tr>
<td>2011</td>
<td>750</td>
</tr>
</tbody>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>Year</th>
<th>Capacity kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>2 666</td>
</tr>
<tr>
<td>2014</td>
<td>1 964</td>
</tr>
<tr>
<td>2012</td>
<td>535</td>
</tr>
<tr>
<td>2011</td>
<td>675</td>
</tr>
</tbody>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>Year</th>
<th>Utilisation %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>32.12%</td>
</tr>
<tr>
<td>2014</td>
<td>28.46%</td>
</tr>
<tr>
<td>2012</td>
<td>53.50%</td>
</tr>
<tr>
<td>2011</td>
<td>89.93%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

<table>
<thead>
<tr>
<th>Resource</th>
<th>Citrusdal</th>
<th>Clanwilliam</th>
<th>Elands Bay</th>
<th>Graafwater</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olifant River</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Clanwilliam, Jan Dissals</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Boreholes</td>
<td>-</td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Boreholes</td>
<td>-</td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>22.04%</td>
</tr>
<tr>
<td>2014</td>
<td>39.41%</td>
</tr>
<tr>
<td>2012</td>
<td>35.85%</td>
</tr>
<tr>
<td>2011</td>
<td>43.32%</td>
</tr>
</tbody>
</table>

### BDRR 2023

<table>
<thead>
<tr>
<th>BDRR</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>17.70%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Citrusdal WTW – 51%
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>98.12%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>95.86%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>98.14%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>97.61%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Cape Town</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>98.12%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>96.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>98.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>98.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 668 200</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 400 200</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>808 423</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>64.55%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Steenbras lower dam; Theewaterskloof dam via the Kleinplaas balancing dam; Wemmershoek dam and Theewaterskloof dam; De Villiers Dam (Primary source), Victoria Dam and Alexandra dam – Indirect sources; Voel</td>
</tr>
<tr>
<td>BDPR 2023</td>
<td>%</td>
<td>30.95%</td>
</tr>
<tr>
<td>BDPR 2022</td>
<td>%</td>
<td>25.70%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment:** Faure WTP – 98%, Steenbras WTW – 93%
### 13.10 Drakenstein Local Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>94.10%</td>
</tr>
<tr>
<td>2014</td>
<td>72.14%</td>
</tr>
<tr>
<td>2012</td>
<td>96.29%</td>
</tr>
<tr>
<td>2011</td>
<td>95.72%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Bainskloof</th>
<th>Drakenstein</th>
<th>Gouda</th>
<th>Hermon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>CoCT MM</td>
<td>WCDM Bulk</td>
<td>CoCT MM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>87.05%</td>
</tr>
<tr>
<td>2014</td>
<td>50.50%</td>
</tr>
<tr>
<td>2012</td>
<td>95.10%</td>
</tr>
<tr>
<td>2011</td>
<td>96.80%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Design Capacity</th>
<th>Available Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>kL/d</td>
<td>400</td>
<td>194 570</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capacity Utilisation</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.50%</td>
<td>83.65%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th>BDRR 2023</th>
<th>BDRR 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Witte River</td>
<td>19.16%</td>
<td>15.50%</td>
</tr>
<tr>
<td>Groundwater, Bethel &amp; Nantes dams on Paarl Mountain Berg River via Victoria Dam, Spruit River &amp; Antoniesvlei Diversion (Withoogte Dam)</td>
<td>31.80%</td>
<td>33.60%</td>
</tr>
<tr>
<td>Channel conveying water from the Voëlvlei Dam</td>
<td>27.63%</td>
<td>NI</td>
</tr>
<tr>
<td>Voëlvlei Dam</td>
<td>18.44%</td>
<td>NI</td>
</tr>
</tbody>
</table>

#### Technical Site Assessment: Welvanpas WTP – 96.3%

- **Weight**: 96.3%
### George Local Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>94.95%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>82.77%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>98.12%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>96.26%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>George</th>
<th>Haarlem</th>
<th>Uniondale</th>
<th>Wilderness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>%</td>
<td>95.15%</td>
<td>89.30%</td>
<td>94.50%</td>
<td>92.20%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2014</strong></td>
<td>%</td>
<td>83.33%</td>
<td>64.28%</td>
<td>76.18%</td>
<td>75.65%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2012</strong></td>
<td>%</td>
<td>98.60%</td>
<td>N/A</td>
<td>N/A</td>
<td>85.50%</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2011</strong></td>
<td>%</td>
<td>96.30%</td>
<td>N/A</td>
<td>N/A</td>
<td>95.00%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>45 000</td>
<td>1 000</td>
<td>1 500</td>
<td>1 500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>45 000</td>
<td>720</td>
<td>1 500</td>
<td>1 500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>29 002</td>
<td>500</td>
<td>846</td>
<td>984</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>68.01%</td>
<td>69.44%</td>
<td>56.40%</td>
<td>65.60%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Garden Route Dam &amp; Malgas Pumping Scheme</td>
<td>Kammanassie/Haarlem Dam</td>
<td>Kammanassie River</td>
<td>Touws River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>29.17%</td>
<td>17.70%</td>
<td>16.90%</td>
<td>19.18%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>41.10%</td>
<td>31.60%</td>
<td>27.60%</td>
<td>25.90%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: New George WTW – 84%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>50.12%</td>
<td>55.18%</td>
<td>35.59%</td>
<td>14.10%</td>
</tr>
</tbody>
</table>

### Key Performance Area

#### Weight

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Albertinia</th>
<th>Garcia</th>
<th>Gouritsmond</th>
<th>Heidelberg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Overberg Water</td>
</tr>
</tbody>
</table>

#### Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>57.48%</td>
<td>48.13%</td>
<td>41.63%</td>
<td>82.07%</td>
</tr>
</tbody>
</table>

#### System Design Capacity

<table>
<thead>
<tr>
<th></th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Design Capacity</td>
<td>2000</td>
<td>180</td>
<td>180</td>
<td>5000</td>
</tr>
</tbody>
</table>

#### System Available Capacity

<table>
<thead>
<tr>
<th></th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Available Capacity</td>
<td>1520</td>
<td>180</td>
<td>150</td>
<td>5000</td>
</tr>
</tbody>
</table>

#### System Input Value

<table>
<thead>
<tr>
<th></th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Input Value</td>
<td>583</td>
<td>180</td>
<td>247</td>
<td>1054</td>
</tr>
</tbody>
</table>

#### Capacity Utilisation

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>%</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Utilisation</td>
<td>38.35%</td>
<td>100.00%</td>
<td>164.60%</td>
<td>63.26%</td>
</tr>
</tbody>
</table>

#### Resource Abstracted From

<table>
<thead>
<tr>
<th></th>
<th>Boreholes</th>
<th>Vet</th>
<th>Boreholes</th>
<th>Duiwenhoks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### BDRR

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>23.51%</td>
<td>28.90%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>23.60%</td>
<td>35.30%</td>
</tr>
</tbody>
</table>

### Key Performance Area

#### Weight

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Jongensfontein</th>
<th>Melkhoutfontein</th>
<th>Riversdale</th>
<th>Slangrivier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Overberg Water</td>
</tr>
</tbody>
</table>

#### Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>29.98%</td>
<td>53.21%</td>
<td>55.48%</td>
<td>80.15%</td>
</tr>
</tbody>
</table>

#### System Design Capacity

<table>
<thead>
<tr>
<th></th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Design Capacity</td>
<td>350</td>
<td>1000</td>
<td>4000</td>
<td>5000</td>
</tr>
</tbody>
</table>

#### System Available Capacity

<table>
<thead>
<tr>
<th></th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Available Capacity</td>
<td>1133</td>
<td>1000</td>
<td>4000</td>
<td>5000</td>
</tr>
</tbody>
</table>

#### System Input Value

<table>
<thead>
<tr>
<th></th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
<th>kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Input Value</td>
<td>132</td>
<td>1000</td>
<td>2410</td>
<td>1054</td>
</tr>
</tbody>
</table>

#### Capacity Utilisation

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>%</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Utilisation</td>
<td>99.96%</td>
<td>100.00%</td>
<td>60.26%</td>
<td>63.26%</td>
</tr>
</tbody>
</table>

#### Resource Abstracted From

<table>
<thead>
<tr>
<th></th>
<th>Fountain</th>
<th>Fountain</th>
<th>Korentepoort River</th>
<th>Duiwenhoks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### BDRR

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>57.02%</td>
<td>34.40%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>26.10%</td>
<td>32.60%</td>
</tr>
</tbody>
</table>

### Key Performance Area

#### Weight

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Still Bay</th>
<th>Witsand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>Overberg Water</td>
</tr>
</tbody>
</table>

#### Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>36.23%</td>
<td>77.39%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Still Bay</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>44.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>20.45%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>27.38%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>2 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>2 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>6 417</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>320.85%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olienhoutfontein, Grootand and Hawe fountains</td>
<td></td>
<td>Duiwenhoks</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>61.30%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>57.90%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Riversdale WTW – 77%**

The Regulator note the dire state of management and drinking water quality in the Jongensfontein water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>25.79%</td>
</tr>
<tr>
<td>2014</td>
<td>31.66%</td>
</tr>
<tr>
<td>2012</td>
<td>28.47%</td>
</tr>
<tr>
<td>2011</td>
<td>55.50%</td>
</tr>
</tbody>
</table>

### Key Performance Area Table

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Calitzdorp</th>
<th>Ladismith</th>
<th>Van Wyksdorp</th>
<th>Zoar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>35.03%</td>
<td>23.93%</td>
<td>22.83%</td>
<td>22.48%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>41.58%</td>
<td>32.39%</td>
<td>20.57%</td>
<td>25.46%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>29.90%</td>
<td>29.50%</td>
<td>25.40%</td>
<td>21.20%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>60.30%</td>
<td>70.30%</td>
<td>31.50%</td>
<td>35.80%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Design Capacity</th>
<th>kL/d</th>
<th>Calitzdorp</th>
<th>Ladismith</th>
<th>Van Wyksdorp</th>
<th>Zoar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 600</td>
<td>2 500</td>
<td>600</td>
<td>1 400</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Available Capacity</th>
<th>kL/d</th>
<th>Calitzdorp</th>
<th>Ladismith</th>
<th>Van Wyksdorp</th>
<th>Zoar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 200</td>
<td>2 500</td>
<td>600</td>
<td>1 400</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Input Value</th>
<th>kL/d</th>
<th>Calitzdorp</th>
<th>Ladismith</th>
<th>Van Wyksdorp</th>
<th>Zoar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 000</td>
<td>3 083</td>
<td>93</td>
<td>983</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capacity Utilisation</th>
<th>%</th>
<th>Calitzdorp</th>
<th>Ladismith</th>
<th>Van Wyksdorp</th>
<th>Zoar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>83.33%</td>
<td>123.32%</td>
<td>15.50%</td>
<td>70.21%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Abstracted From</th>
<th>Calitzdorp Dam</th>
<th>Boreholes &amp; Swartbergrivier</th>
<th>Buffelsfontein River</th>
<th>Tierkloof Dam</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>47.90%</td>
<td>75.54%</td>
<td>65.81%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>89.20%</td>
<td>97.20%</td>
<td>97.40%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Ladismith WTW – 72%

The Regulator note the dire state of management and drinking water quality in the Ladismith, Van Wyksdorp and Zoar water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td><strong>2023</strong></td>
<td>78.85%</td>
<td>61.62%</td>
<td>92.00%</td>
<td>89.76%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Buffalo Bay</th>
<th>Karatara</th>
<th>Knysna</th>
<th>Rheenendal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>72.94%</td>
<td>80.81%</td>
<td>78.95%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>62.62%</td>
<td>65.76%</td>
<td>59.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>85.90%</td>
<td>98.00%</td>
<td>94.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>84.00%</td>
<td>92.60%</td>
<td>90.40%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>300</td>
<td>960</td>
<td>21 750</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>300</td>
<td>277</td>
<td>21 500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>71</td>
<td>146</td>
<td>8 758</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>23.67%</td>
<td>52.71%</td>
<td>40.73%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Goukamma River</td>
<td>Karatara River</td>
<td>Knysna River, Gouna River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>32.34%</td>
<td>16.20%</td>
<td>22.97%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>20.90%</td>
<td>22.30%</td>
<td>21.90%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Sedgefield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Knysna WTW – 79%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>47.81%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>26.06%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>71.16%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>80.54%</td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Bulk/WSP</th>
<th>Weight</th>
<th>Laingsburg</th>
<th>Matjiesfontein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>54.71%</td>
<td>39.63%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>27.59%</td>
<td>22.02%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>73.30%</td>
<td>71.00%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>83.70%</td>
<td>64.80%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>3 000</td>
<td>500</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 585</td>
<td>7 884</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>1 283</td>
<td>1 083</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>80.95%</td>
<td>13.74%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Boreholes</td>
<td>Boreholes</td>
</tr>
<tr>
<td>BDWR 2023</td>
<td>%</td>
<td>28.19%</td>
<td>37.85%</td>
</tr>
<tr>
<td>BDWR 2022</td>
<td>%</td>
<td>48.70%</td>
<td>69.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Laingsburg Reservoir – 74%**
## Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>2023</th>
<th>2014</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score</td>
<td>44.67%</td>
<td>72.30%</td>
<td>51.62%</td>
<td>32.39%</td>
</tr>
</tbody>
</table>

## Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Ashton</th>
<th>Bonnievale</th>
<th>McGregor</th>
<th>Montagu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Ashton

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>33.85%</th>
<th>48.45%</th>
<th>43.85%</th>
<th>42.75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>78.05%</td>
<td>69.99%</td>
<td>71.73%</td>
<td>64.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>48.99%</td>
<td>48.31%</td>
<td>58.26%</td>
<td>43.31%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>33.50%</td>
<td>33.50%</td>
<td>48.50%</td>
<td>29.48%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>11 910</td>
<td>20 000</td>
<td>2 000</td>
<td>6 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>11 910</td>
<td>20 000</td>
<td>2 000</td>
<td>6 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>5 242</td>
<td>20 000</td>
<td>1 017</td>
<td>2 993</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>44.02%</td>
<td>NI</td>
<td>50.87%</td>
<td>49.88%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Bree</td>
<td>Bree</td>
<td>Breede river</td>
<td>Bree</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>32.98%</td>
<td>42.61%</td>
<td>22.64%</td>
<td>31.99%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>19.20%</td>
<td>19.70%</td>
<td>21.40%</td>
<td>34.80%</td>
</tr>
</tbody>
</table>

### Robertson

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>43.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>64.06%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>43.31%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>29.48%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>10 800</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>10 800</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>7 332</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>67.89%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Breede River, Hoopsrivier Irrigation Scheme, Dassieshoek and Kooskok Dams</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>33.48%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>26.80%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Ashton WTW – 70%**
### Matzikama Local Municipality

#### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td></td>
<td>55.23%</td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td>48.64%</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td>70.29%</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td>32.98%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Bitterfontein</th>
<th>Ebenhaezer</th>
<th>Klawer</th>
<th>Kliprand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 57.79%</td>
<td>55.43%</td>
<td>55.43%</td>
<td>52.60%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 64.16%</td>
<td>44.61%</td>
<td>52.48%</td>
<td>37.79%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 92.00%</td>
<td>63.10%</td>
<td>80.80%</td>
<td>64.50%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% 95.60%</td>
<td>32.00%</td>
<td>53.20%</td>
<td>60.70%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d 1728</td>
<td>2592</td>
<td>1728</td>
<td>60</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d 624</td>
<td>2592</td>
<td>1728</td>
<td>60</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d 390</td>
<td>2384</td>
<td>205</td>
<td>60</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>% 62.50%</td>
<td>91.98%</td>
<td>11.86%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Ground water</td>
<td>Olifants</td>
<td>Olifants</td>
<td>Kliprand Boreholes</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>% 16.99%</td>
<td>37.52%</td>
<td>20.57%</td>
<td>16.65%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>% 32.40%</td>
<td>25.80%</td>
<td>23.00%</td>
<td>53.20%</td>
</tr>
</tbody>
</table>

#### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Koekenaap</th>
<th>Lutzville</th>
<th>Lutzville West</th>
<th>Vredendal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 49.30%</td>
<td>52.43%</td>
<td>53.71%</td>
<td>55.65%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 52.81%</td>
<td>54.60%</td>
<td>54.10%</td>
<td>46.74%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 81.80%</td>
<td>73.60%</td>
<td>69.20%</td>
<td>66.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% 33.40%</td>
<td>34.00%</td>
<td>29.60%</td>
<td>28.50%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d 534</td>
<td>2500</td>
<td>144</td>
<td>8 165</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d 288</td>
<td>2500</td>
<td>140</td>
<td>8 165</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d 318</td>
<td>364</td>
<td>150</td>
<td>4 210</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>% 110.42%</td>
<td>14.56%</td>
<td>107.14%</td>
<td>51.56%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Olifants</td>
<td>Olifants</td>
<td>Olifants</td>
<td>Olifants</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>% 38.07%</td>
<td>31.06%</td>
<td>29.52%</td>
<td>31.01%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>% 25.10%</td>
<td>35.00%</td>
<td>27.80%</td>
<td>34.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Vredendal WTW – 50%**
### Municipal Blue Drop Score

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>87.37%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>78.76%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>95.60%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>95.27%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Friemersheim</th>
<th>Hebertsdale</th>
<th>Lodewykstenk</th>
<th>Greater Mossel Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>86.31%</td>
<td>82.93%</td>
<td>79.23%</td>
<td>87.43%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>62.96%</td>
<td>74.66%</td>
<td>68.92%</td>
<td>79.04%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>95.30%</td>
<td>90.50%</td>
<td>90.60%</td>
<td>95.80%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>92.20%</td>
<td>91.90%</td>
<td>90.80%</td>
<td>95.30%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1000</td>
<td>2000</td>
<td>200</td>
<td>55000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>288</td>
<td>290</td>
<td>120</td>
<td>55500</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>151</td>
<td>134</td>
<td>39</td>
<td>25330</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>52.43%</td>
<td>46.21%</td>
<td>32.50%</td>
<td>48.04%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Ernest Robertson Dam &amp; Kleinbos Dam</td>
<td>Boreholes</td>
<td>Boreholes</td>
<td>Wolwedans Dam, Klipheuwel Dam, Ernest Robertson Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>14.98%</td>
<td>12.79%</td>
<td>14.86%</td>
<td>24.31%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>17.30%</td>
<td>30.00%</td>
<td>44.50%</td>
<td>28.40%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Kleinbrak WTW – 80%
# Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>63.91%</td>
</tr>
<tr>
<td>2014</td>
<td>51.29%</td>
</tr>
<tr>
<td>2012</td>
<td>64.58%</td>
</tr>
<tr>
<td>2011</td>
<td>36.88%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>De Rust</th>
<th>Klein Karoo Rural Supply Scheme</th>
<th>Oudtshoorn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>54.33%</td>
<td>78.18%</td>
<td>60.18%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>30.25%</td>
<td>63.33%</td>
<td>49.81%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>47.40%</td>
<td>66.20%</td>
<td>64.70%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>20.20%</td>
<td>26.60%</td>
<td>37.20%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 000</td>
<td>9 000</td>
<td>30 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>395</td>
<td>9 000</td>
<td>20 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>405</td>
<td>3 188</td>
<td>11 176</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>102.53%</td>
<td>35.42%</td>
<td>55.88%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Huisrivier</td>
<td>Boreholes</td>
<td>Koos Raubenheimer Dam</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>30.34%</td>
<td>23.62%</td>
<td>32.56%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>47.30%</td>
<td>34.50%</td>
<td>53.30%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Dysselsdorp WTW (Klein Karoo Rural Supply Scheme) - 73%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>99.99%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>90.79%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>96.82%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>90.56%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Baardskeerdersbos</th>
<th>Buffeljags Bay</th>
<th>Buffelsrivier</th>
<th>Greater Gansbaai</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>99.70%</td>
<td>98.20%</td>
<td>99.99%</td>
<td>99.99%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>63.90%</td>
<td>71.80%</td>
<td>87.20%</td>
<td>88.30%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>91.60%</td>
<td>93.80%</td>
<td>95.00%</td>
<td>97.10%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>93.70%</td>
<td>75.40%</td>
<td>95.10%</td>
<td>95.10%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>185</td>
<td>80</td>
<td>5 500</td>
<td>800</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>28</td>
<td>28</td>
<td>5 500</td>
<td>800</td>
</tr>
<tr>
<td>System Input Value</td>
<td>37</td>
<td>14</td>
<td>2 020</td>
<td>3 743</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>20.00%</td>
<td>50.00%</td>
<td>36.73%</td>
<td>46.22%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Boreholes</td>
<td>Borehole</td>
<td>Buffels River Dam</td>
<td>Klipgat &amp; De Kelders Grotte Fountain, Kraaibosch &amp; Franskraal Dams</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>9.57%</td>
<td>14.21%</td>
<td>15.08%</td>
<td>19.97%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>12.80%</td>
<td>16.20%</td>
<td>16.70%</td>
<td>17.00%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Preekstoel WTP – 94%
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>28.20%</td>
</tr>
<tr>
<td>2014</td>
<td>34.18%</td>
</tr>
<tr>
<td>2012</td>
<td>70.08%</td>
</tr>
<tr>
<td>2011</td>
<td>70.72%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Klaarstroom</th>
<th>Leeugamka</th>
<th>Prince Albert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>19.83%</td>
<td>35.85%</td>
<td>27.53%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>34.76%</td>
<td>39.82%</td>
<td>33.20%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>74.10%</td>
<td>69.00%</td>
<td>68.90%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>73.00%</td>
<td>69.70%</td>
<td>69.70%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>500</td>
<td>500</td>
<td>1 100</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>500</td>
<td>500</td>
<td>1 100</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>469</td>
<td>610</td>
<td>1 100</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>93.80%</td>
<td>122.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Boreholes</td>
<td>Boreholes</td>
<td>Boreholes augmented by Dorpsrivier</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>53.85%</td>
<td>40.81%</td>
<td>51.68%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>42.40%</td>
<td>43.30%</td>
<td>48.10%</td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Prince Albert WTW – 50%

The Regulator notes the dire state of management and drinking water quality in the Klaarstroom and Prince Albert water supply system. The WSI is placed under regulatory surveillance and the Municipal Manager is required to submit a detailed corrective action plan within 20 days of publishing of this report. The plan must map the activities, responsible persons, timelines, and expected improvement as outlined in the Regulatory Comment.
### Municipal Blue Drop Score

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 94.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 69.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 95.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% 87.69</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Hopefield</th>
<th>Langebaan</th>
<th>Saldanha Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulk/WSP</strong></td>
<td></td>
<td>West Coast DM Bulk</td>
<td>West Coast DM Bulk</td>
<td>West Coast DM Bulk</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>% 96.90</td>
<td>92.92%</td>
<td>94.97%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>% 69.40</td>
<td>69.40%</td>
<td>69.40%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>% 95.40</td>
<td>95.40%</td>
<td>95.40%</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>% 87.70</td>
<td>87.70%</td>
<td>87.70%</td>
<td></td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>72 000</td>
<td>72 000</td>
<td>72 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>72 000</td>
<td>72 000</td>
<td>72 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>1 085</td>
<td>6 842</td>
<td>20 936</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>50.00%</td>
<td>50.00%</td>
<td>50.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Misverstand Weir on the Berg River</td>
<td>Misverstand Weir on the Berg River</td>
<td>Misverstand Weir on the Berg River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>% 18.89</td>
<td>18.89%</td>
<td>20.40%</td>
<td></td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>% 27.20</td>
<td>27.20%</td>
<td>27.20%</td>
<td></td>
</tr>
</tbody>
</table>

**Technical Site Assessment:** Swartland WTP – 92% and Withoogte WTP – 95%
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>84.65%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>80.12%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>95.56%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>95.74%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blackheath (City Of Cape Town)</th>
<th>Faure System (City of Cape Town)</th>
<th>Franschhoek</th>
<th>Stellenbosch CBD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>CoCT MM</td>
<td>CoCT MM</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

#### Blue Drop Score 2023

<table>
<thead>
<tr>
<th>%</th>
<th>84.20%</th>
<th>89.45%</th>
<th>62.04%</th>
<th>63.04%</th>
</tr>
</thead>
</table>

### System Design Capacity

| kL/d | 430 000 | 500 000 | 2 000 | 49 000 |

### System Available Capacity

| kL/d | 400 000 | 500 000 | 2 000 | 44 000 |

### System Input Value

| kL/d | 1 675 | 1 990 | 357 | 22 550 |

### Capacity Utilisation

| %                          | 71.75% | 39.00% | 17.85% | 51.84% |

#### Resource Abstracted From

| Theewaterskloof dam via Kleinplaas balancing dam | Rivieronderend, Theewaterskloof dam | Mount Rochelle Fountain | Theewaterskloof dam |

#### BDRR 2023

| %                          | 29.46% | 19.66% | 17.98% | 23.25% |

#### BDRR 2022

| %                          | 23.50% | 22.50% | 26.30% | 39.90% |

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Wemmershoek (City of Cape Town)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>CoCT MM</td>
</tr>
</tbody>
</table>

#### Blue Drop Score 2023

<table>
<thead>
<tr>
<th>%</th>
<th>87.72%</th>
</tr>
</thead>
</table>

#### System Design Capacity

| kL/d | 250 000 |

#### System Available Capacity

| kL/d | 170 000 |

#### System Input Value

| kL/d | 158 228 |

#### Capacity Utilisation

| %                          | 93.08% |

#### Resource Abstracted From

| Wemmershoek dam and Theewaterskloof dam |

#### BDRR 2023

| %                          | 27.31% |

#### BDRR 2022

| %                          | 35.20% |

**Technical Site Assessment: Paradyskloof WTW – 71%**
<table>
<thead>
<tr>
<th>Municipal Blue Drop Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Swartland</th>
<th>Withoogte</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td>West Coast DM Bulk</td>
<td>West Coast DM Bulk</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>93.33%</td>
<td>96.48%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>75.00%</td>
<td>70.50%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>95.20%</td>
<td>95.20%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>92.90%</td>
<td>92.90%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>29 100</td>
<td>72 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>29 100</td>
<td>72 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>12 810</td>
<td>2 050</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>51.55%</td>
<td>50.00%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Channel conveying water from the Voëlvlei Dam</td>
<td>Misverstand Weir on the Berg River</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>26.55%</td>
<td>18.89%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>30.00%</td>
<td>23.00%</td>
</tr>
</tbody>
</table>

**Technical Site Assessments: Swartland WTP – 92% and Withoogte WTP – 95%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Drop Score 2023</td>
<td>58.59%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>57.25%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>85.16%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>80.50%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Barrydale</th>
<th>Buffelsjagrivier</th>
<th>Suurbraak</th>
<th>Swellendam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>57.11%</td>
<td>37.68%</td>
<td>54.01%</td>
<td>60.11%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>53.71%</td>
<td>45.36%</td>
<td>48.41%</td>
<td>59.73%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>79.90%</td>
<td>69.70%</td>
<td>NI</td>
<td>87.70%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>57.30%</td>
<td>60.10%</td>
<td>NI</td>
<td>90.90%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>1 500</td>
<td>250</td>
<td>500</td>
<td>4 000</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>1 500</td>
<td>250</td>
<td>500</td>
<td>6 000</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>595</td>
<td>227</td>
<td>105</td>
<td>4 010</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>41.33%</td>
<td>90.80%</td>
<td>40.00%</td>
<td>66.83%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Huis e</td>
<td>Buffeljags Dam</td>
<td>Buffeljagsrivier</td>
<td>Klip River; Grootkloof Dam (Storage Dam)</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>20.97%</td>
<td>35.96%</td>
<td>21.39%</td>
<td>35.04%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>29.80%</td>
<td>35.30%</td>
<td>21.10%</td>
<td>35.40%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Swellendam WTW – 68%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>89.56%</td>
</tr>
<tr>
<td>2014</td>
<td>64.18%</td>
</tr>
<tr>
<td>2012</td>
<td>71.50%</td>
</tr>
<tr>
<td>2011</td>
<td>75.41%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Bereaville</th>
<th>Botrivier</th>
<th>Caledon</th>
<th>Genadendal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>Overberg Water</td>
<td>-</td>
</tr>
</tbody>
</table>

**Blue Drop Score 2023**

<table>
<thead>
<tr>
<th>Area</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bereaville</td>
<td>88.10%</td>
</tr>
<tr>
<td>Botrivier</td>
<td>96.55%</td>
</tr>
<tr>
<td>Caledon</td>
<td>84.19%</td>
</tr>
<tr>
<td>Genadendal</td>
<td>78.25%</td>
</tr>
</tbody>
</table>

**Blue Drop Score 2014**

<table>
<thead>
<tr>
<th>Area</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bereaville</td>
<td>0.00%</td>
</tr>
<tr>
<td>Botrivier</td>
<td>70.90%</td>
</tr>
<tr>
<td>Caledon</td>
<td>90.60%</td>
</tr>
<tr>
<td>Genadendal</td>
<td>50.80%</td>
</tr>
</tbody>
</table>

**Blue Drop Score 2012**

<table>
<thead>
<tr>
<th>Area</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bereaville</td>
<td>0.00%</td>
</tr>
<tr>
<td>Botrivier</td>
<td>61.70%</td>
</tr>
<tr>
<td>Caledon</td>
<td>84.30%</td>
</tr>
<tr>
<td>Genadendal</td>
<td>68.70%</td>
</tr>
</tbody>
</table>

**Blue Drop Score 2011**

<table>
<thead>
<tr>
<th>Area</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bereaville</td>
<td>0.00%</td>
</tr>
<tr>
<td>Botrivier</td>
<td>76.40%</td>
</tr>
<tr>
<td>Caledon</td>
<td>8.60%</td>
</tr>
<tr>
<td>Genadendal</td>
<td>75.30%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>Area</th>
<th>Design Capacity kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bereaville</td>
<td>350</td>
</tr>
<tr>
<td>Botrivier</td>
<td>1600</td>
</tr>
<tr>
<td>Caledon</td>
<td>11 900</td>
</tr>
<tr>
<td>Genadendal</td>
<td>300</td>
</tr>
</tbody>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>Area</th>
<th>Available Capacity kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bereaville</td>
<td>350</td>
</tr>
<tr>
<td>Botrivier</td>
<td>1600</td>
</tr>
<tr>
<td>Caledon</td>
<td>11 900</td>
</tr>
<tr>
<td>Genadendal</td>
<td>300</td>
</tr>
</tbody>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>Area</th>
<th>Input Value kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bereaville</td>
<td>172</td>
</tr>
<tr>
<td>Botrivier</td>
<td>1017</td>
</tr>
<tr>
<td>Caledon</td>
<td>4 380</td>
</tr>
<tr>
<td>Genadendal</td>
<td>259</td>
</tr>
</tbody>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>Area</th>
<th>Utilisation %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bereaville</td>
<td>49.14%</td>
</tr>
<tr>
<td>Botrivier</td>
<td>63.56%</td>
</tr>
<tr>
<td>Caledon</td>
<td>56.46%</td>
</tr>
<tr>
<td>Genadendal</td>
<td>86.33%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

- **Bereaville**:
  - Weir in the Sonderend Mountain and a borehole

- **Botrivier**:
  - Six boreholes

- **Caledon**:
  - Sonderend River (OVM), Two boreholes and Bazil Newmark Dam (WSI)

- **Genadendal**:
  - Weir in the Upper Baviaans River

### BDRR 2023

<table>
<thead>
<tr>
<th>Area</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bereaville</td>
<td>15.47%</td>
</tr>
<tr>
<td>Botrivier</td>
<td>15.98%</td>
</tr>
<tr>
<td>Caledon</td>
<td>41.90%</td>
</tr>
<tr>
<td>Genadendal</td>
<td>28.79%</td>
</tr>
</tbody>
</table>

### BDRR 2022

<table>
<thead>
<tr>
<th>Area</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bereaville</td>
<td>25.70%</td>
</tr>
<tr>
<td>Botrivier</td>
<td>16.10%</td>
</tr>
<tr>
<td>Caledon</td>
<td>44.10%</td>
</tr>
<tr>
<td>Genadendal</td>
<td>44.00%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Grabouw</th>
<th>Greyton</th>
<th>Riviersonderend</th>
<th>Tесселярс达尔</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Blue Drop Score 2023**

<table>
<thead>
<tr>
<th>Area</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grabouw</td>
<td>92.05%</td>
</tr>
<tr>
<td>Greyton</td>
<td>93.20%</td>
</tr>
<tr>
<td>Riviersonderend</td>
<td>88.95%</td>
</tr>
<tr>
<td>Tесселярс达尔</td>
<td>83.03%</td>
</tr>
</tbody>
</table>

**Blue Drop Score 2014**

<table>
<thead>
<tr>
<th>Area</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grabouw</td>
<td>57.90%</td>
</tr>
<tr>
<td>Greyton</td>
<td>50.70%</td>
</tr>
<tr>
<td>Riviersonderend</td>
<td>61.70%</td>
</tr>
<tr>
<td>Tесселярс达尔</td>
<td>49.10%</td>
</tr>
</tbody>
</table>

**Blue Drop Score 2012**

<table>
<thead>
<tr>
<th>Area</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grabouw</td>
<td>65.30%</td>
</tr>
<tr>
<td>Greyton</td>
<td>54.50%</td>
</tr>
<tr>
<td>Riviersonderend</td>
<td>58.10%</td>
</tr>
<tr>
<td>Tесселярс达尔</td>
<td>60.70%</td>
</tr>
</tbody>
</table>

**Blue Drop Score 2011**

<table>
<thead>
<tr>
<th>Area</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grabouw</td>
<td>64.10%</td>
</tr>
<tr>
<td>Greyton</td>
<td>79.60%</td>
</tr>
<tr>
<td>Riviersonderend</td>
<td>67.50%</td>
</tr>
<tr>
<td>Tесселярс达尔</td>
<td>76.40%</td>
</tr>
</tbody>
</table>

### System Design Capacity

<table>
<thead>
<tr>
<th>Area</th>
<th>Design Capacity kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grabouw</td>
<td>15 000</td>
</tr>
<tr>
<td>Greyton</td>
<td>1 800</td>
</tr>
<tr>
<td>Riviersonderend</td>
<td>2 400</td>
</tr>
<tr>
<td>Tесселярс达尔</td>
<td>200</td>
</tr>
</tbody>
</table>

### System Available Capacity

<table>
<thead>
<tr>
<th>Area</th>
<th>Available Capacity kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grabouw</td>
<td>15 000</td>
</tr>
<tr>
<td>Greyton</td>
<td>1 800</td>
</tr>
<tr>
<td>Riviersonderend</td>
<td>2 400</td>
</tr>
<tr>
<td>Tесселярс达尔</td>
<td>500</td>
</tr>
</tbody>
</table>

### System Input Value

<table>
<thead>
<tr>
<th>Area</th>
<th>Input Value kL/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grabouw</td>
<td>4 572</td>
</tr>
<tr>
<td>Greyton</td>
<td>629</td>
</tr>
<tr>
<td>Riviersonderend</td>
<td>979</td>
</tr>
<tr>
<td>Tесселярс达尔</td>
<td>140</td>
</tr>
</tbody>
</table>

### Capacity Utilisation

<table>
<thead>
<tr>
<th>Area</th>
<th>Utilisation %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grabouw</td>
<td>30.48%</td>
</tr>
<tr>
<td>Greyton</td>
<td>34.94%</td>
</tr>
<tr>
<td>Riviersonderend</td>
<td>40.79%</td>
</tr>
<tr>
<td>Tесселярс达尔</td>
<td>28.00%</td>
</tr>
</tbody>
</table>

### Resource Abstracted From

- **Grabouw**:
  - Eikenhof Dam

- **Greyton**:
  - Wolwekloof weir and Gobos Weir

- **Riviersonderend**:
  - Olfantsbos and Sonderend River

- **Tесселярс达尔**:
  - Borehole

### BDRR 2023

<table>
<thead>
<tr>
<th>Area</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grabouw</td>
<td>21.79%</td>
</tr>
<tr>
<td>Greyton</td>
<td>16.78%</td>
</tr>
<tr>
<td>Riviersonderend</td>
<td>17.84%</td>
</tr>
<tr>
<td>Tесселярс达尔</td>
<td>22.00%</td>
</tr>
</tbody>
</table>

### BDRR 2022

<table>
<thead>
<tr>
<th>Area</th>
<th>Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grabouw</td>
<td>42.70%</td>
</tr>
<tr>
<td>Greyton</td>
<td>29.20%</td>
</tr>
<tr>
<td>Riviersonderend</td>
<td>21.10%</td>
</tr>
<tr>
<td>Tесселярс达尔</td>
<td>21.70%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Bulk/WSP</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Grabouw WTP – 82%**
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>%</th>
<th>Blue Drop Score 2014</th>
<th>%</th>
<th>Blue Drop Score 2012</th>
<th>%</th>
<th>Blue Drop Score 2011</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>80.95</td>
<td></td>
<td><strong>Blue Drop Score 2014</strong></td>
<td>95.77</td>
<td><strong>Blue Drop Score 2012</strong></td>
<td>97.63</td>
<td><strong>Blue Drop Score 2011</strong></td>
<td>97.56</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Ceres WTW</th>
<th>Op die Berg WTW</th>
<th>Prince Alfred Hamlet WTW</th>
<th>Tulbagh WTW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Blue Drop Score 2023</strong></td>
<td>% 80.86</td>
<td>81.06%</td>
<td>81.36%</td>
<td>81.46%</td>
<td></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2014</strong></td>
<td>% 95.84</td>
<td>95.06%</td>
<td>95.09%</td>
<td>95.89%</td>
<td></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2012</strong></td>
<td>% 98.44</td>
<td>96.36%</td>
<td>96.51%</td>
<td>95.64%</td>
<td></td>
</tr>
<tr>
<td><strong>Blue Drop Score 2011</strong></td>
<td>% 98.75</td>
<td>95.00%</td>
<td>98.19%</td>
<td>95.68%</td>
<td></td>
</tr>
<tr>
<td><strong>System Design Capacity</strong></td>
<td>kL/d 44 100</td>
<td>700</td>
<td>4 670</td>
<td>3 807</td>
<td></td>
</tr>
<tr>
<td><strong>System Available Capacity</strong></td>
<td>kL/d 44 064</td>
<td>700</td>
<td>4 670</td>
<td>3 807</td>
<td></td>
</tr>
<tr>
<td><strong>System Input Value</strong></td>
<td>kL/d 10 890</td>
<td>405</td>
<td>2 919</td>
<td>2 135</td>
<td></td>
</tr>
<tr>
<td><strong>Capacity Utilisation</strong></td>
<td>% 24.71%</td>
<td>57.83%</td>
<td>62.51%</td>
<td>56.08%</td>
<td></td>
</tr>
<tr>
<td><strong>Resource Abstracted From</strong></td>
<td>Ceres</td>
<td>Boreholes</td>
<td>Cutting Fountain Spring &amp; PAH Waboomsriver</td>
<td>Moordeniskloof Fountain; Kleinberg River, Steinhal Fountain, BH (not in use)</td>
<td></td>
</tr>
<tr>
<td><strong>BDRR 2023</strong></td>
<td>% 22.52%</td>
<td>18.35%</td>
<td>22.66%</td>
<td>25.92%</td>
<td></td>
</tr>
<tr>
<td><strong>BDRR 2022</strong></td>
<td>% 24.80%</td>
<td>22.70%</td>
<td>25.00%</td>
<td>30.40%</td>
<td></td>
</tr>
</tbody>
</table>

### Technical Site Assessment: Ceres WTW – 80%
Witzenberg WTW: Pumpstation and motor control centre in mint condition

City of Cape Town: Mixing chamber receives softened influent, bypass and water from Melkbos.
Singular Synopsis

SANParks provides drinking water to a total population of 5,800 persons in South Africa.

An audit attendance record of 100% affirms the SANParks commitment to the Blue Drop national incentive-based regulatory programme. SANParks has 13 water supply systems in total.

No water supply system scored a minimum of 95% when measured against the Blue Drop standards for the audited period and thus no system qualified for the prestigious Blue Drop Certification. The audit nonetheless established an accurate, current baseline from where improvement can be driven, and excellence be incentivised. No water supply system was identified to be in a critical state.

SANParks overall Blue Drop performance is characterised by particular strengths in KPA 1 Capacity management, KPA 3 Financial Management and KPA 5 Drinking Water Quality Compliance with scores >50%. The KPAs that require attention for all the water supply systems that are reflecting scores <50% are KPA 2 DWQ Risk Management (19% average) and KPA 4 Technical Management (30.5% average). SANParks need to improve on their risk management practices and embed it in their water supply business.

The SANParks BDRR/BDRRmax is 27.2 % in 2023. 12 (of 13) water supply systems are situated in the low risk category, and only 1 WSS in the medium risk category. No systems are situated in the high and critical risk categories.

The Regulator is optimistic that the 2023 Blue Drop report provides an updated residual basis from where a positive trajectory for water services delivery and improved performance will follow in the next BD audit. SANParks is encouraged to start preparation for the next Blue Drop audit cycle, which is planned to cover the financial year 2023/24 and released in 2025. The 2023 Blue Drop status for SANParks is summarised in the table below.

<table>
<thead>
<tr>
<th>WSS Name</th>
<th>2014 BD Score (%)</th>
<th>2023 BD Score (%)</th>
<th>2023 BD Certified ≥95%</th>
<th>2023 Critical State (&lt;31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skukuza 1</td>
<td>NA</td>
<td>61.9%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Skukuza 2</td>
<td>NA</td>
<td>56.8%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Balule</td>
<td>NA</td>
<td>52.5%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Crocodile Bridge</td>
<td>NA</td>
<td>53.7%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>GPP</td>
<td>NA</td>
<td>53.1%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Kruger Gate</td>
<td>NA</td>
<td>50.6%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Letaba</td>
<td>NA</td>
<td>53.0%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Malelane</td>
<td>NA</td>
<td>55.4%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Nkuhlu</td>
<td>NA</td>
<td>53.5%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Phabene</td>
<td>NA</td>
<td>58.6%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Shingwedzi</td>
<td>NA</td>
<td>53.3%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Lower Sabie</td>
<td>NA</td>
<td>58.4%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Olifants</td>
<td>NA</td>
<td>53.4%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Totals</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The Department of Water and Sanitation acknowledges the excellence in water services management achieved for the Blue Drop Audit year of 2023. No Blue Drop Certificates are awarded to SANParks.

Background to Water Delivery and Distribution Infrastructure

The total volume of water treated in SANParks is 2,442 kl/d. There are 13 WSSs, delivering water services through a water treatment delivery and distribution network comprising of:

- 13 WTWs with the bulk of the water treated and supplied by the Skukuza 1 and 2 WTWs with a total 864 kl/d followed by Lower Sabie with 480 kl/d; and
- 13 pump stations, 96 km bulk water supply lines, km reticulation pipe lines not known, and 30 reservoirs/ towers.
### Table 252 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes

<table>
<thead>
<tr>
<th>Capacities, Daily Production and SIV</th>
<th>Micro Size Plants</th>
<th>Small Size Plants</th>
<th>Medium Size Plants</th>
<th>Large Size Plants</th>
<th>Macro Size Plants</th>
<th>Unknown (NI)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of WTWs, Boreholes, Springs</td>
<td>11</td>
<td>2</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>No. of WSS</td>
<td>11</td>
<td>2</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Total Design Capacity (kl/day)</td>
<td>3,790</td>
<td>2,280</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>6,070</td>
<td>6,070</td>
</tr>
<tr>
<td>Total Available Capacity (kl/day)</td>
<td>3,790</td>
<td>2,280</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>6,070</td>
<td>6,070</td>
</tr>
<tr>
<td>Average Daily Treatment Volume (kl/day)</td>
<td>1,662</td>
<td>780</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>2,442</td>
<td>2,442</td>
</tr>
<tr>
<td>Total SIV (kl/day)</td>
<td>1,562</td>
<td>787</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>2,349</td>
<td>2,349</td>
</tr>
<tr>
<td>Design Capacity Utilisation (%)</td>
<td>44%</td>
<td>34%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>Available Capacity Utilisation (%)</td>
<td>44%</td>
<td>34%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>40%</td>
<td>40%</td>
</tr>
</tbody>
</table>

* "Unknown" means the number of WTWs with NI (No Information) on design capacity or available capacity or SIV.

There is a total installed design capacity of 6,070 kL/d and a total available design capacity of 6,070 kL/d with all this capacity residing in micro and small-sized water treatment plants. Collectively, the 13 WTWs produce 2,442 kL/d and distributes 2,349 kL/d across the water networks. By comparing the available treatment capacity with the treated water volume, a spare treatment capacity of 3,628 kL/d is available to meet additional future demands. However, the WUE for SANParks is high (405 l/p/d) compared to the international WUE benchmark of 180 l/p/d, indicating a high ratio between effective water use and actual water abstraction.

![Capacities, Daily Production and SIV Distribution for the micro and small sized WTWs](image)

The total SIV in the SANParks is 2,349 kL/d and the average daily treatment volume is 2,442 kL/d and this indicates that the treated volume is slightly higher than the total SIV. The largest contributors to the total SIV for 3 WSSs are from Skukuza 1 and 2 and Lower Sabie with a total SIV contribution of 1,251 kL/d (53%). Diagnostic no. 2 to follow herein will unpack these statistics in more detail. The audit data shows that 5 systems have daily treated volumes that are exceeding the authorised daily abstraction volumes. The water distribution infrastructure is summarised in the table below.

### Table 253 - Summary of Water Distribution Infrastructure

<table>
<thead>
<tr>
<th>WSS Name</th>
<th># WSS</th>
<th>Water Distribution Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td># Pump Stations (#)</td>
</tr>
<tr>
<td>Skukuza 1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Skukuza 2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Balule</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Crocodile Bridge</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>GPP</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Kruger Gate</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Letaba</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Malelane</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nkuhlu</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Phabene</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Shingwedzi</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Lower Sabie</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Olifants</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>13</strong></td>
<td><strong>13</strong></td>
</tr>
</tbody>
</table>
Blue Drop Analysis

The 100% response for the 13 WSSs audited during the Blue Drop process demonstrates a firm commitment to water services management in the SANParks.

Table 254 - Blue Drop Comparative Analysis

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>2012</th>
<th>2014</th>
<th>2023</th>
<th>Performance trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSSs assessed (#)</td>
<td>NA</td>
<td>NA</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Water supply systems assessed (#)</td>
<td>NA</td>
<td>NA</td>
<td>13</td>
<td>100%</td>
</tr>
<tr>
<td>Blue Drop scores ≥50% (#)</td>
<td>NA</td>
<td>NA</td>
<td>13</td>
<td>100%</td>
</tr>
<tr>
<td>Blue Drop scores &lt;50% (#)</td>
<td>NA</td>
<td>NA</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Blue Drop Certifications (#)</td>
<td>NA</td>
<td>NA</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Technical Site Assessment Score (%)</td>
<td>NA</td>
<td>NA</td>
<td>78%</td>
<td></td>
</tr>
</tbody>
</table>

NA = Not Applied  0 = None

No trend analysis could be undertaken as SANParks was not assessed in the previous blue drop audit cycles. All system scores are in the >50–<80% (Average Performance) category. There are no systems in critical state (<31%).

BDRR Analysis

The Blue Drop Risk Rating (BDRR) analysis focuses predominantly on the water treatment function, with some risk indicators including water quality and risk management at reservoir and network systems. The BDRR formula was updated in 2021 to include an added risk indicator, E: Water Safety Plans, to address the risk assessment requirements outlined on SANS 241-2015. The BDRR now contains 5 risk indicators, i.e. design capacity (A), operational capacity (B), water quality compliance (C), technical capacity (D), and water safety plans (E).

Table 255 - BDRR/BDRRmax Comparative Analysis

<table>
<thead>
<tr>
<th>WSS Name</th>
<th># WSSs</th>
<th># WBs/ WSPs</th>
<th>2022 (BD PAT)</th>
<th>2023 (BD Audit)</th>
<th>Performance Trend 2022 and 2023</th>
<th>BDRR Risk Category Split</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skukuza 1</td>
<td>1</td>
<td>None</td>
<td>NA</td>
<td>22.6%</td>
<td>NA</td>
<td>1</td>
</tr>
<tr>
<td>Skukuza 2</td>
<td>1</td>
<td>NA</td>
<td>16.5%</td>
<td>NA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Balule</td>
<td>1</td>
<td>NA</td>
<td>29.8%</td>
<td>NA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Crocodile Bridge</td>
<td>1</td>
<td>NA</td>
<td>34.6%</td>
<td>NA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>GPP</td>
<td>1</td>
<td>NA</td>
<td>21.8%</td>
<td>NA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Kruger Gate</td>
<td>1</td>
<td>NA</td>
<td>57.3%</td>
<td>NA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Letaba</td>
<td>1</td>
<td>NA</td>
<td>28.6%</td>
<td>NA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Malelane</td>
<td>1</td>
<td>NA</td>
<td>17.6%</td>
<td>NA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Nkulu</td>
<td>1</td>
<td>NA</td>
<td>21.3%</td>
<td>NA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Phabene</td>
<td>1</td>
<td>NA</td>
<td>20.7%</td>
<td>NA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Shingwedzi</td>
<td>1</td>
<td>NA</td>
<td>39.2%</td>
<td>NA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Lower Sabie</td>
<td>1</td>
<td>NA</td>
<td>18.7%</td>
<td>NA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Olifants</td>
<td>1</td>
<td>NA</td>
<td>25.5%</td>
<td>NA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Totals &amp; %BDRR/BDRRmax</td>
<td>13</td>
<td>24.3%</td>
<td>12</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

No trend analysis could be undertaken as SANParks was not assessed in the previous blue drop audit cycles. All system scores are in the >50–<80% (Average Performance) category. There are no systems in critical state (<31%).
No trend analysis could be undertaken as SANParks was not assessed in the previous blue drop PAT audit cycles.

**Regulatory Enforcement**

Water supply systems which failed to achieve the minimum Blue Drop target of 31%, are placed under regulatory focus. The Regulator requires these WSSs to submit a detailed corrective action (CAP) plan within 20 working days from publishing of this report. None of the 13 WSSs received Blue Drop scores below 31%, and hence no WSSs are being placed under regulatory surveillance, in accordance with the Water Services Act (108 of 1997).

None of the water supply systems are in high and/or critical BDRR risk positions, which reflects on a positive status of the risk indicators, i.e. operational capacity, design capacity utilisation, water quality compliance, technical capacity, and water safety planning. Typically, WTWs in high and critical risk positions pose a serious risk to public health.

**Performance Barometer**

The **Blue Drop Performance Barometer** presents the individual WSS Blue Drop Scores, which essentially reflects the level of mastery that a WSS has achieved in terms of its overall water services business. The bar chart below compares the 2023 BD scores, ranked from highest to lowest performing WSS in 2023. All 13 WSSs are situated in the average performance category with the blue drop scores ranging from 50/6% to 61.9%. This provides a baseline for SANParks to improve on their blue drop scores in the next blue drop audit cycle.

**BDR Risk Barometer**

The **BDR Risk Barometer** expresses the level of risk that a WSA poses in respect of its water supply system. The schematic below presents the BDRR in ascending order – with the low-risk WSAs on the left and higher risk WSAs to the far right. The analysis reveals that there are 12 low risks and 1 medium risk WSSs in the SANParks.
The Blue Drop audit process collects a vast amount of data that yield valuable insight into the state of the water services delivery and water quality in SANParks. These insights have been captured into 5 thematic areas or ‘Diagnostics’, as discussed below.

### Table 256 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs

<table>
<thead>
<tr>
<th>Diagnostic #</th>
<th>Diagnostic Description</th>
<th>Diagnostic Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical Competence</td>
<td>KPA 1, 2 &amp; Bonus</td>
</tr>
<tr>
<td>2</td>
<td>Treatment Capacity and Flow Distribution</td>
<td>KPA 4 &amp; Generic Audit data set</td>
</tr>
<tr>
<td>3</td>
<td>Drinking Water Quality (DWQ) Monitoring and Compliance</td>
<td>KPA 2 &amp; 4 &amp; Bonus</td>
</tr>
<tr>
<td>4</td>
<td>Technical Site Assessments</td>
<td>TSA and 2023 Blue Drop Watch Report</td>
</tr>
<tr>
<td>5</td>
<td>Operation, Maintenance and Refurbishment of Assets</td>
<td>KPA 3 &amp; 4</td>
</tr>
</tbody>
</table>

#### Diagnostic 1: Technical Competence

**Aim:** This focus area assesses the technical human resources capacity that is available to manage and operate water treatment processes and maintain the related water infrastructure. Theory advocates that a correlation exists between human resources capacity and capability (sufficient number of appropriately qualified staff) and a WSI’s performance. Thus, it is hypothesised that high HR capacity would translate to compliant water treatment plants and functional water supply network. Blue Drop assesses technical compliance on two levels: i) WTW plant supervision and process control staff and ii) Technical, scientific and maintenance staff.

#### (i) Plant Supervisors and Process Controllers

**Findings:** According to regulations, water treatment plants are classified as Class A, B, C, D or E plants. Similarly, Process Controllers and Plant Supervisors are registered as Class I, II, III, IV, V or VI Process Controllers. Higher classed plants require a higher level of Process Controllers due to technology complexity and strict water quality standards. Technical compliance of PCs and Supervisors is determined against the Blue Drop standards, as defined by Reg. 2834 of the Water Act 1956 (Act 54 of 1956) for the erection, enlargement, operation, and registration of water care works and draft Reg. 813 of the Water Services Act (No 108 of 1997). Regulation 2834 has been replaced by Regulation 3630 in 2023 but will only come in effect during the next Blue Drop audit cycle.

<table>
<thead>
<tr>
<th>Institution Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th># Available Compliant Staff</th>
<th>Staff Shortfall</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANParks</td>
<td>13</td>
<td>13</td>
<td>8</td>
<td>2</td>
<td>0.8</td>
</tr>
</tbody>
</table>

* 2 Sups taken as available overall and roaming for the Class C & D WTWs
Competent human resources are vital enablers in ensuring efficient and sustainable management of water services and delivery of safe water quality to consumers. For the SANParks in general, the operational competencies are found to be excellent for the Supervisory staff but not so for the PCs as indicated in the table and notes above.

** PC shortfall is measured against Reg. 813 and may not be considered as applicable here as it appears to be inflated.

Ratio depicts the no. of qualified staff divided by the no. of WTWs operated by this no. of staff. E.g., 10 compliant Sups + PCs, divided by 13 WSSs = 0.8 qualified staff per WSS.

Note: "Compliant staff" means qualified and registered staff that meets the BD standard for a particular Class Works. “Staff shortfall” means staff that do not meet the BD standard for a particular Class of works (+1 for a shift) and/or staffing gaps exist at the respective WTWs.

The Regulator expects correlation between the competence of an operational team and the performance of a WTW, as measured by the BD score. The result from the ratio analysis indicates a low ratio of 0.8 for SANParks.

(ii) Technical, Scientific and Maintenance staff

In addition to operational capacity (above), good management practice also requires access to qualified engineers, technicians, technologists, MISA appointees, scientists, and maintenance capability (below). Such competencies could reside in-house or accessible through term contracts and external specialists.

Table 258 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff

<table>
<thead>
<tr>
<th>Institution Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Maintenance Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANParks</td>
<td>13</td>
<td>13</td>
<td>Internal Team (only)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Institution Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Qualified Technical Staff (#)</th>
<th>Technical Shortfall (#)</th>
<th>Qualified Scientists (#)</th>
<th>Scientists Shortfall (#)</th>
<th>Ratio*</th>
<th>2023 BD Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANParks</td>
<td>13</td>
<td>13</td>
<td>0 1 1 0 2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0.2</td>
<td>54.9%</td>
</tr>
</tbody>
</table>

* The single number ratio depicts the no. of qualified technical staff divided by the no. of WSSs that have access to the staff. E.g., 2 qualified staff, divided by 13 WSSs = 0.2 qualified staff per WSS.

Note 1: “Qualified Technical Staff” means staff appointed in positions to support water services, and who has the required qualifications. “Technical Shortfall” is calculated based on a minimum requirement of at least 3 Engineers or more than 1 of each of Engineers, Technologists & Technicians; and at least one 1 Candidate Scientist and 1 Professional Scientist per WSI.

Note 2: “Qualified Scientists” means professional registered scientists (SACNASP) and candidate scientists appointed in positions to support water services. “Scientists shortfall” means that the WSS does not have at least one qualified SACNASP registered scientist and at least one 1 candidate scientist in their employ or contracted.
In terms of maintenance capacity, all the WSSs in the SANParks have a reasonable contingent of qualified technical/maintenance staff. The maintenance staff comprises of an internal maintenance team only.

In terms of qualified professional technical staff at SANParks the data indicates the following:

- A total of 2 qualified staff comprised of 1 Engineer and 1 Technologist, no Technicians and no MISA appointees (qualified);
- 1 SACNASP registered scientist assigned to the 13 WSSs
- A total shortfall of 3 persons is identified, consisting of 2 technical staff and 1 candidate scientist
- The 13 WSSs do not have access to a credible laboratory that complies with the Blue Drop standards.

Ratio analysis has been done to determine the number of qualified technical and scientific staff assigned per WSS. It is expected that a higher ratio would correspond with well-performing and maintained water supply systems, as represented by the BD score. The result from the ratio analysis indicates a low ratio of 0.2 for SANParks.

One of the options to enhance operational capacity is through dedicated training programmes. The Blue Drop audit incentivises training of operational staff over the 2-year period prior to the audit date. The results are summarised as follows:

### Table 259 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa

<table>
<thead>
<tr>
<th>WSS Name</th>
<th># WTWs</th>
<th># WTW staff attending training</th>
<th># WTW without training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skukuza 1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Skukuza 2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Balule</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Crocodile Bridge</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>GPP</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Kruger Gate</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Letaba</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Malelane</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nkuhlu</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Phabene</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Shingwedzi</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Lower Sabie</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Olifants</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>13</td>
<td>13 (100%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

The results confirm that all the 13 WTWs had some of their operational staff attend training over the past 2 years (partial compliance). It stands to reason that investment in human capital through technical orientated training and skills development will mitigate some of the water quality failures and lower performances.

### Diagnostic 2: Treatment Capacity and Flow Distribution

**Aim:** Diagnostic 2 deals with design and flow related dynamics, comprising of: i) design capacity and operational flow, ii) raw water abstraction, and iii) WUE and SIV.

### (i) Design Capacity and Operational Flow

This diagnostic assesses the status of plant design capacity and daily water production at the WTWs, as well as SIVs as measured at the outflow from the WTW or inflow to the water distribution network. A capable WTW requires adequate installed design capacity and functional equipment to operate optimally. If the WTW design capacity is exceeded by the average daily production (treatment) volume, the WTW will not be able to deliver SANS compliant water quality. The available design capacity is typically exceeded when the water demand exceeds the installed design capacity, or when unit processes or equipment are dysfunctional, or when electrical supply problems render treatment and pumping of water defective. Typically, the production volume and SIV is the same if 1 WTW supplies 1 WSS, but different if multiple supply systems are feeding from a singular WTW.

**Findings:** Analysis of the design capacity and average daily production/treatment volume indicate a total design capacity of 6,070 kl/d for the SANParks, with a total average daily treatment (operational) volume of 2,442 kl/d. Theoretically, this implies that 40% of the design capacity is used with 60% available to meet additional water demand.
All 13 WTWs have their full installed capacity available with no exceptions. In addition, 12 WTWs are operating within their design capacities with the exception of 1 WTW that is operating at its design capacity (100%). This risk is currently mitigated through operational optimisation and preventative maintenance regimes.

Table 260 - Summary of WTWs design, available and operational capacities, % use available capacity, and Total SIV towards the WSSs

<table>
<thead>
<tr>
<th>WSS Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Design Capacity (kl/d)</th>
<th>Available Capacity (kl/d)</th>
<th>Average Daily Production (kl/d)</th>
<th>Available Variance (kl/d)</th>
<th>% Available Capacity</th>
<th>Total SIV towards the WSS (kl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skukuza 1</td>
<td>1</td>
<td>1</td>
<td>1,560</td>
<td>1,560</td>
<td>657</td>
<td>903</td>
<td>42%</td>
<td>654</td>
</tr>
<tr>
<td>Skukuza 2</td>
<td>1</td>
<td>1</td>
<td>480</td>
<td>480</td>
<td>207</td>
<td>273</td>
<td>43%</td>
<td>207</td>
</tr>
<tr>
<td>Balule</td>
<td>1</td>
<td>1</td>
<td>720</td>
<td>720</td>
<td>123</td>
<td>597</td>
<td>17%</td>
<td>123</td>
</tr>
<tr>
<td>Crocodile Bridge</td>
<td>1</td>
<td>1</td>
<td>240</td>
<td>240</td>
<td>182</td>
<td>58</td>
<td>76%</td>
<td>182</td>
</tr>
<tr>
<td>GPP</td>
<td>1</td>
<td>1</td>
<td>480</td>
<td>480</td>
<td>89</td>
<td>391</td>
<td>19%</td>
<td>89</td>
</tr>
<tr>
<td>Kruger Gate</td>
<td>1</td>
<td>1</td>
<td>48</td>
<td>48</td>
<td>38</td>
<td>10</td>
<td>79%</td>
<td>137</td>
</tr>
<tr>
<td>Letaba</td>
<td>1</td>
<td>1</td>
<td>480</td>
<td>480</td>
<td>137</td>
<td>343</td>
<td>28%</td>
<td>137</td>
</tr>
<tr>
<td>Malelane</td>
<td>1</td>
<td>1</td>
<td>480</td>
<td>480</td>
<td>97</td>
<td>383</td>
<td>20%</td>
<td>97</td>
</tr>
<tr>
<td>Nkuhlu</td>
<td>1</td>
<td>1</td>
<td>48</td>
<td>48</td>
<td>38</td>
<td>10</td>
<td>79%</td>
<td>38</td>
</tr>
<tr>
<td>Phabene</td>
<td>1</td>
<td>1</td>
<td>480</td>
<td>480</td>
<td>109</td>
<td>371</td>
<td>23%</td>
<td>109</td>
</tr>
<tr>
<td>Shingwedzi</td>
<td>1</td>
<td>1</td>
<td>360</td>
<td>360</td>
<td>151</td>
<td>209</td>
<td>42%</td>
<td>151</td>
</tr>
<tr>
<td>Lower Sabie</td>
<td>1</td>
<td>1</td>
<td>480</td>
<td>480</td>
<td>480</td>
<td>0</td>
<td>100%</td>
<td>380</td>
</tr>
<tr>
<td>Olifants</td>
<td>1</td>
<td>1</td>
<td>214</td>
<td>214</td>
<td>134</td>
<td>80</td>
<td>63%</td>
<td>134</td>
</tr>
<tr>
<td>Totals</td>
<td>13</td>
<td>13</td>
<td>6,070</td>
<td>6,070</td>
<td>2,442</td>
<td>3,628</td>
<td>40%</td>
<td>2,339</td>
</tr>
</tbody>
</table>

Figure 195 - WSS design, available and operational capacities, % available capacity, and Total SIV towards the WSSs

Figure 196 - WSS % available capacity

(ii) Raw Water Abstraction

This diagnostic takes a snapshot view of the status of water abstraction authorisations from natural water resources in SANParks. As per the National Water Act (Act no 36 of 1998), Water Use Licenses (WULs) mandate the maximum abstraction volumes of raw water, and the installation and monitoring of abstraction, inflow, and outflow meters, whilst the BD audit requires SANParks to report the flows on IRIS and to calibrate meters annually. Any defects in terms of abstracting water from a resource without an authorisation, or exceeding the authorised volume, or reporting inaccurate volumes, or not monitoring abstraction against authorised volumes, are considered to be a regulatory risk and contravention of the law.
**Findings:** Data pertaining to the daily abstraction volumes (kl/d), average daily treatment volumes (kl/d), the names of the WTWs exceeding the Daily Abstraction Volumes (Authorised) and Average Daily Treatment Volumes (Authorised) is captured in the tables below.

**Table 261 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, and Variances**

<table>
<thead>
<tr>
<th>WSS Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>Daily Abstraction Volumes (Authorised) (kl/d)</th>
<th>Average Daily Treatment Volume (kl/d)</th>
<th>Average Variance (kl/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skukuza 1</td>
<td>1</td>
<td>1</td>
<td>2,700</td>
<td>657</td>
<td>2,043</td>
</tr>
<tr>
<td>Skukuza 2</td>
<td>1</td>
<td>1</td>
<td>400</td>
<td>207</td>
<td>193</td>
</tr>
<tr>
<td>Balule</td>
<td>1</td>
<td>1</td>
<td>340</td>
<td>123</td>
<td>217</td>
</tr>
<tr>
<td>Crocodile Bridge</td>
<td>1</td>
<td>1</td>
<td>170</td>
<td>182</td>
<td>-12</td>
</tr>
<tr>
<td>GPP</td>
<td>1</td>
<td>1</td>
<td>60</td>
<td>89</td>
<td>-29</td>
</tr>
<tr>
<td>Kruger Gate</td>
<td>1</td>
<td>1</td>
<td>30</td>
<td>38</td>
<td>-8</td>
</tr>
<tr>
<td>Letaba</td>
<td>1</td>
<td>1</td>
<td>370</td>
<td>137</td>
<td>233</td>
</tr>
<tr>
<td>Malelane</td>
<td>1</td>
<td>1</td>
<td>350</td>
<td>97</td>
<td>253</td>
</tr>
<tr>
<td>Nkhuлу</td>
<td>1</td>
<td>1</td>
<td>12</td>
<td>38</td>
<td>-26</td>
</tr>
<tr>
<td>Phabene</td>
<td>1</td>
<td>1</td>
<td>280</td>
<td>109</td>
<td>171</td>
</tr>
<tr>
<td>Shingwedzi</td>
<td>1</td>
<td>1</td>
<td>200</td>
<td>151</td>
<td>49</td>
</tr>
<tr>
<td>Lower Sabie</td>
<td>1</td>
<td>1</td>
<td>199</td>
<td>480</td>
<td>-281</td>
</tr>
<tr>
<td>Olifants</td>
<td>1</td>
<td>1</td>
<td>210</td>
<td>134</td>
<td>76</td>
</tr>
<tr>
<td>Totals</td>
<td>13</td>
<td>13</td>
<td>5,321</td>
<td>2,442</td>
<td>2,879</td>
</tr>
</tbody>
</table>

**Figure 197 - Abstraction Volumes (Authorised), Average Daily Treatment Volumes, and Variances**

The results conclude shows that 5 systems (Crocodile Bridge, Game Processing Plant, Kruger Gate, Nkhuлу and Lower Sabie) have daily production volumes that are exceeding the authorised daily abstraction volumes (negative average variance figures reflected in the table above). These WSS are not complying with the regulations and compliance will be required to show correction in the next Blue Drop audit cycle.

The Blue Drop audit requires an IWA water balance to determine the SIV into each water supply system, and to identify and quantify possible losses from abstraction to the end user or consumption points in the water delivery and water distribution networks. No water balances are in place for the 13 WSSs in SANParks.

(iii) Water Use Efficiency and System Input Value

The Department is committed to consider issues related to water scarcity and security, aiming to ensure there is sufficient water for the population, the economy, and the environment by increasing water use efficiency across all sectors. Water use for services sectors is specifically dealing with the quantity of water used directly by the consumer through the public distribution network and industries connected to the network.

This diagnostic assesses the water use efficiency (i.e., the average daily consumption in litres per person per day) and the individual and collective performance of the water supply systems. WUE indicates how effective is water used by consumers, i.e. the process between effective water use and actual water abstraction. This concept is closely related to the Department’s No Drop Certification assessment, whereby WUE, NRW and water losses are targeted as part of Water Conservation and Water Demand Management strategies.
Findings: Both the Blue Drop audit and No Drop audits require an IWA water balance to determine the SIV into each water supply system, and to identify and quantify possible losses from abstraction to the end-of-use point.

WUE is calculated based on the SIV contributions, population served, and the average daily consumption, as summarised in the following table.

**Table 262 - Summary of total SIV, total population served, average daily consumption, WUE status**

<table>
<thead>
<tr>
<th>Institution Name</th>
<th># WSSs</th>
<th>Total Population</th>
<th>Total SIV (kl/d)</th>
<th>2023 WUE (l/p/d)</th>
<th>2023 Blue Drop WUE Range &amp; Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANParks</td>
<td>13</td>
<td>5,800</td>
<td>2,349</td>
<td>405</td>
<td>&gt;300</td>
</tr>
</tbody>
</table>

For SANParks, 2,349 kl/d water is supplied to 5,800 consumers. An average 405 litre of water is used per person per day, which implies an extremely high per capita water use and is regarded as extremely high according to national benchmarks. No Drop Certification is specifically tasked with plans to curb water losses and improve NRW through water accounting assessments and water conservation and demand management.

**Diagnostic 3: Drinking Water Quality (DWQ) Monitoring and Compliance**

Aim: Blue Drop audits values the principles of “To measure is to know” and “To know is to manage”. The primary objective of a water treatment plant is to produce final water quality that is safe for human consumption at the end of the distribution network. This standard can only be measured and achieved if operational and compliance monitoring and DWQ, compliance is executed at the correct frequency, sample point, and determinand type. This diagnostic assesses the i) operational and compliance monitoring status, ii) drinking water quality compliance, and iii) risk defined compliance and laboratory credibility.

(i) Drinking water operational and compliance monitoring

Findings: A minimum level of 90% operational monitoring compliance is applied as benchmark, to give weight to the importance of sampling and monitoring of the raw water, process unit water, and final water across the treatment stream. Compliance monitoring is also informed by SANS 241:2015 and the requirement for risk-informed monitoring through the WaSP process at both the WTW final and distribution network. DWQ compliance is calculated against the population size and the mandatory limits set by SANS 241:2015 and the Blue Drop standards, as calculated and reported from data loaded in the IRIS.

**Table 263 - Summary of the KPA 2 WTW operational and WSS compliance monitoring status**

<table>
<thead>
<tr>
<th>WSS Name</th>
<th># WTWs</th>
<th># WSSs</th>
<th>WTW Operational monitoring [KPA 2 sub-KPA 2.b)]</th>
<th>WSS Compliance monitoring [KPA 2 sub-KPA 2.c)]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Satisfactory [BD score &gt;90%] Not Satisfactory [BD score &lt;90%]</td>
<td>Satisfactory [BD score &gt;90%] Not Satisfactory [BD score &lt;90%]</td>
</tr>
<tr>
<td>Skukuza 1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Skukuza 2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Balule</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Crocodile Bridge</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>GPP</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Kruger Gate</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Letaba</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Malelane</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nkuhlu</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Phabene</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Shingwedzi</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Lower Sabie</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Olifants</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>13</td>
<td>13</td>
<td>0 (0%)</td>
<td>13 (100%)</td>
</tr>
</tbody>
</table>

DFFE SYSTEMS
The performance recorded in the table above stems from performance data as measured against the Blue Drop Standard expressed in KPA 2 and sub-KPAs 2.b) and 2.c). Overall, an unsatisfactory sampling and analysis regime is observed for both operational (100%) and compliance (100%) monitoring. The data indicates that None of the 13 WTWs (0%) are on par with good practice for operational monitoring of the raw and final water and the respective process units at the WTW. In terms of compliance monitoring, none of the WSSs (0%) are on par with good compliance monitoring practices, and all the WSSs (100%) are failing the Blue Drop standard. This is a deeply concerning observation. Compliance monitoring is a legal requirement and the only means to measure the DWQ performance of a water supply system. Operational monitoring is the cornerstone of day-to-day process adjustments and optimisation to ensure that the water treatment is efficient and delivers quality final water. The results indicate that 13 WTWs and WSSs are not achieving regulatory and industry standards.

(ii) Drinking water quality compliance

**Findings:** DWQ compliance is measured against the requirements of SANS 241:2015 under KPA 5 of the Blue Drop audit. The tables following summarises the results of the DWQ status for Microbiological and Chemical Compliance, which also carries the highest Blue Drop score weighting of 35% (of 100%).

**Table 264 - Summary of the DWQ Status for Microbiological Compliance**

<table>
<thead>
<tr>
<th>WSS Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Micro Compliance</th>
<th># WSS Micro Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skukuza 1</td>
<td>1</td>
<td>2,000</td>
<td>99.99%</td>
<td>1</td>
</tr>
<tr>
<td>Skukuza 2</td>
<td>1</td>
<td>600</td>
<td>99.99%</td>
<td>1</td>
</tr>
<tr>
<td>Balule</td>
<td>1</td>
<td>300</td>
<td>99.99%</td>
<td>1</td>
</tr>
<tr>
<td>Crocodile Bridge</td>
<td>1</td>
<td>150</td>
<td>99.99%</td>
<td>1</td>
</tr>
<tr>
<td>GPP</td>
<td>1</td>
<td>50</td>
<td>99.99%</td>
<td>1</td>
</tr>
<tr>
<td>Kruger Gate</td>
<td>1</td>
<td>50</td>
<td>91.67%</td>
<td>1</td>
</tr>
<tr>
<td>Letaba</td>
<td>1</td>
<td>300</td>
<td>99.99%</td>
<td>1</td>
</tr>
<tr>
<td>Malelane</td>
<td>1</td>
<td>400</td>
<td>99.99%</td>
<td>1</td>
</tr>
<tr>
<td>Nkuhlu</td>
<td>1</td>
<td>50</td>
<td>99.99%</td>
<td>1</td>
</tr>
<tr>
<td>Phabene</td>
<td>1</td>
<td>300</td>
<td>99.99%</td>
<td>1</td>
</tr>
<tr>
<td>Shingwedzi</td>
<td>1</td>
<td>300</td>
<td>99.99%</td>
<td>1</td>
</tr>
<tr>
<td>Lower Sabie</td>
<td>1</td>
<td>300</td>
<td>99.99%</td>
<td>1</td>
</tr>
<tr>
<td>Olifants</td>
<td>1</td>
<td>1,000</td>
<td>99.99%</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>13</td>
<td>5,800</td>
<td>99.35%</td>
<td>12</td>
</tr>
</tbody>
</table>

**Figure 198 - Microbiological Drinking Water Quality Status**

12 of 13 (92%) systems achieved excellent microbiological quality whilst only 1 of 13 (8%) systems have an unacceptable microbiological water quality status. The water in these systems pose a serious acute health risk to the community. Failure to produce water that meets microbiological compliance standards can be linked back to poor operations, defective infrastructure, inadequate dosing rates, absence of disinfection chemicals, lack of monitoring, lack of operating and chemistry knowledge, and several other root causes. WSSs that are not monitoring the final water quality at the outlet of the treatment plant or at specific end use points are required to develop a monitoring programme and resume with compliance monitoring as a matter of urgency.
**Table 265 - Summary of the DWQ Status for Chemical Acute Health and Chronic Health Compliance**

<table>
<thead>
<tr>
<th>WSS Name</th>
<th># WSSs</th>
<th>Population</th>
<th>% Ave. Chem Acute Health Compliance</th>
<th># WSS Chem Acute Health Performance Status</th>
<th>% Ave. Chem Chronic Health Compliance</th>
<th># WSS Chem Chronic Health Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skukuza 1</td>
<td>1</td>
<td>2,000</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Skukuza 2</td>
<td>1</td>
<td>600</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Balule</td>
<td>1</td>
<td>300</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Crocodile Bridge</td>
<td>1</td>
<td>150</td>
<td>100%</td>
<td>1</td>
<td>98.1%</td>
<td>1</td>
</tr>
<tr>
<td>GPP</td>
<td>1</td>
<td>50</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Kruger Gate</td>
<td>1</td>
<td>50</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Letaba</td>
<td>1</td>
<td>300</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Malelane</td>
<td>1</td>
<td>400</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Nkuhlu</td>
<td>1</td>
<td>50</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Phabene</td>
<td>1</td>
<td>300</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Shingwedzi</td>
<td>1</td>
<td>300</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Lower Sabie</td>
<td>1</td>
<td>300</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td>Olifants</td>
<td>1</td>
<td>1,000</td>
<td>100%</td>
<td>1</td>
<td>100%</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>13</strong></td>
<td><strong>5,800</strong></td>
<td><strong>100%</strong></td>
<td><strong>13</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
</tr>
</tbody>
</table>

**CHEM Acute Health: Population <100,000**

- **CHEM Chronic Health: Population <100,000**

**CHEM Chronic Health: Population >100,000**

- **Figure 199 - Chemical Acute Health and Chronic Health Drinking Water Quality Status**

Chemical acute health compliance shows that 13 (100%) systems have excellent water quality and none of the systems have an unacceptable chemical acute health compliance. Chemical chronic health compliance shows that 13 (100%) systems have excellent water quality and none of the systems have an unacceptable chemical chronic health compliance.
The Water Services Act upholds standards regarding the monitoring and reporting on drinking water quality and issuance of advisory notices to the public when significant DWQ failures are observed. The audit process applies a penalty when DWQ failures are noticed without issuing such Water Quality Alert Notices to forewarn water users of the status of (unsafe) water quality and to advise communities to source alternative water sources or methods to disinfect water used for drinking water purposes.

**Table 266 - Summary of Penalties Applied to WSSs for not Issuing Advisory Notices**

<table>
<thead>
<tr>
<th>Institution Name</th>
<th># WSSs</th>
<th># WSS No Penalty Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANParks</td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>

No penalties were applied to all 13 (100%) WSSs.

**(iii) Risk defined compliance and laboratory credibility**

**Findings:** Risk-defined compliance standards aim to determine the compliance (to SANS 241) of those parameters that have been found to pose a risk in a specific WSS and need to be included in the routine monitoring programme or frequency as prescribed by SANS 241. The SANParks achieved an average Annual Risk Defined Compliance of 91.8%. Excellent risk defined compliance was achieved by 5 (38%) systems and bad compliance for 8 (62%) systems.

**Table 267 - Summary of the DWQ Compliance for Risk Defined Compliance**

<table>
<thead>
<tr>
<th>WSS Name</th>
<th># WSSs</th>
<th>Population</th>
<th>Ave. % Risk Defined Compliance</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skukuza 1</td>
<td>1</td>
<td>2,000</td>
<td>96.43%</td>
<td>1</td>
</tr>
<tr>
<td>Skukuza 2</td>
<td>1</td>
<td>600</td>
<td>96.92%</td>
<td>1</td>
</tr>
<tr>
<td>Balule</td>
<td>1</td>
<td>300</td>
<td>85.00%</td>
<td>1</td>
</tr>
<tr>
<td>Crocodile Bridge</td>
<td>1</td>
<td>150</td>
<td>87.30%</td>
<td>1</td>
</tr>
<tr>
<td>GPP</td>
<td>1</td>
<td>50</td>
<td>92.31%</td>
<td>1</td>
</tr>
<tr>
<td>Kruger Gate</td>
<td>1</td>
<td>50</td>
<td>95.00%</td>
<td>1</td>
</tr>
<tr>
<td>Letaba</td>
<td>1</td>
<td>300</td>
<td>86.67%</td>
<td>1</td>
</tr>
<tr>
<td>Malelane</td>
<td>1</td>
<td>400</td>
<td>92.50%</td>
<td>1</td>
</tr>
<tr>
<td>Nkuhlu</td>
<td>1</td>
<td>50</td>
<td>92.31%</td>
<td>1</td>
</tr>
<tr>
<td>Phabene</td>
<td>1</td>
<td>300</td>
<td>96.92%</td>
<td>1</td>
</tr>
<tr>
<td>Shingwedzi</td>
<td>1</td>
<td>300</td>
<td>86.67%</td>
<td>1</td>
</tr>
<tr>
<td>Lower Sabie</td>
<td>1</td>
<td>300</td>
<td>95.38%</td>
<td>1</td>
</tr>
<tr>
<td>Olifants</td>
<td>1</td>
<td>1,000</td>
<td>90.00%</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>13</td>
<td>5,800</td>
<td><strong>91.80%</strong></td>
<td>5 0 8</td>
</tr>
</tbody>
</table>

The aim of operational determinand compliance is to determine the efficiency of the water treatment process, by monitoring those parameters which are used to control the treatment process. Although not necessarily a health risk, these parameters provide good information on the integrity of the WTW. The SANParks achieved an average % Actual Operational Determinand Compliance of 39%. No excellent and good risk defined compliance was achieved by any of the 13 systems. Bad risk defined compliance was achieved for all 13 (100%) systems.

**Table 268 - Summary of the Treatment (Operational) Efficiency Index**

<table>
<thead>
<tr>
<th>WSS Name</th>
<th># WSSs</th>
<th>Population</th>
<th>Actual Operational Determinand Compliance (% ave.)</th>
<th># WSS Performance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skukuza 1</td>
<td>1</td>
<td>2,000</td>
<td>35%</td>
<td>1</td>
</tr>
<tr>
<td>Skukuza 2</td>
<td>1</td>
<td>600</td>
<td>10%</td>
<td>1</td>
</tr>
<tr>
<td>Balule</td>
<td>1</td>
<td>300</td>
<td>10%</td>
<td>1</td>
</tr>
<tr>
<td>Crocodile Bridge</td>
<td>1</td>
<td>150</td>
<td>40%</td>
<td>1</td>
</tr>
<tr>
<td>GPP</td>
<td>1</td>
<td>50</td>
<td>40%</td>
<td>1</td>
</tr>
<tr>
<td>Kruger Gate</td>
<td>1</td>
<td>50</td>
<td>50%</td>
<td>1</td>
</tr>
<tr>
<td>Letaba</td>
<td>1</td>
<td>300</td>
<td>29%</td>
<td>1</td>
</tr>
<tr>
<td>Malelane</td>
<td>1</td>
<td>400</td>
<td>50%</td>
<td>1</td>
</tr>
<tr>
<td>Nkuhlu</td>
<td>1</td>
<td>50</td>
<td>50%</td>
<td>1</td>
</tr>
<tr>
<td>Phabene</td>
<td>1</td>
<td>300</td>
<td>50%</td>
<td>1</td>
</tr>
<tr>
<td>Shingwedzi</td>
<td>1</td>
<td>300</td>
<td>50%</td>
<td>1</td>
</tr>
<tr>
<td>Lower Sabie</td>
<td>1</td>
<td>300</td>
<td>40%</td>
<td>1</td>
</tr>
<tr>
<td>Olifants</td>
<td>1</td>
<td>1,000</td>
<td>50%</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>11</td>
<td>5,800</td>
<td><strong>39%</strong></td>
<td>0 0 13</td>
</tr>
</tbody>
</table>
SANParks provided no proof of the credibility of the SANParks Skukuza Laboratory and hence does not appear to have access to a credible laboratory for compliance and operational analysis. This laboratory is either accredited with SANAS, and/or has Proficiency Testing Scheme in place to ensure suitable analytical methods and quality assurance produce credible water quality data. The SANParks Skukuza Laboratory does not appear to be meeting the regulatory expectation that all WSIs have access to analytical services for compliance and operational monitoring.

Diagnostic 4: Technical Site Assessments

**Aim:** The Blue Drop process makes provision for a Technical Site Assessment (TSA) in order to verify the desktop evidence through field-based inspections. This assessment includes a physical inspection of the entire water treatment plant with all its process units, as well as the reservoir and spot checks of a pumpstation and pipelines. The technical assessment is coupled with an asset condition check to determine an approximate cost (VROOM) to restore existing infrastructure to functional status for the treatment facility (only).

**Findings:** The results of the SANParks TSA is summarised in the table below. A deviation of 10% between the BD and TSA score indicate a misalignment between the administrative aspects and the work on the ground. The Regulator regards a WTW with a TSA score of >80% to have an acceptable level of process control and functional equipment, and a TSA score of 90% as an excellent WTW that complies with most of the Blue Drop TSA standards. A TSA score of <30% indicates that the treatment facility and network fails in most regards, and is evident of dysfunctional infrastructure, failed process control, absence of record keeping and monitoring, and poor water quality.

The VROOM cost presents a “Very Rough Order of Measurement” cost to return a WTWs functionality to its original design. More detail can be found in the Blue Drop Watch Report 2023.

**Table 269 - %TSA and %BD score, and VROOM cost estimates total and split for civil, mechanical, and electrical**

<table>
<thead>
<tr>
<th>WSS Name</th>
<th>TSA Name</th>
<th>%TSA</th>
<th>2023 BD Score (%)</th>
<th>Civil cost estimate</th>
<th>Mechanical cost estimate</th>
<th>Electrical &amp; C&amp;I cost estimate</th>
<th>Total VROOM cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kruger Park - Skukuza 1</td>
<td>Skukuza 1</td>
<td>78.0%</td>
<td>61.9%</td>
<td>447,190</td>
<td>3,577,517</td>
<td>447,190</td>
<td>4,471,896</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td>R447,190</td>
<td>R3,577,517</td>
<td>R447,190</td>
<td>R4,471,896</td>
</tr>
<tr>
<td>% Split of Cost Items</td>
<td></td>
<td></td>
<td></td>
<td>10%</td>
<td>80%</td>
<td>10%</td>
<td>100%</td>
</tr>
</tbody>
</table>

A deviation of >10% is noted between the BD and TSA score. For the individual WTWs assessed in the SANParks, a total budget of R4.472m is estimated, with the bulk of the work (80%) going towards restoration of the mechanical equipment.

Diagnostic 5: Operation, Maintenance and Refurbishment of Assets

**Aim:** Insufficient financial resources are often cited as a root cause to dysfunctional or non-compliant water treatment works and water networks. Knowledge and monitoring of fiscal spending are therefore a critical part of water services management and of the assets. This diagnostic investigates the status of financial information as pertaining to O&M budgets and expenditure, asset figures, and capital funding.

**Findings:** Financial information was presented during the audit process. Unfortunately, the budget and spend figures were not ringfenced for water only and the budget was way overspent. The results are discussed hereunder.

**Capital, O&M Budget and Actual, and Asset Value**

The capital budgets, O&M budgets, O&M actual expenditure, and current asset values are summarised below.
Table 270 - Summary of the capital budgets, O&M budgets, O&M actual expenditure, and current asset values

<table>
<thead>
<tr>
<th>WSS Name</th>
<th>Capital budget available (R)</th>
<th>O&amp;M budget (R) (2021/22)</th>
<th>O&amp;M expended (R) (2021/22)</th>
<th>% Expended</th>
<th>Total Current Asset Value (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANParks</td>
<td>R16,700,000</td>
<td>R8,020,000</td>
<td>R14,300,208</td>
<td>178%</td>
<td>R41,319,271</td>
</tr>
</tbody>
</table>

The Regulatory Comments following in this Chapter list the capital projects with secured funding for SANParks. The capital lists are deemed to be a definitive means to address water service inadequacies and ensuring water infrastructure investment. A total capital budget of R16.7m has been reported for the refurbishment and upgrades of the water supply system infrastructure.

For the 2021/22 fiscal year, the total O&M budget reported for the SANParks was R8m, of which R14.3m (178%) has been expended. Over-expenditure of 178% was observed. The budget and expenditure figures provided for were not ringfenced for water only.

The total current asset value for water infrastructure (networks, pump stations, treatment plants) is reportedly R41.32m for all systems in total.

O&M Cost Benchmarking

By combining the SALGA and WRC WATCOST models, an estimation of the maintenance cost required per asset type can be done, i.e. civil, buildings, pipelines, mechanical, electrical, and instrumentation.

Table 271 - SALGA-WRC annual maintenance budget guideline and cost estimation

<table>
<thead>
<tr>
<th>Description</th>
<th>% of Current Asset Value</th>
<th>Asset Value Estimate</th>
<th>Modified SALGA Maintenance Guideline</th>
<th>Annual Maintenance Budget Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Asset Value estimate</td>
<td>100%</td>
<td>R41,319,271</td>
<td>15.75%</td>
<td>R892,496</td>
</tr>
<tr>
<td>Broken down into:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Civil Structures</td>
<td>46%</td>
<td>R19,006,865</td>
<td>0.50%</td>
<td>R95,034</td>
</tr>
<tr>
<td>2. Buildings</td>
<td>3%</td>
<td>R1,239,578</td>
<td>1.50%</td>
<td>R18,594</td>
</tr>
<tr>
<td>3. Pipelines</td>
<td>6%</td>
<td>R2,479,156</td>
<td>0.75%</td>
<td>R18,594</td>
</tr>
<tr>
<td>4. Mechanical Equipment</td>
<td>30%</td>
<td>R12,395,781</td>
<td>4.00%</td>
<td>R495,831</td>
</tr>
<tr>
<td>5. Electrical Equipment</td>
<td>11%</td>
<td>R4,545,120</td>
<td>4.00%</td>
<td>R181,805</td>
</tr>
<tr>
<td>6. Instrumentation</td>
<td>4%</td>
<td>R1,652,771</td>
<td>5.00%</td>
<td>R82,639</td>
</tr>
<tr>
<td>Totals</td>
<td>100%</td>
<td>R41,319,271</td>
<td>15.75%</td>
<td>R892,496</td>
</tr>
</tbody>
</table>

Minus 20% P&Gs and 10% Installation | R267,749
Total | R624,747

The model estimates that R0.893m (2.16%) is required per year to maintain the assets valued at R41.32m. Notably, this maintenance estimate assumes that all assets are functional. In cases where Blue Drop Certification is not being achieved, it can be assumed that some form of inefficiency or constraint is being experienced, and national benchmarks closer to 7% of the asset value is advocated (R2.89m).

The table below indicates the SALGA maintenance cost estimation in relation to the O&M budget, and O&M actual expended.

Table 272 - O&M cost estimates by the SALGA versus actual budget and expenditure figures

<table>
<thead>
<tr>
<th>Cost Reference</th>
<th>O&amp;M Cost Estimate</th>
<th>Period</th>
<th>% of Asset Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified SALGA</td>
<td>R892,496</td>
<td>Annually, estimation</td>
<td>2.16%</td>
</tr>
<tr>
<td>O&amp;M Budget</td>
<td>R8,020,000</td>
<td>Actual for 2021/22</td>
<td>19.4%</td>
</tr>
<tr>
<td>O&amp;M Spend</td>
<td>R14,300,208</td>
<td>Actual for 2021/22</td>
<td>34.6%</td>
</tr>
</tbody>
</table>

The cost dynamics can be summarised as follows:

- The SALGA estimations for maintenance budgets is about 11.1% (Modified SALGA divided by O&M Budget) of the actual reported budgets for the 2021/22 fiscal year
- The actual O&M budget (19.4%) appears to be more than adequate when compared with the SALGA guideline (2.16%) or with the government benchmark (7%).
### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th></th>
<th>Blue Drop Score 2023</th>
<th>Blue Drop Score 2014</th>
<th>Blue Drop Score 2012</th>
<th>Blue Drop Score 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>57.12%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Balule</th>
<th>Crocodile Bridge</th>
<th>GPP</th>
<th>Kruger Gate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>52.45%</td>
<td>53.71%</td>
<td>53.05%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

| System Design Capacity | kl/d | 720 | 240 | 480 | 48 |
| System Available Capacity | kl/d | 720 | 240 | 480 | 48 |
| System Input Value | kl/d | 123 | 182 | 89 | 38 |
| Capacity Utilisation | % | 17.08% | 75.96% | 18.59% | 79.42% |

| Resource Abstracted From | Olifants | Crocodile River | Sand River | Sabie River |
| BDRR 2023 | % | 29.75% | 34.58% | 21.78% | 57.33% |
| BDRR 2022 | % | NA | NA | NA | NA |

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Letaba</th>
<th>Lower Sabie</th>
<th>Malelane</th>
<th>Nkuhlu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>53.00%</td>
<td>58.39%</td>
<td>55.39%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

| System Design Capacity | kl/d | 480 | 480 | 480 | 48 |
| System Available Capacity | kl/d | 480 | 480 | 480 | 48 |
| System Input Value | kl/d | 137 | 380 | 97 | 38 |
| Capacity Utilisation | % | 28.46% | 100.00% | 20.21% | 79.17% |

| Resource Abstracted From | Letaba | Sabie River | Crocodile | Sabie River |
| BDRR 2023 | % | 28.62% | 18.68% | 17.58% | 21.33% |
| BDRR 2022 | % | NA | NA | NA | NA |

### Key Performance Area

<table>
<thead>
<tr>
<th>Weight</th>
<th>Olifants</th>
<th>Phabene</th>
<th>Shingwedzi</th>
<th>Skukuza 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>53.40%</td>
<td>58.59%</td>
<td>53.34%</td>
</tr>
<tr>
<td>Key Performance Area</td>
<td>Weight</td>
<td>Olifants</td>
<td>Phabene</td>
<td>Shingwedzi</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------</td>
<td>----------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>214</td>
<td>480</td>
<td>360</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>214</td>
<td>480</td>
<td>360</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>134</td>
<td>109</td>
<td>151</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>62.76%</td>
<td>22.63%</td>
<td>41.94%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td></td>
<td>Olifants</td>
<td>Sabie River</td>
<td>Shingwezi River</td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>25.53%</td>
<td>20.67%</td>
<td>39.22%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Performance Area</th>
<th>Weight</th>
<th>Skuluza 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Blue Drop Score 2023</td>
<td>%</td>
<td>56.76%</td>
</tr>
<tr>
<td>Blue Drop Score 2014</td>
<td>%</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2012</td>
<td>%</td>
<td>NA</td>
</tr>
<tr>
<td>Blue Drop Score 2011</td>
<td>%</td>
<td>NA</td>
</tr>
<tr>
<td>System Design Capacity</td>
<td>kL/d</td>
<td>480</td>
</tr>
<tr>
<td>System Available Capacity</td>
<td>kL/d</td>
<td>480</td>
</tr>
<tr>
<td>System Input Value</td>
<td>kL/d</td>
<td>207</td>
</tr>
<tr>
<td>Capacity Utilisation</td>
<td>%</td>
<td>43.13%</td>
</tr>
<tr>
<td>Resource Abstracted From</td>
<td>Sabie River</td>
<td></td>
</tr>
<tr>
<td>BDRR 2023</td>
<td>%</td>
<td>16.48%</td>
</tr>
<tr>
<td>BDRR 2022</td>
<td>%</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Technical Site Assessment: Skukuza 1 WTW – 78%**
Kruger Park staff and audit team – well done for a first audit

Skukuza WTW: Discipline in all aspects of operation, raw water extraction from the Sabie River
Diagnostic Summary and Recommendations

The Blue Drop 2023 results reveal vulnerabilities and deficiencies on institutional and governance level, as well as on technical aspects. Where these deficiencies are profound, i.e. in cases of poor Blue Drop scores, the consequence is ineffective or failed water services delivery. Specific trends and themes are observed to confirm a national picture and to guide water sector actors to address these in a systematic, possibly programmatic, approach to affect wide-scale turnaround.

**Common Findings and Root Causes**

The Regulator acknowledges the following issues and root causes pertaining to drinking water supply and water quality:

- Individual water treatment works in each province varies from poor to excellent. The technical site assessment scores indicate the average status of water treatment and network infrastructure - EC 57%, FS 63%, GP 82%, KZN 72%, LP 60%, MP 69%, NW 64%, NC 56% and WC 81%. Thus, provincially TSAs range from average to good with a nationally indicator of 67% (average). Nationally, 85% of the VROOM costs are attributed to mechanical equipment (51%) and civil infrastructure (34%), thereby confirming that dysfunctional mechanical equipment is the largest cost and a root cause for non-compliance to drinking water standards.
- In such cases where infrastructure are found to be in poor condition, the general root cause seems indicate a lack of maintenance, which is in turn caused by non-prioritisation of budgets for maintenance and operations, as well as poor billing and revenue collection, which often point to questionable leadership, management, and overall accountability.
- Non-adherence to standard operating processes for drinking water treatment, caused by municipalities failing to hire the necessary staff with the correct skills and qualifications as well as poor management practice. These factors are as important as infrastructure condition, if not more important, as contributors to poor performance.
- DWS, COGTA and DHS allocate approximately R20 billion per annum in water and sanitation infrastructure grants to municipalities, but often this money must be used to repeatedly repair and refurbish infrastructure which has deteriorated rapidly due to a lack of maintenance by municipalities.
- Vandalism and metal theft are an increasing cause of infrastructure failure, but this is partly a result of inadequate security being provided by the municipalities. Municipalities do not have anti-vandalism strategies, contingency plans or means to secure infrastructure.

The Blue Drop findings and actions are summarised as follows, per KPA diagnostic:

**Diagnostic 1: Technical Competence**

Many of the metros, larger municipalities and waterboards fared well in terms of technical competencies, whereas smaller WSAs indicated a shortfall to total lack in technical skills. These vulnerabilities will be addressed via:

- WSIs will be required to update and maintain the registration of all Supervisors and Process Controllers on the IRIS system to ensure compliance with Blue Drop Standards, noting that the new Regulation 3630 came into effect in 2023.
- Regulation 3630 was published in June 2023 with a two year grace period for water services institutions to come into compliance. DWS will work with sector partners to combine IRIS registration of supervisors and process controllers to ascertain that operational staff has the required competence to operate the specified treatment technology. Competence tests will be applied to grandparent process controllers.
- WSIs will be required to strengthen recruitment processes to ensure that registered, qualified, competent staff is appointed that has experience in the particular technologies to be operated – this aspect will receive increased regulatory focus.
- The Regulator will require WSIs to put mentor programmes in place whereby qualified, experienced professionals serve as mentors and coach junior staff, and hold them to the highest standard of water service management.
- Incentivise professional development for process controllers, supervisors, and water unit managers. This should be informed by Workplace Skills Plans and Skills Development Programmes. Registration as Professional Process Controller (PrPC) at WISA is also encouraged to facilitate professionalisation of process controllers and plant managers.
- Developing partnerships with professional training/engineering/science/research institutes to strengthen technical skills and to upskill existing skills, especially in the application of microbiology, chemistry, laboratory results, process adjustments, mathematical calculations, design knowledge, and energy assessment.
- Intensify efforts around collaborative public-private partnerships to augment municipal capacity constraints and elevate water services delivery.
Diagnostic 2: Treatment Capacity and Flow Distribution

Several authorities cannot verify their WTW design capacity, do not monitor flows to- or from their WTWs, and do not have reliable SIV information from water flow logs, water balances, or billing documentation. WSIs are thereby limited in their ability to plan to meet medium-term water demand projections, or to confirm if spare capacity is available. This would present a serious impairment to economic growth initiatives. Furthermore, the lack of SIV figures implies severe gaps in water loss and water demand management, as well as NRW management. A programmatic approach will be followed to address these risks by targeting:

- Strengthen the regulatory requirement to verify design capacity and measure/report operational volumes of all WTWs – this is crucial to confirm available capacity in order to support new housing and business development
- Prioritising the refurbishment or restoring of infrastructure to their original design capacity and functionality
- Accelerate water loss reduction and NRW enhancement plans
- Identify new infrastructure and upgrade requirements to meet the 10-year demand.
- Water Use Licenses require that abstraction volumes to be measured and monitored. The Regulator will intensify their focus on these requirements in the short term future.

Diagnostic 3: Drinking Water Quality (DWQ) Monitoring and Compliance

Severe deficiencies were found in the monitoring of operational and compliance parameters at most institutions. The following interventions are required:

- WSIs must urgently correct failures in the disinfection process which leads to poor microbiological quality compliance. This hazard carries risk of public health events of potential epidemic proportions. Operational know-how needs to be improved on the disinfection processes
- Regulatory interventions need to be intensified to WSAs to identify, assess, rate and prioritise risks via the water safety planning process. The Blue Drop audit will increase the weight around KPA 2 (Risk Management) going forward
- Strict regulatory enforcement of DWQ compliance and Blue Drop standards.

Diagnostic 4: Technical Site Assessments

The TSA showed a highly variable result regarding process and asset functionality at WTWs across the country. While some drinking water treatment plants were excellent, others failed in all respects. Infrastructure operation and maintenance and regulatory interventions will involve:

- Prioritise anti-vandalism and anti-theft strategies
- Require strengthening of preventative repairs and maintenance programmes, budgets, and competence
- Require streamlining of procurement processes and internal planning for spare parts and water treatment chemicals such as chlorine
- Prioritise refurbishment of existing asset functionality by addressing the respective VROOM asset types, i.e. civils, mechanical, and electrical components
- Require minimum turnaround times to ensure fast turnover on repairs and replacement activities
- Implement more regular site inspections and condition assessments by DWS regional staff. WSIs will be required to conduct independent assessments every 6-12 months, by a subject expert professional
- Incentivise the update and improvement of quality asset registers to contain asset condition, remaining useful life and replacement cost, and use this information as part of the budget process
- Work with sector partners to strengthen Councillor induction programmes, and arrange field visits for Councillors, financial- and municipal managers to observe the typical risks and practicalities of drinking water management to support informed decisions at executive and policy levels.

Diagnostic 5: Operation, Maintenance and Refurbishment of Assets

The majority of institutions could not present completed and verifiable evidence in the form of budgets, expenditure, asset values, and production cost (Rand/m² treated). The Regulator will work with financial sector actors to:

- Preparation for the Blue Drop audit and participation by the financial officials to be a compulsory requirement enforced by WSA managers
- Dedicated allocation of budget and expenditure for water supply systems is imperative to formulate budgets, monitor expenditure and determine production costs – this will result in cost optimisation with the objective of achieving industry targets in Rand/m³ treated and reticulated
- Regular meeting of technical and financial management to review the status of budget, expenditure, revenue collection and NRW
- Monitoring and reporting of production cost on a monthly basis and comparison with similar sized- and typology infrastructure
- Engage fund managers and WSIs in cases highlighted in this Report where vast amounts of capital funds (mostly grants) have been expended without positive outcomes or impact. Funding agents will be required to put measures in place to track such incidents timeously and intervene earlier in the project lifecycle.

CONCLUSION AND WAY FORWARD
The Way Forward

Following the Blue Drop audit findings, the Regulator intend to intervene as follows:

**Infrastructure Actions**

i. DWS together with COGTA and NT has developed an action plan which covers municipalities which have wastewater- and/or drinking water systems which scored less than 10% in the Green Drop and/or Blue Drop assessments (i.e. municipalities which are performing the worst in terms of their water quality and sanitation services)

ii. This plan has been approved by Cabinet and presented to COGTA MINMEC

iii. The plan covers 30 municipalities in 7 provinces, with Gauteng and KZN not having any municipalities with <10% Drop scores from the Green Drop and Blue Drop assessments

iv. DWS and COGTA are allowing municipalities to use their MIG and WSIG funding for repairs and refurbishment

v. However, this does not address the lack of routine maintenance by municipalities, which must be funded from municipal revenues. This can only be addressed by improving municipal billing and revenue collection and by prioritisation of budgets for maintenance by the municipal leadership

vi. MISA is offering support to municipalities to improve their infrastructure asset management and to undertake infrastructure condition assessments

vii. In most cases, funding for refurbishment or augmentation of infrastructure to address the Blue Drop infrastructure-related findings has already been allocated over the MTEF, mostly through DWS’s RBIG and WSIG grants and DCOG’s MIG grant, but also by the municipalities themselves and/or through support from the private sector in a few instances

viii. For those municipalities which do not yet have funding allocations to address the Blue and Green Drop infrastructure-related findings, DWS and COGTA will work with these municipalities to reprioritise their grant allocations to address the findings.

**Support and Capacity Building Actions**

i. The effectiveness of capacity building measures is dependent on the municipal leadership being willing to implement advice and improvements

ii. In some municipalities, there are no people to train because the municipalities have not prioritised the hiring of qualified process controllers

iii. While the national government is providing funding for repairs and refurbishment, it cannot provide funding for routine maintenance – this must be funded from municipal revenue

iv. In those cases where the leadership of the municipality is not responding to directives, or taking advice, or not accepting or using support, performance can only be improved by addressing the leadership challenges.

*MISA is building capacity in the municipalities by:*  
- Hiring engineers and making them available to the municipalities to assist them with engineering expertise  
- Recruiting and allocating young graduate engineers and apprentices to municipalities  
- Facilitating the training of process controllers  
- Offering support to municipalities to improve their project management, contract management and asset management practices  
- Assisting the municipalities with funding applications for infrastructure.

*DWS is building capacity in the municipalities by:*  
- Councilor induction programmes, in collaboration with SALGA  
- Training of process controllers and support with registration of process controllers  
- Support with registration of wastewater and water treatment works  
- Assistance with development of water services development plans and five-year reliability plans  
- Assistance with the development of water safety plans, risk abatement plans, sludge management strategies, and operational and compliance monitoring plans.

**Financial Sustainability Actions**

i. In terms of the Local Government Fiscal Framework, municipalities obtain revenue from municipal property rates and from service surcharges on the sale of water and electricity, in addition to the equitable share and grants from national government

ii. However, municipal revenue from the sale of both water and electricity is under pressure - electricity revenues are under pressure due to load shedding, customers moving to off-grid solutions, and bulk electricity prices increasing more quickly than retail electricity prices
iii. With the relevant sector departments’ support, including COGTA, NT is leading the review of the Local Government Fiscal Framework, to be completed by November 2024.

**Governance Interventions**

i. Half of the 30 municipalities which scored less than 10% in the Green/Blue Drop assessments are also on COGTA’s list of 66 dysfunctional municipalities

ii. A quarter of the 30 municipalities are also on National Treasury’s list of 79 municipalities in service delivery and financial crisis or in serious financial trouble and requiring intervention. NT has recommended that Provinces implement mandatory interventions in terms of Section 139(5) of the Constitution and Chapter 13 of the MFMA for these municipalities

iii. However, most Provinces have been non-responsive to these recommendations leaving the problems to worsen

iv. If Provinces fail to act, there is a likelihood of communities approaching courts to force national government to act in terms of Section 139(7) of the Constitution (refer Lekwa case study)

v. Whilst national interventions are provided for in the Constitution, the capacity to intervene at national level is limited and Provinces must lead the interventions

vi. COGTA in consultation with DWS will assess the access to skills and resources in South Africa to maintain 144 WSAs and if necessary, bring recommendations to Cabinet for reducing the number of Water Services Authorities by July 2024.

---

**National Treasure is building capacity in municipalities by:**

i. Ensuring that tariffs for trading services are set to be cost reflective and to recover the cost of providing the service

ii. Reconciling the general valuation roll (GVR) to the billing system for completeness of revenue, so that all customers that appear on the GVR also appear on the billing system

iii. Developing tariff policies to reduce disputes

iv. Improving indigent management

v. Assisting municipalities to institutionalise standard operating procedures for financial management

vi. Improving billing and revenue collection

vii. Issuing a transversal tender for smart prepaid meters for electricity and water to enable prepayment for water services, to be advertised early 2024

viii. Availing technical advisors under the Municipal Financial Improvement Programme (MFIP), as well as by Budget and Revenue Management technical advisors placed at 7 provincial treasuries and NT offices, and 22 municipal support technical advisors placed in districts.

---

**Legislative Amendments**

i. Water Services Act distinguishes between roles of WSA and WSPs. Only a municipality can be allocated the power and function for the WSA function, as allocated by Minister of COGTA, whereby a WSA is the primary Constitutional water role of municipalities

ii. WSA can approve any legal entity (municipality, municipal entity, another municipality, CBO, NGO, organ of state, private company, or water board) to function as a WSP in the municipality

iii. Almost all municipalities are currently both WSA and WSP, having approved themselves as sole WSP

iv. Water Services Act requires WSA and WSP functions to be managed and accounted for separately by municipalities, this is happening

v. Key role of WSA is to ensure that WSP provides services which meet minimum norms and standards, this is happening

vi. DWS is therefore amending the Water Services Act to strengthen the WSA role in municipalities:

   - Introduce an operating license system for WSPs, to be managed by DWS as the national regulator
   - Introduce requirement that water services can only be provided by an entity (municipality or other entity) that has an operating license. This will enable WSAs to ensure that WSPs have minimum competency, capability, and performance levels
   - Amend S63 of the Act, to enable the Minister, as a last resort, to force separation of the water services function from the municipal administration where there is persistent failure to meet license conditions, and require the Water Services Authority to contract with a licensed WSP (after a S78 Municipal Systems Act process)
   - In such instances, the appointed licensed WSP will take over all the functions related to providing the water service, including billing and revenue collection, SCM and HRM
   - Currently S63 of the Act is impractical because it does not provide for all these functions to be taken over – the amendments will enable the licensed WSP to be funded.

---

**Other Actions**

i. DWS is in the process of strengthening its regulation function and improving the consistency of its regulatory actions. This includes revising the norms and standards for water services, developing standardised regulatory protocols, publishing a public dashboard of municipal performance against a range of measures of water and sanitation performance, and linking support and regulatory action to the contents of the dashboard – the dashboard will be in place by March 2024
ii. DWS has established a Water Partnerships Office together with the DBSA and SALGA to facilitate more private sector involvement in the management and funding of municipal water services and to offer financial structuring and feasibility study support to municipalities to bring projects to market

iii. DWS and COGTA will promote cross-pollination between municipalities – good performing municipalities to assist poor performing ones

iv. DWS will develop guidelines and standard operating procedures for operations and maintenance of water and sanitation infrastructure by municipalities.

v. COGTA has gazetted municipal staff regulations and will develop prototype staff establishments. This is a multi-year project that commenced during 2022 and should be completed by July 2025.

vi. NT is currently leading a review of the entire conditional grants system. This review will be completed by 31 March 2024 and its implications will be phased in from the 2025 Budget process. It will identify how grant funding can be used efficiently and effectively, while creating the right incentives to encourage better management of resources and leveraging private sector resources and expertise.

Last but not least, the Department welcomes the participation of SanParks in the Blue Drop process and trust the results will guide the way for the Kruger National Park to become a world-class water services institution.

**Water Services Institutions are hereby encouraged to commence immediately with the preparation for the next Blue Drop audit process.**

> I don't know where we should take this company, but I do know that if I start with the right people, ask them the right questions, and engage them in vigorous debate, we will find a way to make this company great.”

Jim Collins
Drakenstein: Welvanpas raw water inlet work – clean, maintained, operated by a proud competent team

Saldanha: Withoogte WTW filter backwash – true excellence
2023 BLUE DROP CHAMPIONS

For 2023, Blue Drop awards and acknowledgement are attributed to Water Services Institutions across the various Provinces as following:

**BLUE DROP AWARDS and RECOGNITION**

**Gauteng** [3 in total]:
- City of Johannesburg MM (Rand Water) - Greater Johannesburg WSS (98.1%)
- City of Ekurhuleni MM (Rand Water) - Ekurhuleni (97.1%)
- Midvaal LM (Rand Water) - Meyerton (95.1%)

**Western Cape** [15 in total]:
- Berg Rivier LM (West Coast DM Bulk) – Velddrif (95%)
- City of Cape Town MM – Cape Town (98.1%)
- Drakenstein LM (City of Cape Town MM) – Hermon (95.7%)
- George LM – George Water Works (95.2%)
- Overstrand LM - Baardskeerdersbos Supply System (99.7%) ; Buffeljags Bay Supply System (98.2%) ; Buffelsrivier Supply System (99.99%) ; Greater Gansbaai Supply System (99.99%) ; Greater Hermanus Supply System (99.99%) ; Kleinmond Supply System (99.99%) ; Pearly Beach Supply System (99.99%) ; Stanford Supply System (99.99%)
- Saldanha Bay LM (West Coast DM Bulk) - Hopefield Supply System (96.9%)
- Swartland LM (West Coast DM Bulk) - Witgoote Supply System (96.5%)
- Theewaterskloof LM – Botrivier (96.6%)

**Mpumalanga** [4 in total]:
- Mbombela-Umjindi LM - Karino Water Treatment Works (96.6%) ; Matsulu WTW (97.9%) ; Nelspruit Supply System (97.3%) ; Primkop WTW (96.2%)

**KwaZulu Natal** [3 in total]:
- Ilembe DM (Umgeni Water) – Dolphin Coast Ballito - Sembcorp Siza Water (98.6%)
- Msunduzi LM (Umgeni Water) – Umsunduzi (97.94%)
- uMgungundlovu DM (Umgeni Water) - UW-uMgungundlovu DM (97.3%)

**North West** [1 in total]:
- JB Marls LM – Potchefstroom (95.6%)

**RECOGNITION OF TEAMS and INSTITUTIONS**

<table>
<thead>
<tr>
<th>Awards</th>
<th>Criteria</th>
<th>Winner</th>
<th>2nd runner up</th>
<th>3rd runner up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best Performing Municipalities</td>
<td>%BD score - WSI</td>
<td>Overstrand LM (99.99%) – Western Cape</td>
<td>City of Cape Town MM (98.12%) – Western Cape</td>
<td>City of Johannesburg (98.10%) - Gauteng</td>
</tr>
</tbody>
</table>
### Recognition of Teams and Institutions

#### Best Performing Systems

<table>
<thead>
<tr>
<th>System</th>
<th>%BD score - system</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overstrand LM</td>
<td>99.99%</td>
<td>Western Cape</td>
</tr>
<tr>
<td>Buffelsrivier</td>
<td>99%</td>
<td>Greater Gansbaai, Western Cape</td>
</tr>
<tr>
<td>Greater Hermanus</td>
<td>99%</td>
<td>Overstrand LM</td>
</tr>
<tr>
<td>Kleinmond</td>
<td>99.99%</td>
<td>Pearly Beach, Stanford (All 99.99%)</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>99.7%</td>
<td>Baardskeerdersbos, Overstrand LM</td>
</tr>
<tr>
<td>Ilembe DM</td>
<td>98.6%</td>
<td>Dolphin Coast Ballito, Sembcorp Siza Water</td>
</tr>
</tbody>
</table>

#### Best Technical Site

<table>
<thead>
<tr>
<th>% TSA score</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faure WTW</td>
<td>98%</td>
</tr>
<tr>
<td>Vereeniging WTW</td>
<td>97%</td>
</tr>
<tr>
<td>Welvynas WTW</td>
<td>96%</td>
</tr>
</tbody>
</table>

#### Best Progress from 2014 to 2023

<table>
<thead>
<tr>
<th>%BD score increase</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victor Khanye LM (63.5% to 90.1% = 26.7%)</td>
<td>Mpumalanga</td>
</tr>
<tr>
<td>Theewaterskloof LM (64.2% to 86.6% = 25.4%)</td>
<td>Western Cape</td>
</tr>
<tr>
<td>Vhembe LM (64.2% to 86.6% = 25.4%)</td>
<td>Western Cape</td>
</tr>
<tr>
<td>Victor Khanye LM (63.5% to 90.1% = 26.7%)</td>
<td>Mpumalanga</td>
</tr>
</tbody>
</table>

#### Best Provincial Risk Managers

<table>
<thead>
<tr>
<th>BDRR% WSI</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kouga LM</td>
<td>32%</td>
</tr>
<tr>
<td>Brakkefontein LM</td>
<td>32%</td>
</tr>
<tr>
<td>Saldanha Bay LM</td>
<td>17%</td>
</tr>
<tr>
<td>Overstrand LM</td>
<td>17%</td>
</tr>
</tbody>
</table>

### Recognition of Individuals and Blue Drop Champions

<table>
<thead>
<tr>
<th>Province</th>
<th>Recognition</th>
<th>Name and Designation OR Audit Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>Recognition</td>
<td>Nelson Mandela Bay Metropolitan Municipality, NM/BLM Audit Team</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>Audit Team</td>
<td>Bramwill Pinslobo, Manager Water Services</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>Recognition</td>
<td>Koo Kamma Metropolitan Municipality, NM/BLM Audit Team</td>
</tr>
</tbody>
</table>

**The Regulator was impressed by the professionalism of the audit team representing NMBM. The team included senior officials and decision makers as well as operational personnel, and it was evident that the Municipality operates as a well-oiled team. All representatives had detailed knowledge of individual plant infrastructure and the particular challenges of the distribution area. The Municipality has experienced an 8-year drought and a detailed drought mitigation plan is currently being implemented. Certain aspects of the Drought Mitigation Plan supersede the Blue Drop requirements. Monitoring points, determinands and frequency are determined according to the requirements of the integrated system – water is provided where it is needed – and as a result monitoring may appear erratic where it is, in fact, meticulously planned. Senior officials are involved at an operational level and decisions are made at the level of the integrated system rather than on a plant-per-plant basis. The Municipality is commended for responsible management which extends to sustainable management of the water resource.**

**The Regulator was extremely impressed by the renewed dedication of the personnel appointment for the management of water provision. He and his team have acknowledged their weaknesses and put in plans in place to improve the delivery of water to this remote area. The Regulator is also impressed that Bramwill made extra attempt to drive far distance to provide much needed information that assisted their scoring. Connectivity in the region is a challenge yet he and his team are committed to improving matters but will be a long road as he admits there a lot to do but they have already begun this process and is also engaging with NMB and Kouga municipalities to assist which speaks a lot to inter-governmental cooperation.**
RECOGNITION OF INDIVIDUALS and BLUE DROP AWARDS

The Dithlabeng municipality was represented by a multidisciplinary team. Representatives from executive management, water demand management and senior management attended the Blue Drop certification and awards ceremony. The municipality can be proud of this team, led by the Manager Water and Sanitation. The team has demonstrated its commitment towards the Blue Drop process. They have been following the guidelines for Blue Drop compliance and have shown a high level of understanding of the process and the procedure.

Mr Ramukela is the Manager Water and Sanitation. He is recommended for excellent leadership by the municipality and his team. He gave employees the opportunity to actively involve them in the compilation of the water safety plans and plant audit and network verification. The inspection reports were compiled in a clear and understandable manner. The Team is furthermore commended on efforts exerted to present to the Audit Team the water safety plans and plant audit and network verification.

Hendrik Coetzer is responsible for the Ficksburg Water Supply System. He is commended for excellent recordkeeping and availability of all evidence. He provided all evidence systematically and presented it to the Inspectors. The manner in which he presented the results and the standards he maintained were very impressive. He showed good knowledge of the plant and its operation. It was evident that he was well prepared for the assessment, with all evidence uploaded and all records systematically filed and presented to the Inspectors. The manner in which he presented the results and the standards he maintained were very impressive.

Charlene Smith was responsible for the Blue Drop Team. She is commended for excellent presentation of BD information with all supporting documents uploaded on IRIS. Charlene is proud of the Blue Drop Team under her guidance. They have been working hard to comply with Blue Drop standards and have shown a high level of understanding of the process and the procedure.

These two process control staff members were given the opportunity to lead the Blue Drop Team during the site inspection. They were accompanied by the Technical Manager, who was never stepping forward to answer questions. He allowed them to take the Audit Team through the site inspection. They were very well prepared for the assessment, with all evidence uploaded and all records systematically filed and presented to the Inspectors. The manner in which they presented the results and the standards they maintained were very impressive.

It was also heartening to see the dynamic between staff and management. Two process controlling staff members, together with the Technical Manager, took the Audit Team through the plant for the TSA. The good relationship between process controlling personnel and their principals is commendable.

The team is responsible for Rand Water’s water quality assurance and Blue Drop certification. The municipality has demonstrated its commitment towards the programme through the participation of various solutions, and finally formally motivating for repairs or replacements with a complete list of prices from suppliers. The municipality has been very active in the Blue Drop process and has shown a high level of understanding of the process and the procedure.

The municipality was represented by a multidisciplinary team. Representatives from executive management, water demand management and senior management attended the Blue Drop certification and awards ceremony. The municipality can be proud of this team, led by the Manager Water and Sanitation. The team has demonstrated its commitment towards the Blue Drop process. They have been following the guidelines for Blue Drop compliance and have shown a high level of understanding of the process and the procedure.
## RECOGNITION OF INDIVIDUALS and BLUE DROP CERTIFICATION and AWARDS

<table>
<thead>
<tr>
<th>Company</th>
<th>Team Member</th>
<th>Position and Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midvaal Water Company</td>
<td>Dalenca Human</td>
<td>Acting Superintendent, Production &amp; Bulk Distribution, Water Quality Advisor</td>
</tr>
<tr>
<td></td>
<td>Ms Thobile Mpunzana</td>
<td>Production; Water Quality Advisor</td>
</tr>
<tr>
<td></td>
<td>Mr Siphiwe Sithole</td>
<td>Water Quality Advisor</td>
</tr>
<tr>
<td></td>
<td>Wilheminah Moeng</td>
<td>Acting Superintendent, Production; Water Quality Advisor</td>
</tr>
<tr>
<td></td>
<td>Jabu (JA) Mkwanazi</td>
<td>Water Quality Advisor</td>
</tr>
<tr>
<td></td>
<td>Mlondi Ngcobo (uMngeni Water)</td>
<td>Production &amp; Bulk Distribution, Water Quality Advisor</td>
</tr>
<tr>
<td></td>
<td>Dineo Ledwaba</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Hlatshwayo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Karabo Khumalo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Mabaso</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Lekhato</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Lihle Mkhize</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Makhene</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Nonjabulo Magwaka</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sibonelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sifiso Moapi</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sabelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Tsilipogo Nkina</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thembani Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Dineo Ngcobo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Nonjabulo Magwaka</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sibonelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sabelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Tsilipogo Nkina</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thembani Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Dineo Ngcobo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Nonjabulo Magwaka</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sibonelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sabelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Tsilipogo Nkina</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thembani Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Dineo Ngcobo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Nonjabulo Magwaka</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sibonelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sabelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Tsilipogo Nkina</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thembani Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Dineo Ngcobo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Nonjabulo Magwaka</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sibonelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sabelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Tsilipogo Nkina</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thembani Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Dineo Ngcobo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Nonjabulo Magwaka</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sibonelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sabelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Tsilipogo Nkina</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thembani Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Dineo Ngcobo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Nonjabulo Magwaka</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sibonelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sabelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Tsilipogo Nkina</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thembani Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Dineo Ngcobo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Nonjabulo Magwaka</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sibonelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sabelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Tsilipogo Nkina</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thembani Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Dineo Ngcobo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Nonjabulo Magwaka</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sibonelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sabelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Tsilipogo Nkina</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thembani Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Dineo Ngcobo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Nonjabulo Magwaka</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sibonelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sabelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Tsilipogo Nkina</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thembani Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Dineo Ngcobo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Nonjabulo Magwaka</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sibonelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sabelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Tsilipogo Nkina</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thembani Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Dineo Ngcobo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Nonjabulo Magwaka</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sibonelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sabelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Tsilipogo Nkina</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thembani Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Dineo Ngcobo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Nonjabulo Magwaka</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sibonelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Sabelo Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Tsilipogo Nkina</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thembani Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Dineo Ngcobo</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Zanele Nkula</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Themba Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Maleko Mabuza</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
<tr>
<td></td>
<td>Thameli Mayeng</td>
<td>Production &amp; Bulk Distribution</td>
</tr>
</tbody>
</table>
## RECOGNITION OF INDIVIDUALS and BLUE DROP CHAMPIONS

<table>
<thead>
<tr>
<th>Region</th>
<th>Location</th>
<th>Name</th>
<th>Title</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>North West</td>
<td>Moses Kotane LM</td>
<td>Mr. David Mpete</td>
<td>Acting Superintendent</td>
<td>During the TSA audit, Mr. Mpete was very enthusiastic and explained the process with passion. He is a person who clearly understands the process and what each unit is supposed to achieve. The question about workplace satisfaction, Mr. Mpete stressed about lack of availability of treatment chemicals, operational monitoring instruments. He reported this lack by his institution as something that gives him sleepless nights. Which is rare as most people in that question mention politics, etc, but his concern was for him to do what he loves which is to treat water and ensure consumers have potable water safe for human consumption. The other take away observed from Mr. Mpete was his observation between types of suppliers called during the plant construction phase and those that are called thereafter to fix/repair or replace pumps. His observation was spot on in a sense that during construction/refurbishment, pumps are installed using laser shaft alignment despite the fact that he didn’t know the device by name but he knew that to install a pump you need that device so that a pump and a shaft is well aligned to avoid breakdowns later on. But the fact he is well aware of why there are constant pump breaks, this was a great observation and at the time the plant supervisor was equally impressed of this observation because as the assessment team we caution the dangers associated with that and safety hazard thereof. Mr. Mpete he will be going to retirement in a year or two and we asked him to update his registration since it was a rejected Class V. His comments was that he will pursue that however his focus now is that there are two graduates with BSC and if he can mentor them to be skilled enough to be class V before he retires, provided proper instruments are procured he will retire happily. This left an impression that he is someone who is concerned about safety of his consumers above everything else.</td>
</tr>
<tr>
<td>Western Cape</td>
<td>Theewaterskloof LM</td>
<td>Ms. Roseline Myburgh</td>
<td></td>
<td>The role which Ms. Rose Myburgh at the Theewaterskloof municipality impacted positively in their performance in the recent Blue Drop assessments in reducing their risk rating and increasing their average blue drop score form previous years. She was proactive in her approach and continuously communicated with the assessors on requirements. Prompt responses from her and even attending the confirmation session during sick leave from home under trying loadshedding conditions are commended.</td>
</tr>
<tr>
<td>Western Cape</td>
<td>Cape Town Metropolitan Municipality</td>
<td>Mr. Kotze and Dr Naicker</td>
<td></td>
<td>The Cape Town Metro once again indicted their professional approach in managing their potable water supply following the recent BD assessment. Information was readily available and provided upfront, while any outstanding information was promptly provided. All role players from the individual plants and reticulation system division contributed during the assessment, but specific reference is made to Mr Hennie Kotze and Dr Swastika Surujal-Naicker for facilitating all sessions and site visits in a professional manner. We regard these two people pivotal in managing Cape Town’s Blue Drop programme.</td>
</tr>
<tr>
<td>Western Cape</td>
<td>Overstrand LM</td>
<td>Whole Team</td>
<td></td>
<td>The Overstrand Municipality impressed with the cooperative way in which they provide potable water to their customers with their service provider, Veolia Water. During the assessment, it was clear that their relationship is built on trust and mutual respect, with continuous communication between the two entities being key to their operations. The Regulator experienced a well prepared team during the assessment and all information provided was relevant to the process.</td>
</tr>
</tbody>
</table>

---

“It always seems impossible until it’s done.”

*Nelson Mandela*
Clarification - essential to remove suspended solids to provide a clear, high quality potable water to consumers

Bergriver: Piketberg WTW raw water pumpstation – deteriorating raw water quality, but staff displayed good knowledge of this risk via the water safety plan
<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DESCRIPTION</th>
<th>CALCULATION</th>
<th>REFERENCE</th>
</tr>
</thead>
</table>
| Blue Drop Scores       | A BD % is awarded to an individual WSS based on audit results considered against 5 KPAs. The individual scores aggregate as a single (weighted) BD score for the WSI. The score is weighted against the SIVs of the individual WSSs. | 1) System BD score (%) = Sum (Scores x KPA sub weights) for each of the 5 KPAs  
Example: KPA 1 sub weight = 15% of 100% for all 5 KPAs; KPA 1 sub-weights are 20% each for sub-KPAs 1.a) to 1.e) as per BD Requirements in the scorecard  
KPA 1 = (100% x 0.2) + (100% x 0.2) + (90% x 0.2) + (100% x 0.2) + (100% x 0.2) = 98%  
Contribution of KPA 1 to the overall BD score = (98% x 0.15) = 14.7% (out of 15%)  
2) WSI BD score (%) = Sum ((SIV / Total SIV) x System BD score)  
Example (WSA - 2 Systems): WSA BD score = ((200,000 kl/d / 255,000 kl/d) x 66.4%) + ((55,000 kl/d / 255,000 kl/d) x 86.6%) = 70.7%  
|                                                                                       |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Introductory Provincial and National Chapters |
| Blue Drop Risk Rating   | BDRR and %BDRR/BDRRmax The BDRR value is based on 5 (weighted) risk indicators, i.e. the design capacity, operational capacity, water quality compliance, technical skills and water safety plan skills. The %BDRR/BDRRmax provides the variance of a BDRR value against the maximum BDRR value that could potentially be reached if all 5 risk indicators are in critical state | See section to follow this table titled CALCULATION OF BDRR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Introductory Provincial and National Chapters |
| Technical Site Assessments | The TSA % reflects the physical condition of the delivery network, the water treatment plant, and part of the distribution network. The intention of the TSA is to verify the evidence and findings presented during the BD audit through the physical inspections of randomly selected sites | Singular TSA scores per WSS inspected, non-weighted, as calculated via the TSA scorecard.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | BD scorecards                                                                 |
|                         | TSA and BD score comparison                                                                                                                                                                                                                                           | % Deviation (TSA & BD score) = % score difference  
Example: TSA score = 44% and BD score = 38% = 6% deviation or difference  
| Technical Competence    | Ratios to do a comparative analysis “Qualified Technical Staff” - staff appointed in positions to support water services, and who has the required qualifications. “Technical shortfall” means the number of staff who are in technical support positions.  
“Qualified Scientists” - professional registered scientists (SACNASP) appointed in positions to support water services. “Scientist’s shortfall” means the number of scientists in scientific positions that are professional registered and qualified in technical support positions but not qualified.  
“Shortfall” is calculated based on a minimum requirement of more than one of each of Engineers, Technologists & Technicians or at least 3 Engineers; and at least one candidate & professional Scientist per WSI or more than 1 professional Scientist per WSI. | Ratio - A : B (2 elements) or A : B : C (3 elements) etc  
Example 1: WTW staff - No. Supervisors : No PC = 1 : 3 (based on 2 shifts)  
Example 2: If WSI has no qualified technical staff, the shortfall would be 3 or 4 qualified technical staff; Similarly, if WSI has 1 qualified technical staff, the shortfall would be 2 or 3 qualified technical staff  
Example 3: If WSI has no qualified scientific staff, the shortfall would be 1 qualified scientist & 1 candidate scientist; Similarly, if WSI has 1 qualified scientist, the shortfall would be 1 candidate scientist  
|                                                                                       |                                                                                                                                             | Diagnostic 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Diagnostic 1                                                                 |
| Treatment Capacity      | System Input Volume (kl/d) is the WTW Input Volume towards the Water Supply System (This equates the outflow of the WTW/ inflow to the WTW to single WSS: WTW SIV (kl/d) = WSS SIV (kl/d)  
WTW to multiple WSSs: Total WTW SIV (kl/d) = WSS 1 SIV (kl/d) + WSS 2 SIV (kl/d) etc |                                                                                                                                             | Diagnostic 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                           |
<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DESCRIPTION</th>
<th>CALCULATION</th>
<th>REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking Water Quality Compliance</td>
<td>WSS from the Bulk Water Supplier, e.g. Water Board or Private WSP) % Mean, % Minimum and % Maximum of the DWQ Compliance: C overall, C1a, C1b, C2a &amp; C2b as linked to the BDRR calculation process % Mean, % Minimum and % Maximum of the DWQ Risk Defined Compliance and Treatment (Operational) Efficiency Index</td>
<td>Multiple WTWs to single WSS: Total WSS SIV (kl/d) = WTW 1 SIV (kl/d) + WTW 2 SIV (kl/d) etc 1) Mean (arithmetical average) = Mean (Range of values) Example: Mean (24% + 71% + 91%) / 3 = 62% 2) % Compliance = # Compliant samples / Total # Samples tested *100 Example: % Compliance = 42 compliant samples / 50 total samples tested = 84% compliance</td>
<td>Diagnostic 3</td>
</tr>
<tr>
<td>Operation &amp; Maintenance &amp; Refurbishment of Assets</td>
<td>O&amp;M Cost Benchmarking using: - WRC WATCOST model: calculated breakdown of assets into civil, buildings, pipelines, mechanical, electrical, instrumentation. - SALGA model: calculate annual maintenance cost per asset type based on benchmark of 15.75% of asset value</td>
<td>1) Current asset value (100% = Civil structures (46%) + Buildings (3%) + Pipelines (6%) + Mechanical equipment (35%) + Electrical equipment (8%) + Instrumentation (2%) 2) Modified SALGA maintenance guideline: 15.5% = Civil structures (0.5%) + Buildings (1.5%) + Pipelines (0.75%) + Mechanical equipment (4%) + Electrical equipment (4%) + Instrumentation (5%) Example (Civil structures) = (0.46 x R20,000,000) x 0.005 = R46,000</td>
<td>Diagnostic 5</td>
</tr>
<tr>
<td>VROOM</td>
<td>Estimation of cost required to restore existing infrastructure to its original design capacity and operational functionality by addressing civil, mechanical, and electrical failures or defects. The cost is derived from an algorithm that uses the BD Inspector’s impression of the condition of the hardware, for each process unit inspected. Cost estimations are done for the treatment plant only, NOT for the supply network.</td>
<td>With reference to the earlier ‘Technical Site Assessments’ parameter: The following is extracted from the TSA scorecard and inserted into the IRIS scorecard: VROOM cost ratio in R million per ML/d % cost estimates for Civil, Mechanical and Electrical deficiencies.</td>
<td>BD scorecards Diagnostic 5</td>
</tr>
</tbody>
</table>
CALCULATION OF BDRR

A. First BDRR Formular

In 2015, the Department used the experience built-up during the previous four Blue Drop assessments to formulate a Blue Drop Risk Rating (BDRR) that represents a progressive combination of incentive and risk-based regulation. The BDRR allows for uniform measurement of all systems across the country with regards to treatment capacity, process control and water quality compliance and to answer the following questions:

- Does the system have sufficient capacity to meet safe drinking water quality limits?
- Is the WSA complying with technical (process controller and maintenance staff) requirements?
- Is the WSA complying with SANS 241 (or any limits set by the Department)?
- Is the WSA managing drinking water quality according to the principles of risk management?

The original BDRR formula was:

\[ \text{BDRR} = 0.25A + 0.25B + 0.5C \]

Where the weighting factor is based on the following three risk indicators:

- \( A \): Treatment Capacity = Population X Operational Capacity
- \( B \): Process Control = Process Controllers + Supervisor + Maintenance Team
- \( C \): Water Quality Compliance = Population X \([0.8*(0.5\text{Micro} + 0.2\text{Chem} + 0.3\text{Risk})) + (0.2*[0.6\text{WSP} + 0.2\text{Monitoring} + 0.2\text{Full SANS}])\]
  - Micro = Microbiological compliance
  - Chem = Chemical compliance
  - Risk = Risk-defined monitoring
- \( \text{WSP} \): Water Safety Plan (Yes/No/Partial)
  - Monitoring = % Monitoring compliance
  - Full SANS = Full SANS, risk-based monitoring programme (Yes/No/Partial)

The BDRR calculation is weighted against population size considering the population risk factor i.e. the larger the population served by the water supply system, the larger the impact should any hazardous event occur in the system, viz. the number of people who may be impacted. The BDRR formular was used by the DWS to determine the level of risk at which water services and water quality was delivered to the citizens of South Africa thereby facilitating implementation of regulatory actions to improve water quality where critical and high risks were identified.

B. Alignment of BDRR with DWS Risk-based Regulation

The DWS Risk-based Regulation allows for four key risk indicators that apply to \textit{Blue Drop} (water), \textit{Green Drop} (wastewater), and \textit{No Drop} (water use efficiency):

- \( A \): Design capacity
- \( B \): Operational flow
- \( C \): Compliance
- \( D \): Technical skill of the supervisor, process controllers and maintenance team

The Green Drop Cumulative Risk Ratio (CRR) was the first to have been developed and has a successful track record that allows for identification of high risk treatment plants. One of the reasons why the CRR has enjoyed high uptake and impact, was that it is used as part of the wastewater risk abatement plan (\textit{W2RAP}) [the equal of the Water Safety Plan]. The (existing) formula calculates the Green Drop Risk rating as follows: \( \text{CRR} = A \times B + C + D \)

- \( A \): Installed design capacity: Larger plants present a higher risk
- \( B \): Operational capacity: Plants operating above its capacity present a higher risk
- \( C \): Effluent quality compliance: A high number of non-compliant effluent quality parameters present a higher risk
- \( D \): Technical skills: Poor technical, management and maintenance skills base present a collective and individual high risk.

C. Updated BDRR Formular

The updated BDRR formular adopts the same approach with an added risk indicator, \( E \): Water Safety Planning, to address the risk assessment requirements outlined in SANS 241. The updated BDRR formular is:

\[ \text{BDRR} = (A \times B) + C + D + E \]
Where the weighting factor is based on the following five risk indicators

- **A**: Design Capacity: Larger plants present a higher risk as they supply water to a larger population
- **B**: Operational Capacity: Plants operating above its installed capacity present a higher risk as its capability is compromised to deliver safe drinking water
- **C**: Water Quality Compliance: C1 Microbiological (70%) + C2 Chemical (30%)
- **D**: Technical Skills: Poor technical, management and maintenance skills base present a collective and individual high risk.
- **E**: Water Safety Plan: The absence of a WSP, risk-defined monitoring programme based on full SANS 241 assessment and implementation of actions to reduce risk, would represent a high risk due to non-compliance with SANS 241 requirements and lack of risk-management procedures.

The proportional risk allocation between the components is 35 : 35 : 20 : 10 for A/B : C : D : E.

Therefore full BDRR formula = (35% (A*B)) + [35% C (70% C1 (Micro compliance x monitoring compliance)) + 30% C2 (Chemical compliance x monitoring compliance)] + 20% D + 10% E.

The benefits of the updated BDRR formula are:

- Aligned with CRR and DWS Risk-based approach
- Simplified calculation which uses available information on IRIS
- Provide calculation of baseline BDRR for each plant based on size
- Includes Risk Rating Indicator for Water Safety Planning – requirement for SANS 241
- Provides a quick, scientific-based impression of national WTW risk profiles
- Standardised, uniform approach - rates all plans on equal level

A **BDRR value** is calculated for each municipal water supply system in South Africa, as provided in this Blue Drop PAT Report. The municipal BDRR profiles are usually sent to the respective Executive Mayors from the Minister’s office, to inform the political principals of the facilities that reside in the high and critical risk space.

A **BDRR %deviation** is used throughout the Report and calculated using the following formula:

\[ \text{BDRR} \%\text{deviation} = \frac{\text{BDRR}}{\text{BDRR}_{\text{max}}} \times 100 \]

Where **BDRRmax** = Maximum BDRR of System

The **BDRR %deviation** is a calculated unit of measurement of risk which indicate the variance of a BDRR value before it reaches its maximum BDRR value. This unit of measurement allows DWS to compare all sized and types of plants equally.

All water supply systems are categorised according to their risk rating placing them in one of four categories as per table below.

**BDRR Categorisation**:

<table>
<thead>
<tr>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Critical</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;50%</td>
<td>50%&lt;70%</td>
<td>70% - &lt;90%</td>
<td>90% - 100%</td>
</tr>
</tbody>
</table>

The higher the **BDRR %deviation** value, the closer the BDRR risk is to the maximum value it can obtain.

- Example 1: a 95% BDRR %deviation value means the supply system has only 5% space remaining before the system will reach its maximum critical state (100%) – this is a highly undesirable state, and the supply system is categorised as a critical risk system.
- Example 2: a 25% BDRR %deviation value means the supply system holds a low and manageable risk position and is not close to the limits that define a critical state (90-100%) – this is a desirable status and the supply system is categorised as a low risk system.

The rationale and weighting of each risk indicator is outlined below.

**Risk Indicator A: Design capacity and Risk Indicator B: Operational Capacity in terms of design**

**Weighting factor for Criteria A and B**
Criterion A represents the design capacity of the treatment plant.

Every water treatment plant must be classified with DWS as per Regulation 2834. The classification of the treatment plant is based on a number of components, including size, complexity and electrical consumption, as per set criteria. The plant classification certificate is available on IRIS and supporting evidence provided by the WSA during plant registration is used to determine the risk rating for criterion A.

The risk rating is allocated according to the size of the treatment plant with higher risk rating given for a larger plant and lower risk rating for a smaller plant. The rationale is that a larger plant serves a larger community and therefore presents a higher risk if the plant is not functioning or is producing unsafe drinking water than a smaller plant which serves less people. The risk rating for criteria A remains the same provided the capacity stays the same, and all plants which have the same design capacity range will have the same maximum BDRR.

Risk Indicator B represents the % operational capacity in terms of design capacity.

The daily production versus the design capacity of the treatment plant is an important indicator to determine if the plant can provide sufficient, safe drinking water to all the consumers now and in the near future. When the plant is operating above its design capacity, major unit processes are overloaded and cannot achieve their operational limits which leads to water quality failures. Once daily production approaches 90% of design capacity, the WSA must plan, budget for and implement upgrades to the treatment facility to ensure there is sufficient supply, not only for human consumption, but also for economic activities such as mining, agriculture and industries.

Criterion B reports on the percentage operational flow in terms of design capacity. The ideal value is between 50 – 100%; higher values indicate the plant is overloaded and lower values indicate the plant is receiving too little flow which may also compromise performance due to lack of retention time (floculation, sedimentation).

**Risk Indicator C: Water Quality Compliance**

In South Africa, the SANS 241:2015 is the definitive reference on acceptable limits for drinking water quality parameters and provides limits for a range of water quality characteristics and water meeting this standard is deemed safe for lifetime consumption. In addition, the SANS 241: 2015 standard stipulates the frequency of sampling as well as the number of sample points required per supply system to ensure sufficient coverage of the network. The frequency and number of required sample points is dependent on the population size as outlined in Table 1 of SANS241:2015. Monitoring compliance is therefore critical to guarantee the safety of the supply at all points in the network.

Risk Indicator C is directly linked to the safety of the drinking water in the supply systems as it reports on compliance against the microbiological and chemical determinands and on the monitoring compliance.

**Risk Indicator C: Water Quality compliance = C1(70%) + C2 (30%)**

Both microbiological and chemical compliance accounts for monitoring compliance to ensure compliance is based on minimum required number of samples based on population size.
Expanded Formular is 

\[ C = (C1a \times C1b) + (C2a \times C2b) \]

Where:

- **C1: Microbiological compliance = C1a X C1b**
  - C1a: micro compliance, different weighting based on population size
  - C1b: micro monitoring compliance (MNR%) – monitoring compliance against registered programme, based on population size as per Table 2 in SANS 241-2: 2015

- **C2: Chemical compliance = C2a X C2b**
  - C2a: chemical compliance against all required determinands, different weighting based on population size
    - The chemical quality of the water supply must comply with the excellent requirements set by the Blue Drop Programme for all chemical-health determinands listed in the 2014 Blue Drop Limits, derived from SANS241:2006 and 2011 and includes, NO3 - and NO2 - as N, SO42-, Sb, As, Cd, Cr, Co, Cu, CN-, Pb, Hg, Ni, Se, V, DOC or TOC, and Total THM.
    - Performance assessment is based on the following:
      - Excellent Compliance (95% for <100 000 population) & (97% for >100 000 population)
      - Good Compliance (93% for 100 000 population) & (95% for >100 000 population)
  - C2b: chemical monitoring compliance calculated against Blue Drop requirements:
    - Actual monitoring occurs according to registered monitoring programme (>80%)
    - Number of samples: One sample each at treatment plant final and one distribution point, both of which must be analysed for at least 80% of determinands listed above (13 of the 17 determinands) i.e. at least 26 data points are required.

**Weighting for Ca – water quality compliance**

<table>
<thead>
<tr>
<th>Category / Description</th>
<th>Weighting Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population &lt;100 000</td>
<td></td>
</tr>
<tr>
<td>&lt;94% or No Information</td>
<td>9</td>
</tr>
<tr>
<td>94 &lt; 95%</td>
<td>7</td>
</tr>
<tr>
<td>95% &lt; 96%</td>
<td>5</td>
</tr>
<tr>
<td>96% &lt; 97%</td>
<td>3</td>
</tr>
<tr>
<td>97% &lt; 98%</td>
<td>2</td>
</tr>
<tr>
<td>≥ 98%</td>
<td>1</td>
</tr>
<tr>
<td>Population &gt;100 000</td>
<td></td>
</tr>
<tr>
<td>&lt;96% or No Information</td>
<td>9</td>
</tr>
<tr>
<td>96% &lt; 97%</td>
<td>7</td>
</tr>
<tr>
<td>97% &lt; 98%</td>
<td>5</td>
</tr>
<tr>
<td>98% &lt; 99%</td>
<td>3</td>
</tr>
<tr>
<td>≥ 99%</td>
<td>1</td>
</tr>
</tbody>
</table>

**Weighting for Cb - monitoring compliance**

<table>
<thead>
<tr>
<th>Category / Description</th>
<th>Weighting Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;80%</td>
<td>1</td>
</tr>
<tr>
<td>50% - 80%</td>
<td>2</td>
</tr>
<tr>
<td>30% - 49%</td>
<td>3</td>
</tr>
<tr>
<td>&lt;30%</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category / Description</th>
<th>Weighting Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;80%</td>
<td>1</td>
</tr>
<tr>
<td>50% - 80%</td>
<td>2</td>
</tr>
<tr>
<td>30% - 49%</td>
<td>3</td>
</tr>
<tr>
<td>&lt;30%</td>
<td>4</td>
</tr>
</tbody>
</table>
**Risk Indicator D: Technical Skills**

Under Section 9 (1) of the Water Services Act (108 of 1997), regulations relating to Compulsory National Standards for Process Controllers and Water Service Works stipulate the requirements for registration of all water and wastewater treatment plants. Regulation 2834 outlines the requirements for:

- Classification of water and wastewater treatment plants: based on size, complexity, and electrical consumption,
- Classification of process controllers and supervisors: based on qualifications and years of experience,
- Required number and classification of staff per shift based on the classification of the plant: more complex plants requires more skilled process controllers per shift.

Based on the shift patterns, the WSAs must align with the Regulation to ensure treatment plants are effectively operated and maintained for sustainable water services delivery.

Risk Indicator D: Technical Skills evaluates the compliance of technical staff against Blue Drop requirements as outlined below:

**Technical skills evaluation as per Blue Drop requirements**

<table>
<thead>
<tr>
<th>Works Class</th>
<th>Class Of Process Controller Per Shift</th>
<th>Class Of Process Controller for Supervision*</th>
<th>Operations And Maintenance Support Services Requirements*</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>Class I</td>
<td>Class V*</td>
<td>THESE PERSONNEL MUST BE AVAILABLE AT ALL TIMES BUT MAY BE IN-HOUSE OR OUTSOURCED</td>
</tr>
<tr>
<td>D</td>
<td>Class II</td>
<td>Class V*</td>
<td>- electrician</td>
</tr>
<tr>
<td>C</td>
<td>Class III</td>
<td>Class V*</td>
<td>- fitter</td>
</tr>
<tr>
<td>B</td>
<td>Class IV</td>
<td>Class V</td>
<td>- instrumentation technician</td>
</tr>
<tr>
<td>A</td>
<td>Class IV</td>
<td>Class V</td>
<td></td>
</tr>
</tbody>
</table>

*does not have to be at the works at all times but must be available at all times. If the Water Services Institution or owner of a waterwork has no person of this class employed on that work, a contractor / consultant with the required qualifications as prescribed in Schedule III in respect of that particular class of persons, shall be appointed to visit the work weekly.

Risk indicator D is calculated from three separate components which each carry the same weighting (1/3 of total):

- Compliance for process controllers: required number and class of process controllers per shift for specific class of plant.
- Compliance for supervisor: Class V required, either at the plant or available at all times.
- Compliance for maintenance team, subdivided into 3 sections, each with equal, proportional weighting:
  - civil team: plumbing qualification / trade test.
  - mechanical team: millwright or similar mechanical qualification.
  - electrical team: electrical qualification / trade test

**Weighting Factor for Criteria D**

<table>
<thead>
<tr>
<th>D = TECHNICAL SKILLS</th>
<th>Category / Description</th>
<th>Weighting Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor + Process Controllers + Maintenance Team</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Supervisor + Maintenance Team but no Process Controllers</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Process Controllers + Maintenance Team but no Supervisor</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Process Controllers + Supervisor but no Maintenance Team</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Supervisor &amp; no Maintenance Team &amp; no Process Controllers</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

**Risk Indicator E: Water Safety Plans**

The concept of using risk management processes to manage water supply systems effectively was introduced by the World Health Organisation (WHO) in 2004 and described as Water Safety Planning. The WHO states:

"The most effective means of consistently ensuring the safety of a drinking-water supply is through the use of a comprehensive risk assessment and risk management approach that encompasses all steps in water supply from catchment to consumer. In these Guidelines, such approaches are called water safety plans (WSPs)." (WSP Manual, 2007)
Since then more than 93 countries have adopted Water Safety Planning as a method for drinking water quality management with more than 70 countries having policies and regulations requiring Water Safety Plans.

In South Africa, the WaSP is a requirement for Blue Drop Certification with a scoring of 35% for comprehensive WSP and response monitoring. The National Drinking Water Standard, SANS241:2015 is closely aligned with the Water Safety Plans risk based approach with following specifications to ensure delivery of safe drinking water at all times:

Water quality risk assessment:
- At least annually or when quality changes
- Identify problem determinands + increase frequency of monitoring for problem determinands based on level of risk
- Risk-based monitoring programme unique to each supply system
- Routine compliance monitoring: based on population size and area
- Response monitoring: Incident Management Protocol to address incidents
- Verification of water quality: calculation of indices
- Water Safety Plan: adopt and implement

The Water Safety Plan is therefore a critical component of drinking water management and forms part of the BDRR calculation.

Risk Indicator E evaluates the following three critical components which are required for effective risk management:
- Completeness of the WSP as per World Health Organisation Water Safety Planning Manual,
- Development and adoption of risk-based monitoring programme as per SANS 241:2015, and
- Proof of implementation of the findings of the WSP to ensure there is continuous risk management and movement towards an overall lower risk rating.

The requirements are divided into 11 sub-elements that are evaluated to calculate the risk rating for this indicator as illustrated below.

**Weighting Factor for Criteria E**

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting Factor / Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No WSP</td>
<td>5</td>
</tr>
<tr>
<td>WSP contains X sub-elements</td>
<td>(5 - \left(\frac{X}{55}\right))</td>
</tr>
</tbody>
</table>

Note: if shortcomings for any of the sub-elements, then a higher risk rating is given.

**D. Multiple systems**

In many supply systems, there are more than one source of water and more than one water treatment plant. These multiple sources will all feed into one network and will therefore be combined. To calculate the BDRR for such multiple systems, the input data sheet makes allowance for selection of multiple systems. A BDRR score is then completed for each water source/treatment plant i.e. scores for A, B, C, D and E are calculated for each water source/treatment plant. A combined BDRR score is then calculated based on the proportion of flow supplied by each water source/treatment plant.

In summary, a proportional scoring is given for each risk indicator and for the system as a whole based on quantity of water provided by each water source/treatment plant.
The Lead Inspector contact the WSA and WSP to confirm dates, venue, logistics for audits, using the template DWS letter and BD criteria annexure

The Lead Inspector contact his/her audit team to plan, assign tasks, and engage DWS members on skills development focus areas

Each inspector obtain access to IRIS via the IRIS Helpdesk to study their WSI evidence before the audit event & to print a pdf of the WSI data

Each Inspector familiarise themselves with the IRIS BD scorecard, the excel-BD worksheet and the TSA/VROOM scorecard

The Lead Inspector prepopulates the excel worksheet with the most critical data from IRIS and may download information in pdf from IRIS to assist during audit. Leads may ask inspectors to assist but avoid duplication. All Panel Inspectors will have access to the IRIS

The Lead Inspector cross check if the IRIS systems check out with the BDPAT systems. If not, complete a Variation Report and send to Maryna to update IRIS or to seek clarity. This same process applies if the Inspector find more or less systems during the audit process

The Lead Inspector distribute the pre-populated BD worksheet and pdf summary to panel members, and ensure full readiness by each inspector

The main audits are undertaken using the prepopulated excel worksheet and PDF data summary from IRIS

The Lead Inspector consolidates individual worksheets from panel members and complete a draft BD scorecard on IRIS, with auditor comments. The TSA is submitted as an excel file. Madi auditors to submit their individuals worksheets as PoE to support claims. The Lead notifies the Moderator that the interim BD IRIS scorecard and excel TSA

The Lead Inspector addresses shortcomings or concerns from the Moderator and update the IRIS BD scorecard and TSA for further moderation

The Moderator moderates the BD scorecard (with Moderator comments) on IRIS and revert back to the Lead Inspector to either 1) correct shortfall and return for further moderation, or 2) inform the

The Lead Inspector prepopulates the excel worksheet with the most critical data from IRIS and may download information in pdf from IRIS to assist during audit. Leads may ask inspectors to assist but avoid duplication. All Panel Inspectors will have access to the IRIS

The Moderator moderates the BD scorecard (with Moderator comments) on IRIS and revert back to the Lead Inspector to either 1) correct shortfall and return for further moderation, or 2) inform the

The Moderator engages the Lead Inspector if any queries after publication of BD audit report/results. The Lead Inspector investigates and communicate corrections to the Moderator and BD author needed. The BD author engages DWS management and update the Report. IRIS publishes an Erratum to the BD Report.

OR

The Lead Inspector notifies the WSI that their preliminary BD results are ready for viewing on IRIS (or share as and IRIS Confirmation Report) and request the WSI to prepare for the Confirmation Audit. The Lead provides the WSI with a date, time and electronic link for this audit event

The Lead or assigned Inspector keep attendance registers, photos, and recording records of the audit

The virtual confirmation sessions are undertaken using the IRIS moderated scorecard, with each Inspector still supporting their respective audits using the consolidated excel

The Moderator moderates the final BD scorecard on IRIS and revert back to the Lead Inspector if any shortfalls to be

The Lead Inspector confirm the final scorecard on IRIS with his/her team, write up the Regulatory and TSA comment (& photos) and notifies the Moderator that the final moderation is due

The Moderator moderates the final BD scorecard on IRIS and revert back to the Lead Inspector if any shortfalls to be

The Moderator moderates the final BD scorecard on IRIS and revert back to the Lead Inspector if any shortfalls to be

The Moderator moderates the final BD scorecard on IRIS and revert back to the Lead Inspector if any shortfalls to be

The Moderator moderates the final BD scorecard on IRIS and revert back to the Lead Inspector if any shortfalls to be

The Moderator moderates the final BD scorecard on IRIS and revert back to the Lead Inspector if any shortfalls to be
The following is an example of a typical report card that appears in the Blue Drop Report 2023. Results are provided in colour coded format – each colour has a specific meaning and performance reference.

### Municipal Blue Drop Score

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>82%</td>
<td>↑</td>
</tr>
<tr>
<td>2014</td>
<td>64%</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>45%</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>26%</td>
<td></td>
</tr>
</tbody>
</table>

### Key Performance Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
<th>Name</th>
<th>System Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk/WSP</td>
<td>15%</td>
<td></td>
<td>&lt;Name&gt;</td>
</tr>
<tr>
<td>Capacity Management</td>
<td>20%</td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>DWQ Risk Management</td>
<td>10%</td>
<td></td>
<td>72%</td>
</tr>
<tr>
<td>Financial Management</td>
<td>20%</td>
<td></td>
<td>76%</td>
</tr>
<tr>
<td>Technical Management</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DWQ Compliance</td>
<td>35%</td>
<td></td>
<td>70%</td>
</tr>
<tr>
<td>Bonus</td>
<td>10%</td>
<td></td>
<td>80%</td>
</tr>
<tr>
<td>Penalties</td>
<td>10%</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Disqualifiers</td>
<td>0%</td>
<td></td>
<td>None</td>
</tr>
</tbody>
</table>

### Blue Drop Score 2023

- % 82%↑

### System Design Capacity

- kl/d 28,000

### System Available Capacity

- kl/d 28,000

### System Input Volume

- kl/d 20,000

### Capacity Utilisation (%)

- kl/d 77%

### Average Daily Consumption (l/p/d)

- 176

### Resource Abstracted From

- Mhlongo River

### Microbiological Compliance

- % 98%

### Chemical Compliance

- % 97%

### Risk Defined Compliance

- % 95%

### VROOM

- Rand R12,831,000

### BDPRR 2023

- % 71%

### BDPRR 2022

- % 76%

### Water Use Efficiency formula

\[
\text{WUE (l/cap/day)} = \frac{\text{SIV}}{\text{Population}}
\]

### WUE (l/cap/day) performance categories

- >200: Extremely high per capita water use
- 200-360: Poor per capita water use
- 260-310: Average per capita water use with potential for marked improvement
- 150-260: Good per capita water use but some improvement may be possible subject to economic benefit
- <150: Excellent per capita water use management

### Colour codes

- ≥95-100%: Excellent situation, need to maintain via continued improvement
- 80-95%: Good status, improve where gaps identified to shift to ‘excellent’
- 50-<80%: Average performance, ample room for improvement
- 31-<50%: Very poor performance, need targeted turnaround interventions
- 0-<31%: Critical state, need urgent intervention for all aspects of the water services business

### WTW Outflow to the WSS or Daily Treated Flow/Operational Capacity

- Capacity Utilisation calculated as dividing the SIV by the system Available Capacity
- Water Use Efficiency calculated by dividing the SIV by the Population (see legend below)

### BDPRR Certification

- A system is disqualified from BD Certification if it defaulted to respond to a Notice/Directive
- DWQ compliance with SANS 241:2015 and the BD requirements as audited under KPA 5. A system is disqualified from BD Certification if microbiological and/or chemical compliance not “Excellent” status

### The final BD score - same colour legends as above

- The WSI BD score is a Performance Indicator of the overall water business of the organisation. See colour legends below.
- Arrows: Depict the current BD status of the plant. A ↑ arrow shows improvement, ↓ shows digress, → shows unchanged situation.
### Quality of Drinking Water Drop Definition

<table>
<thead>
<tr>
<th>Colour Drop</th>
<th>Indication of Drop</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="blue-drop-certified.png" alt="Blue Drop Certified" /></td>
<td>Blue Drop Certified</td>
</tr>
<tr>
<td><img src="water-complied.png" alt="Water Complied" /></td>
<td>Water complied excellently with standard; safe to drink&lt;br&gt;Micro &gt;97%&lt;br&gt;Chemical &gt;95%</td>
</tr>
<tr>
<td><img src="water-safe.png" alt="Water Safe" /></td>
<td>Water safe to drink but some chemical parameter compliance required improvement&lt;br&gt;Micro &gt;97%&lt;br&gt;Chemical &lt;95% (or no information)</td>
</tr>
<tr>
<td><img src="water-generally-safe.png" alt="Water Generally Safe" /></td>
<td>Water generally safe to drink but with recorded some microbiological failures&lt;br&gt;Micro &lt;97%&lt;br&gt;Chemical &gt;95%</td>
</tr>
<tr>
<td><img src="water-did-not-comply.png" alt="Water Did Not Comply" /></td>
<td>Water did not comply according to expected standard targets&lt;br&gt;Micro &gt;90% but &lt;95%&lt;br&gt;Chemical &gt;90% but &lt;95%</td>
</tr>
<tr>
<td><img src="compliance-levels-too-low.png" alt="Compliance Levels Too Low" /></td>
<td>Compliance levels too low; there were extended periods when the water did not comply with standard / or no monitoring to confirm actual quality of tap water&lt;br&gt;Micro &lt;90%&lt;br&gt;Chemical &lt;90%</td>
</tr>
</tbody>
</table>
### ANNEXURE D: ACRONYMS

<table>
<thead>
<tr>
<th>ACRONYMS</th>
<th>DESCRIPTION</th>
<th>ACRONYMS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>Asbestos Cement</td>
<td>NA</td>
<td>Not Assessed or Not Applied</td>
</tr>
<tr>
<td>AGSA</td>
<td>Auditor General of South Africa</td>
<td>ND</td>
<td>No Drop</td>
</tr>
<tr>
<td>AW</td>
<td>Amatola Water</td>
<td>NDP</td>
<td>National Development Plan</td>
</tr>
<tr>
<td>BD</td>
<td>Blue Drop</td>
<td>NI</td>
<td>No Information</td>
</tr>
<tr>
<td>BDC</td>
<td>Blue Drop Certification</td>
<td>NGO</td>
<td>Non-Government Organisation</td>
</tr>
<tr>
<td>BDPAT</td>
<td>Blue Drop Progress Assessment Tool</td>
<td>NLA</td>
<td>National Laboratory Association</td>
</tr>
<tr>
<td>BDRR</td>
<td>Blue Drop Risk Rating</td>
<td>NQF</td>
<td>National Qualifications Framework</td>
</tr>
<tr>
<td>BH</td>
<td>Borehole</td>
<td>NMB</td>
<td>Nelson Mandela Bay</td>
</tr>
<tr>
<td>BWS</td>
<td>Bulk Water Supplier</td>
<td>NT</td>
<td>National Treasury</td>
</tr>
<tr>
<td>CAP</td>
<td>Corrective Action Plan</td>
<td>NTU</td>
<td>Nephelometric Turbidity Units</td>
</tr>
<tr>
<td>CAPEX</td>
<td>Capital Expenditure</td>
<td>NWA</td>
<td>National Water Act</td>
</tr>
<tr>
<td>CBD</td>
<td>Central Business District</td>
<td>NRW</td>
<td>Non-Revenue Water</td>
</tr>
<tr>
<td>CBO</td>
<td>Community Based Organisation</td>
<td>O&amp;M</td>
<td>Operation and Maintenance</td>
</tr>
<tr>
<td>CFO / CEO</td>
<td>Chief Financial/Executive Officer</td>
<td>OHS</td>
<td>Occupational Health and Safety</td>
</tr>
<tr>
<td>CoJ</td>
<td>City of Johannesburg</td>
<td>OPEX</td>
<td>Operating Expenditure</td>
</tr>
<tr>
<td>CoCT</td>
<td>City of Cape Town</td>
<td>OW</td>
<td>Overberg Water</td>
</tr>
<tr>
<td>CoE</td>
<td>City of Ekurhuleni</td>
<td>PA</td>
<td>Process Audit; Performance Agreement</td>
</tr>
<tr>
<td>COGTA</td>
<td>Cooperative Government and Traditional Affairs</td>
<td>PC</td>
<td>Process Controller</td>
</tr>
<tr>
<td>CoM</td>
<td>City of Mbombela</td>
<td>PMFA</td>
<td>Public Financial Management Act</td>
</tr>
<tr>
<td>CoT</td>
<td>City of Tshwane</td>
<td>PMU</td>
<td>Project Management Unit</td>
</tr>
<tr>
<td>CRR</td>
<td>Cumulative Risk Ratio; Capital Replacement Reserve</td>
<td>PoE</td>
<td>Portfolio of Evidence</td>
</tr>
<tr>
<td>CSIR</td>
<td>Council for Scientific and Industrial Research</td>
<td>PrPC</td>
<td>Professional Process Controller</td>
</tr>
<tr>
<td>CVW</td>
<td>Central Vaal Water (formerly Bloem Water)</td>
<td>PTS</td>
<td>Participatory Testing Scheme</td>
</tr>
<tr>
<td>DAV</td>
<td>Dissolved Air Flotation</td>
<td>R</td>
<td>Rand</td>
</tr>
<tr>
<td>DBS</td>
<td>Development Bank of Southern Africa</td>
<td>RBIG</td>
<td>Regional Bulk Infrastructure Grant</td>
</tr>
<tr>
<td>DCG/DCOG</td>
<td>Department of Cooperative Governance</td>
<td>Reg</td>
<td>Regulation</td>
</tr>
<tr>
<td>DFFE</td>
<td>Department of Forestry, Fisheries and Environment</td>
<td>RO</td>
<td>Reverse Osmosis</td>
</tr>
<tr>
<td>DHS</td>
<td>Department of Human Settlements</td>
<td>RR</td>
<td>Risk Register</td>
</tr>
<tr>
<td>DM</td>
<td>District Municipality</td>
<td>RW</td>
<td>Rand Water</td>
</tr>
<tr>
<td>DPW</td>
<td>Department of Public Works</td>
<td>RWSS</td>
<td>Rural Water Supply System</td>
</tr>
<tr>
<td>DR</td>
<td>Doctor</td>
<td>SACNASP</td>
<td>South African Council for Natural Scientific Professions</td>
</tr>
<tr>
<td>DWQ</td>
<td>Drinking Water Quality</td>
<td>SAHRC</td>
<td>South African Human Rights Commission</td>
</tr>
<tr>
<td>DWS</td>
<td>Department of Water and Sanitation</td>
<td>SALGA</td>
<td>South African Local Government Association</td>
</tr>
<tr>
<td>ECSA</td>
<td>Engineering Council of South Africa</td>
<td>SANAS</td>
<td>South African National Accreditation System</td>
</tr>
<tr>
<td>EDAMS</td>
<td>Water Management Engineering Management and Design System</td>
<td>SANParks</td>
<td>South African National Parks</td>
</tr>
<tr>
<td>FAR</td>
<td>Fixed Asset Register</td>
<td>RR</td>
<td>Risk Register</td>
</tr>
<tr>
<td>FY</td>
<td>Financial Year</td>
<td>SCADA</td>
<td>Supervisory Control and Acquisition Data</td>
</tr>
<tr>
<td>GD</td>
<td>Green Drop</td>
<td>SCM</td>
<td>Supply Chain Management</td>
</tr>
<tr>
<td>GG</td>
<td>Government Gazette</td>
<td>SHEQ</td>
<td>Safety Health Environment Quality</td>
</tr>
<tr>
<td>GVR</td>
<td>General Valuation Roll</td>
<td>SIV</td>
<td>System Input Volume</td>
</tr>
<tr>
<td>HOD</td>
<td>Head of Department</td>
<td>SLA</td>
<td>Service Level Agreement</td>
</tr>
<tr>
<td>HRM</td>
<td>Human Resource Management</td>
<td>SWPN</td>
<td>Strategic Water Partners Network</td>
</tr>
<tr>
<td>IDP</td>
<td>Integrated Development Plan</td>
<td>TSA</td>
<td>Technical Site Assessment</td>
</tr>
<tr>
<td>IMP</td>
<td>Incident Management Protocol</td>
<td>UPS</td>
<td>Utility Power Supply</td>
</tr>
<tr>
<td>IMQS</td>
<td>Infrastructure Management Quality Solutions/Software</td>
<td>USDG</td>
<td>Urban Settlements Development Grant</td>
</tr>
<tr>
<td>IR</td>
<td>Incident Register</td>
<td>UW</td>
<td>Umgeni Water; uMhlathuze Water; uThukela Water</td>
</tr>
<tr>
<td>ACRONYMS</td>
<td>DESCRIPTION</td>
<td>ACRONYMS</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>IRIS</td>
<td>Integrated Regulatory Information System</td>
<td>VROOM</td>
<td>Very Rough Order Of Measurement/Magnitude</td>
</tr>
<tr>
<td>ISO</td>
<td>International Standards Organisation</td>
<td>VSD</td>
<td>Variable Speed Drive</td>
</tr>
<tr>
<td>IWA</td>
<td>International Water Association</td>
<td>WaSP</td>
<td>Water Safety Plan</td>
</tr>
<tr>
<td>JW</td>
<td>Johannesburg Water</td>
<td>WAL</td>
<td>Water Abstraction License</td>
</tr>
<tr>
<td>KPA</td>
<td>Key Performance Area</td>
<td>WB</td>
<td>Water Board</td>
</tr>
<tr>
<td>kl</td>
<td>kilo litre</td>
<td>WCDM Bulk</td>
<td>West Coast District Municipality Bulk</td>
</tr>
<tr>
<td>km</td>
<td>kilo metre</td>
<td>WCDM</td>
<td>Water Conservation Demand Management</td>
</tr>
<tr>
<td>kWh</td>
<td>kilo Watt hour</td>
<td>WF</td>
<td>Weighting Factor</td>
</tr>
<tr>
<td>L/c/p or L/p/d</td>
<td>Litres per person/capita per day</td>
<td>WHO</td>
<td>World Health Organisation</td>
</tr>
<tr>
<td>LM</td>
<td>Local Municipality</td>
<td>WISA</td>
<td>Water Institute of South Africa</td>
</tr>
<tr>
<td>LNW</td>
<td>Lepelle Northern Water</td>
<td>WQ</td>
<td>Water Quality</td>
</tr>
<tr>
<td>MCPH</td>
<td>Municipal Capability and Partnership Programme</td>
<td>WQMS</td>
<td>Water Quality Management System</td>
</tr>
<tr>
<td>MFIP</td>
<td>Municipal Financial Improvement Programme</td>
<td>WRC</td>
<td>Water Research Commission</td>
</tr>
<tr>
<td>MFMA</td>
<td>Municipal Financial Management Act</td>
<td>WSA</td>
<td>Water Services Authority; Water Services Act</td>
</tr>
<tr>
<td>MIG</td>
<td>Municipal Infrastructure Grant</td>
<td>WSDP</td>
<td>Water Services Development Plan</td>
</tr>
<tr>
<td>MINMEC</td>
<td>Ministers and members of Executive Councils Meeting</td>
<td>WSP</td>
<td>Water Services Provider</td>
</tr>
<tr>
<td>MISA</td>
<td>Municipal Infrastructure Support Agent</td>
<td>WSI</td>
<td>Water Services Institution</td>
</tr>
<tr>
<td>MI</td>
<td>Mega litre</td>
<td>WSIG</td>
<td>Water Services Infrastructure Grant</td>
</tr>
<tr>
<td>MI/d</td>
<td>Mega litres per day</td>
<td>WSIP</td>
<td>Water Services Improvement Programme</td>
</tr>
<tr>
<td>MM</td>
<td>Metropolitan Municipality; Municipal Manager</td>
<td>WSS</td>
<td>Water Supply System</td>
</tr>
<tr>
<td>MSA</td>
<td>Municipal Structures Act</td>
<td>WSSA</td>
<td>Water and Sanitation South Africa</td>
</tr>
<tr>
<td>MTEF</td>
<td>Medium Term Expenditure Framework</td>
<td>WTP/W</td>
<td>Water Treatment Plant/Works</td>
</tr>
<tr>
<td>MW</td>
<td>Magalies Water; Midvaal Water</td>
<td>WUA</td>
<td>Water Use Authorisation</td>
</tr>
<tr>
<td>MWH</td>
<td>Mega Watt Hour</td>
<td>WUE</td>
<td>Water Use Efficiency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WUL</td>
<td>Water Use License</td>
</tr>
<tr>
<td>PROVINCES</td>
<td></td>
<td>NW</td>
<td>North West</td>
</tr>
<tr>
<td>EC</td>
<td>Eastern Cape</td>
<td>FS</td>
<td>Free State</td>
</tr>
<tr>
<td>FS</td>
<td>Free State</td>
<td>NC</td>
<td>Northern Cape</td>
</tr>
<tr>
<td>GP</td>
<td>Gauteng</td>
<td>KZN</td>
<td>KwaZulu Natal</td>
</tr>
<tr>
<td>LP</td>
<td>Limpopo</td>
<td>WC</td>
<td>Western Cape</td>
</tr>
<tr>
<td>MP</td>
<td>Mpumalanga</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 1 - National Summary of Water Treatment Works, Water Supply Systems, Populations, Water Boards and Water Service Providers

Table 2 - National Summary of the 2023 Blue Drop Audit key performance Areas

Table 3 - National 2023 Blue Drop Summary

Table 4 - National Summary of Capacities, Daily Production and SIV distribution according to plant sizes

Table 5 - National Summary of Water Distribution Reticulation Infrastructure

Table 6 - National Blue Drop Comparative Analysis from 2012 to 2023

Table 7 - National Blue Drop Scores Performance Categories from 2014 and 2023

Table 8 - National BDRR/BDRRmax Comparative Analysis from 2022 and 2023

Table 9 - WSSs with <31% Blue Drop scores

Table 10 - %BDRR/BDRRmax scores and WSSs in critical and high-risk space

Table 11 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs

Table 12 - National Summary of the no. compliant versus shortfall in Supervisor and Process Controller staff

Table 13 - National Summary of the no. qualified and shortfall of Engineering, Technical and Scientific staff

Table 14 - National Summary of no. of WTWs with operational staff sent on training over the past 2 years and vice versa

Table 15 - National Summary of WTWs design & available capacities, average daily production, % available capacity & total SIV

Table 16 - National Summary: Abstraction Volumes (Authorised), Ave. Daily Treatment Volumes, Variances & WTWs listed for Enforcement Action

Table 17 - National Summary of total SIV, total population served, average daily consumption, WUE status and performance trend

Table 18 - National Summary of the KPA 2 WTW operational and WSS compliance monitoring status

Table 19 - National Summary of the DWQ Status for Microbiological Compliance

Table 20 - National Summary of the DWQ Status for Chemical Acute Health and Chronic Health Compliance

Table 21 - National Summary of Penalties Applied to WSSs for not issuing Advisory Notices

Table 22 - National Summary of the DWQ Compliance for Risk Defined Compliance

Table 23 - National Summary of the Treatment (Operational) Efficiency Index

Table 24 - National Summary of VROOM cost estimates total and split for civil, mechanical, and electrical

Table 25 - National Summary of the capital budgets, O&M budgets, O&M actual expenditure, and current asset values

Table 26 - National SALGA-WRC annual maintenance budget guideline and cost estimation

Table 27 - National O&M cost estimates by the SALGA versus actual budget and expenditure figures

Table 28 - 2023 Blue Drop Summary

Table 29 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes

Table 30 - Summary of Water Distribution Reticulation Infrastructure

Table 31 - Blue Drop Comparative Analysis from 2012 to 2023

Table 32 - Municipal BDRR/BDRRmax Comparative Analysis from 2022 and 2023

Table 33 - WSSs with <31% Blue Drop scores

Table 34 - %BDRR/BDRRmax scores and WSSs in critical and high-risk space

Table 35 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs

Table 36 - No. compliant versus shortfall in Supervisor and Process Controller staff

Table 37 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff

Table 38 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa

Table 39 - Summary of WTWs design and available capacities, average daily production, % available capacity, and total SIV towards the WSSs

Table 40 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances & WTWs Listed for Enforcement Action

Table 41 - Summary of total SIV, total population served, average daily consumption, WUE status and performance trend

Table 42 - Summary of the KPA 2 WTW operational and WSS compliance monitoring status

Table 43 - Provincial Summary of the DWQ Status for Microbiological Compliance

Table 44 - Provincial Summary of the DWQ Status for Chemical Acute Health and Chronic Health Compliance

Table 45 - Summary of Penalties Applied to WSSs for not issuing Advisory Notices

Table 46 - Summary of the DWQ Compliance for Risk Defined Compliance

Table 47 - Summary of the Treatment (Operational) Efficiency Index

Table 48 - %TSA and %BD score, and VROOM cost estimates total and split for civil, mechanical, and electrical

Table 49 - Summary of the capital budgets, O&M budgets, O&M actual expenditure, and current asset values

Table 50 - SALGA-WRC annual maintenance budget guideline and cost estimation

Table 51 - O&M cost estimates by the SALGA versus actual budget and expenditure figures

Table 52 - BD Audit Water Supply Operations Cost Determination and Water Supply O&M Budget status

Table 53 - 2023 Blue Drop Summary

Table 54 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes

Table 55 - Summary of Water Distribution Infrastructure

Table 56 - Blue Drop Comparative Analysis from 2012 to 2023

Table 57 - Municipal BDRR/BDRRmax Comparative Analysis from 2022 and 2023

Table 58 - WSSs with <31% Blue Drop scores

Table 59 - %BDRR/BDRRmax scores and WSSs in critical and high-risk space

Table 60 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs

Table 61 - No. compliant versus shortfall in Supervisor and Process Controller staff

Table 62 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff

Table 63 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa
<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
</tr>
<tr>
<td>112</td>
</tr>
<tr>
<td>114</td>
</tr>
<tr>
<td>115</td>
</tr>
<tr>
<td>116</td>
</tr>
<tr>
<td>117</td>
</tr>
<tr>
<td>118</td>
</tr>
<tr>
<td>119</td>
</tr>
<tr>
<td>120</td>
</tr>
<tr>
<td>120</td>
</tr>
<tr>
<td>121</td>
</tr>
<tr>
<td>123</td>
</tr>
<tr>
<td>123</td>
</tr>
<tr>
<td>151</td>
</tr>
<tr>
<td>152</td>
</tr>
<tr>
<td>153</td>
</tr>
<tr>
<td>154</td>
</tr>
<tr>
<td>155</td>
</tr>
<tr>
<td>157</td>
</tr>
<tr>
<td>159</td>
</tr>
<tr>
<td>161</td>
</tr>
<tr>
<td>162</td>
</tr>
<tr>
<td>163</td>
</tr>
<tr>
<td>165</td>
</tr>
<tr>
<td>166</td>
</tr>
<tr>
<td>167</td>
</tr>
<tr>
<td>168</td>
</tr>
<tr>
<td>169</td>
</tr>
<tr>
<td>170</td>
</tr>
<tr>
<td>171</td>
</tr>
<tr>
<td>172</td>
</tr>
<tr>
<td>172</td>
</tr>
<tr>
<td>172</td>
</tr>
<tr>
<td>179</td>
</tr>
<tr>
<td>180</td>
</tr>
<tr>
<td>181</td>
</tr>
<tr>
<td>182</td>
</tr>
<tr>
<td>183</td>
</tr>
<tr>
<td>184</td>
</tr>
<tr>
<td>185</td>
</tr>
<tr>
<td>186</td>
</tr>
<tr>
<td>187</td>
</tr>
<tr>
<td>188</td>
</tr>
<tr>
<td>190</td>
</tr>
<tr>
<td>191</td>
</tr>
<tr>
<td>192</td>
</tr>
<tr>
<td>193</td>
</tr>
<tr>
<td>194</td>
</tr>
<tr>
<td>195</td>
</tr>
<tr>
<td>196</td>
</tr>
<tr>
<td>197</td>
</tr>
<tr>
<td>198</td>
</tr>
<tr>
<td>199</td>
</tr>
<tr>
<td>200</td>
</tr>
<tr>
<td>201</td>
</tr>
<tr>
<td>202</td>
</tr>
<tr>
<td>204</td>
</tr>
<tr>
<td>205</td>
</tr>
<tr>
<td>206</td>
</tr>
<tr>
<td>207</td>
</tr>
<tr>
<td>208</td>
</tr>
<tr>
<td>209</td>
</tr>
<tr>
<td>210</td>
</tr>
<tr>
<td>211</td>
</tr>
<tr>
<td>212</td>
</tr>
<tr>
<td>213</td>
</tr>
<tr>
<td>214</td>
</tr>
<tr>
<td>215</td>
</tr>
<tr>
<td>216</td>
</tr>
<tr>
<td>217</td>
</tr>
<tr>
<td>218</td>
</tr>
<tr>
<td>219</td>
</tr>
<tr>
<td>220</td>
</tr>
<tr>
<td>221</td>
</tr>
<tr>
<td>222</td>
</tr>
<tr>
<td>223</td>
</tr>
<tr>
<td>224</td>
</tr>
<tr>
<td>225</td>
</tr>
<tr>
<td>226</td>
</tr>
<tr>
<td>227</td>
</tr>
<tr>
<td>228</td>
</tr>
<tr>
<td>229</td>
</tr>
<tr>
<td>230</td>
</tr>
<tr>
<td>231</td>
</tr>
<tr>
<td>232</td>
</tr>
<tr>
<td>233</td>
</tr>
<tr>
<td>234</td>
</tr>
<tr>
<td>235</td>
</tr>
<tr>
<td>236</td>
</tr>
<tr>
<td>237</td>
</tr>
<tr>
<td>238</td>
</tr>
<tr>
<td>239</td>
</tr>
<tr>
<td>240</td>
</tr>
<tr>
<td>241</td>
</tr>
<tr>
<td>242</td>
</tr>
<tr>
<td>243</td>
</tr>
<tr>
<td>244</td>
</tr>
<tr>
<td>245</td>
</tr>
<tr>
<td>246</td>
</tr>
<tr>
<td>247</td>
</tr>
<tr>
<td>248</td>
</tr>
</tbody>
</table>
Table 127 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes ................................................................. 249
Table 128 - Summary of Water Distribution Reticulation Infrastructure ......................................................................................................................... 250
Table 129 - Blue Drop Comparative Analysis from 2012 to 2023 ................................................................................................................................. 250
Table 130 - Municipal BDRR/BDRRmax Comparative Analysis from 2022 and 2023 ......................................................................................... 252
Table 131 - WSSs with <31% Blue Drop scores .................................................................................................................................................. 252
Table 132 - %BDRR/BDRRmax scores and WSSs in critical and high-risk space ................................................................................................. 253
Table 133 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs ........................................................................... 255
Table 134 - No. compliant versus shortfall in Supervisor and Process Controller staff .......................................................................................... 255
Table 135 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff ................. 257
Table 136 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa ............................................................... 259
Table 137 - Summary of WTWs design and available capacities, average daily production, % available capacity, and total SIV towards the WSSs ........................................................................................................... 259

Table 138 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances & WTWs listed For Enforcement Action ..................................................................................................................... 261
Table 139 - Summary of total SIV, total population served, average daily consumption, WUE status and performance trend ......................... 262
Table 140 - Summary of the KPA 2 WTW operational and WSS compliance monitoring status ........................................................................................................ 264
Table 141 - Provincial Summary of the DWQ Status for Microbiological Compliance .......................................................................................... 264
Table 142 - Provincial Summary of the DWQ Status for Chemical Acute Health and Chronic Health Compliance ......................................................... 265
Table 143 - Summary of Penalties Applied to WSSs for not Issuing Advisory Notices .......................................................................................... 266
Table 144 - Summary of the DWQ Compliance for Risk Defined Compliance .................................................................................................. 267
Table 145 - Summary of the Treatment (Operational) Efficiency Index .................................................................................................................. 267
Table 146 - %TSA and %BD score, and VROOM cost estimates total and split for civil, mechanical, and electrical ............................................ 268
Table 147 - Summary of the capital budgets, O&M budgets, O&M actual expenditure, and current asset values .................................................. 269
Table 148 - SALGA-WRC annual maintenance budget guideline and cost estimation .......................................................................................... 270
Table 149 - O&M cost estimates by the SALGA versus actual budget and expenditure figures ................................................................. 270
Table 150 - BD Audit Water Supply Operations Cost Determination and Water Supply O&M Budget status ......................................................... 270
Table 151 - 2023 Blue Drop Summary ......................................................................................................................................................... 292
Table 152 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes ................................................................. 293
Table 153 - Summary of Water Distribution Reticulation Infrastructure ........................................................................................................... 294
Table 154 - Blue Drop Comparative Analysis from 2012 to 2023 ................................................................................................................................. 295
Table 155 - Municipal BDRR/BDRRmax Comparative Analysis from 2022 and 2023 ......................................................................................... 296
Table 156 - WSSs with <31% Blue Drop scores .................................................................................................................................................. 297
Table 157 - %BDRR/BDRRmax scores and WSSs in critical and high-risk space ................................................................................................. 297
Table 158 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs ........................................................................... 299
Table 159 - No. compliant versus shortfall in Supervisor and Process Controller staff .......................................................................................... 299
Table 160 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff ................. 301
Table 161 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa ............................................................... 303
Table 162 - Summary of WTWs design and available capacities, average daily production, % available capacity, and total SIV towards the WSSs ........................................................................................................... 304

Table 163 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances & WTWs listed For Enforcement Action ..................................................................................................................... 306
Table 164 - Summary of total SIV, total population served, average daily consumption, WUE status and performance trend ......................... 308
Table 165 - Summary of the KPA 2 WTW operational and WSS compliance monitoring status ........................................................................................................ 309
Table 166 - Provincial Summary of the DWQ Status for Microbiological Compliance .......................................................................................... 310
Table 167 - Provincial Summary of the DWQ Status for Chemical Acute Health and Chronic Health Compliance ......................................................... 311
Table 168 - Summary of Penalties Applied to WSSs for not Issuing Advisory Notices .......................................................................................... 312
Table 169 - Summary of the DWQ Compliance for Risk Defined Compliance .................................................................................................. 312
Table 170 - Summary of the Treatment (Operational) Efficiency Index .................................................................................................................. 313
Table 171 - %TSA and %BD score, and VROOM cost estimates total and split for civil, mechanical, and electrical ............................................ 314
Table 172 - Summary of the capital budgets, O&M budgets, O&M actual expenditure, and current asset values .................................................. 314
Table 173 - SALGA-WRC annual maintenance budget guideline and cost estimation .......................................................................................... 315
Table 174 - O&M cost estimates by the SALGA versus actual budget and expenditure figures ................................................................. 316
Table 175 - BD Audit Water Supply Operations Cost Determination and Water Supply O&M Budget status ......................................................... 316
Table 176 - 2023 Blue Drop Summary ......................................................................................................................................................... 344
Table 177 - Summary of Capacities, Daily Production and SIV distribution according to plant sizes ................................................................. 345
Table 178 - Summary of Water Distribution Reticulation Infrastructure ........................................................................................................... 346
Table 179 - Blue Drop Comparative Analysis from 2012 to 2023 ................................................................................................................................. 347
Table 180 - Municipal BDRR/BDRRmax Comparative Analysis from 2022 and 2023 ......................................................................................... 348
Table 181 - WSSs with <31% Blue Drop scores .................................................................................................................................................. 349
Table 182 - %BDRR/BDRRmax scores and WSSs in critical and high-risk space ................................................................................................. 349
Table 183 - Summary of the key diagnostic themes and reference to the respective Blue Drop KPAs ........................................................................... 351
Table 184 - No. compliant versus shortfall in Supervisor and Process Controller staff .......................................................................................... 351
Table 185 - Summary of the maintenance capacity and no. of qualified and shortfall of Engineering, Technical and Scientific staff ................. 353
Table 186 - No. of WTWs with operational staff sent on training over the past 2 years and vice versa ............................................................... 355
Table 187 - Summary of WTWs design and available capacities, average daily production, % available capacity, and total SIV towards the WSSs ........................................................................................................... 356
Table 188 - Summary of Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances & WTWs listed For Enforcement Action ..................................................................................................................... 357
Table 189 - Summary of total SIV, total population served, average daily consumption, WUE status and performance trend ......................... 359
Figure 44 - Ratio of compliant operational staff to no. of WTWs and Comparison of Ratios with BD scores

Figure 45 - Graphic illustration of the number and %: a) qualified engineering/technical staff; b) professional scientists; c) access to credible laboratory services that complies with Blue Drop standards

Figure 46 - Ratio of compliant technical staff to no. of WSSs and Comparison of Ratios with BD scores

Figure 47 - %WTWs that have trained operational staff over the past two years

Figure 48 - Design and available capacity, average daily production, available variance and total SIV for the WTWs

Figure 49 - % available capacity

Figure 50 - Abstraction Volumes (Authorised), Average Daily Treatment Volumes, Variances

Figure 51 - Total SIV towards the WSSs

Figure 52 - Total Population served

Figure 53 - Provincial Microbiological Drinking Water Quality Status

Figure 54 - Provincial Chemical Acute Health and Chronic Health Drinking Water Quality Status

Figure 55 - Total current asset value reported

Figure 56 - Capacities, Daily Production and SIV Distribution - (a) micro to medium sized WTWs, (b) large WTWs, and (c) macro sized WTWs

Figure 57 - Blue Drop trend analysis over the period 2012 to 2023, indicating the percentage BD scores above and below 50%

Figure 58 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right)

Figure 59 - a) WSS risk distribution and trends for 2022 and 2023; b) Colour legend

Figure 60 - a) Blue Drop scores 2014 (bar left) and 2023 (bar right); b) Colour legend

Figure 61 - a) %BDRR/BDRR\textsubscript{max} Risk Performance Profile/Log 2023; b) Colour legend

Figure 62 - Schematic illustration of compliant and shortfall of Supervisors (a) and Process Controllers (b)

Figure 63 - Ratio of compliant operational staff to no. of WTWs and Comparison of Ratios with BD scores

Figure 64 - Graphic illustration of the number and %: a) qualified engineering/technical staff; b) professional scientists; c) access to credible laboratory services that complies with Blue Drop standards

Figure 65 - Ratio of compliant technical staff to no. of WSSs and Comparison of Ratios with BD scores

Figure 66 - %WTWs that have trained operational staff over the past two years

Figure 67 - Rand Water, Magalies Water and WSA design and available capacity, average daily production, available variance and total SIV

Figure 68 - Rand Water, Magalies Water and WSA % available capacity

Figure 69 - Rand Water, Magalies Water and WSA Abstraction Volumes (Authorised), Average Daily Treatment Volumes, and Variances

Figure 70 - Total SIV towards the WSSs

Figure 71 - Total Population served

Figure 72 - Provincial Microbiological Drinking Water Quality Status

Figure 73 - Provincial Chemical Acute Health and Chronic Health Drinking Water Quality Status

Figure 74 - Total current asset value reported by the WSAs

Figure 75 - Capacities, Daily Production and SIV Distribution - (a) micro to medium sized WTWs, (b) large WTWs, and (c) macro sized WTWs

Figure 76 - Blue Drop trend analysis over the period 2012 to 2023, indicating the percentage BD scores above and below 50%

Figure 77 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right)

Figure 78 - a) WSS risk distribution and trends for 2022 and 2023; b) Colour legend

Figure 79 - a) Blue Drop scores 2014 (bar left) and 2023 (bar right); b) Colour legend

Figure 80 - a) %BDRR/BDRR\textsubscript{max} Risk Performance Profile/Log 2023; b) Colour legend

Figure 81 - Schematic illustration of compliant and shortfall of Supervisors (a) and Process Controllers (b)

Figure 82 - Ratio of compliant operational staff to no. of WTWs and Comparison of Ratios with BD scores

Figure 83 - Graphic illustration of the number and %: a) qualified engineering/technical staff; b) professional scientists; c) access to credible laboratory services that complies with Blue Drop standards

Figure 84 - Ratio of compliant technical staff to no. of WSSs and Comparison of Ratios with BD scores

Figure 85 - %WTWs that have trained operational staff over the past two years

Figure 86 - Design and available capacity, average daily production, available variance and total SIV for the WTWs

Figure 87 - % available capacity

Figure 88 - Abstraction Volumes (Authorised), Average Daily Treatment Volumes, and Variances

Figure 89 - Total SIV towards the WSSs

Figure 90 - Total Population served

Figure 91 - Provincial Microbiological Drinking Water Quality Status

Figure 92 - Provincial Chemical Acute Health and Chronic Health Drinking Water Quality Status

Figure 93 - Total current asset value reported

Figure 94 - Capacities, Daily Production and SIV Distribution - (a) micro to medium sized WTWs, (b) large WTWs, and (c) macro sized WTWs

Figure 95 - Blue Drop trend analysis over the period 2012 to 2023, indicating the percentage BD scores above and below 50%

Figure 96 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right)

Figure 97 - a) WSS risk distribution and trends for 2022 and 2023; b) Colour legend

Figure 98 - a) Blue Drop scores 2014 (bar left) and 2023 (bar right); b) Colour legend

Figure 99 - a) %BDRR/BDRR\textsubscript{max} Risk Performance Profile/Log 2023; b) Colour legend

Figure 100 - Schematic illustration of compliant and shortfall of Supervisors (a) and Process Controllers (b)

Figure 101 - Ratio of compliant operational staff to no. of WTWs and Comparison of Ratios with BD scores

Figure 102 - Graphic illustration of the number and %: a) qualified engineering/technical staff; b) professional scientists; c) access to credible laboratory services that complies with Blue Drop standards

Figure 103 - Ratio of compliant technical staff to no. of WSSs and Comparison of Ratios with BD scores

Figure 104 - %WTWs that have trained operational staff over the past two years

Figure 105 - Design and available capacity, average daily production, available variance and total SIV for the WTWs

Figure 106 - % available capacity

Figure 107 - Abstraction Volumes (Authorised), Average Daily Treatment Volumes, and Variances

Figure 108 - Total SIV towards the WSSs

ANNEXURES
Figure 171 - No. WSSs in the Blue Drop score categories for 2014 and 2023 (graph legend to right) .......................................................... 459
Figure 172 - a) WSS risk distribution and trends for 2022 and 2023; b) Colour legend .......................................................... 460
Figure 173 (Left) - a) Blue Drop scores 2014 (bar bottom) and 2023 (bar top); b) Colour legend .......................................................... 462
Figure 174 (Right) - a) %BDRR/BDRRmax Risk Performance Profile/Log 2023; b) Colour legend .......................................................... 462
Figure 175 - Schematic illustration of compliant and shortfall of Supervisors (a) and Process Controllers (b) .......................................................... 464
Figure 176 - Ratio of compliant operational staff to no. of WTWs and Comparison of Ratios with BD scores .......................................................... 465
Figure 177 - Graphic illustration of the number and %: a) qualified engineering/technical staff; b) professional scientists; c) access to credible laboratory services that complies with Blue Drop standards .......................................................................................................................... 467
Figure 178 - Ratio of compliant technical staff to no. of WSSs and Comparison of Ratios with BD scores .......................................................... 468
Figure 179 - %WTWs that have trained operational staff over the past two years .......................................................................................................................... 469
Figure 180 - Design and available capacity, average daily production, available variance and total SIV for the WTWs .......................................................................................................................... 470
Figure 181 - % available capacity .......................................................................................................................................................................................... 471
Figure 182 - Abstraction Volumes (Authorised), Average Daily Treatment Volumes, and Variances .......................................................................................................................... 472
Figure 183 - Total SIV towards the WSSs .......................................................................................................................................................................................... 474
Figure 184 - Total Population served .......................................................................................................................................................................................... 475
Figure 185 - Provincial Microbiological Drinking Water Quality Status .......................................................................................................................... 477
Figure 186 - Provincial Chemical Acute Health and Chronic Health Drinking Water Quality Status .......................................................................................................................... 479
Figure 187 - Total current asset value reported .......................................................................................................................................................................................... 483
Figure 188 - Capacities, Daily Production and SIV Distribution for the micro and small sized WTWs .......................................................................................................................................................................................... 520
Figure 189 - Blue Drop analysis and No. Water Supply Systems in the Blue Drop score categories for 2023 (graph legend to right) .......................................................................................................................... 521
Figure 190 - a) WSS risk distribution for 2023; b) Colour legend .......................................................................................................................................................................................... 522
Figure 191 - a) Blue Drop scores 2023 (bar right; b) Colour legend .......................................................................................................................................................................................... 522
Figure 192 - a) %BDRR/BDRRmax Risk Performance Profile/Log 2023; b) Colour legend .......................................................................................................................................................................................... 523
Figure 193 - Schematic illustration of compliant and shortfall of Supervisors (a) and Process Controllers (b) .......................................................................................................................................................................................... 524
Figure 194 - %WTWs that have trained operational staff over the past two years .......................................................................................................................................................................................... 525
Figure 195 - WSS design, available and operational capacities, % available capacity, and Total SIV towards the WSSs .......................................................................................................................................................................................... 526
Figure 196 - WSS % available capacity .......................................................................................................................................................................................... 526
Figure 197 - Abstraction Volumes (Authorised), Average Daily Treatment Volumes, and Variances .......................................................................................................................................................................................... 527
Figure 198 - Microbiological Drinking Water Quality Status .......................................................................................................................................................................................... 529
Figure 199 - Chemical Acute Health and Chronic Health Drinking Water Quality Status .......................................................................................................................................................................................... 530
City of Johannesburg and Rand Water: Clean and well maintained pumpstation at Illovo Reservoir

Rand Water: Upgrading of bulk water pipelines to meet current and future demand (open source)