# OVERSTRAND MUNICIPALITY

# *Water Services Development Plan (WSDP) – IDP Water Sector Input Report*

***For IDP incorporation as directed by the Water Services Act (Act 108 of 1997)***

## ***FY 2024/2025***

***DRAFT***

***26 February 2024***


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# OVERSTRAND MUNICIPALITY

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**PROJECT P09233 - OVERSTRAND MUNICIPALITY'S WSDP-IDP SECTOR INPUT REPORT FOR 2024/2025**

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# OVERSTRAND MUNICIPALITY

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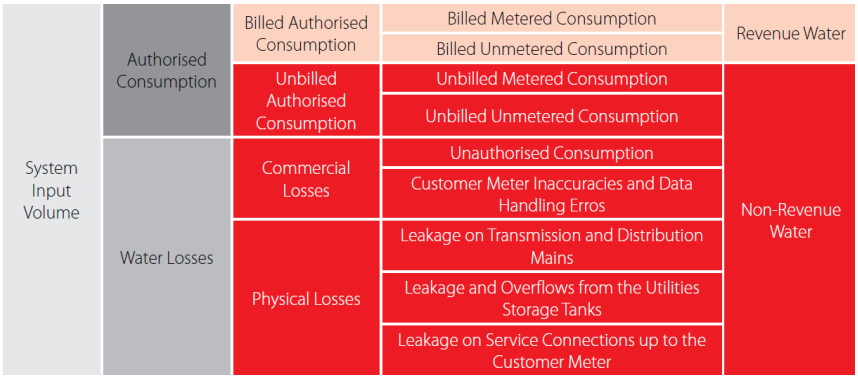
| | |
|---|---|
| AADD | Average Annual Daily Demand |
| AC | Asbestos Cement |
| ACH | Aluminium Chlorohydrate |
| ADWF | Average Dry Weather Flow |
| AIDS | Acquired Immune Deficiency Syndrome |
| AMP | Asset Management Plan |
| AMR | Automatic Meter Reading |
| BDRR | Blue Drop Risk Rating |
| BGWMA | Breede-Gouritz Water Management Area |
| BOWMA | Breede-Olifants Water Management Agency |
| CAPEX | Capital Expenditure |
| CBO | Community Based Organisation |
| COD | Chemical Oxygen Demand |
| CRC | Current Replacement Cost |
| CRR | Cumulative Risk Ratio |
| CU | Consumer Unit |
| CV | Carrying Value |
| CWDP | Coastal Water Discharge Permit |
| DAFF | Dissolved Air Flotation and Filtration |
| DEADP | Department of Environmental Affairs and Development Planning |
| DM | Disaster Management |
| DMAF | Disaster Management Advisory Forum |
| DMC | Disaster Management Centre |
| DO | Dissolved Oxygen |
| DRC | Depreciated Replacement Cost |
| DWQ | Drinking Water Quality |
| DWS | Department of Water and Sanitation |
| EHP | Environmental Health Practitioner |
| EIA | Environmental Impact Assessment |
| FOG | Fats, Oils and Grease |
| FY | Financial Year |
| GA | General Authorisation |
| GAMAP | General Accepted Municipal Accounting Practice |
| GD | Green Drop |
| GDIP | Green Drop Improvement Plan |
| GIS | Geographical Information Systems |
| GRAP | Generally Recognized Accounting Practice |
| HH | Households |
| HIV | Human Immunodeficiency Virus |
| HL | High Level |
| HOD | Head of Department |
| IBT | Inclining Block Tariff |
| IDP | Integrated Development Plan |
| ILI | Infrastructure Leakage Index |
| IMQS | Infrastructure Management Query System |
| IRIS | Integrated Regulatory Information System |
| IWA | International Water Association |
| l/c/d | Litre Per Capita Per Day |
| JOC | Joint Operation Centre |

| | |
|---|---|
| Kl/d | Kilolitre per Day |
| KPA | Key Performance Area |
| KPI | Key Performance Indicator |
| L | License |
| LGTAS | Local Government Turn Around Strategy |
| LL | Low Level |
| LM | Local Municipality |
| l/p/d | Litre Per Person Per Day |
| MCC | Motor Control Centre |
| MFMA | Municipal Finance Management Act |
| MIG | Municipal Infrastructure Grant |
| MISA | Municipal Infrastructure Support Agent |
| Ml | Mega Litre |
| Ml/a | Mega Litre per Annum |
| Ml/d | Mega Litre per Day |
| MLSS | Mixed Liquor Suspended Solids |
| MNF | Minimum Night Flow |
| MTEF | Medium-Term Expenditure Framework |
| MuSSA | Municipal Strategic Self-Assessment |
| N/A | Not Applicable |
| NGO | Non-Governmental Organisation |
| NRW | Non-Revenue Water |
| NWRS | National Water Resource Strategy |
| O&M | Operation and Maintenance |
| OLM | Overstrand Local Municipality |
| PAT | Progress Assessment Tool |
| PC | Process Controller |
| PDA | Previously Disadvantage Area |
| PDD | Peak Daily Demand |
| PFD | Process Flow Diagram |
| P&G | Preliminary and General |
| PMF | Peak Month Factor |
| PRP | Pipeline Replacement Programme |
| PRV | Pressure Reducing Valve |
| PS | Pump Station |
| RAS | Return Activated Sludge |
| RDP | Reconstruction and Development Programme |
| RO | Reverse Osmosis |
| RR | Risk Ratio |
| RUL | Remaining Useful Life |
| SALGA | South African Local Government Association |
| SAMRAS | South African Municipal Resource Administration System |
| SANDF | South African National Defense Force |
| SANS | South African National Standard |
| SAPS | South African Police Service |
| SCADA | Supervisory Control and Data Acquisition |
| SDBIP | Service Delivery and Budget Implementation Plan |
| SDF | Spatial Development Framework |
| SIV | System Input Volume |

| | |
|---|---|
| SST | Secondary Settling Tank |
| SWRO | Sea Water Reverse Osmosis |
| TMG | Table Mountain Group |
| TSS | Total Suspended Solids |
| VIP | Ventilated Improved Pit |
| WARMS | Water use Authorisation and Registration Management System |
| WAS | Waste Activated Sludge |
| WaSP | Water Safety Plan |
| WC/WDM | Water Conservation / Water Demand Management |
| WCNCB | Western Cape Nature Conservation Board (South Africa) |
| WDM | Water Demand Management |
| WMA | Water Management Area |
| WRC | Water Research Commission |
| WSA | Water Services Authority |
| WSDP | Water Services Development Plan |
| WSI | Water Services Institution |
| WSIG | Water Services infrastructure Grant |
| WSP | Water Services Provider |
| WSS | Water Supply System |
| WTP | Water Treatment Plant |
| WTW | Water Treatment Works |
| WULA | Water Use License Application |
| $W_2$RAP | Waste Water Risk Abatement Plan |
| WWTW | Waste Water Treatment Works |
| Y | Yield |

**KEY TERMS AND INTERPRETATIONS**

| | |
|---|---|
| Climate Change | Changes in climatic conditions due to natural causes or to anthropogenic (man-made) effects such as emissions of greenhouse gases, e.g. carbon dioxide, nitrous oxide, and methane, from industry, transport, farming and deforestation, that are expected to have significant consequences for rainfall and water availability on earth. |
| Current replacement cost (CRC) | The cost of replacing the service potential of an existing asset, by reference to some measure of capacity, with an appropriate modern equivalent asset. GAMAP defines CRC as the cost the entity would incur to acquire the asset on the reporting date. |
| Depreciated Replacement Cost (DRC) | The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset. |
| Financial Year | Financial year means in relation to-<br>• a national or provincial department, the year ending 31 March; or<br>• a municipality, the year ending 30 June. |
| Global Warming | The increase in the average surface temperatures across the globe, usually measured over long periods of time; reported to have increased by 1ºC over the past hundred years. |
| Integrated Development Plan (IDP) | An IDP is a legislative requirement for municipalities, which identifies the municipality's key development priorities; formulates a clear vision, mission and values; formulates appropriate strategies; shows the appropriate organisational structure and systems to realise the vision and the mission and aligns resources with the development priorities. |
| National Water Resource Strategy 2 | Sets out how we will achieve the following core objectives:<br>• Water supports development and the elimination of poverty and inequality.<br>• Water contributes to the economy and job creation, and<br>• Water is protected, used, developed, conserved, managed and controlled sustainably and equitably. |
| International Water Association (IWA) Water Balance |  |
| System Input Volume | The volume of treated water input to that part of the water supply system to which the water balance calculation relates. |
| Authorised Consumption | The volume of metered and/or un-metered water taken by registered customers, the water supplier and others who are implicitly or explicitly authorised to do so by the water supplier, for residential, commercial and industrial purposes. It also includes water exported across operational boundaries.<br>Authorised consumption may include items such as fire-fighting and training, flushing of mains and sewers, street cleaning, watering of municipal gardens, public fountains, frost protection, building water, etc. These may be billed or unbilled, metered or unmetered. |
| Water Losses | The difference between System Input and Authorised Consumption. Water losses can be considered as a total volume for the whole system, or for partial systems such as transmission or distribution schemes, or individual zones. Water Losses consist of Physical Losses and Commercial Losses (also known as Real Losses and Apparent Losses). |
| Billed Authorised Consumption | Those components of Authorised Consumption which are billed and produce revenue (also known as Revenue Water). Equal to Billed Metered Consumption plus Billed Unmetered Consumption. |
| Unbilled Authorised Consumption | Those components of Authorised Consumption which are legitimate but not billed and therefore do not produce revenue. Equal to Unbilled Metered Consumption plus Unbilled Unmetered Consumption. |
| Commercial Losses | Includes all types of inaccuracies associated with customer metering as well as data handling errors (meter reading and billing), plus unauthorised consumption (theft or illegal use).<br>Commercial losses are called "Apparent Losses" by the International Water Association and in some countries the misleading term "Non-Technical Losses" is used. |

**KEY TERMS AND INTERPRETATIONS**

| | |
|---|---|
| Physical Losses | Physical water losses from the pressurized system and the utility's storage tanks, up to the point of customer use. In metered systems this is the customer meter, in unmetered situations this is the first point of use (stop tap/tap) within the property. Physical losses are called "Real Losses" by the International Water Association and in some countries the misleading term "Technical Losses" is used. |
| Billed Metered Consumption | All metered consumption which is also billed. This includes all groups of customers such as domestic, commercial, industrial or institutional and also includes water transferred across operational boundaries (water exported) which is metered and billed. |
| Billed Unmetered Consumption | All billed consumption which is calculated based on estimates or norms but is not metered. This might be a very small component in fully metered systems (for example billing based on estimates for the period a customer meter is out of order) but can be the key consumption component in systems without universal metering. This component might also include water transferred across operational boundaries (water exported) which is unmetered but billed. |
| Unbilled Metered Consumption | Metered Consumption which is for any reason unbilled. This might for example include metered consumption by the utility itself or water provided to institutions free of charge, including water transferred across operational boundaries (water exported) which is metered but unbilled. |
| Unbilled Unmetered Consumption | Any kind of Authorised Consumption which is neither billed nor metered. This component typically includes items such as fire-fighting, flushing of mains and sewers, street cleaning, frost protection, etc. In a well-run utility it is a small component which is very often substantially overestimated. Theoretically this might also include water transferred across operational boundaries (water exported) which is unmetered and unbilled – although this is an unlikely case. |
| Unauthorised Consumption | Any unauthorised use of water. This may include illegal water withdrawal from hydrants (for example for construction purposes), illegal connections, bypasses to consumption meters or meter tampering. |
| Customer Metering Inaccuracies and Data Handling Errors | Commercial water losses caused by customer meter inaccuracies and data handling errors in the meter reading and billing system. |
| Leakage on Transmission and /or Distribution Mains | Water lost from leaks and breaks on transmission and distribution pipelines. These might either be small leaks which are still unreported (e.g. leaking joints) or large bursts which were reported and repaired but did obviously leak for a certain period before that. |
| Leakage and Overflows at Utility's Storage Tanks | Water lost from leaking storage tank structures or overflows of such tanks caused by e.g. operational or technical problems. |
| Leakage on Service Connections up to point of Customer Metering | Water lost from leaks and breaks of service connections from (and including) the tapping point until the point of customer use. In metered systems this is the customer meter, in unmetered situations this is the first point of use (stop tap/tap) within the property. Leakage on service connections might be reported breaks but will predominately be small leaks which do not surface and which run for long periods (often years). |
| Revenue Water | Those components of Authorised Consumption which are billed and produce revenue (also known as Billed Authorised Consumption). Equal to Billed Metered Consumption plus Billed Unmetered Consumption. |
| Non-Revenue Water | Those components of System Input which are not billed and do not produce revenue. Equal to Unbilled Authorised Consumption plus Physical and Commercial Water Losses. |
| Remaining useful life (RUL) | The time remaining over which an asset is expected to be used. |
| Re-use | Utilisation of treated or untreated wastewater for a process other than the one that generated it. For instance, the re-use of municipal wastewater for agricultural irrigation. Water re-use can be direct or indirect, intentional or unintentional, planned or unplanned, local, regional or national in terms of location, scale and significance. Water re-use may involve various kinds of treatment (or not) and the reclaimed water may be used for a variety of purposes. |
| Service Delivery Budget Implementation Plan (SDBIP) | The SDBIP is a management, implementation and monitoring tool that enable the City Manager to monitor the performance of senior managers, the Mayor to monitor the performance of the City Manager, and for the community to monitor the performance of the municipality. |
| Strategic Framework for Water Services | The Strategic Framework provides a comprehensive summary of policy with respect to the water services sector in South Africa and sets out a strategic framework for its implementation over the next ten years. |
| Water Conservation | The minimisation of loss or waste, the care and protection of water resources and the efficient and effective use of water. |
| Water Demand Management | The adaptation and implementation of a strategy by a water institution or consumer to influence the water demand and usage of water in order to meet any of the following objectives: economic efficiency, social development, social equity, environmental protection, sustainability of water supply and services, and political acceptability. |

**KEY TERMS AND INTERPRETATIONS**

| | |
|---|---|
| Water Services Authority (WSA) | A water services authority means a municipality with the executive authority and the right to administer water services as authorised in terms of the Municipal Structures Act, 1998 (Act No.117 of 1998). There can only be one water services authority in any specific area. Water services authority area boundaries cannot overlap. Water services authorities are metropolitan municipalities, district municipalities and authorised local municipalities. |
| Water Services Development Plan (WSDP) | A plan to be developed and adopted by the WSA in terms of the Water Services Act, 1997 (Act No.108 of 1997) |
| WSDP Guide Framework | Modular tool which has been developed by the DWS to support WSAs in complying to the Water Services Act with respect to Water Services Development Planning and which is also used by the DWS to regulate such compliance. |
| Water Services Provider (WSP) | A WSP means any person or institution that provides water services to consumers or to another water services institution, but does not include a water services intermediary. |

# WSDP – IDP Water Sector Input Report (Executive Summary)

## Introduction

Every WSA has a duty to progressively ensure efficient, affordable, economical and sustainable access to water services to all customers or potential customers in its area of jurisdiction, in order to promote sustainable livelihoods and economic development.

Sections 12 and 13 of the Water Services Act (Act No 108 of 1997) place a duty on WSAs to prepare and maintain a WSDP, as part of the process of preparing an IDP. The DWS has developed a new set of WSDP guidelines to assist WSAs with the WSDP process and to provide a framework for the capturing of the data. The topics included in the guidelines and addressed in detail in Overstrand Municipality's WSDP are as follows:

- Settlements and Demographics
- Service Levels
- Water Services Infrastructure Management (Infrastructure)
- Water Services Infrastructure Management (O&M)
- Conservation and Demand Management
- Water Resources
- Financial
- Institutional Arrangements and Customer Care

The primary instrument of planning in the water services sector is the WSDP. The following principles apply to the WSDP:

- All WSAs must develop a WSDP.
- A new plan must be developed every five years and the plan should be updated as necessary and appropriate in the interim years.
- The WSDP must be integrated with the IDP of the municipality, as required in terms of the Municipal Systems Act.
- The WSDP must integrate water supply planning with sanitation planning.
- The WSDP must integrate technical planning with social, institutional, financial and environmental planning. The planning of capital expenditures must also be integrated with the associated operation and maintenance requirements and expenditures.
- The WSDP must be informed by the business plans developed by water services providers and with the plans of any regional water services providers, as relevant.
- The plan must take into account the impact of HIV/Aids on future water demand.
- The WSDP must integrate with the catchment management strategy.
- The planning process must take into account the views of all important stakeholders, including communities, through a consultative and participatory process. Every effort must be made to ensure the adequate and meaningful participation of women in consultation forums.
- The draft plan must be made available for public and stakeholder comment and all comments made must be considered when preparing the final plan.
- The contents of the WSDP must be communicated to all important stakeholders, including the DWS.

- A WSA must report annually and in a public way on progress in implementing the plan (Annual WSDP Performance- and Water Services Audit Report).

The purpose of this report is to provide relevant and summarised WSDP inputs for incorporation into Overstrand Municipality's IDP process and is structured as follows:

**Section A: Status Quo Overview**: Provides a summarised overview of the water services status quo in terms of the water services functional business elements as aligned to the WSDP framework.

**Section B: State of Water Services Planning:** Presents the status of- and references the water services planning within Overstrand Municipality.

**Section C: Water Services Existing Needs Perspective:** Gives an overview of Overstrand Municipality's assessment and interpretation of its water services, with specific focus on problem definition statements.

**Section D: Water Services Objectives and Strategies:** Outlines the 5-year water services objectives and strategies as developed through the WSDP process for incorporation in terms of the IDP and aligned to the water services functional business elements.

**Section E: Water Services MTEF Projects:** The agreed water services projects for the medium-term expenditure framework and inclusive of funding sources.

**Section F: WSDP Projects:** Presents the projects identified during the WSDP process in order to meet the water services strategies of Overstrand Municipality, as aligned to the outflow from the situation analysis per water services business element.

The **SWOT analysis** for Overstrand Municipality indicated the following Threats, Strengths, Weaknesses and Opportunities (2023/2024 IDP).

Threats:

- Load shedding
- Covid-19 pandemic;
- Adverse economic climate affecting the revenue stream of the Municipality;
- Urbanisation; and
- Excessive red tape.

Strengths:

- Ethical, participative and accountable governance;
- Stable, skilled and highly knowledgeable workforce; and
- Available and well maintained municipal infrastructure that enhances social and economic growth.

Weaknesses:

- Lack of suitable land for urban expansion in certain areas due to topography (land locked between sea and mountain);
- Lack of affordable residential accommodation;
- Inadequate and/or non-existing public transport services that hamper opportunities to develop local economy;
- Gaps in pro-active and timely communication through the relevant mechanisms; and
- Inadequate resources to combat disasters.

Opportunities:

- Diverse economic income streams;
- Capitalise on its ability to foster local economic development;
- Promote safety and security;
- Make the most of its unique natural assets;
- Capacity building of elected statutory structures and community structures to be able to deal with challenges in local communities;
- Promotion of diversity and social cohesion.

## SECTION A: STATUS QUO OVERVIEW

Overstrand Municipality is situated within the Breede-Olifants Water Management Area (WMA). The Municipality consists of thirteen (13) individual wards and is the only WSA within this municipal area and is also the Water Services Provider for the internal water and sewerage networks and services. The bulk water and sewerage infrastructure are operated and maintained by an external Service Provider. Overstrand Municipality's Management Area includes the following towns and ***Water Distribution Systems***:

- Rooi Els, Pringle Bay, Betty's Bay – ***Buffels River System***

  The towns of Rooi Els, Pringle Bay and Betty's Bay obtain their bulk water from the Buffels River Dam. The raw water is treated at the Buffels River WTW before it is distributed to the various consumers in Rooi Els, Pringle Bay and Betty's Bay.

- Kleinmond – ***Kleinmond System***

  Kleinmond is supplied from the Palmiet River. The "Dorpsfontein" and a borehole (1998), located 300m to the east of the fountain, is available as additional sources in case of emergency. The raw water is treated at the Kleinmond WTW before it is distributed to the various consumers in Kleinmond.

- Fisherhaven, Hawston, Vermont, Onrus, Sandbaai, Zwelihle, Hermanus – ***Greater Hermanus System***

  The Greater Hermanus area is supplied with bulk surface water from De Bos Dam and bulk groundwater from the Gateway-, Camphill- and Volmoed Well Fields. The surface and groundwater are treated at the Preekstoel WTW before it is distributed to the various consumers in the Greater Hermanus area. A portion of the final effluent from the Hermanus WWTW is used for irrigation purposes. Raw surface water from the Mossel River and Fisherhaven Dams is also used for irrigation purposes.

- Stanford – ***Stanford System***

  Stanford is supplied with bulk water from the high discharging Stanford Spring, generally known as "Die Oog" (the Eye), which was previously the sole source of supply of potable water to the town and the greater area. Two boreholes were drilled in the "Kouevlakte wellfield" during 2010/2011 and a new bulk pipeline was constructed the following year in order to connect the boreholes to the existing network. The raw water is treated at the Stanford WTW (Ultrafiltration plus Reverse Osmosis Plant) before it is distributed to the various consumers in Stanford.

- De Kelders, Gansbaai, Kleinbaai, Franskraal – ***Greater Gansbaai System***

  The water sources of Gansbaai, De Kelders, Kleinbaai and Franskraal are integrated with each other through the bulk water supply distribution system. In the past specific sources were utilised for specific areas, but due to peak supply limitations of underground resources during peak seasons, the system has become completely integrated. Bulk water supply to the Greater Gansbaai system is from the Franskraal and Kraaibosch dams and the Klipgat and Grotte water sources, which consist of a spring in the De Kelders caves and a spring at Stanfords Bay. The raw water from the Franskraal and Kraaibosh dams are treated at the Franskraal WTW and the water from the Klipgat and Grotte water sources are treated at the De Kelders WTW. Final effluent from the Gansbaai WWTW is used for irrigation purposes.

- Pearly Beach – ***Pearly Beach System***

  Pearly Beach is supplied from seven springs located in the mountains some 6km from Pearly Beach. The water from the springs is kept in storage at the Pearly Beach Dam. A Service Level Agreement is also in place for the supply of 0.26 Ml/d from the Koekemoer Dam free of charge to the Municipality. The raw water is treated at the Pearly Beach WTW before it is distributed to the various consumers in Pearly Beach.

- Baardskeerdersbos – ***Baardskeerdersbos System***

  Bulk water supply to Baardskeerdersbos is from two boreholes. Baardskeerdersbos previously received their bulk water from the Boskloof Stream, but all current bulk water supply to the area and in the future will be from the boreholes. The groundwater is treated at the Baardskeerdersbos WTW before it is distributed to the various consumers in Baardskeerdersbos.

- Buffeljags Bay – ***Buffeljags Bay System***

  Bulk water supply to Buffeljags Bay is from a borehole. The water is disinfected before it is distributed to the various consumers in Buffeljags Bay.

The most significant challenges experienced by Overstrand Municipality from a water and sanitation services delivery perspective, as summarised in the draft 2022/2023 Annual Report, are as follows.

- Under reading of water meters older than twelve years;
- Burst water pipes in water distribution networks;
- Water conservation;
- Large price increases for treatment chemicals;
- Vandalism and theft of infrastructure and equipment;
- Aging infrastructure;
- Additional water source required for Hermanus in the medium term;
- National shortage of chlorine gas for water treatment;
- Blockages (Inappropriate objects in sewer lines cause blockages and leads to spillages);
- To provide sufficient wastewater treatment capacity as well as bulk and reticulation system capacity in all the schemes to be able to accommodate future growth and development, including the planned low-cost housing projects.

Physical Perspective:

Climate change: In terms of adapting for climate change, water systems will need to be more robust and new / alternative sources of supply may need to be found. Increased skills will be required from water managers and long-term water projections are required. Although an overall decrease in rainfall is generally not forecasted, increased variability in the climate and frequency of extreme events, as well as increased temperature and wind could have an impact on water sources, particularly surface waters.

It is necessary for WSAs to develop climate response strategies and include these in their WSDPs, implement WC/WDM and reduce levels of NRW and Water Losses. Water-related climate change adaptation and mitigation planning should be incorporated into all WSDPs and IDPs. The implementation of WC/WDM is a critical element of adapting to climate change. This must be implemented by all water sector institutions and water users and should include the optimisation of dam and groundwater operation, as well as the reduction of physical water losses and the introduction of water-efficient appliances, processes and crops.

It is therefore advisable for Overstrand Municipality that a conservative approach be followed regarding the management of water sources. It is proposed that the following approach be adopted to mitigate and adapt to the impacts of climate change:

- All resources, especially surface water resources, need to be re-evaluated, especially where demand is close to the safe one in twenty-year yields. It is therefore important to establish assurance of supply levels of all water sources;
- increase assurance of supply of the water resources by ensuring that there is at least 10% additional capacity (headroom), when considering the maximum 24-hour demand on the peak month of the year;
- do not undertake new developments unless a proper investigation of the implication on water sources and sustainability in the long term has been undertaken;
- vigorously implement WDM measures, especially in terms of the following:
  - increased water efficiency
  - frequent monitoring of the water supply system, from the sources to the consumers; and
  - regular and adequate system maintenance and repairs.
- Diversify water resources, e.g. surface water, groundwater, wastewater re-use and sea water desalination.

Floods: One of the climate change threats in some parts of the Western Cape is the likelihood of floods with greater intensity and longer-term impacts. There is likely to be increases in the severity and unpredictability of weather patterns. Flooding and storms are predicted which could have devastating effects on agricultural production.

Natural Environment:

Overstrand Municipality strives towards sustainable environmental management by means of environmental good practice. Accordingly, the Environmental Management section strives to coordinate, plan and manage all human activities in a defined environmental system, to accommodate the broadest possible range of sustainable short and long term environmental, social and economic development objectives. The mission of the section is to promote the use of sound environmental management principles to ensure a healthy environment within the Overstrand Municipality.

## TOPIC 1: SETTLEMENTS AND DEMOGRAPHICS

The tables below gives an overview of the settlements, population and households in Overstrand Municipality's Management Area for 2022/2023. The numbers of settlements are in accordance with the grouping of the different areas in DWS's GeoDatabase.

**Table A.1.1: Settlement Summary**

| Section | Value | Assessment Score |
|---|---|---|
| 1.1 Total Population (Permanent) | 124 812 | 80% |
| 1.2 Total Number of Households (Permanent) | 43 289 | 80% |
| 1.3 Average Household Size | 2.88 | 80% |
| 1.4 Total Number of Settlements (GeoDatabase) | 60 | 80% |

Note: The score of 80% in the above table is Excellent, which is the highest score in DWS's eWSDP website.

**Table A.1.2 Summary by Settlement Group (Urban / Rural Split)**

| Settlement Type | Settlements (GeoDatabase) | Population | Households | Assessment Score |
|---|---|---|---|---|
| Rural | 10 | 5 604 | 2 127 | 80% |
| Urban | 50 | 119 206 | 41 161 | 80% |
| **Total** | **60** | **124 812** | **43 289** | **80%** |

Note: The score of 80% in the above table is Excellent, which is the highest score in DWS's eWSDP website.

| Table A.1.3 Assessment Score by Settlement Type | | | | | | |
|---|---|---|---|---|---|---|
| **Main Type** | **Settlement Type** | **Settlements GeoDatabase** | **Population** | **Households** | **Avg. Household Size** | **Assessment Score** |
| Rural | Farming | 9 | 5 604 | 2 127 | 2.63 | 80% |
| Rural | Rural – Informal Settlements | 1 | 60 | 15 | 4.00 | 80% |
| Urban | Urban - Informal Settlements | 23 | 44 580 | 11 145 | 4.00 | 80% |
| Urban | Urban - Formal Town | 27 | 74 566 | 30 001 | 2.49 | 80% |
| **Total** | | **60** | **124 812** | **43 289** | **2.88** | **80%** |

Note: The score of 80% in the above table is Excellent, which is the highest score in DWS's eWSDP website.

| Table.A.1.4 Amenities Summary (Health & Educational Facilities) | | |
|---|---|---|
| **Amenity Type** | **Number of Amenities** | **Assessment Score** |
| Health Facilities | 13 | 80% |
| Educational facilities | 39 | 80% |

Note: The score of 80% in the above table is Excellent, which is the highest score in DWS's eWSDP website.

The Community Survey of 2016 from Statistics South Africa estimate the 2016 population for Overstrand Municipality at 93 466 persons and the permanent households at 35 739, at an average household size of 2.6 persons per household.

Overstrand Municipality's Spatial Development Framework (SDF), May 2020, estimated the 2019 population at 116 550 persons. The SDF indicated that the population of the Overstrand Municipality grew at an approximate rate of 3% per annum between 2011 and 2016, and that future growth will continue to be between 2.8% and 3.3% per annum.

The 2022 Socio Economic Profile of Overstrand Municipality (Western Cape Government) indicates the 2022 population of Overstrand Municipality at 110 971 persons and the 2021 households at 30 427. The Municipality's Final IDP of 31 May 2023 (Final IDP Review, 2023/2024) indicates the 2022 projected population at 110 971 persons and the permanent households for the 2021/2022 financial year at 36 076.

The published 2022 Census population for Overstrand Municipality was 132 495 persons (Annual growth rate of 4.9% over the period 2011 to 2022) and the number of permanent households was 59 980, which is higher than the figures included in the IDP, SDF and 2022 Socio Economic Profile. The projected population and households included in the Municipality's approved 2022/2023 WSDP Performance- and Water Services Audit Report is however closer to the 2022 Census published data. The 2022 Census data is not yet available per town and it was therefore not possible to update Overstrand Municipality's projected population and households per town (system) at this stage. It was therefore decided to keep the projected population and households for Overstrand Municipality, as included in the 2022/2023 WSDP Performance- and Water Services Audit Report.

The on-going in-migration into the Overstrand Municipal area will place increasing demands on the infrastructure and available space for urban growth. The increased footprint in the Municipal area needs careful management if it is not to impact negatively on the natural environment of Overstrand. The increased population growth will place increased pressure on the municipal resources to develop new as well as maintain existing infrastructure. The 2022/2023 populations for the various water distribution systems were estimated by applying the annual growth rates as indicated in Table A.1.5. The current population figures and the annual population growth percentages used in the WSDP Performance- and Water Services Audit Report are aligned with the figures used in DWS's GeoDatabase.

The future estimated annual population growth percentages, as listed in the table below, were agreed with the Municipality's Community Services and Engineering Planning Departments during January 2014.

**Table A.1.5: Estimated Future Annual Population Growth Percentages, Population and Households per Distribution System**

| Town | Estimated future annual Population Growth % | Projected 2022/2023 Persons | Projected 2022/2023 Households |
|---|---|---|---|
| Buffels River | 4.15% | 3 593 | 1 811 |
| Kleinmond | 2.50% | 8 698 | 3 586 |
| Greater Hermanus | 4.45% | 76 410 | 25 213 |
| Stanford | 2.65% | 6 375 | 1 991 |
| Greater Gansbaai | 4.89% | 22 531 | 7 875 |
| Pearly Beach | 2.11% | 1 317 | 610 |
| Baardskeerdersbos | 0.50% | 129 | 41 |
| Buffeljags Bay | 0.50% | 155 | 35 |
| Farms | 1.56% | 5 604 | 2 127 |
| **Total** | **4.07%** | **124 812** | **43 289** |

The current 2022/2023 population for Overstrand Municipality is therefore estimated at 124 812 persons and the permanent households at 43 289, as indicated in the table above. The projected population and households will be updated according to the 2022 Census data, once the information becomes available per town.

The tables below give an overview of the projected population and permanent number of households and the water and sanitation service levels in Overstrand Municipality's Management Area.

**Table A.1.6: Water Services Overview**

| Settlement Type | 2011/2012 Households | 2011/2012 Population | 2022/2023 Households | 2022/2023 Population | Water category: Adequate: Formal | Adequate: Informal | Adequate: Shared Services | Water resources needs only | O&M needs only | Infrastructure needs only | Infrastructure & O&M needs | Infrastructure, O&M & Resource need | No Services: Informal | No Services: Formal | Sanitation category: Adequate: Formal | Adequate: Informal | Adequate: Shared Services | Water resources needs only | O&M needs only | Infrastructure needs only | Infrastructure & O&M needs | Infrastructure, O&M & Resource need | No Services: Informal | No Services: Formal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **URBAN** | | | | | | | | | | | | | | | | | | | | | | | | |
| **Metropolitan Area** | | | | | Adequate | | | Below RDP | | | | | None | | Adequate | | | Below RDP | | | | | None | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sub-Total** | **0** | **0** | **0** | **0** | | | | | | | | | | | | | | | | | | | | |
| **Formal Town** | | | | | Adequate | | | Below RDP | | | | | None | | Adequate | | | Below RDP | | | | | None | |
| *Buffels River* | 1 158 | 2 297 | 1 811 | 3 593 | P | | P | | | | | | | | P | | P | | | | | | | |
| *Kleinmond* | 2 351 | 5 101 | 2 572 | 4 642 | P | | P | | | | | | | | P | | P | | | | | | | |
| *Greater Hermanus* | 14 256 | 41 884 | 17 316 | 44 822 | P | | P | | | | | | | | P | | P | | | | | | | |
| *Stanford* | 1 379 | 4 325 | 1544 | 4 587 | P | | P | | | | | | | | P | | P | | | | | | | |
| *Greater Gansbaai* | 3 251 | 7 698 | 6214 | 15 887 | P | | P | | | | | | | | P | | P | | | | | | | |
| *Pearly Beach* | 314 | 363 | 484 | 813 | P | | P | | | | | | | | P | | P | | | | | | | |
| *Baardskeerdersbos* | 39 | 122 | 41 | 129 | P | | | | | | | | | | P | | | | | | | | | |
| *Buffeljags Bay* | 33 | 147 | 20 | 95 | P | | | | | | | | | | P | | | | | | | | | |
| **Sub-Total** | **22 781** | **61 937** | **30 002** | **74 567** | | | | | | | | | | | | | | | | | | | | |
| **Townships** | | | | | Adequate | | | Below RDP | | | | | None | | Adequate | | | Below RDP | | | | | None | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sub-Total** | **0** | **0** | **0** | **0** | | | | | | | | | | | | | | | | | | | | |
| **Informal Settlements** | | | | | Adequate | | | Below RDP | | | | | None | | Adequate | | | Below RDP | | | | | None | |
| *Greater Gansbaai* | 1 407 | 5 628 | 1 661 | 6 644 | | P | | | | | | | | | | P | | | | | | | | |
| *Greater Hermanus* | 1 362 | 5 448 | 7 897 | 31 588 | | P | | | | | | | | | | P | | | | | | | | |
| *Kleinmond* | 382 | 1 528 | 1 014 | 4 056 | | P | | | | | | | | | | P | | | | | | | | |
| *Stanford* | 114 | 456 | 447 | 1 788 | | P | | | | | | | | | | P | | | | | | | | |
| *Pearly Beach* | 171 | 684 | 126 | 504 | | P | | | | | | | | | | P | | | | | | | | |
| *Buffeljags Bay* | | | 15 | 60 | | P | | | | | | | | | | P | | | | | | | | |
| **Sub-Total** | **3 436** | **13 744** | **11 160** | **44 640** | | | | | | | | | | | | | | | | | | | | |
| **Working towns & service centres** | | | | | Adequate | | | Below RDP | | | | | None | | Adequate | | | Below RDP | | | | | None | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sub-Total** | **0** | **0** | **0** | **0** | | | | | | | | | | | | | | | | | | | | |
| **Sub-Total: (Urban)** | **26 217** | **75 681** | **41 162** | **119 207** | | | | | | | | | | | | | | | | | | | | |
| **RURAL** | | | | | | | | | | | | | | | | | | | | | | | | |
| **Rural / Farming** | | | | | Adequate | | | Below RDP | | | | | None | | Adequate | | | Below RDP | | | | | None | |
| *Overstrand Rural* | 1 794 | 4 727 | 2 127 | 5 604 | P | | P | | | | | | | P | P | | P | | | | | | | P |
| **Sub-Total** | **1 794** | **4 727** | **2 127** | **5 604** | | | | | | | | | | | | | | | | | | | | |
| **Informal Settlements** | | | | | Adequate | | | Below RDP | | | | | None | | Adequate | | | Below RDP | | | | | None | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sub-Total** | **0** | **0** | **0** | **0** | | | | | | | | | | | | | | | | | | | | |
| **Sub-Total (Rural)** | **1 794** | **4 727** | **2 127** | **5 604** | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| **TOTAL** | **28 011** | **80 408** | **43 289** | **124 812** | | | | | | | | | | | | | | | | | | | | |

## TOPIC 2: SERVICE LEVELS

The National Norms and Standards for Domestic Water and Sanitation Services, as published in the Government Gazette No.41100 of 8 September 2017, make provision for the following norms and standards for levels of water supply and sanitation services:

| Table A.2.1: Norms and Standards for Levels of Water Supply Services | | |
|---|---|---|
| **Full level of service:** People access and pay for more than 90 l/c/d at high pressure. | Interim **Full** | **Full provision**: People access a minimum of 50 l/c/d of SANS241 quality water on demand at the boundary of the yard, metered and tariffed. |
| **Middle level of service:** People access and pay for 51-90 l/c/d at medium pressure. | Interim **Upper** | **Upper provision**: People access a maximum of 90 l/c/d of SANS241 quality water from an improved source at the boundary of the yard, metered and tariffed. |
| | Interim **Intermediate** | Intermediate provision: People access more than 50 l/c/d but less than 90 l/c/d of SANS241 quality water from an improved source at the boundary of the yard, metered and tariffed. |
| **Minimum level of service:** People access 25-50 l/c/d at low to medium pressure, use of more than 25 l/c/d is paid for. | Interim **Basic Plus** | **Basic Plus provision**: People access more than 25 l/c/d but less than 50 l/c/d of SANS241 quality water from an improved source at the boundary of the yard, metered and tariffed. |
| | Interim **Basic** | **Basic provision**: People access a minimum of 25 l/c/d of SANS241 quality water from an improved source at the boundary of the yard, metered and tariffed. |
| | Interim **Free Basic** | **Free basic provision**: People access a minimum of 25 l/c/d of SANS241 quality water from an improved source at the boundary of the yard, metered. |
| | **Intermittent** | **Intermittent provision**: People access a minimum of 1500 l/household/week of acceptable quality water on a weekly basis within 100m, which is metered. |
| **Bulk service:** Source of potable water to be provided to people, which is metered in all circumstances. | | |
| **No service / provision = backlog:** People access water from insecure or unimproved sources, or sources that are too distant, too time consuming or are of poor quality. | | |

**Interim provision:** People access a minimum of 25 l/c/d of acceptable quality water within 24 hours of disruption, normal service to be restored within 7 days.

| Table A.2.2: Norms and Standards for Levels of Sanitation Services | | |
|---|---|---|
| Hygiene promotion; Prevention of pollution; Re-use / recycle; Operation and Maintenance; Metering and tariffing; Solid Waste Management; Asset Management | | |
| **Full level**: Full concern for human health, environment and sustainability of interconnected systems. | **Full services** | **In-house facility**: Storm water, wastewater/excreta, greywater, solid waste are collected and managed to achieve maximum benefits from treatment and re-use of water and nutrients. |
| | | **In-house facility**: Access to a pleasant, safe, reliable and properly maintained facility for 24 hours a day, with control of nutrients in human excreta, wastewater and greywater. |
| **Basic level**: Remove excreta from the environment through treatment, pathogen reduction, resource recovery and nutrient reuse. | **Free basic services** | **Toilet with functional hand washing facility in the yard**: Access to a pleasant, safe and reliable facility for 24 hours a day, including privacy, personal safety and shelter through a subsidy for free. Maintenance of the facility is for free and is the responsibility of services provider. |
| | **Basic services** | **Toilet with functional hand washing facility in the yard**. Access to a pleasant, safe and reliable facility for 24 hours a day, including privacy, personal safety and shelter through a capital subsidy. Maintenance of the facilities is not for free and is the responsibility of the household / owner. |
| **Interim level**: Blocking the spread of faecal-oral diseases through proper excreta containment at a fixed point. | **Excreta containment** | **Household, shared or communal toilets with functional hand washing facilities**: Access to safe, reliable and properly maintained toilet and hand washing facility, free of charge, within 200m of the dwelling, which at a minimum safely contains human excreta. Maintenance is the responsibility of the services provider. To be phased out by 2030. |
| **No service / provision = backlog**: People practice open defecation or access an unimproved sanitation facility, such as pit toilets and bucket toilets. To be completely eliminated by 2030. | | |

Proper disposal, clean platform, vector and rodent control, resource use and health protection.

**Emergency level:** People access pleasant, safe, reliable and properly maintained improved toilets and hand washing facility on the premises in close proximity to the temporary dwelling within 24 hours and for duration of event.

All the formal households in the urban areas of Overstrand Municipality's Management Area are provided with water and sewer connections inside the premises. Informal areas are supplied with shared services as an intermediary measure. Overstrand Municipality works towards a ratio of at least 1 tap per twenty-five households and 1 communal toilet per five households for their shared services. Overstrand Municipality is committed to ensure that private landowners provide at least basic water and sanitation services to those households in the rural areas with existing services below RDP standard.

Overstrand Municipality's challenges with regard to the provision of basic water and sanitation services are as follows.

- The operation and maintenance of communal services in informal areas are a challenge, with regular sewer blockages, vandalism of infrastructure and facilities and water leaks.
- To provide basic water and sanitation services in the informal areas to new citizens moving into the informal areas and to ensure that health and hygiene awareness and education is part of the process of providing basic services.
- To identify suitable land for the relocation of the people from informal areas, with existing communal services, to formal houses with a higher level of water and sanitation service (Services inside the erven).
- To identify adequate funding for the rehabilitation, maintenance, replacement and upgrading of the existing bulk and reticulation infrastructure in order to support the sustainability of the water and sanitation services.
- To monitor the provision of basic water and sanitation on privately owned land.

The table and graph below give an overview of the water service delivery access profile of Overstrand Municipality.

**Table A.2.3: Residential Water Services Delivery Access Profile: Water**

| Census Category | Description | Year 0 | | Year -1 | | Year 2 | |
|---|---|---|---|---|---|---|---|
| | | FY2022/23 | | FY2021/22 | | FY2020/21 | |
| | | Nr | % | Nr | % | Nr | % |
| | **WATER (ABOVE MIN LEVEL)** | | | | | | |
| Piped (tap) water inside dwelling/institution | House connections | 40 620 | 71% | 39 713 | 70% | 38 808 | 81% |
| Piped (tap) water inside yard | Yard connections | 5 300 | 9% | 5 300 | 9% | 5 300 | 11% |
| Piped (tap) water on community stand: distance less than 200m from dwelling/institution | Standpipe connection < 200 m | 11 191 | 20% | 11 240 | 20% | 3 810 | 8% |
| | **Sub-Total: Minimum Serivce Level and Above** | **57 111** | **100%** | **56 253** | **100%** | **47 918** | **100%** |
| | **WATER (BELOW MIN LEVEL)** | | | | | | |
| Piped (tap) water on community stand: distance between 200m and 500m from dwelling/institution | Standpipe connection: > 200 m < 500 m | 21 | 0% | 21 | 0% | 21 | 0% |
| Piped (tap) water on community stand: distance between 500m and 1000m (1km) from dwelling /institution | Standpipe connection: > 500 m < 1 000 m | 8 | 0% | 8 | 0% | 8 | 0% |
| Piped (tap) water on community stand: distance greater than 1000m (1km) from dwelling/institution | Standpipe connection: > 1 000 m | 5 | 0% | 5 | 0% | 5 | 0% |
| No access to piped (tap) water | No services | 49 | 0% | 49 | 0% | 49 | 0% |
| | **Sub-Total: Below Minimum Service Level** | **83** | **0%** | **83** | **0%** | **83** | **0%** |
| | **Total number of households** | **57 194** | **100%** | **56 336** | **100%** | **48 001** | **100%** |

Note: The households in the above residential water services delivery access profile include all permanent residential households, holiday homes, the households in informal areas and the backyard dwellers and is not the same as only the permanent residential households in Table A.1.6.

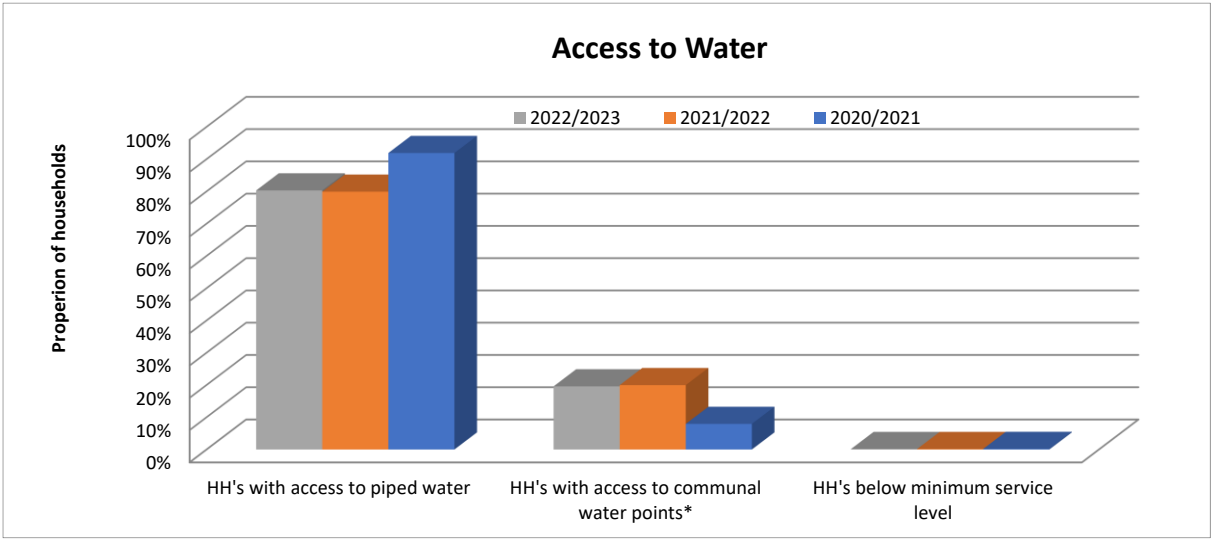



Figure A.2.1: Access to Water Services.

The existing residential water service levels in Overstrand Municipality's Management Area are indicated in the table below.

**Table A.2.4: Residential Water Service Levels (Residential Consumer Units)**

| Service Level | Buffels River | Kleinmond | Greater Hermanus | Stanford | Greater Gansbaai | Pearly Beach | Baardskeer-dersbos | Buffeljags Bay | Farms | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| No Water Services | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49 [2)] | 49 |
| Below RDP: Infrastructure Upgrade | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below RDP: Infrastructure Extension | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 [3)] | 34 |
| Below RDP: Infrastructure Refurbishment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below RDP: O&M Needs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below RDP: Water Resource Needs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below RDP: Infrastructure and O&M Needs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below RDP: Infrastructure, O&M and Water Resource Needs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total Basic Need (RDP)** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **83** | **83** |
| Below Housing Interim [4)] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Adequate Housing Permanent [5)] | 0 | 1 014 | 7 897 | 447 | 1 661 | 126 | 0 | 15 | 0 | 11 160 |
| **Total Housing Need** | **0** | **1 014** | **7 897** | **447** | **1 661** | **126** | **0** | **15** | **0** | **11 160** |
| Standpipes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 31 |
| Yard Connections [6)] | 6 | 282 | 3 623 | 482 | 625 | 39 | 0 | 0 | 243 | 5 300 |
| House Connections [1)] | 3 753 | 3 681 | 21 410 | 1 349 | 6 745 | 1 815 | 67 | 30 | 1 770 | 40 620 |
| **Total Adequate** | **3 759** | **3 963** | **25 033** | **1 831** | **7 370** | **1 854** | **67** | **30** | **2 044** | **45 951** |
| **Total Residential Consumer Units for the Municipality** | **3 759** | **4 977** | **32 930** | **2 278** | **9 031** | **1 980** | **67** | **45** | **2 127** | **57 194** |

Notes: 1) Number of residential consumer units for the urban areas for 2022/2023 was estimated from the previous number of residential consumer units from the financial system.

2) Census 2011: Number of households with no access to piped (tap) water 49

3) Census 2011: Number of households with communal services (200m – 500m) 21, (500m – 1000m) 8 and (>1000m) 5.

4) Below Housing Interim in the above table is the number of informal households in informal areas without basic water services.

5) Adequate Housing Permanent in the above table is the number of informal households in informal areas with communal water services, as confirmed by the Municipality (June 2023).

6) Estimated number of backyard dwellers, as agreed with the Municipality during January 2014, as part of DWS's Backlog Eradication Strategy process.

| Table A.2.5: Improvement in Eradicating the Water Backlog | | | | | |
|---|---|---|---|---|---|
| Settlement | Urban / Rural | 2022/23 | | 2021/22 (-Y1) | |
| | | Water backlog HH | Water Backlog Population | Water backlog HH | Water Backlog Population |
| Buffels River | Urban | 0 | 0 | 0 | 0 |
| Kleinmond | Urban | 0 | 0 | 0 | 0 |
| Greater Hermanus | Urban | 0 | 0 | 0 | 0 |
| Stanford | Urban | 0 | 0 | 0 | 0 |
| Greater Gansbaai | Urban | 0 | 0 | 0 | 0 |
| Pearly Beach | Urban | 0 | 0 | 0 | 0 |
| Baardskeerdersbos | Urban | 0 | 0 | 0 | 0 |
| Buffeljags Bay | Urban | 0 | 0 | 0 | 0 |
| Farms | Rural | 83 | 218 | 83 | 218 |
| | | **83** | | **83** | |

| Table A.2.6: Water Supply Level Profile (Households) | | |
|---|---|---|
| Water Profile | Totals | Assessment Score |
| **Total households with a water need (Irrelevant the type of need)** | **83** | **80%** |
| **Total households below RDP** | **83** | **80%** |
| Piped water inside the dwelling/house-Households | 40 620 | 80% |
| Piped water inside yard-Households | 5 300 | 80% |
| Piped water distance <200m - Households | 11 191 | 80% |
| Piped water distance >200m - Households | 34 | 60% |
| Borehole in the yard - Households | 0 | 80% |
| Rain-water tank in yard - Households | 0 | 80% |
| Water vendor-carrier/tanker - Households | 0 | 80% |
| Stagnant water - dam/pool - Households | 19 | 60% |
| Flowing water/spring/ stream/river - Households | 4 | 60% |
| Water Other – Households (include no water) | 26 | 60% |

Note: The scores of 60% and 80% in the above table is Good and Excellent. 80% is the highest score in DWS's eWSDP website.

| Table A.2.7: Water Reliability Profile (Households) | | |
|---|---|---|
| Section: Water Reliability Profile | Totals | Assessment Score |
| **Total Number of Households having Reliable Service** | **57 111** | **80%** |
| **Total Number of Households NOT having Reliable Service** | **83** | **60%** |

Note: The scores of 60% and 80% in the above table is Good and Excellent. 80% is the highest score in DWS's eWSDP website.

The projected figures in the previous tables for water services are still based on the 2011 Census data and can only be updated once the 2022 Census data becomes available per town or subplace.

The table and graph below give an overview of the sanitation service delivery access profile in Overstrand Municipality's Management Area.

| Table A.2.8: Residential Water Services Delivery Access Profile: Sanitation | | | | | | | |
|---|---|---|---|---|---|---|---|
| Census Category | Description | Year 0 | | Year -1 | | Year 2 | |
| | | FY2022/23 | | FY2021/22 | | FY2020/21 | |
| | | Nr | % | Nr | % | Nr | % |
| | **SANITATION (ABOVE MIN LEVEL)** | | | | | | |
| Flush toilet (connected to sewerage system) | Waterborne | 30 398 | 53% | 29 502 | 52% | 28 376 | 59% |
| | Waterborne: Low Flush | 4 100 | 7% | 4 100 | 7% | 4 100 | 9% |
| Flush toilet (with septic tank) | Septic tanks / Conservancy | 11 239 | 20% | 11 228 | 20% | 11 449 | 24% |
| Chemical toilet | Non-waterborne (min. service level) | 5 | 0% | 5 | 0% | 5 | 0% |
| Pit toilet with ventilation (VIP) | | 27 | 0% | 27 | 0% | 27 | 0% |
| Other / Communal Services | Waterborne (min. service level, communal) | 11 160 | 20% | 11 209 | 20% | 3 779 | 8% |
| | **Sub-Total: Minimum Serivce Level and Above** | **56 929** | **100%** | **56 071** | **100%** | **47 736** | **99%** |
| | **SANITATION (BELOW MIN LEVEL)** | | | | | | |
| Pit toilet without ventilation | Pit toilet | 12 | 0% | 12 | 0% | 12 | 0% |
| Bucket toilet | Bucket toilet | 68 | 0% | 68 | 0% | 68 | 0% |
| Other toilet provision (below min. service level | Other | 119 | 0% | 119 | 0% | 119 | 0% |
| No toilet provisions | No services | 66 | 0% | 66 | 0% | 66 | 0% |
| | **Sub-Total: Below Minimum Service Level** | **265** | **0%** | **265** | **0%** | **265** | **1%** |
| | **Total number of households** | **57 194** | **100%** | **56 336** | **100%** | **48 001** | **100%** |

Note: The households in the above residential sanitation services delivery access profile include all permanent residential households, holiday homes, the households in informal areas and the backyard dwellers and is not the same as only the permanent residential households in Table A.1.6.

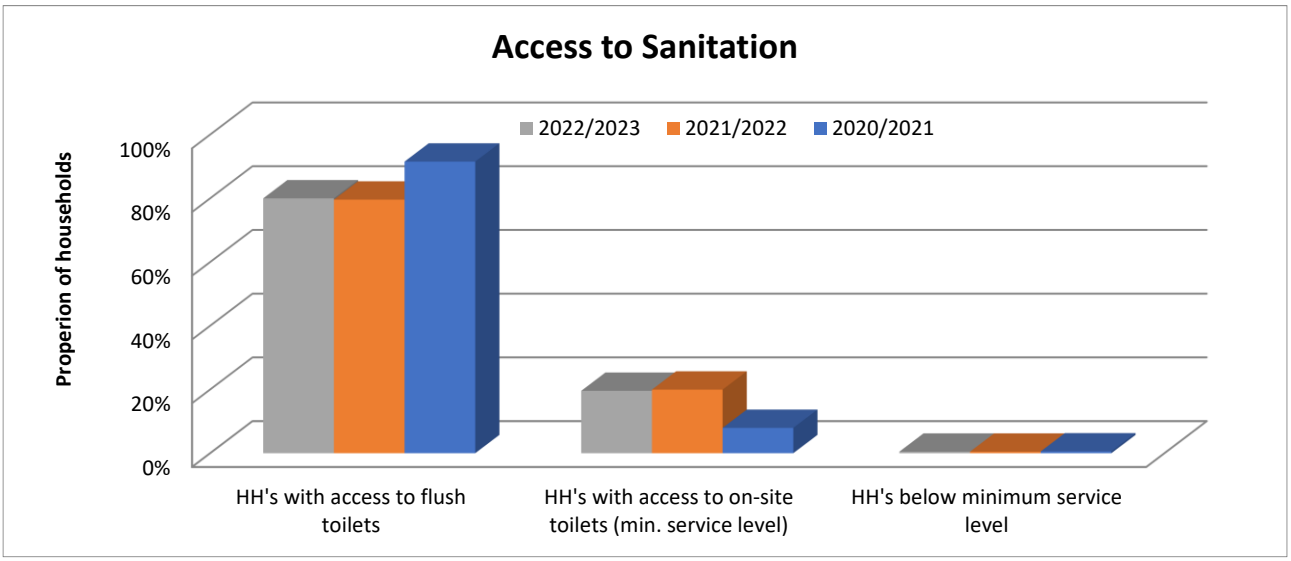



Figure A.2.2: Access to Sanitation Services.

The existing residential sanitation service levels in Overstrand Municipality's Management Area are indicated in the table below.

**Table A.2.9: Residential Sanitation Service Levels (Residential Consumer Units)**

| Service Levels | Buffels River | Kleinmond | Greater Hermanus | Stanford | Greater Gansbaai | Pearly Beach | Baardskeer-dersbos | Buffeljags Bay | Farms | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| No Sanitation Services | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 66 [3] | 66 |
| Below RDP: Infrastructure Upgrade | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 204 [4] | 204 |
| Below RDP: Infrastructure Extension | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below RDP: Infrastructure Refurbishment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below RDP: O&M Needs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below RDP: Water Resource Needs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below RDP: Infrastructure and O&M Needs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Below RDP: Infrastructure, O&M and Water Resource Needs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total Basic Need (RDP)** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **270** | **270** |
| Below Housing Interim [5] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Adequate Housing Permanent [6] | 0 | 1 014 | 7 897 | 447 | 1 661 | 126 | 0 | 15 | 0 | 11 160 |
| **Total Housing Need** | **0** | **1 014** | **7 897** | **447** | **1 661** | **126** | **0** | **15** | **0** | **11 160** |
| No Waterborne (VIP) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 27 |
| Waterborne Low Flush | 0 | 0 | 4 100 | 0 | 0 | 0 | 0 | 0 | 0 | 4 100 |
| Septic Tanks / Conservancy Tanks | 3 759 | 960 | 1 318 | 10 | 2 671 | 594 | 67 | 30 | 1 830 | 11 239 |
| Waterborne | 0 | 3 003 | 19 615 | 1 821 | 4 699 | 1 260 | 0 | 0 | 0 | 30 398 |
| **Total Adequate [2]** | **3 759** | **3 963** | **25 033** | **1 831** | **7 370** | **1 854** | **67** | **30** | **1 857** | **45 764** |
| **Total Residential Consumer Units for the Municipality** | **3 759** | **4 977** | **32 930** | **2 278** | **9 031** | **1 980** | **67** | **45** | **2 127** | **57 194** |

Notes:

1) Total for Septic Tanks and Conservancy tanks in Urban Areas according to Municipal information for June for "Developed Sites Septic Tanks (SE8D)"
2) Include Backyard dwellers
3) Census 2011: Number of households with no toilet facility 66.
4) Census 2011: Number of households with existing buckets 68, chemical toilets 5, pit toilets without ventilation 12 and "other" 119.
5) Below Housing Interim in the above table is the number of informal households in informal areas without basic sanitation services.
6) Adequate Housing Permanent in the above table is the number of informal households in informal areas with communal ablution facilities, as confirmed by the Municipality (June 2023).

**Table A.2.10: Improvement in Eradicating the Sanitation Backlog**

| Settlement | Urban / Rural | 2022/23 | | 2021/22 (-Y1) | |
|---|---|---|---|---|---|
| | | Sanitation backlog HH | Sanitation Backlog Population | Sanitation backlog HH | Sanitation Backlog Population |
| Buffels River | Urban | 0 | 0 | 0 | 0 |
| Kleinmond | Urban | 0 | 0 | 0 | 0 |
| Greater Hermanus | Urban | 0 | 0 | 0 | 0 |
| Stanford | Urban | 0 | 0 | 0 | 0 |
| Greater Gansbaai | Urban | 0 | 0 | 0 | 0 |
| Pearly Beach | Urban | 0 | 0 | 0 | 0 |
| Baardskeerdersbos | Urban | 0 | 0 | 0 | 0 |
| Buffeljags Bay | Urban | 0 | 0 | 0 | 0 |
| Farms | Rural | 270 | 710 | 270 | 710 |
| | | **270** | | **270** | |

| Table A.2.11: Sanitation Level of Service (Households) | | |
|---|---|---|
| **Section: Sanitation Service Infrastructure Supply Level Profile** | **Totals** | **Assessment Score** |
| Bucket toilet - Households | 68 | 60% |
| Pit without ventilation - Households | 12 | 60% |
| Pit toilet with ventilation (VIP) - Households | 27 | 60% |
| Chemical Toilet - Households | 5 | 60% |
| Flush toilet (with septic / conservancy tank) - Households | 11 239 | 80% |
| Flush toilet (connected to sewerage system) - Households | 45 658 | 80% |
| None - Households | 185 | 60% |

Note: The scores of 60% and 80% in the above table is Good and Excellent. 80% is the highest score in DWS's eWSDP website.

| Table A.2.12: Sanitation Reliability Profile (Households) | | |
|---|---|---|
| **Section: Sanitation Reliability Profile** | **Totals** | **Assessment Score** |
| **Total number of households having reliable service** | **56 924** | **80%** |
| **Total number of households not having reliable service** | **270** | **60%** |
| Infrastructure to be upgraded: None to VIP (HH) | 185 | 60% |
| Infrastructure requirement: Bucket to VIP (HH) | 68 | 60% |
| Infrastructure to be upgraded: Pit to VIP (HH) | 12 | 60% |

Note: The scores of 60% and 80% in the above table is Good and Excellent. 80% is the highest score in DWS's eWSDP website.

The projected figures in the previous tables for sanitation services are still based on the 2011 Census data and can only be updated once the 2022 Census data becomes available per town or subplace.

| Table A.2.13: Direct Backlog (Water and Sanitation) | | |
|---|---|---|
| **Direct Backlog (Water & Sanitation)** | **Totals** | **Assessment Score** |
| Direct settlement backlog water households. Total household of settlement with a water need (irrelevant the type of need) | 83 | 60% |
| Direct settlement backlog water population. Total population of settlement with a water need (irrelevant the type of need) | 218 | 60% |
| Direct settlement backlog sanitation households. Total household of settlement with a sanitation need (irrelevant the type of need) | 270 | 60% |
| Direct settlement backlog sanitation population. Total population of settlement with a sanitation need (irrelevant the type of need) | 710 | 60% |

The National Norms and Standards for Domestic Water and Sanitation Services, as published in the Government Gazette No.41100 of 8 September 2017, include the following interim water and sanitation services (Communal Services):

| Table A.2.14: Interim Water and Sanitation Services (National Norms and Standards for Domestic Water and Sanitation Services) |
|---|
| **Intermittent provision of water at a minimum level of water supply services** |
| • A minimum volume of 1 500 litres of potable water shall be made available to a household per week.<br>• The water provided shall comply with the SANS241 quality standards.<br>• The access/delivery point shall be at a minimum a communal standpipe, or a storage facility in the yard (water container, yard tank, roof tank) of at least a volume of 1 500 litres.<br>• In the case of a communal standpipe, it shall be within a reasonable walking distance of no more than 100m from the farthest household.<br>• In the case of a storage facility in the yard (water container, yard tank, roof tank), it shall be refilled by a water tanker with potable water at least once a week.<br>• The water shall be made available for 52 weeks per year.<br>• All water use and/or supply shall be metered, but not tariffed.<br>• Maintenance of the infrastructure for this level of service is the responsibility of the WSA.<br>• Point-of-use water treatment systems and methods shall be advocated.<br>• Efforts shall be made to ensure user acceptance and understanding for this level of service.<br>• Users shall be educated in effective water use and hygiene. |

| Table A.2.14: Interim Water and Sanitation Services (National Norms and Standards for Domestic Water and Sanitation Services) |
|---|
| **Intermittent provision of water at a minimum level of water supply services** |
| • This level of service shall be phased out by 2030 to comply with the National Development Plan's requirement of providing a basic service of at least a yard connection for water. |
| **Interim sanitation services (Communal and shared facilities)** |
| • Users shall be consulted on the siting and design, and the responsible cleaning and maintenance of shared toilets. Clean toilets are more likely to be frequently used.<br>• Plumbing in and for communal and shared facilities needs to be more robust than that installed on private premises, and shall comply with the general principles of the National Building Regulations. Precautions need to be taken in the design against vandalism, theft and misuse.<br>• Efforts shall be made to provide people living with chronic illnesses, such as HIV and AIDS, with easy access to a toilet as they frequently suffer from chronic diarrhoea and reduced mobility.<br>• Where possible, communal and shared toilets must be provided with lighting, or users provided with torches. The input of the users must be sought with regard to ways of enhancing the safety of users.<br>• Efforts to build a sense of communal ownership and pride of possession shall be made so that cooperation is voluntarily given or assured by peer pressure.<br>• Sufficient sanitation facilities shall be provided for the number of users<br>  ➢ Communal toilet: Toilet seats – 1 seat per 50 users; Urinal units – 1 unit per 100 users; Hand washing – 1 basin per 10 toilet seats.<br>  ➢ Shared toilet mostly used all the time: Toilet seats – 1 seat per 20 users; Urinal units – 1 unit per 50 users; Hand washing – 1 basin per 4 toilet seats.<br>• Shared and communal facilities shall have separate toilet blocks for men and women with separate entries; waste bins with lids in toilet block for women – emptied once a week and disposed of appropriately; urinal facilities for men; seats for children in the section for women; waiting / circulating area; separate washing cubicles for men and women; facility to store large volumes of water (water-borne sanitation); appropriate wastewater disposal system; and store room for keeping the cleaning material / equipment. |

Overstrand Municipality's Directorate Community Services regularly count the number of households in the informal areas. The current number of households in the informal areas, with access to communal basic services, is 3 242. The number of households with communal services in the informal areas and the number of households per facility type are summarised in the table below (June 2023).

**Table A.2.15: Communal Service Levels in the Informal Areas**

| Area | Informal Settlement | No. of Households | Number of Toilets | Household / Toilet | Number of Taps | Households / Tap |
|---|---|---|---|---|---|---|
| Stanford | Die Kop | 180 | 20 | 9.0 | 7 | 25.7 |
| Kleinmond | Overhills | 489 | 107 | 4.6 | 27 | 18.1 |
| Gansbaai | Masakhane | 716 | 451 | 1.6 | 283 | 2.5 |
| | Buffeljags Bay | 15 | 8 | 1.9 | 2 | 7.5 |
| Hawston | Erf 170 | 8 | 4 | 2.0 | 2 | 4.0 |
| Zwelihle | Tsepe-Tsepe | 244 | 40 | 6.1 | 7 | 34.9 |
| | Serviced Sites | 85 | 25 | 3.4 | 5 | 17.0 |
| | Thambo Square | 345 | 21 | 16.4 | 7 | 49.3 |
| | Asazani | 89 | 12 | 7.4 | 5 | 17.8 |
| | Temporary Relocation Area | 250 | 125 | 2.0 | 125 | 2.0 |
| | New Camp | 69 | 12 | 5.8 | 8 | 8.6 |
| | Transit Camp | 171 | 140 | 1.2 | 136 | 1.3 |
| **Sub-Total** | | **2 661** | **965** | **2.8** | **614** | **4.3** |
| **Communal Service Levels – Emergency Housing** | | | | | | |
| Stanford | Stanford | 154 | 36 | 4.3 | 9 | 17.1 |
| Hermanus | Mount Pleasant (Cemetery) | 25 | 8 | 3.1 | 4 | 6.3 |
| | Mount Pleasant (Mbeki Str) | 29 | 10 | 2.9 | 4 | 7.3 |
| | Zwelihle | 150 | 42 | 3.6 | 13 | 11.5 |
| Gansbaai | Masakhane | 97 | 16 | 6.1 | 3 | 32.3 |
| | Eluxolweni | 126 | 30 | 4.2 | 11 | 11.5 |
| **Sub-Total** | | **581** | **142** | **4.1** | **44** | **13.2** |
| **Total** | | **3 242** | **1 107** | **2.9** | **658** | **4.9** |

Notes: No Services, Ratios above Targets, Ratios meeting Targets

The table below indicates the number of communal services provided on erven that was part of the land invasion.

| Table A.2.16: Communal Service Levels Provided During Land Invasion | | | | | | |
|---|---|---|---|---|---|---|
| **Area** | **Settlement** | **No. of Households** | **Number of Toilets** | **Household / Toilet** | **Number of Taps** | **Households / Tap** |
| Hermanus | Marikana (Area of church) | 2 309 | 14 | 27.5 | 10 | 38.5 |
| | Marikana (Next to swimming pool) | | 20 | | 16 | |
| | Marikana (Next to recycling site) | | 20 | | 14 | |
| | Marikana Swimming Pool | | 20 | | 12 | |
| | Marikana (Next to parking area) | | 10 | | 8 | |
| | Dubai (Schulphoek) | 3 950 | 30 | 131.7 | 21 | 188.1 |
| | Back of sport ground, Zwelihle | 173 | 20 | 8.7 | 8 | 21.6 |
| Kleinmond | Overhills | 525 | 19 | 27.6 | 6 | 87.5 |
| Gansbaai | Masakhane (Next to primary school and portion of new housing project) | 848 | 8 | 106.0 | 1 | 848.0 |
| Stanford | Die Kop | 88 | 8 | 11.0 | 2 | 44.0 |
| | Thembelihle | 25 | 2 | 12.5 | 1 | 25.0 |
| **Sub-Total** | | **7 918** | **171** | **46.3** | **99** | **80.0** |

Notes: No Services, Ratios above Targets, Ratios meeting Targets

The number of user connections in each user sector, for the various distribution systems in Overstrand Municipality's Management Area, is as follows.

| Table A.2.17: Number of Consumer Units for Water Services for each User Category for the Various Financial Years | | | | | |
|---|---|---|---|---|---|
| **Distribution System** | **Residential** | **Commercial** | **Industrial** | **Other** | **Total** |
| **2014/2015 (Average over period July 2014 – June 2015)** | | | | | |
| Buffels River | 3 264 | 106 | 0 | 36 | **3 406** |
| Kleinmond | 3 533 | 264 | 0 | 65 | **3 862** |
| Greater Hermanus | 18 168 | 904 | 31 | 325 | **19 428** |
| Stanford | 1 147 | 53 | 2 | 14 | **1 216** |
| Greater Gansbaai | 4 962 | 225 | 4 | 188 | **5 378** |
| Pearly Beach | 1 221 | 5 | 0 | 7 | **1 234** |
| Baardskeerdersbos | 63 | 0 | 0 | 3 | **66** |
| Buffeljags Bay | 30 | 0 | 0 | 4 | **34** |
| **TOTALS** | **32 388** | **1 557** | **37** | **642** | **34 624** |
| **2015/2016 (Average over period July 2015 – June 2016)** | | | | | |
| Buffels River | 3 316 | 110 | 0 | 31 | **3 457** |
| Kleinmond | 3 553 | 263 | 0 | 64 | **3 880** |
| Greater Hermanus | 18 305 | 999 | 32 | 308 | **19 644** |
| Stanford | 1 156 | 54 | 2 | 17 | **1 229** |
| Greater Gansbaai | 5 034 | 228 | 4 | 198 | **5 464** |
| Pearly Beach | 1 254 | 4 | 0 | 7 | **1 265** |
| Baardskeerdersbos | 64 | 0 | 0 | 3 | **67** |
| Buffeljags Bay | 30 | 0 | 0 | 6 | **36** |
| **TOTALS** | **32 712** | **1 658** | **38** | **634** | **35 042** |
| **2016/2017 (Average over period July 2016 – June 2017)** | | | | | |
| Buffels River | 3 362 | 118 | 0 | 30 | **3 510** |
| Kleinmond | 3 585 | 292 | 0 | 66 | **3 943** |
| Greater Hermanus | 18 788 | 1 004 | 37 | 346 | **20 175** |
| Stanford | 1 187 | 55 | 2 | 18 | **1 262** |
| Greater Gansbaai | 5 091 | 234 | 3 | 202 | **5 530** |
| Pearly Beach | 1 500 | 3 | 0 | 7 | **1 510** |
| Baardskeerdersbos | 64 | 0 | 0 | 3 | **67** |

| Table A.2.17: Number of Consumer Units for Water Services for each User Category for the Various Financial Years | | | | | |
|---|---|---|---|---|---|
| **Distribution System** | **Residential** | **Commercial** | **Industrial** | **Other** | **Total** |
| Buffeljags Bay | 30 | 0 | 0 | 6 | **36** |
| **TOTALS** | **33 607** | **1 706** | **42** | **678** | **36 033** |
| **2017/2018 (Average over period July 2017 – June 2018)** | | | | | |
| Buffels River | 3 416 | 118 | 0 | 30 | 3 564 |
| Kleinmond | 3 606 | 295 | 0 | 70 | 3 971 |
| Greater Hermanus | 19 460 | 1 039 | 38 | 499 | 21 036 |
| Stanford | 1 227 | 56 | 3 | 18 | 1 304 |
| Greater Gansbaai | 5 213 | 286 | 5 | 197 | 5 701 |
| Pearly Beach | 1 691 | 5 | 0 | 8 | 1 704 |
| Baardskeerdersbos | 64 | 0 | 0 | 3 | 67 |
| Buffeljags Bay | 30 | 0 | 0 | 6 | 36 |
| **TOTALS** | **34 707** | **1 799** | **46** | **831** | **37 383** |
| **2018/2019 (Average over period July 2018 – June 2019)** | | | | | |
| Buffels River | 3 501 | 119 | 0 | 30 | 3 650 |
| Kleinmond | 3 625 | 297 | 0 | 71 | 3 993 |
| Greater Hermanus | 19 819 | 1 161 | 38 | 532 | 21 550 |
| Stanford | 1 260 | 65 | 3 | 20 | 1 348 |
| Greater Gansbaai | 5 761 | 346 | 9 | 196 | 6 312 |
| Pearly Beach | 1 647 | 8 | 0 | 8 | 1 663 |
| Baardskeerdersbos | 64 | 1 | 0 | 3 | 68 |
| Buffeljags Bay | 30 | 0 | 0 | 6 | 36 |
| **TOTALS** | **35 707** | **1 997** | **50** | **866** | **38 620** |
| **2019/2020 (Average over period July 2019 – June 2020)** | | | | | |
| Buffels River | 3 558 | 119 | 0 | 30 | 3 707 |
| Kleinmond | 3 633 | 307 | 1 | 71 | 4 012 |
| Greater Hermanus | 20 099 | 1 209 | 38 | 541 | 21 887 |
| Stanford | 1 269 | 76 | 3 | 18 | 1 366 |
| Greater Gansbaai | 5 917 | 375 | 9 | 198 | 6 499 |
| Pearly Beach | 1 657 | 9 | 0 | 8 | 1 674 |
| Baardskeerdersbos | 65 | 2 | 0 | 3 | 70 |
| Buffeljags Bay | 30 | 0 | 0 | 6 | 36 |
| **TOTALS** | **36 228** | **2 097** | **51** | **875** | **39 251** |
| **2020/2021 (Estimated)** | | | | | |
| Buffels River | 3 623 | 120 | 0 | 30 | 3 773 |
| Kleinmond | 3 649 | 312 | 1 | 73 | 4 035 |
| Greater Hermanus | 20 536 | 1 278 | 39 | 605 | 22 458 |
| Stanford | 1 295 | 84 | 3 | 18 | 1 400 |
| Greater Gansbaai | 6 194 | 421 | 11 | 196 | 6 822 |
| Pearly Beach | 1 710 | 11 | 0 | 8 | 1 729 |
| Baardskeerdersbos | 66 | 2 | 0 | 3 | 71 |
| Buffeljags Bay | 30 | 0 | 0 | 6 | 36 |
| **TOTALS** | **37 103** | **2 227** | **54** | **940** | **40 324** |
| **2021/2022 (Estimated)** | | | | | |
| Buffels River | 3 688 | 120 | 0 | 30 | 3 838 |
| Kleinmond | 3 665 | 317 | 2 | 74 | 4 058 |
| Greater Hermanus | 20 973 | 1 346 | 39 | 670 | 23 028 |
| Stanford | 1 322 | 91 | 4 | 18 | 1 435 |
| Greater Gansbaai | 6 469 | 468 | 13 | 195 | 7 145 |
| Pearly Beach | 1 763 | 13 | 0 | 8 | 1 784 |
| Baardskeerdersbos | 66 | 3 | 0 | 3 | 72 |
| Buffeljags Bay | 30 | 0 | 0 | 6 | 36 |
| **TOTALS** | **37 976** | **2 358** | **58** | **1 004** | **41 396** |

| Table A.2.17: Number of Consumer Units for Water Services for each User Category for the Various Financial Years | | | | | |
|---|---|---|---|---|---|
| **Distribution System** | **Residential** | **Commercial** | **Industrial** | **Other** | **Total** |
| **2022/2023 (Estimated)** | | | | | |
| Buffels River | 3 753 | 121 | 0 | 30 | 3 904 |
| Kleinmond | 3 681 | 322 | 2 | 76 | 4 081 |
| Greater Hermanus | 21 410 | 1 415 | 40 | 735 | 23 600 |
| Stanford | 1 349 | 98 | 4 | 19 | 1 470 |
| Greater Gansbaai | 6 745 | 515 | 15 | 193 | 7 468 |
| Pearly Beach | 1 815 | 15 | 0 | 9 | 1 839 |
| Baardskeerdersbos | 67 | 4 | 0 | 3 | 74 |
| Buffeljags Bay | 30 | 0 | 0 | 6 | 36 |
| **TOTALS** | **38 850** | **2 490** | **61** | **1 071** | **42 472** |

| Table A.2.18: Total Number of Consumer Units per Town and Percentage Growth from 2014/2015 to 2022/2023 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Distribution System** | **Annual Growth % 14/15 – 22/23** | **14/15** | **15/16** | **16/17** | **17/18** | **18/19** | **19/20** | **20/21*** | **21/22*** | **22/23*** |
| Buffels River | 1.72% | 3 406 | 3 457 | 3 510 | 3 564 | 3 650 | 3 707 | 3 773 | 3 838 | 3 904 |
| Kleinmond | 0.69% | 3 862 | 3 880 | 3 943 | 3 971 | 3 993 | 4 012 | 4 035 | 4 058 | 4 081 |
| Greater Hermanus | 2.46% | 19 428 | 19 644 | 20 175 | 21 036 | 21 550 | 21 887 | 22 458 | 23 028 | 23 600 |
| Stanford | 2.40% | 1 216 | 1 229 | 1 262 | 1 304 | 1 348 | 1 366 | 1 400 | 1 435 | 1 470 |
| Greater Gansbaai | 4.19% | 5 378 | 5 464 | 5 530 | 5 701 | 6 312 | 6 499 | 6 822 | 7 145 | 7 468 |
| Pearly Beach | 5.11% | 1 234 | 1 265 | 1 510 | 1 704 | 1 663 | 1 674 | 1 729 | 1 784 | 1 839 |
| Baardskeerdersbos | 1.44% | 66 | 67 | 67 | 67 | 68 | 70 | 71 | 72 | 74 |
| Buffeljags Bay | 0.72% | 34 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| **TOTALS** | **2.59%** | **34 624** | **35 042** | **36 033** | **37 383** | **38 620** | **39 251** | **40 324** | **41 396** | **42 472** |

Note: * The number of CUs for the last three financial years was estimated.

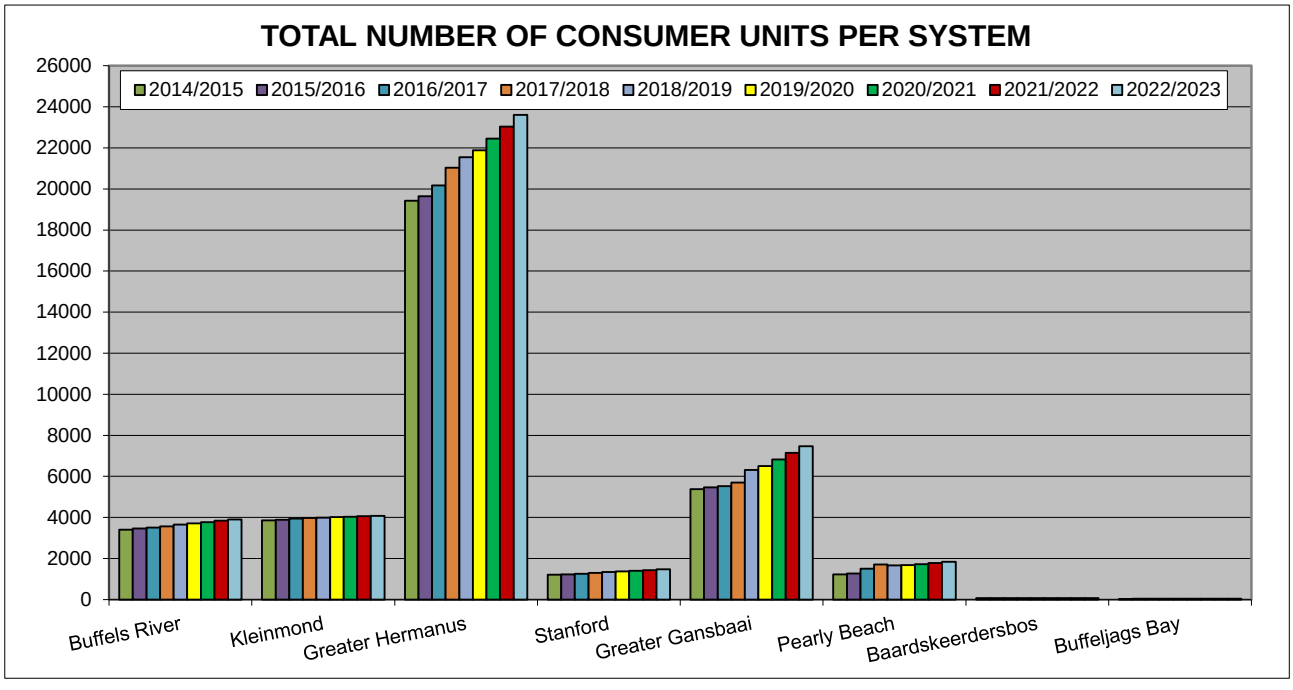



Figure A.2.3: Number of Billed Metered Consumption Units per System for each of the Financial Years

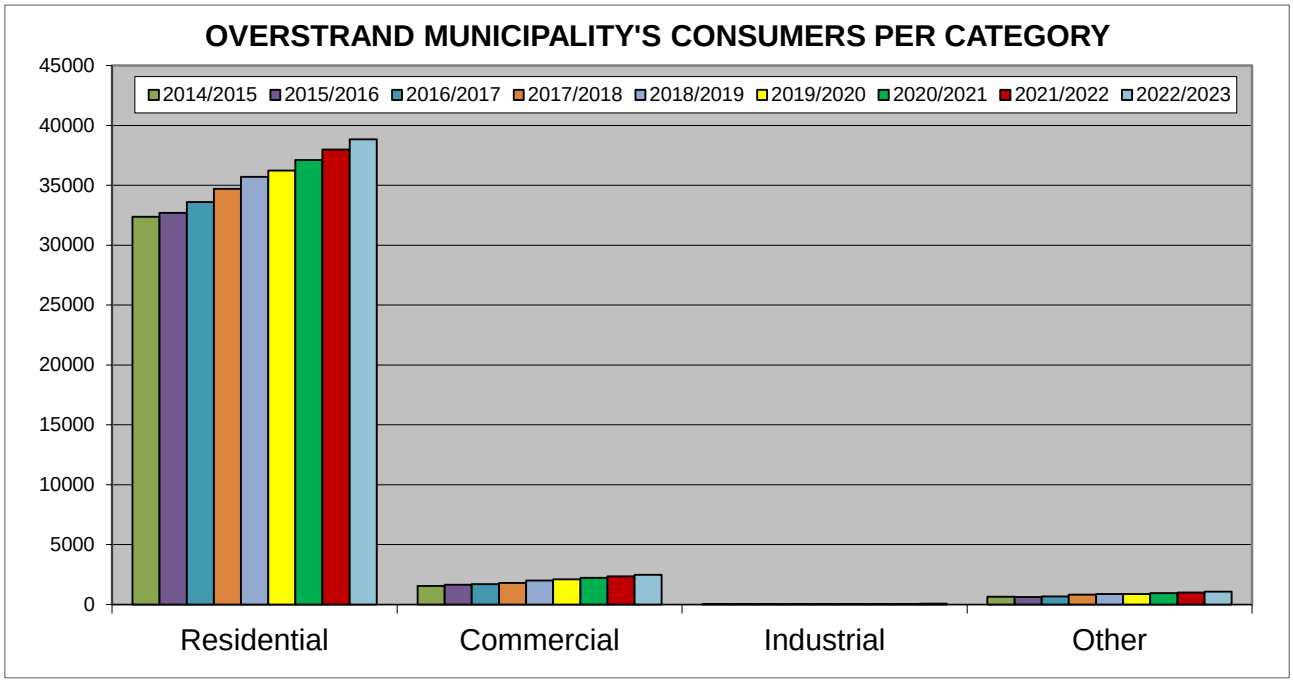



Figure A.2.4: Overstrand Municipality's Consumers per Category Type

### Public Amenities

All schools and medical facilities in Overstrand Municipality's Management Area are supplied with a higher level of water and sanitation services. The existing water and sanitation service levels for all the schools and medical facilities in Overstrand Municipality's Management Area are summarised in the tables below.

**Table A.2.19: Water Service Levels: Education and Health Facilities**

| Associated services facility | Number of facilities | Facilities with No Services | Facilities with Inadequate Services | Total Potential Cost (basic level) (RM) |
|---|---|---|---|---|
| **Education Plan** | | | | |
| Primary school | 17 | 0 | 0 | R0 |
| Secondary school | 4 | 0 | 0 | R0 |
| Tertiary | - | - | - | - |
| Combined | 4 | 0 | 0 | R0 |
| Special needs | 1 | 0 | 0 | R0 |
| Other | 13 | 0 | 0 | R0 |
| **Total** | **39** | | **0** | **R0** |
| **Health Plan** | | | | |
| Hospitals | 2 | 0 | 0 | R0 |
| Community Day Centres | 1 | 0 | 0 | R0 |
| Clinics | 10 | 0 | 0 | R0 |
| Other | - | - | - | - |
| **Total** | **13** | **0** | **0** | **R0** |

| Table A.2.20: Sanitation Service Levels: Education and Health Facilities | | | | |
|---|---|---|---|---|
| **Associated services facility** | **Number of facilities** | **Facilities with No Services** | **Facilities with Inadequate Services** | **Total Potential Cost (basic level) (RM)** |
| **Education Plan** | | | | |
| Primary school | 17 | 0 | 0 | R0 |
| Secondary school | 4 | 0 | 0 | R0 |
| Tertiary | - | - | - | - |
| Combined | 4 | 0 | 0 | R0 |
| Special needs | 1 | 0 | 0 | R0 |
| Other | 13 | 0 | 0 | R0 |
| **Total** | **39** | **0** | **0** | **R0** |
| **Health Plan** | | | | |
| Hospitals | 2 | 0 | 0 | R0 |
| Community Day Centres | 1 | 0 | 0 | R0 |
| Clinics | 10 | 0 | 0 | R0 |
| Other | - | - | - | - |
| **Total** | **13** | **0** | **0** | **R0** |

## TOPIC 3: WATER SERVICES ASSET MANAGEMENT

A new Water and Wastewater Bulk Works Contract was signed during the 2018/2019 financial year between Overstrand Municipality and an External Service Provider to operate the bulk water services infrastructure in Overstrand Municipality's Management Area for a period of fifteen (15) years starting on the 8th of December 2018. The Municipality also has the right to extend the contract for a further five (5) years. The Municipality will ensure the long-term efficient operation and maintenance of their bulk water and sewerage infrastructure through the Contract.

The operation and maintenance of the following bulk infrastructure forms part of the Contract:

- Hawston, Hermanus, Stanford, Gansbaai, Kleinmond and Eluxolweni WWTWs;
- Preekstoel, Buffels River, Franskraal, Pearly Beach, De Kelders, Stanford, Kleinmond, Baardskeerdersbos and Buffeljags Bay WTWs;
- Water Resources;
- Surface water pump stations and borehole pumps;
- Bulk water and sewer pipelines;
- Water Reservoirs; and
- Water and sewer pump stations and rising main pipelines.

| Table A.3.1: Infrastructure Components | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Assets** | **Boreholes** | **Abstraction Points** | **WTW** | **Water Pump Stations** | **Sewer Pump Stations** | **Water Bulk Pipelines** | **Sewer Bulk Pipelines** | **Reservoirs** | **WWTW** | **Assessment Score** |
| Total number of components / km of pipeline / units | 20 | 12 | 8 | 26 | 54 | 119 km | 48.3 km (Rising) | 48 | 6 | 80% |

The table below gives an overview of the resources and the WTWs and treatment processes for the various water distribution systems in Overstrand Municipality's Management Area.

**Table A.3.2: Existing Main Water Infrastructure (Resources and WTWs)**

| Water Distribution System | Bulk Supply | WTWs and Treatment Processes | |
|---|---|---|---|
| | (Resources) | WTW (Capacity in Ml/d) | Processes |
| Buffels River | Buffels River Dam | Buffels River (5.500) | Chemical dosing (Aluminium Chlorohydrate), flocculation, sedimentation, filtration (Rapid gravity sand filters), stabilization (Soda Ash) and disinfection (Chlorine Gas) |
| Kleinmond | Palmiet River, Kleinmond Borehole & Dorpsfontein Spring | Kleinmond (5.800) | Chemical dosing (Aluminium Chlorohydrate and Soda Ash), flocculation, sedimentation, filtration (Rapid gravity sand filters), stabilization (Soda Ash) and disinfection (Chlorine Gas). |
| Greater Hermanus | De Bos Dam and Gateway, Camphill and Volmoed wellfields | Preekstoel (21.000) | Chemical dosing (Aluminium Sulphate and Sodium Aluminate), flocculation, sedimentation, filtration (Rapid gravity sand filters), stabilization (Lime) and Disinfection (Chlorine Gas) |
| | | Groundwater Hemel & Aarde (10.000) | Biological WTW for iron and manganese removal by contact filtration, Caustic Soda dosing and Aeration (Hemel & Aarde wellfields of Camphill and Volmoed). |
| | | Groundwater Gateway (7.000) | Chemical oxidation treatment plant with Potassium Permanganate and Aeration (Gateway Wellfield). |
| Stanford | Stanford Spring and two Kouevlakte Boreholes | Stanford RO plant (1.000) | Ultrafiltration plus Reverse Osmosis Plant and disinfection (Sodium Hypochlorite) |
| Greater Gansbaai | Franskraal and Kraaibosch Dams | Franskraal (6.500) | Chemical dosing (Aluminium Chlorohydrate), flocculation, sedimentation, filtration (Rapid gravity sand filters), disinfection (Chlorine Gas) and stabilization (Soda Ash) |
| | Klipgat Fountain and De Kelders Caves Fountain. | De Kelders (1.600) | Ultrafiltration plus Reverse Osmosis Plant and disinfection (Sodium Hypochlorite) |
| Pearly Beach | Pearly Beach Springs and Koekemoer Dam | Pearly Beach (1.440) | DAFF pre-treatment, Ultrafiltration Modules from Memcor, Chemical dosing (Sudfloc K300) and disinfection (Sodium Hypochlorite) |
| Baardskeerders-bos | Two Boreholes | Baardskeerdersbos (0.185) | pH adjustment, oxidation, settling, ultrafiltration and disinfection (Sodium Hypochlorite). |
| Buffeljags Bay | Borehole | - | Disinfection (Chlorine Tablets) |

The existing water reticulation networks, pump stations and reservoirs are summarised in the table below for each of the water distribution systems.

**Table A.3.3: Existing Water Infrastructure (Reticulation, Pump Stations and Reservoirs)**

| Water Distribution System | Water Distribution Networks | | Number of Water PS | | Reservoirs and Water Towers | |
|---|---|---|---|---|---|---|
| | Bulk | Internal | Raw Water | Potable Water | Number of Reservoirs and Water Towers | Total Storage in Ml |
| | km | km | Number of PS | Number of PS | | |
| Buffels River | 15.326 | 123.859 | - | 4 | 6 | 6.267 |
| Kleinmond | 5.400 | 75.053 | 3 | 1 | 3 | 8.100 |
| Greater Hermanus | 41.586 | 328.807 | 1 | 6 | 21 | 38.446 |
| Stanford | 5.564 | 34.501 | - | 2 | 2 | 2.750 |
| Greater Gansbaai | 35.299 | 140.970 | 3 | 3 | 10 | 13.050 |
| Pearly Beach | 12.404 | 30.969 | - | 2 | 2 | 2.300 |
| Baardskeerdersbos | 0.858 | 4.952 | - | 1 | 1 | 0.150 |
| Buffeljags Bay | 2.575 | 0.469 | - | - | 1 | 0.096 |
| **Total Overstrand** | **119.012** | **739.580** | **7** | **19** | **46** | **72.544** |

The table below gives an overview of the major sewerage infrastructure components, for the various drainage systems, in Overstrand Municipality's Management Area.

**Table A.3.4: Existing Main Sewerage Infrastructure**

| Sewer Drainage Systems | WWTWs and Treatment Processes | | | Sewer Drainage Network | | Number of Sewer PS | |
|---|---|---|---|---|---|---|---|
| | Hydraulic Capacity | Organic Capacity | Treatment Processes | Rising | Gravity | Mun | Private |
| | Ml/d | kg COD/d | | km | km | | |
| Buffels River | - | - | - | - | - | - | - |
| Kleinmond | 0.997 | 843 | Kleinmond Activated Sludge System | 6.841 | 29.902 | 6 | 1 |
| Greater Hermanus | 0.700 | 968 | Hawston Activated Sludge System | 33.041 | 257.684 | 33 | 2 |
| | 12.000 | 9 000 | Hermanus Activated Sludge System | | | | |
| Stanford | 1.200 | 1 200 | Stanford Activated Sludge System | 3.242 | 29.752 | 4 | 2 |
| Greater Gansbaai | 2.000 | 3 600 | Gansbaai Nereda System | 4.282 | 24.686 | 4 | - |
| Pearly Beach | 0.259 | 198 | Eluxolweni Oxidation Pond System | 0.941 | 5.245 | 1 | 1 |
| Baardskeerdersbos | - | - | - | - | - | - | - |
| Buffeljags Bay | - | - | - | - | - | - | - |
| **Total Overstrand** | | | | **48.347** | **347.269** | **48** | **6** |

Rooi Els, Pringle Bay, Betty's Bay, De Kelders, Franskraal, Buffeljags Bay and Baardskeerdersbos and are not currently serviced by a sewer reticulation system. The towns of Kleinmond, Fisherhaven, Hawston, Stanford, Gansbaai and Pearly Beach are partially serviced by a sewer system.

**Table A.3.5: Refurbishment Need and O&M Occurrence**

| Component | Refurbishment Need | | | | O&M Occurrence | | | | Observation | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | High | Medium | Low | None | Regular | Periodic | Sporadic | None | Dysfunctional | Operational | Prime Condition | Vandalised |
| Boreholes | 1 | 2 | 13 | 4 | 20 | 0 | 0 | 0 | 0 | 18 | 2 | 0 |
| Abstraction points | 0 | 2 | 4 | 6 | 12 | 0 | 0 | 0 | 0 | 7 | 5 | 0 |
| Bulk water pipelines | 0 | 2 | 6 | 0 | 8 | 0 | 0 | 0 | 0 | 8 | 0 | 0 |
| Reservoirs | 0 | 9 | 24 | 15 | 48 | 0 | 0 | 0 | 0 | 43 | 5 | 0 |
| Water pump stations | 1 | 9 | 10 | 6 | 26 | 0 | 0 | 0 | 0 | 25 | 1 | 0 |
| WTW | 0 | 2 | 5 | 1 | 8 | 0 | 0 | 0 | 0 | 6 | 2 | 0 |
| Bulk sewer pipelines | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 5 | 0 | 0 |
| Sewer pump stations | 2 | 13 | 22 | 17 | 54 | 0 | 0 | 0 | 0 | 52 | 2 | 0 |
| WWTW | 0 | 3 | 3 | 0 | 6 | 0 | 0 | 0 | 0 | 5 | 1 | 0 |

**Asset Management:** An Asset Management Policy and a Maintenance Management Policy are in place for Overstrand Municipality. The objectives of the Asset Management Policy are to ensure the effective and efficient control of the municipality's assets. The Maintenance Management Policy applies to the ongoing maintenance of infrastructure assets, which include all water and sanitation assets.

An Asset Maintenance Plan was completed with the 2014 asset register used as the basis for the plan. The maintenance plans developed provide the municipality with a basis for establishing a planned maintenance approach for the municipality's full asset base. Funding requirements for the maintenance needs are based on the guidelines of the National Infrastructure Maintenance Strategy, which is based on a % of the value of the assets of the respective services.

Overstrand Municipality updated their current Asset Register after June 2023, in order to include the new assets constructed during the 2022/2023 financial year. The tables and graphs below give an overview of the current water and sewerage infrastructure included in Overstrand Municipality's Asset Register.

**Water Infrastructure:** The current replacement cost and carrying value of the water infrastructure of Overstrand Municipality is summarised in the table below (June 2023).

| Table A.3.6: Current Replacement Cost and Carrying Value of the Water Infrastructure (June 2023) | | | |
|---|---|---|---|
| **Asset Type** | **CRC** | **CV** | **% CV / CRC** |
| Dams | R11 119 399 | R4 212 132 | 37.9% |
| Boreholes | R11 161 486 | R5 210 180 | 46.7% |
| Bulk Water Pipelines | R127 078 859 | R45 277 466 | 35.6% |
| Pump Stations | R49 252 052 | R15 680 482 | 31.8% |
| Reservoirs | R120 153 764 | R66 182 683 | 55.1% |
| Water Reticulation Pipelines | R681 501 128 | R247 737 828 | 36.4% |
| Buffels River WTW | R13 813 820 | R4 589 580 | 33.2% |
| Kleinmond WTW | R27 568 183 | R9 762 759 | 35.4% |
| Preekstoel WTW | R78 510 492 | R62 746 623 | 79.9% |
| Franskraal New WTW | R36 298 367 | R18 413 978 | 50.7% |
| Franskraal Old WTW | R20 036 738 | R3 222 977 | 16.1% |
| Baardskeerdersbos WTW | R6 724 089 | R3 355 523 | 49.9% |
| Pearly Beach WTW | R8 154 514 | R5 049 560 | 61.9% |
| De Kelders WTW | R18 982 042 | R6 557 326 | 34.5% |
| **Totals** | **R1 210 354 933** | **R497 999 097** | **41.1%** |

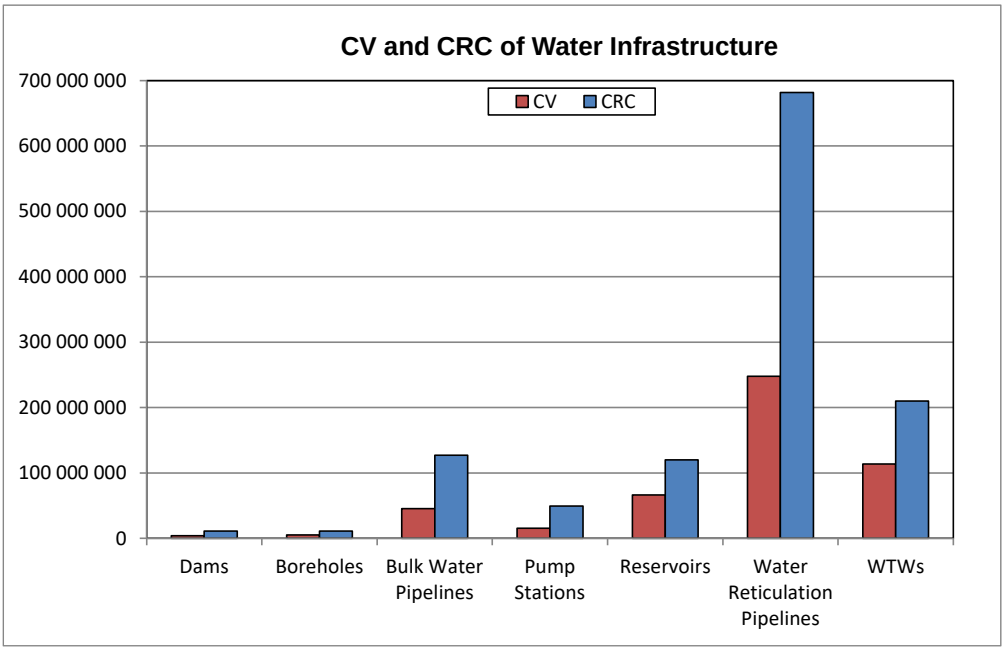



Figure A.3.1: CV and CRC of the Water Infrastructure

The information in the previous table indicates that 58.9% of the value of the water infrastructure has been consumed.

The following table and graph give an overview of the RUL by facility type for the water infrastructure (CRC).

| Table A.3.7: Overview of the Remaining Useful Life by Facility Type for the Water Infrastructure – June 2023 (CRC) | | | | | |
|---|---|---|---|---|---|
| **Asset Type** | **0 – 5 yrs** | **6 – 10 yrs** | **11 – 15 yrs** | **16 – 20 yrs** | **> 20 yrs** |
| Dams | R134 772 | R549 065 | R0 | R9 355 486 | R1 080 076 |
| Boreholes | R5 505 371 | R787 096 | R0 | R476 057 | R4 392 962 |
| Bulk Water Pipelines | R66 198 631 | R1 975 841 | R0 | R15 095 773 | R43 808 614 |
| Pump Stations | R27 111 749 | R3 525 932 | R323 326 | R9 802 824 | R8 488 221 |
| Reservoirs | R12 551 018 | R4 438 285 | R428 995 | R74 489 805 | R28 245 661 |
| Water Reticulation Pipelines | R438 576 815 | R21 947 656 | R0 | R15 986 449 | R204 990 208 |
| Buffels River WTW | R4 174 943 | R1 643 262 | R0 | R7 990 365 | R5 250 |
| Kleinmond WTW | R3 532 253 | R413 610 | R18 819 | R16 563 102 | R7 040 399 |
| Preekstoel WTW | R9 687 516 | R5 919 392 | R987 859 | R1 472 124 | R60 443 601 |
| Franskraal New WTW | R14 072 191 | R354 761 | R63 424 | R446 210 | R21 361 781 |
| Franskraal Old WTW | R5 320 555 | R2 260 796 | R6 955 | R12 448 432 | R0 |
| Baardskeerdersbos WTW | R10 486 | R5 198 392 | R65 430 | R0 | R1 449 781 |
| Pearly Beach WTW | R2 661 404 | R2 650 272 | R112 658 | R268 380 | R2 461 800 |
| De Kelders WTW | R13 161 873 | R0 | R242 892 | R213 953 | R5 363 324 |
| **Totals** | **R602 699 577** | **R51 664 360** | **R2 250 358** | **R164 608 960** | **R389 131 678** |

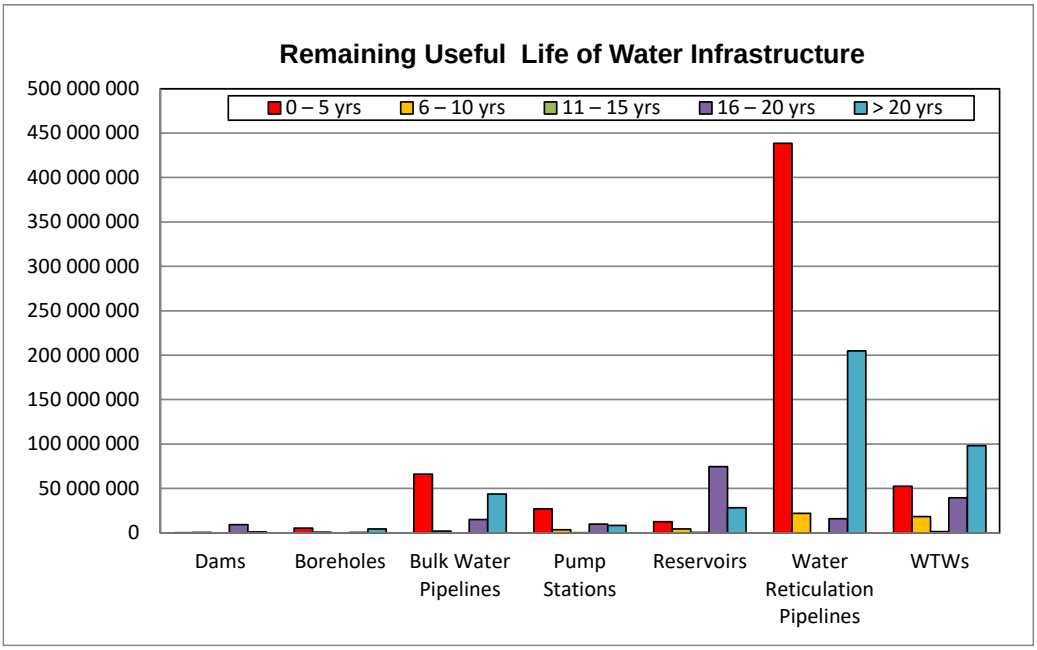



Figure A.3.2: Remaining Useful Life of the Water Infrastructure

The following table and graph give an overview of the age distribution by facility type for the water infrastructure (CRC).

| Table A.3.8: Overview of the Age Distribution by Facility Type for the Water Infrastructure – June 2023 (CRC) | | | | | |
|---|---|---|---|---|---|
| **Asset Type** | **0 – 5 yrs** | **6 – 10 yrs** | **11 – 15 yrs** | **16 – 20 yrs** | **> 20 yrs** |
| Dams | R549 065 | R0 | R0 | R134 772 | R10 435 562 |
| Boreholes | R118 473 | R964 068 | R8 577 298 | R937 920 | R563 727 |
| Bulk Water Pipelines | R0 | R0 | R24 775 777 | R0 | R102 303 082 |
| Pump Stations | R0 | R238 775 | R7 061 858 | R21 433 221 | R20 518 198 |
| Reservoirs | R186 225 | R1 407 859 | R9 539 361 | R5 558 561 | R103 461 758 |
| Water Reticulation Pipelines | R0 | R26 593 582 | R119 209 386 | R134 535 758 | R401 162 402 |
| Buffels River WTW | R364 073 | R0 | R112 335 | R3 987 088 | R9 350 324 |
| Kleinmond WTW | R0 | R0 | R1 625 527 | R3 521 323 | R22 421 333 |

| Table A.3.8: Overview of the Age Distribution by Facility Type for the Water Infrastructure – June 2023 (CRC) | | | | | |
|---|---|---|---|---|---|
| **Asset Type** | **0 – 5 yrs** | **6 – 10 yrs** | **11 – 15 yrs** | **16 – 20 yrs** | **> 20 yrs** |
| Preekstoel WTW | R0 | R75 632 233 | R1 351 766 | R1 526 493 | R0 |
| Franskraal New WTW | R0 | R31 823 | R36 266 544 | R0 | R0 |
| Franskraal Old WTW | R0 | R0 | R232 856 | R2 476 656 | R17 327 226 |
| Baardskeerdersbos WTW | R0 | R6 724 089 | R0 | R0 | R0 |
| Pearly Beach WTW | R0 | R0 | R6 293 841 | R560 130 | R1 300 543 |
| De Kelders WTW | R0 | R0 | R18 982 042 | R0 | R0 |
| **Totals** | **R1 217 836** | **R111 592 429** | **R234 028 591** | **R174 671 922** | **R688 844 155** |

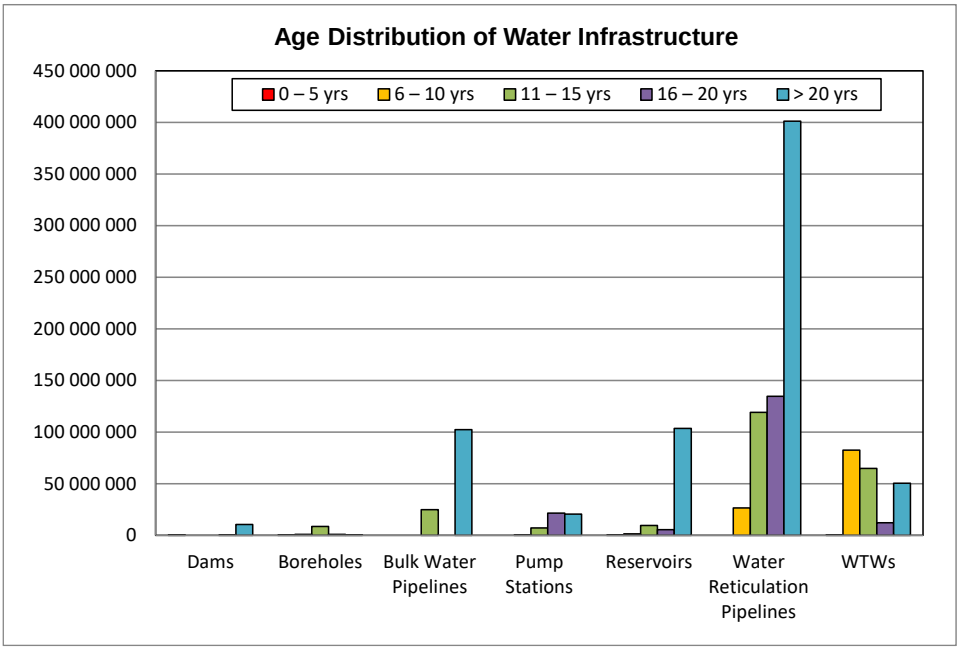



Figure A.3.3: Age Distribution of the Water Infrastructure

The following table and graph give an overview of the condition grading by facility type for the water infrastructure (CRC).

| Table A.3.9: Overview of the Condition Grading by Facility Type for the Water Infrastructure – June 2023 (CRC) | | | | | |
|---|---|---|---|---|---|
| **Asset Type** | **Very Poor** | **Poor** | **Fair** | **Good** | **Very Good** |
| Dams | R0 | R0 | R10 570 334 | R0 | R549 065 |
| Boreholes | R186 545 | R78 365 | R8 468 951 | R2 411 330 | R16 295 |
| Bulk Water Pipelines | R66 198 631 | R1 975 841 | R26 320 613 | R9 505 682 | R23 078 092 |
| Pump Stations | R921 951 | R6 103 315 | R31 217 742 | R10 752 696 | R256 348 |
| Reservoirs | R5 006 986 | R3 691 538 | R80 415 707 | R30 254 328 | R785 205 |
| Water Reticulation Pipelines | R307 354 345 | R21 947 656 | R183 106 914 | R34 745 303 | R134 346 910 |
| Buffels River WTW | R0 | R409 206 | R12 947 079 | R93 462 | R364 073 |
| Kleinmond WTW | R7 164 | R3 168 | R20 299 016 | R5 851 745 | R1 407 090 |
| Preekstoel WTW | R0 | R550 608 | R16 234 675 | R40 817 863 | R20 907 346 |
| Franskraal New WTW | R0 | R0 | R17 242 946 | R18 219 366 | R836 055 |
| Franskraal Old WTW | R817 309 | R6 142 278 | R13 077 151 | R0 | R0 |
| Baardskeerdersbos WTW | R0 | R0 | R555 518 | R2 244 433 | R3 924 138 |
| Pearly Beach WTW | R0 | R0 | R914 226 | R3 061 412 | R4 178 876 |
| De Kelders WTW | R0 | R0 | R5 815 836 | R1 969 276 | R11 196 930 |
| **Totals** | **R380 492 931** | **R40 901 975** | **R427 186 708** | **R159 926 896** | **R201 846 423** |

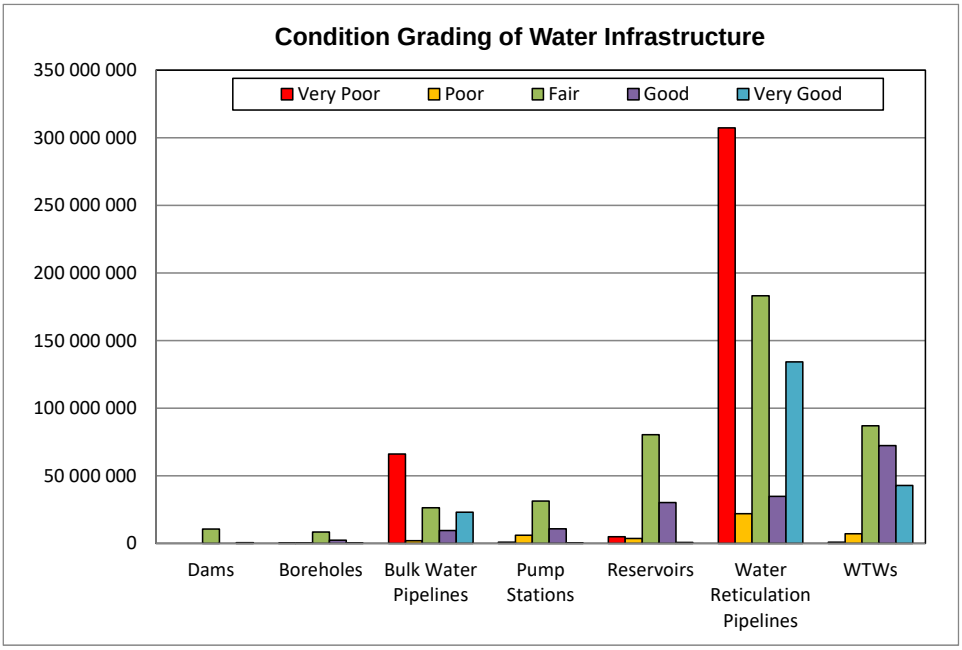



Figure A.3.4: Condition Grading of the Water Infrastructure

**Sewerage Infrastructure:** The current replacement cost and carrying value of the sewerage infrastructure of Overstrand Municipality is summarised in the table below (June 2023).

**Table A.3.10: Current Replacement Cost and Carrying Value of the Sewerage Infrastructure (June 2023)**

| Asset Type | CRC | CV | % CV / CRC |
|---|---|---|---|
| Sanitation Pump Stations | R36 884 091 | R29 419 087 | 79.8% |
| Sewer Reticulation Pipelines | R418 429 511 | R350 017 326 | 83.7% |
| Stanford WWTW | R18 563 529 | R20 671 888 | 111.4% |
| Hermanus WWTW | R75 665 898 | R31 982 509 | 42.3% |
| Hawston WWTW | R13 438 372 | R4 343 407 | 32.3% |
| Kleinmond WWTW | R13 430 196 | R3 808 595 | 28.4% |
| Gansbaai WWTW | R34 135 896 | R8 846 322 | 25.9% |
| Pearly Beach WWTW | R11 060 449 | R6 213 515 | 56.2% |
| **Totals** | **R621 607 942** | **R455 302 649** | **73.2%** |

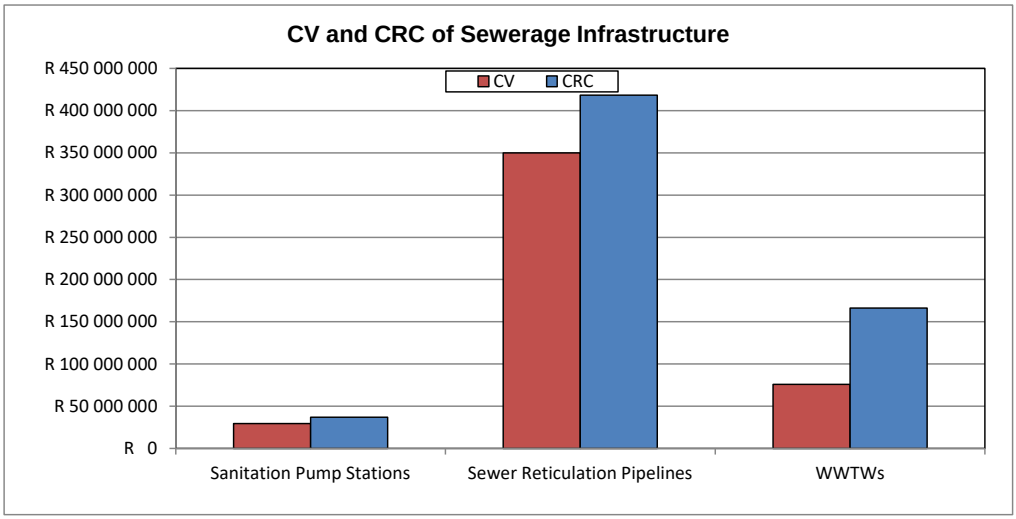



Figure A.3.5: CV and CRC of the Sewerage Infrastructure

The information in the previous table indicates that 26.8% of the value of the sewerage infrastructure has been consumed.

The following table and graph give an overview of the RUL by facility type for the sewerage infrastructure (CRC):

| Table A.3.11: Overview of the Remaining Useful Life by Facility Type for the Sewerage Infrastructure – June 2023 (CRC) | | | | | |
|---|---|---|---|---|---|
| **Asset Type** | **0 – 5 yrs** | **6 – 10 yrs** | **11 – 15 yrs** | **16 – 20 yrs** | **> 20 yrs** |
| Sanitation Pump Stations | R16 594 142 | R5 036 113 | R157 644 | R11 500 933 | R3 595 259 |
| Sewer Reticulation Pipelines | R4 755 708 | R44 560 765 | R12 710 160 | R46 360 689 | R310 042 189 |
| Stanford WWTW | R10 066 779 | R1 169 212 | R124 499 | R5 851 022 | R1 352 017 |
| Hermanus WWTW | R9 767 866 | R41 485 956 | R860 275 | R9 705 903 | R13 845 898 |
| Hawston WWTW | R6 720 595 | R1 498 020 | R259 171 | R2 075 285 | R2 885 301 |
| Kleinmond WWTW | R5 746 948 | R2 435 140 | R208 575 | R2 109 326 | R2 930 207 |
| Gansbaai WWTW | R18 306 206 | R5 711 316 | R434 596 | R3 575 748 | R6 108 030 |
| Pearly Beach WWTW | R85 365 | R409 067 | R292 620 | R0 | R10 273 397 |
| **Totals** | **R72 043 609** | **R102 305 589** | **R15 047 540** | **R81 178 906** | **R351 032 298** |

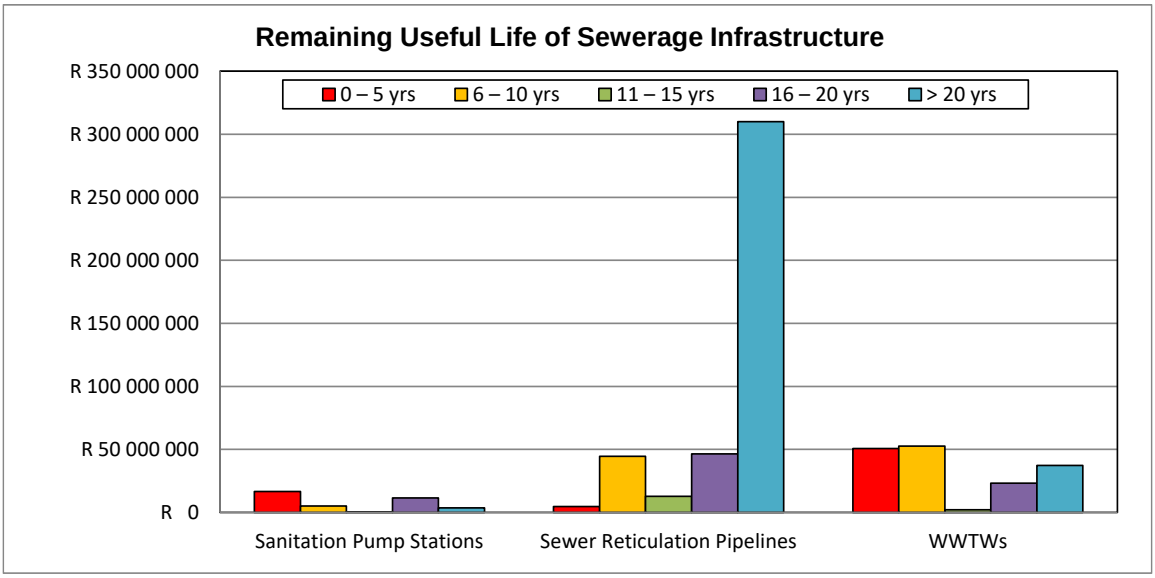



Figure A.3.6: Remaining Useful Life of the Sewerage Infrastructure

The following table and graph give an overview of the age distribution by facility type for the sewerage infrastructure (CRC).

| Table A.3.12: Overview of the Age Distribution by Facility Type for the Sewerage Infrastructure – June 2023 (CRC) | | | | | |
|---|---|---|---|---|---|
| **Asset Type** | **0 – 5 yrs** | **6 – 10 yrs** | **11 – 15 yrs** | **16 – 20 yrs** | **> 20 yrs** |
| Sanitation Pump Stations | R0 | R6 155 871 | R3 832 078 | R14 456 267 | R12 439 875 |
| Sewer Reticulation Pipelines | R92 033 | R24 193 190 | R48 571 983 | R0 | R345 572 305 |
| Stanford WWTW | R0 | R0 | R6 323 805 | R4 355 297 | R7 884 427 |
| Hermanus WWTW | R35 182 | R50 033 091 | R2 875 535 | R2 144 661 | R20 577 429 |
| Hawston WWTW | R0 | R0 | R5 824 224 | R2 867 908 | R4 746 240 |
| Kleinmond WWTW | R0 | R2 271 550 | R1 203 605 | R4 613 672 | R5 341 369 |
| Gansbaai WWTW | R0 | R5 670 490 | R2 248 236 | R16 119 798 | R10 097 372 |
| Pearly Beach WWTW | R0 | R11 060 449 | R0 | R0 | R0 |
| **Totals** | **R127 215** | **R99 384 641** | **R70 879 466** | **R44 557 603** | **R406 659 017** |

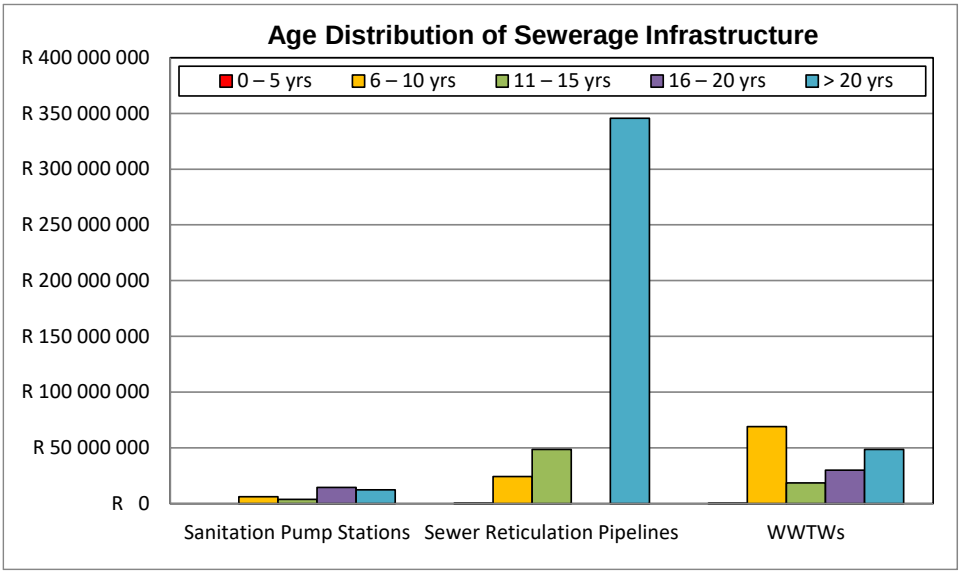



Figure A.3.7: Age distribution of the Sewerage Infrastructure

The following table and graph give an overview of the condition grading by facility type for the sewerage infrastructure (CRC).

**Table A.3.13: Overview of the Condition Grading by Facility Type for the Sewerage Infrastructure – June 2023 (CRC)**

| Asset Type | Very Poor | Poor | Fair | Good | Very Good |
|---|---|---|---|---|---|
| Sanitation Pump Stations | R17 965 | R38 148 | R32 100 868 | R3 057 178 | R1 669 932 |
| Sewer Reticulation Pipelines | R4 663 675 | R60 105 948 | R165 470 719 | R143 382 791 | R44 806 378 |
| Stanford WWTW | R0 | R1 063 582 | R11 149 555 | R6 350 392 | R0 |
| Hermanus WWTW | R8 648 330 | R1 802 042 | R38 583 831 | R17 996 344 | R8 635 351 |
| Hawston WWTW | R0 | R199 283 | R6 585 074 | R4 864 349 | R1 789 666 |
| Kleinmond WWTW | R25 913 | R15 528 | R6 906 032 | R6 482 723 | R0 |
| Gansbaai WWTW | R4 768 779 | R722 846 | R20 501 243 | R6 057 553 | R2 085 475 |
| Pearly Beach WWTW | R0 | R58 022 | R0 | R162 383 | R10 840 044 |
| **Totals** | **R18 124 662** | **R64 005 399** | **R281 297 322** | **R188 353 713** | **R69 826 846** |

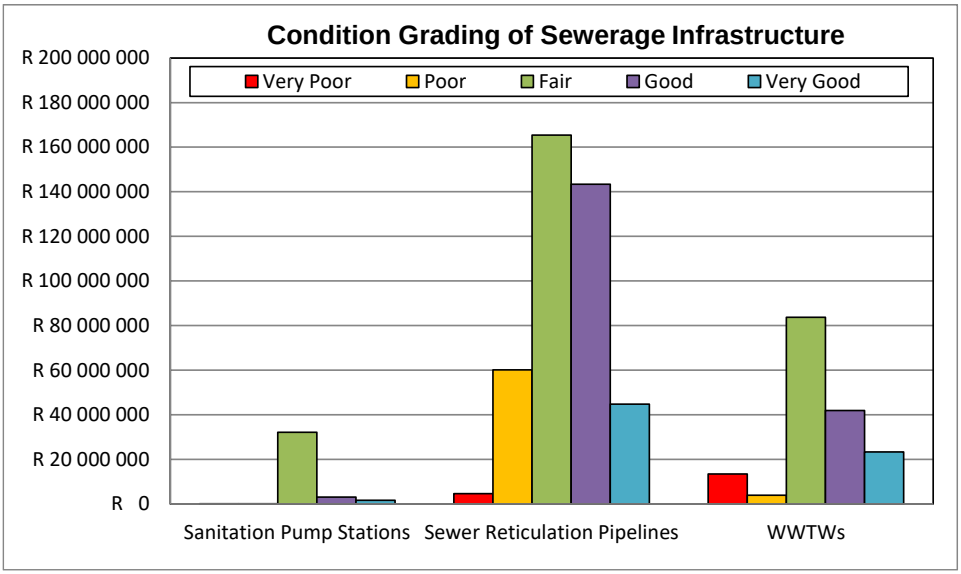



Figure A.3.8: Condition Grading of the Sewerage Infrastructure

**The CRC of the water and sewerage infrastructure that will need to be replaced over the next five years (RUL <5 yrs) is R674.743 million. The asset renewal needs for the water infrastructure assets over the next ten years is R65.436 million per year. The reinvestment required is R602.700 million in the first five years and R51.664 million in the second five-year period. The age of 56.9% of the water infrastructure assets is greater than twenty years. The CRC of the water infrastructure with a condition grading of "Very Poor" is R380.493 million. The asset renewal needs for the sewerage infrastructure assets over the next ten years is R17.435 million per year. The reinvestment required is R72.044 million in the first five years and R102.306 million in the second five-year period. The age of 65.4% of the sewerage infrastructure assets is greater than twenty years. The CRC of the sewerage infrastructure with a condition grading of "Very Poor" is R18.125 million.**

Some of the key challenges of Overstrand Municipality are to identify adequate funds for the rehabilitation and maintenance of their existing infrastructure, which is critical to ensure the sustainability of the services that are provided by the Municipality. The Water and Wastewater Bulk Works Contract ensures that the new technology installed is adequately maintained and operated in order to prevent a massive increase in maintenance in the future due to backlog being created (Objective is asset preservation). This Bulk Works Contract addresses the capacity constraints, the Municipality previously experienced, with regard to the operation and maintenance of the WTWs and WWTWs (Objectives are skills development and retention and long-term improvement of efficiency of operations).

It is however still important for the Municipality to secure adequate funding for major refurbishment and maintenance work, the provision of bulk infrastructure and development of additional sources to keep up with the high demand for services.

**Disaster Management Plan:** An updated 2022/2023 Disaster Management Plan is available for Overstrand Municipality, which forms an integral part of the Municipality's IDP and anticipate the types of disasters that are likely to occur in the municipal area as well as their possible effects. The Disaster Management Plan place emphasis on measures that reduce the vulnerability of disaster prone areas, communities and households.

Overstrand Municipality has a functional Fire and Disaster management Department within the Directorate: Protection Services. A Joint Operation Centre (JOC) is activated as and when the need arises. The JOC is operated from the Fire station in Hermanus. No Disaster Management Advisory Forum is established, because such a committee already exists which plays a similar role.

**Untreated Effluent Management Plan:** All effluent discharged in the urban areas in Overstrand Municipality are treated at the existing WWTWs and there is no known untreated effluent discharged to the environment. A $W_2$RAP is in place for all the wastewater treatment systems.

**TOPIC 4: WATER SERVICES OPERATION AND MANAGEMENT**

Maintenance is usually practiced in two forms, preventative maintenance and corrective maintenance. A third form is called design-out maintenance, which is rather an aspect of the design considerations when the infrastructure is planned.

The existing Water and Wastewater Bulk Works Contract assists Overstrand Municipality with the operation and maintenance of their bulk water and sewerage infrastructure.

Pipe bursts and other serious damage to pipes immediately interrupts services to the affected area and is rapidly addressed by Overstrand Municipality. O&M is a continuous process for Overstrand Municipality involving various activities, with the ultimate purpose of delivering good quality services to all customers at all times and keeping the percentage of water lost through pipe bursts and other serious damage to pipes as low as possible. Overstrand Municipality's O&M Plan depends on a range of factors such as the age and condition of the water supply system, requirements of the Municipality and DWS as the regulating authority, the availability of staff, plant, equipment, spares, money and other resources.

Operation and Maintenance Manuals and Emergency Preparedness Plans were drafted for the Mossel River Dam and the De Bos Dam during the 2021/2022 financial year.

Overstrand Municipality and the Contractor responsible for the Bulk Works Contract also have standby teams available after hours and over weekends, besides the planned and scheduled O&M activities, in order to allow for unscheduled responses to service breakdowns due to mal-functioning equipment, vandalism, emergency situations, etc. This allows Overstrand Municipality to be able to quickly assess service breakdowns and re-allocate staff and resources to do unscheduled repairs, and then quickly return to the regular and scheduled O&M activities. The Municipality and the Contractor also ensure that sufficient repair materials, consumables and back-up equipment are also readily available for any potential breakdowns.

Electricity load shedding is putting additional pressure on available O&M resources due to the continuous need for refuelling of standby generators, controlling of sewerage pumpstation sump levels with tankers, increased equipment failures due to load shedding, and increased service requirements.

**Table A.4.1: Operation and Maintenance**

| Compliancy | Existing Groundwater Infrastructure | Existing Surface Water Infrastructure | Existing WTW Infrastructure | Existing WWTW Infrastructure | Existing Pump Station Infrastructure | Existing Bulk Pipeline Infrastructure | Existing Tower & Reservoir Infrastructure | Existing Reticulation Infrastructure |
|---|---|---|---|---|---|---|---|---|
| Resources | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement |
| Information | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement |
| Activity Control & Management | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement | Above min. requirement |

## TOPIC 5: CONSERVATION AND DEMAND MANAGEMENT

The implementation of the Municipality's WDM Strategy and Action Plan have been extremely successful, with the overall raw water requirements for all the systems reduced from 9 206 Ml in 2008/2009 to 7 028 Ml in 2011/2012 (annual decrease of -8.6% over three-year period) and a further steady increase over the last eleven years to 8 160 Ml in 2022/2023 (average annual increase of 1.37% over last eleven years). The overall NRW for all the systems for the 2022/2023 financial year was 1 841 Ml (24.48%). The overall water losses were 1 733 Ml (23.04%).

The table below give a summary of the Treatment Losses, NRW, Water Losses and ILIs for the various distribution systems, as calculated through the WSDP process.

**Table A.5.1: Treatment Losses, NRW, Water Losses and ILIs for the Various Water Distribution Systems**

| System | Component | Unit | Record: Prior (Ml/a) | | | | | 22/23 |
|---|---|---|---|---|---|---|---|---|
| | | | 17/18 | 18/19 | 19/20 | 20/21 | 21/22 | |
| Buffels River | Treatment Losses | Volume | 64.571 | 60.724 | 79.606 | 14.959 | 51.005 | 26.640 |
| | | Percentage | 9.94% | 7.58% | 10.37% | 1.94% | 6.47% | 3.97% |
| | NRW | Volume | 265.104 | 407.056 | 335.271 | 383.457 | 358.678 | 232.091 |
| | | Percentage | 45.31% | 54.98% | 48.70% | 50.60% | 48.65% | 35.99% |
| | Water Losses | Volume | 263.934 | 345.276 | 302.971 | 330.845 | 295.471 | 169.546 |
| | | Percentage | 45.11% | 46.63% | 44.01% | 43.66% | 40.08% | 26.29% |
| | ILI | | **2.67** | **3.45** | **3.00** | **3.44** | **3.04** | **1.73** |
| | The current treatment losses of below 10% are at an acceptable level. The NRW and Water Losses were reduced by approximately 13% over the last financial year, which is excellent. The NRW percentage is however still above the DWS's target of 30% and the Municipality needs to continue with the implementation of specific WC/WDM measures to further reduce the NRW and water losses. The Municipality needs to work towards targets of 30% for the NRW and 20% for the water losses. The ILI value indicates an excellent system, with no immediate intervention required and the Municipality needs to keep the ILI level below 2. | | | | | | | |
| Kleinmond | Treatment Losses | Volume | 16.091 | 67.349 | 73.584 | 75.267 | 61.360 | 86.275 |
| | | Percentage | 2.25% | 8.64% | 8.19% | 8.55% | 7.04% | 9.40% |
| | NRW | Volume | 188.379 | 183.409 | 276.922 | 289.372 | 281.074 | 287.316 |
| | | Percentage | 26.90% | 25.75% | 33.57% | 35.94% | 34.69% | 34.54% |
| | Water Losses | Volume | 186.978 | 178.280 | 273.090 | 282.963 | 269.958 | 283.332 |
| | | Percentage | 26.70% | 25.03% | 33.11% | 35.15% | 33.32% | 34.06% |
| | ILI | | **2.28** | **2.17** | **3.30** | **3.11** | **2.96** | **3.09** |
| | The current treatment losses of below 10% are at an acceptable level. The NRW and water losses stayed roughly the same for the last two financial years. The NRW percentage is above the DWS's target of 30% and | | | | | | | |

| Table A.5.1: Treatment Losses, NRW, Water Losses and ILIs for the Various Water Distribution Systems | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| System | Component | Unit | Record: Prior (Ml/a) | | | | | 22/23 |
| | | | 17/18 | 18/19 | 19/20 | 20/21 | 21/22 | |
| | the Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards targets of 30% for the NRW and 25% for the water losses. The current ILI value of 3.09 is good and no urgent action is required, but the NRW and Water Losses should however be monitored carefully. | | | | | | | |
| Greater Hermanus | Treatment Losses | Volume | 539.107 | 487.283 | 445.591 | 217.909 | 194.527 | 113.774 |
| | | Percentage | 12.89% | 11.77% | 10.79% | 5.14% | 4.56% | 2.67% |
| | NRW | Volume | 262.270 | 332.685 | 430.532 | 960.986 | 753.296 | 816.989 |
| | | Percentage | 7.20% | 9.10% | 11.69% | 23.88% | 18.50% | 19.67% |
| | Water Losses | Volume | 254.983 | 316.318 | 416.581 | 947.239 | 702.134 | 782.891 |
| | | Percentage | 7.0% | 8.66% | 11.31% | 23.54% | 17.25% | 18.85% |
| | ILI | | **0.62** | **0.75** | **0.98** | **2.23** | **1.62** | **1.77** |
| | The current treatment losses of below 10% are at an acceptable level. The current NRW and water losses percentages are at good levels and the Municipality needs to maintain the percentages for the NRW and water losses below 20%. The ILI value indicates an excellent system, with no immediate intervention required and the Municipality needs to keep the ILI level below 2. | | | | | | | |
| Stanford | Treatment Losses | Volume | 20.993 | 53.133 | 40.381 | 143.545 | 197.305 | 235.534 |
| | | Percentage | 6.53% | 14.18% | 11.05% | 32.15% | 42.08% | 47.26% |
| | NRW | Volume | 78.723 | 90.868 | 93.141 | 79.613 | 17.035 | 13.485 |
| | | Percentage | 26.20% | 28.25% | 28.65% | 26.28% | 6.27% | 5.13% |
| | Water Losses | Volume | 78.122 | 87.478 | 91.463 | 78.036 | 13.758 | 11.884 |
| | | Percentage | 26.00% | 27.19% | 28.14% | 25.76% | 5.07% | 4.52% |
| | ILI | | **3.81** | **4.16** | **4.31** | **2.27** | **0.39** | **0.33** |
| | The treatment losses of the RO plant are closely monitored by the Municipality to ensure that it is at acceptable levels. There was a drastic decrease in the NRW and water losses for the last two financial years for Stanford. The Municipality recently installed a new bulk water meter in order to ensure that readings for the calculation of the NRW and Water are accurate. The Municipality needs to keep the NRW below a target of 20% and the water losses below a target of 15%. The ILI value is extremely low and it will be verified during the new financial year, when the readings from the newly installed bulk water meter become available. | | | | | | | |
| Greater Gansbaai | Treatment Losses | Volume | 55.750 | 66.610 | 64.025 | 97.490 | 120.239 | 83.200 |
| | | Percentage | 5.02% | 5.56% | 5.45% | 8.69% | 10.64% | 6.55% |
| | | Volume | 68.287 | 71.221 | 69.012 | 79.262 | 69.131 | 83.545 |
| | | Percentage | 16.30% | 19.71% | 19.68% | 22.89% | 19.71% | 23.11% |
| | NRW | Volume | 449.900 | 450.328 | 390.657 | 308.492 | 308.847 | 455.188 |
| | | Percentage | 32.01% | 31.67% | 28.07% | 23.89% | 23.92% | 31.08% |
| | Water Losses | Volume | 447.089 | 445.817 | 384.859 | 303.451 | 294.694 | 450.605 |
| | | Percentage | 31.81% | 31.35% | 27.66% | 23.50% | 22.82% | 30.77% |
| | ILI | | **3.84** | **3.58** | **3.03** | **2.26** | **2.13** | **3.16** |
| | The treatment losses of the De Kelders RO plant are closely monitored by the Municipality to ensure that it is at acceptable levels. The current treatment losses of below 10% for the Franskraal plant are at an acceptable level. The NRW percentage is just above the DWS's target of 30% and the Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards targets of 30% for the NRW and 25% for the water losses. The current ILI value of 3.16 is good and no urgent action is required, but the NRW and Water Losses should however be monitored carefully. | | | | | | | |
| Pearly Beach | Treatment Losses | Volume | 5.860 | 29.603 | 4.891 | 4.756 | -6.419 | 7.263 |
| | | Percentage | 4.64% | 16.98% | 3.15% | 3.10% | -4.35% | 4.89% |
| | NRW | Volume | 23.495 | 38.499 | 46.005 | 44.318 | 41.065 | 25.787 |
| | | Percentage | 19.52% | 26.60% | 30.57% | 29.81% | 26.65% | 18.25% |
| | Water Losses | Volume | 23.254 | 37.760 | 45.166 | 43.574 | 39.415 | 25.284 |
| | | Percentage | 19.32% | 26.09% | 30.02% | 29.31% | 25.58% | 17.89% |
| | ILI | | **1.43** | **2.35** | **2.81** | **1.26** | **1.12** | **0.70** |
| | The current treatment losses of below 10% are at an acceptable level. The current NRW and water losses percentages are at good levels and the Municipality needs to maintain the percentages for the NRW and water losses below 20%. The ILI value indicates an excellent system, with no immediate intervention required and the Municipality needs to keep the ILI level below 2. | | | | | | | |
| Baardskeerdersbos | Treatment Losses | Volume | 2.446 | 3.101 | 2.637 | 2.603 | 3.202 | 2.229 |
| | | Percentage | 14.26% | 17.15% | 14.40% | 14.67% | 19.02% | 11.56% |
| | NRW | Volume | 6.752 | 7.509 | 6.941 | 7.918 | 5.883 | 8.125 |
| | | Percentage | 45.91% | 50.14% | 44.28% | 52.31% | 43.14% | 47.67% |

| Table A.5.1: Treatment Losses, NRW, Water Losses and ILIs for the Various Water Distribution Systems | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **System** | **Component** | **Unit** | **Record: Prior (Ml/a)** | | | | | **22/23** |
| | | | **17/18** | **18/19** | **19/20** | **20/21** | **21/22** | |
| | Water Losses | Volume | 6.723 | 7.313 | 6.834 | 7.871 | 5.738 | 7.640 |
| | | Percentage | 45.71% | 48.83% | 43.60% | 52.00% | 42.08% | 44.82% |
| | ILI | | **2.12** | **2.29** | **2.12** | **2.35** | **1.71** | **2.26** |
| | The Municipality needs to work towards a target of below 10% for the treatment losses. The current NRW and water losses are extremely high. The NRW percentage is above the DWS's target of 30% and the Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards targets of 35% for the NRW and 30% for the water losses. The current ILI value of 2.26 is good and no urgent action is required, but the NRW and Water Losses should however be monitored carefully. | | | | | | | |
| Buffeljags Bay | Treatment Losses | Volume | 0.523 | 0.048 | -0.139 | -0.220 | 0.247 | 0.182 |
| | | Percentage | 10.53% | 0.98% | -2.77% | -3.89% | 4.49% | 3.10% |
| | NRW | Volume | 0.373 | 0.770 | 0.930 | 3.156 | 2.299 | 1.998 |
| | | Percentage | 8.40% | 15.83% | 18.03% | 53.68% | 43.73% | 35.11% |
| | Water Losses | Volume | 0.364 | 0.741 | 0.901 | 3.127 | 2.243 | 1.986 |
| | | Percentage | 8.20% | 15.24% | 17.46% | 53.19% | 42.67% | 34.90% |
| | ILI | | **1.60** | **3.24** | **3.96** | **13.75** | **9.86** | **8.73** |
| | The bulk distribution losses of below 5% are at an acceptable level. The NRW and Water Losses were reduced by approximately 8% over the last financial year, which are excellent. The NRW percentage is however still above the DWS's target of 30% and the Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards targets of 30% for the NRW and 25% for the water losses. The current ILI value of 21.5 is extremely high, which requires immediate water loss reduction interventions. | | | | | | | |
| **TOTAL** | **NRW** | **Volume** | **1 274.996** | **1 511.124** | **1 580.399** | **2 077.312** | **1 768.177** | **1 840.979** |
| | | **Percentage** | **18.82%** | **21.54%** | **22.31%** | **28.26%** | **24.04%** | **24.48%** |
| | **Water Losses** | **Volume** | **1 261.447** | **1 418.983** | **1 521.865** | **1 997.106** | **1 623.411** | **1 733.168** |
| | | **Percentage** | **18.62%** | **21.23%** | **21.48%** | **27.17%** | **22.07%** | **23.04%** |
| | **ILI** | | **1.57** | **1.73** | **1.83** | **2.32** | **1.85** | **1.94** |
| | The NRW and water losses for all the systems combined increased slightly during the last financial year, but are still below DWS's target of 30% for the NRW, which is good. The Municipality needs to work towards targets of 20% for the NRW and 15% for the water losses. The current ILI of 1.94 is excellent, with no immediate intervention required and the Municipality needs to keep the ILI level below 2. | | | | | | | |

Infrastructure Leakage Index (ILI) for Developed Countries = **1 – 2 Excellent (Category A)**, **2 – 4 Good (Category B)**, **4 – 8 Poor (Category C)** and > **8 – Very Bad (Category D)**

**Category A** = No specific intervention required.

**Category B** = No urgent action required although should be monitored carefully.

**Category C** = Requires attention

**Category D** = Requires immediate water loss reduction interventions

The Billed Metered Consumption figures up to 2019/2020 included the raw water volumes supplied from the different raw water pipelines to consumers, as well as the volume of treated effluent re-used by consumers. These volumes were excluded for the 2020/2021 financial year onwards and therefore the drastic increase in the NRW and Water Losses for the 2020/2021 financial year, especially in the Greater Hermanus area.

The Infrastructure Leakage Index (ILI) in the above table is the most recent and preferred performance indicator for comparing leakage from one system to another. It is a non-dimensional index representing the ratio of the current real leakage and the "Unavoidable Annual Real Losses". A high ILI value indicates a poor performance with large potential for improvement while a small ILI value indicates a well-managed system with less scope for improvement. Attaining an ILI = 1 is a theoretical limit, which is the minimum water loss in an operational water reticulation system. A value of less than 1 should not occur since this implies that the actual leakage is less than the theoretical minimum level of leakage.

The table below gives an overview of the various WC/WDM measures and whether the measures are adequately addressed by Overstrand Municipality.

| Table A.5.2: Reducing Unaccounted Water | | |
|---|---|---|
| **Reducing unaccounted water and water inefficiencies** | **In Place** | **Assessment Score** |
| Night flow metering | Yes | 80% |
| Day flow metering | Yes | 80% |
| Reticulation leaks | Yes | 80% |
| Illegal connections | Yes | 80% |
| Un-metered connections | Yes | 80% |
| **Leak and meter repair programmes. Consumer units targeted by:** | | |
| Leak repair assistance programme | Yes | 80% |
| Retro-fitting of water inefficient toilets | Yes | 80% |
| Meter repair programme | Yes | 80% |
| **Consumer/end-use demand management: Public Information & Education Programmes** | | |
| Schools targeted by education programmes | Yes | 80% |
| Consumers targeted by public information programmes | Yes | 80% |

Note: The score of 80% in the above table is Excellent, which is the highest score in DWS's eWSDP website.

Overstrand Municipality is committed to reduce the percentage of Water Losses for the various water distribution systems to below 20%. The Municipality's WDM Strategy and Action Plan include the following key activities (June 2023 progress in brackets):

- Continue with pipe replacement in priority areas with old reticulation networks and history of frequent pipe failures (2018/2019 to 2022/2023 phases included Rooi-Els, Pringle Bay, Betty's Bay, Kleinmond, Northcliff, Zwelihle and Voëlklip);
- Continued operation and maintenance of intelligent pressure management systems in Stanford, Kleinmond and Betty's Bay;
- Phased pro-active replacement of older water meters;
- Review and improve efficiency of remote monitoring of minimum night flows in all zones (On-going maintenance and extension of SCADA and telemetry systems).
- Link properties with distribution zones in financial data base to enable water balance in smaller areas (ongoing in all areas);
- Enhance public awareness on general water and water demand management issues, e.g. the watering of gardens as determined by the bylaws, rainwater harvesting, dam levels, and general water saving tips; regular publication of water and wastewater quality in local media and on Overstrand Municipality's website; pamphlets are being issued with all building plan approvals, and primary school learners are reached with water awareness puppet shows as well as live shows;
- Identify users on financial data base with regular abnormal high or abnormal low water use, and physically inspect the causes (on-going);
- Sourcing of external funds, e.g. from the DWS WSIG program and MIG for water projects;
- Tariffs structured to discourage excessive use of water, including volumetric sewerage tariffs, and specific water restriction tariffs implemented for specific water restriction levels (implemented and on-going);
- Continue with removal of alien vegetation in catchment areas (ongoing);
- Maximum use of treated effluent for irrigation (Implemented and extended in Hermanus and Gansbaai).

The Long-Term WC/WDM Strategy does not only refer to measures that reduce water wastage and inefficient use, but also include measures to effectively manage and sustain efficiency targets. Some of the priority requirements are to install systems that measure and identify certain key parameters such as minimum night flows and systems to enable detailed and regular water audits and water balances.

The table below gives an overview of the System Input Volume, Average Billed Metered Consumption and Non-Revenue Water in litre per connection per day for the various water distribution systems for the 2022/2023 financial year.

**Table A.5.3: System Input Volume, Average Billed Metered Consumption and NRW in Litre per Connection per Day for the various Water Distribution Systems for 2022/2023**

| Water Balance Component | Buffels River | Kleinmond | Greater Hermanus | Stanford | Greater Gansbaai | Pearly Beach | Baardskeer-dersbos | Buffeljags Bay | Overstrand Municipality |
|---|---|---|---|---|---|---|---|---|---|
| System Input Volume | 443 | 558 | 482 | 490 | 537 | 211 | 640 | 433 | **485** |
| Average Billed Metered Cons. | 290 | 366 | 387 | 465 | 370 | 172 | 335 | 281 | **366** |
| Non-Revenue Water | 153 | 193 | 95 | 25 | 167 | 38 | 305 | 152 | **119** |

The system with the highest system input volume per connection per day is Baardskeerdersbos. The system with the highest average billed metered consumption per connection per day is Stanford, while the Baardskeerdersbos system is the system with the highest non-revenue water per connection per day.

DWS's scorecard for assessing the potential for WC/WDM efforts was completed for Overstrand Municipality. The aim of the scorecard was to establish areas where the municipality has made good progress in relation to WC/WDM and where there is still room for improvement. It can be seen from the Scorecard that there are 25 questions each of which carries a maximum of 4 points providing a possible maximum score of 100. If the Municipality has the specific item completely under control, it receives the maximum points and if it is neglecting the item completely it receives no points. There are various levels between the maximum and the minimum number of points assigned to the municipality for each item depending on the level of completeness or lack thereof. **The status quo score for Overstrand Municipality is 85 out of 100 suggesting that the Municipality is making good progress with regard to the implementation of specific WC/WDM activities.**

**TOPIC 6: WATER RESOURCES**

**The Western Cape experienced a severe drought over the period 2015 to 2017, with some relief during the 2018 to 2022 winter months. The drought over the period 2015 to 2017 reduced the safe yield of the Municipality's own existing surface and groundwater resources. The Municipality therefore continued with the implementation of various WC/WDM measures to lower the current and future water requirements and investigations of augmentation options for the existing water resources.**

Below average rainfall was experienced in the Hermanus area during the period 2015 to 2019. Level 1 water restrictions were implemented in the Greater Hermanus area from 1 November 2017, and level 2 water restrictions from 1 June 2018, accompanied by the 1st level of restriction tariffs. Level 3 restrictions were implemented from 1 November 2019, but reduced to level 2 again from 1 February 2020, following a significant rainfall event in January 2020. Above average rainfall was experienced during the 2020 winter season, resulting in the water restrictions being lifted completely from 1 September 2020.

The municipality took a pro-active approach some years ago by firstly implementing a WC/WDM programme and secondly diversifying its water resources.

The table below gives an overview of the current water resources, the current volumes abstracted and authorised and whether the abstractions are registered and recorded.

**Table A.6.1: Current Water Sources and Volumes**

| Source Type | Source | Number of Sources | Current 22/23 Abstraction or Returns (Mm³/a) | Licensed Abstraction / Returns (Mm³/a) | Community Water Supply | | Abstraction registered? (Yes/No) | Abstraction recorded? (Yes/No) |
|---|---|---|---|---|---|---|---|---|
| | | | | | Rural | Urban | | |
| Groundwater | Baardskeerdersbos | 2 | 0.019 | 0.060 (License) | NA | 100% | Yes | Yes |
| | Buffeljags Bay | 1 | 0.006 | - | NA | 100% | In process | Yes |
| Surface Water | Buffels River dam | 1 | 0.672 | 0.900 (WARMS) | NA | 100% | Yes | Yes |
| | Franskraal and Kraaibosch dams | 2 | 1.270 | 2.000 (WARMS) | NA | 100% | Yes | Yes |
| | Klipgat fountain | 1 | 0.239 | - | NA | 100% | In process | Yes |
| | De Kelders fountain | 1 | 0.143 | - | NA | 100% | In process | Yes |
| | Pearly Beach and Koekemoer dams | 1 | 0.149 | 0.257 (WARMS) 0.095 (Agreement) | NA | 100% | Yes | Yes |
| External Sources (Bulk Purchase) | - | - | - | - | - | - | - | - |
| Water Returned to Source | Kleinmond WWTW | 1 | 0.348 | 0.730 (GA) | - | - | - | - |
| | Hawston WWTW | 1 | 0.212 | 0.365 (GA) | - | - | - | - |
| | Hermanus WWTW | 1 | 2.049 | 4.380 (Permit) | - | - | - | - |
| | Stanford WWTW | 1 | 0.265 | 0.730 (GA) | - | - | - | - |
| | Gansbaai WWTW | 1 | 0.018 | 0.730 (GA) | - | - | - | - |
| | Pearly Beach WWTW | 1 | 0.000 | 0.091 (GA) | - | - | - | - |
| Conjunctive use | Palmiet River | 1 | 0.918 | 0.949 (WARMS) | NA | 100% | Yes | Yes |
| | Dorpsfontein | 1 | - | 0.110 (WARMS) | NA | 100% | Yes | Yes |
| | Kleinmond Borehole | 1 | - | | NA | 100% | Yes | Yes |
| | Gateway Well Field | 5 | 0.411 | 1.600 (License) | NA | 100% | Yes | Yes |
| | Camphill and Volmoed Well Fields | 7 | 0.600 | 1.200 (License) | NA | 100% | Yes | Yes |
| | De Bos | 1 | 3.441 | 2.800 (Court Ruling) | NA | 100% | Yes | Yes |
| | Stanford Fountain | 1 | 0.265 | 1.600 (License) | NA | 100% | Yes | Yes |
| | Stanford Boreholes | 2 | 0.234 | | NA | 100% | Yes | Yes |

The table below indicates the potential additional future water resources for Overstrand Municipality. These resources are with regard to the Greater Hermanus system.

**Table A.6.2: Additional Water Sources and Volumes**

| Source Type | Schemes | Number of Sources | Potential Volume (Mm³/a) | Licensed Abstraction (Mm³/a) |
|---|---|---|---|---|
| Ground Water | Camphill and Volmoed boreholes, Third Phase | 4 | 0.400 | 1.600 |
| Surface Water | Desalination First Phase | 1 | 1.095 | Not yet done |
| | Desalination Second Phase | 1 | 1.095 | Not yet done |
| | Desalination Third Phase | 1 | 1.460 | Not yet done |
| External Sources (Bulk Purchase) | - | - | - | - |

Overstrand Municipality has an established monitoring plan to monitor the volumes abstracted from all the various surface and ground water resources and quality of the water abstracted.

**Table A.6.3: Monitoring of Abstraction Volumes, Water Levels and Water Quality**

| Monitoring of water abstracted | Assessment Score | |
|---|---|---|
| % of water abstracted monitored: Surface water | 100% | |
| % of water abstracted monitored: Ground water | 100% | |
| **Monitoring of water levels and water quality** | **Interval** | **Assessment Score** |
| Surface water levels (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never) | Monthly | 80% |
| Ground water levels (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never) | Daily | 80% |
| Water quality for formal schemes? (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never) | Monthly | 80% |
| Water quality for rudimentary schemes? (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never) | Not Applicable | - |
| Borehole abstraction? (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never) | Daily | 80% |

Detail IWA Water Balances are available for each of the water distribution systems (towns) in Overstrand Municipality's Management Area. The graph below gives an overview of the average daily raw water supply to all the towns.

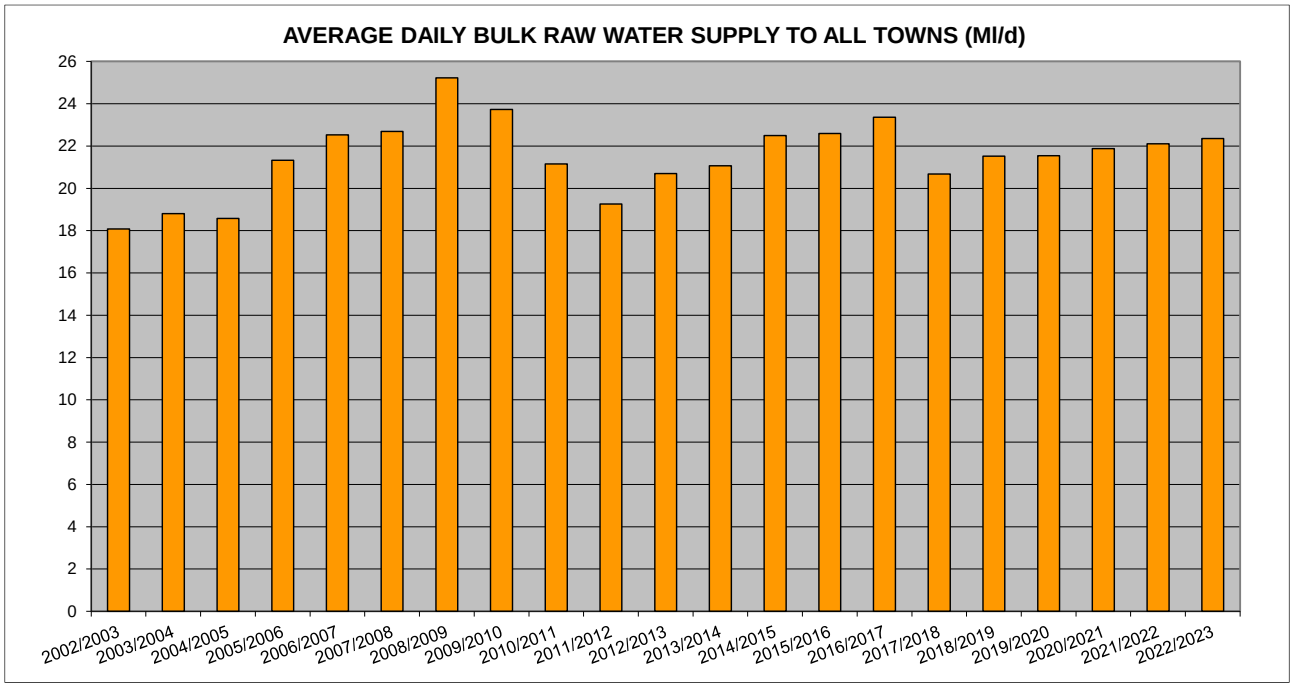



Figure A.6.1: Average Daily Bulk Raw Water Supply to all Towns

The graph below gives an overview of the system input volume and NRW for the various distribution systems in Overstrand Municipality's Management Area.

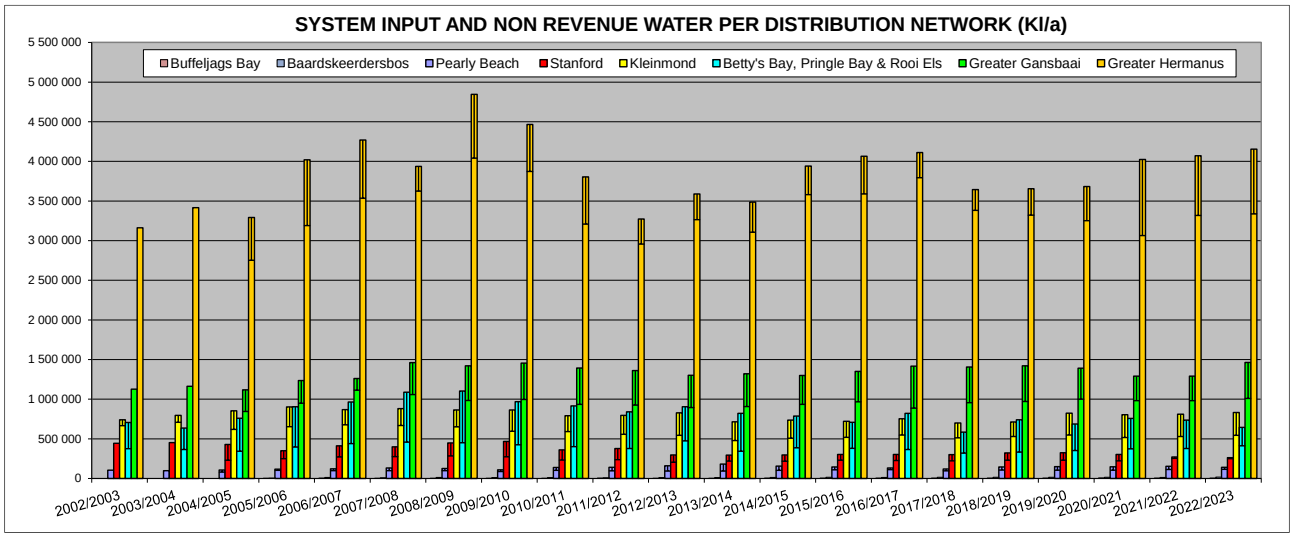



Figure A.6.2: System Input Volume and NRW per Distribution System

All water sources are supplied with bulk water meters and accurate records are kept of all bulk water meter readings. The table below gives a summary of the total bulk raw water supplied to the various towns within Overstrand Municipality's Management Area.

**Table A.6.4: Bulk Raw Water Supply to the Various Towns**

| Distribution System | Source | Record : Prior (Ml/a) | | | | | 22/23 |
|---|---|---|---|---|---|---|---|
| | | 17/18 | 18/19 | 19/20 | 20/21 | 21/22 | |
| Buffels River | Buffels River Dam | 649.669 | 801.120 | 767.993 | 772.751 | 788.232 | 671.598 |
| Kleinmond | Palmiet River and Dorpsfontein spring | 716.358 | 779.610 | 898.489 | 880.390 | 871.522 | 918.124 |
| Greater Hermanus | De Bos Dam and Groundwater | 4 182.703 | 4 141.553 | 4 128.705 | 4 242.199 | 4 265.761 | 4 267.244 |
| Stanford | Stanford spring and two Boreholes | 321.479 | 374.810 | 365.453 | 446.512 | 468.903 | 498.341 |
| Greater Gansbaai | Kraaibosch and Franskraal Dam Klipgat, De Kelders Grotte | 1 529.544 | 1 559.727 | 1 524.604 | 1 467.816 | 1 480.781 | 1 631.362 |
| Pearly Beach | Pearly Beach Springs and Koekemoer Dam | 126.233 | 174.354 | 155.368 | 153.406 | 158.837 | 148.586 |
| Baardskeerdersbos | Two Boreholes | 17.154 | 18.077 | 18.311 | 17.741 | 16.838 | 19.274 |
| Buffeljags Bay | Borehole | 4.966 | 4.912 | 5.019 | 5.879 | 5.504 | 5.872 |
| **Total Supply to all towns** | | **7 548.106** | **7 854.163** | **7 863.942** | **7 986.694** | **8 056.378** | **8 160.401** |

Raw water is also supplied by Overstrand Municipality from their Fisherhaven dam and the Mossel River dams in Fernkloof to a number of users. The untreated raw water supply from the Fisherhaven dam is for the Karwyderskraal Landfill (Overberg District Municipality), Benguela Cove and a number of properties along the pipeline route for irrigation and non-potable use. The untreated raw water supply from the Mossel River dams is for the irrigation of the golf course and for the Fernkloof nature reserve. These dams are not part of the Municipality's water sources utilised for the treatment of the raw water to potable standards.

**Water Quality:** Overstrand Municipality makes use of an accredited external laboratory to conduct the drinking water compliance sampling and analysis. Samples are taken at various locations in each system and analysed to evaluate the compliance. The water quality results are loaded onto DWS's IRIS system via the internet. Once entered the data is automatically compared to the SANS241 Drinking Water Quality Standards. This real-time system allows for immediate intervention to rectify any problems.

The table below gives an overview of the various water quality monitoring measures and whether it is in place for Overstrand Municipality.

**Table A.6.5: Water Quality**

| Water Quality | In place | Status Quo | Assessment Score |
|---|---|---|---|
| Reporting on quality of water taken from source: urban & rural | Yes | 80% | 80% |
| Quality of water returned to the resource: urban | Yes | 80% | 80% |
| Quality of water returned to the resource: rural | No | Not Applicable | 80% |
| Is there a Pollution contingency measures plan in place? | Yes | 80% | 80% |
| Quality of water taken from source: urban - % monitored by WSA self? | Yes | 80% | 80% |
| Quality of water taken from source: rural - % monitored by WSA self? | No | Not Applicable | 80% |
| Quality of water returned to the source: urban - % monitored by WSA self? | Yes | 80% | 80% |
| Quality of water returned to the source: rural - % monitored by WSA self? | No | Not Applicable | 80% |
| Are these results available in electronic format? (Yes/no) | Yes | 80% | 80% |
| % Time (days) within SANS 241 standards per year | Yes | 80% | 80% |
| Abstraction IS registered with DWS | Yes | 60% | 60% |
| The abstraction IS NOT registered with DWS | Yes | 40% | 40% |
| The abstraction IS recorded | Yes | 80% | 80% |
| The abstraction IS NOT recorded | - | - | - |

Note: The score of 80% in the above table is Excellent, which is the highest score in DWS's eWSDP website.

**The water quality of all the water distribution systems in Overstrand Municipality is "Excellent", according to the SANS 241:2015 classification, except for the Buffels River system that was "Unacceptable" for Operational Efficiency, due to a number of turbidity failures, and the Buffeljags Bay system that was "Unacceptable" for Aesthetic, due to a number of conductivity and chloride failures.** The overall percentage of compliance of the water quality samples taken over the period July to June for the last two financial years is summarised in the table below per distribution system. The additional monitoring required by Overstrand Municipality for determinands identified during the risk assessment exceeding the SANS 241:2015 numerical limits are also included in the table.

**Table A.6.6: Percentage Compliance of the Water Quality Samples for the Last Two Financial Years**

| Performance Indicator | Performance Indicator categorised as unacceptable Yes / No (Table 4 of SANS 241-2:2015) | | % Sample Compliance according to SANS 241-2015 Limits | | Frequency of Additional Monitoring due to failure (Table 3 of SANS 241-2:2015) | |
|---|---|---|---|---|---|---|
| | 22/23 | 21/22 | 22/23 | 21/22 | 22/23 | 21/22 |
| **Buffels River** | | | | | | |
| Acute Health Microbiological | No (Excellent) | No (Excellent) | 99.3% | 100.0% | - | - |
| Acute Health Chemical | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Chronic Health | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Aesthetic | No (Excellent) | No (Excellent) | 99.8% | 99.8% | - | - |
| Operational Efficiency | Yes (Unacceptable) | No (Excellent) | 89.7% | 93.9% | Monthly | - |
| **Kleinmond** | | | | | | |
| Acute Health Microbiological | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Acute Health Chemical | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Chronic Health | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Aesthetic | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Operational Efficiency | No (Excellent) | No (Excellent) | 98.2% | 98.9% | - | - |
| **Greater Hermanus** | | | | | | |
| Acute Health Microbiological | No (Excellent) | No (Excellent) | 100.0% | 98.8% | - | - |
| Acute Health Chemical | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Chronic Health | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Aesthetic | No (Excellent) | No (Excellent) | 99.5% | 99.6% | - | - |
| Operational Efficiency | No (Excellent) | No (Excellent) | 98.4% | 99.1% | - | - |
| **Stanford** | | | | | | |
| Acute Health Microbiological | No (Excellent) | No (Excellent) | 99.1% | 98.8% | - | - |
| Acute Health Chemical | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Chronic Health | No (Excellent) | No (Excellent) | 99.4% | 100.0% | - | - |
| Aesthetic | No (Excellent) | No (Excellent) | 100.0% | 99.5% | - | - |
| Operational Efficiency | No (Excellent) | No (Excellent) | 97.0% | 97.2% | - | - |
| **Greater Gansbaai** | | | | | | |
| Acute Health Microbiological | No (Excellent) | No (Excellent) | 99.3% | 98.7% | - | - |
| Acute Health Chemical | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Chronic Health | No (Excellent) | No (Excellent) | 99.8% | 99.7% | - | - |
| Aesthetic | No (Excellent) | No (Excellent) | 100.0% | 99.8% | - | - |
| Operational Efficiency | No (Excellent) | No (Excellent) | 97.1% | 98.4% | - | - |
| **Pearly Beach** | | | | | | |
| Acute Health Microbiological | No (Excellent) | No (Excellent) | 99.1% | 98.7% | - | - |
| Acute Health Chemical | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Chronic Health | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Aesthetic | No (Excellent) | No (Excellent) | 100.0% | 98.5% | - | - |
| Operational Efficiency | No (Excellent) | No (Excellent) | 94.9% | 98.8% | - | - |
| **Baardskeerdersbos** | | | | | | |
| Acute Health Microbiological | No (Excellent) | No (Excellent) | 99.1% | 98.7% | - | - |
| Acute Health Chemical | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Chronic Health | No (Excellent) | No (Excellent) | 97.3% | 99.2% | - | - |
| Aesthetic | No (Excellent) | No (Excellent) | 94.9% | 99.1% | - | - |
| Operational Efficiency | No (Excellent) | No (Good) | 93.3% | 90.8% | - | - |
| **Buffeljags Bay** | | | | | | |

| Table A.6.6: Percentage Compliance of the Water Quality Samples for the Last Two Financial Years | | | | | | |
|---|---|---|---|---|---|---|
| **Performance Indicator** | **Performance Indicator categorised as unacceptable Yes / No (Table 4 of SANS 241-2:2015)** | | **% Sample Compliance according to SANS 241-2015 Limits** | | **Frequency of Additional Monitoring due to failure (Table 3 of SANS 241-2:2015)** | |
| | **22/23** | **21/22** | **22/23** | **21/22** | **22/23** | **21/22** |
| Acute Health Microbiological | No (Excellent) | No (Excellent) | 97.6% | 100.0% | - | - |
| Acute Health Chemical | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Chronic Health | No (Excellent) | No (Excellent) | 100.0% | 100.0% | - | - |
| Aesthetic | Yes (Unacceptable) | No (Excellent) | 87.0% | 95.3% | Quarterly | - |
| Operational Efficiency | No (Excellent) | No (Excellent) | 97.8% | 94.1% | - | - |

The table below gives an overview of the four categories under which the risks posed by micro-organism, physical or aesthetic property or chemical substance of potable water is normally classified.

| Table A.6.7: Four Categories under which the Risks Posed by Micro-organism, Physical or Aesthetic Property or Chemical Substance of Potable Water is Normally Classified | |
|---|---|
| **Category** | **Risk** |
| Acute Health | Determinand that poses an immediate unacceptable health risk if present at concentration values exceeding the numerical limits specified in this part of SANS 241. |
| Aesthetic | Determinand that taints water with respect to taste, odour and colour and that does not pose an unacceptable health risk if present at concentration values exceeding the numerical limits specified in SANS 241. |
| Chronic Health | Determinand that poses an unacceptable health risk if ingested over an extended period if present at concentration values exceeding the numerical limits specified in SANS 241. |
| Operational | Determinand that is essential for assessing the efficient operation of treatment systems and risks from infrastructure |

The table below indicates the compliance of the E.Coli monitoring frequency in the water distribution systems of Overstrand Municipality, in terms of the minimum requirements of SANS:241-2: 2015 (Table 2). The period assessed was for samples taken from July 2022 to June 2023.

| Table A.6.8: Overstrand Municipality's Compliance of the Monthly E.Coli Monitoring Frequency in the Water Distribution Systems in Terms of the Minimum Requirements of SANS 241-2:2015 (Table 2). | | | |
|---|---|---|---|
| **Distribution System** | **Population served** | **Required number of monthly samples (SANS 241-2:2015: Table 2)** | **Average Number of monthly E.Coli samples taken by Municipality during 2022/2023** |
| Buffels River | 3 593 | 2.0 | 12.4 |
| Kleinmond | 8 698 | 2.0 | 8.5 |
| Greater Hermanus | 76 410 | 14.6 | 24.6 |
| Stanford | 6 375 | 2.0 | 8.4 |
| Greater Gansbaai | 22 531 | 4.3 | 23.3 |
| Pearly Beach | 1 317 | 2.0 | 8.6 |
| Baardskeerdersbos | 129 | 2.0 | 9.0 |
| Buffeljags Bay | 155 | 2.0 | 6.6 |

**It can be noted from the above table that the number of monthly E.Coli samples taken by the Municipality during the 2022/2023 financial year was far more than the required number of samples for all the water distribution systems.**

**Effluent quality:** The effluent quality compliance sample results are loaded onto DWS's IRIS via the internet. The final effluent quality complies with the authorised Microbiological, Chemical and Physical limits for most of the WWTWs. The overall Microbiological, Chemical and Physical compliance percentages of the final effluent samples taken over the last three financial years at the Kleinmond-, Hawston-, Hermanus-, Stanford-, Gansbaai and Pearly Beach WWTW are summarised in the tables below.

| Table A.6.9: Percentage Microbiological (Faecal Coliforms) Compliance of the Compliance Samples Taken at the Various WWTWs for the Last Three Financial Years | | | |
|---|---|---|---|
| **WWTW** | **2020/2021** | **2021/2022** | **2022/2023** |
| Kleinmond | 100.0% | 91.7% | 91.7% |
| Hawston | 100.0% | 91.7% | 100.0% |
| Hermanus | 100.0% | 75.0% | 91.7% |

| Table A.6.9: Percentage Microbiological (Faecal Coliforms) Compliance of the Compliance Samples Taken at the Various WWTWs for the Last Three Financial Years | | | |
|---|---|---|---|
| **WWTW** | **2020/2021** | **2021/2022** | **2022/2023** |
| Stanford | 100.0% | 91.7% | 33.3% |
| Gansbaai | 100.0% | 50.0% | 16.7% |
| Pearly Beach | 100.0% | 100.0% | 83.3% |
| **Total** | **100.0%** | **83.3%** | **69.4%** |

Note: Where parameters were resampled, due to failures, the resampled results were used to calculate the above compliance percentages.

**Table A.6.10: Percentage Chemical Compliance of the Compliance Samples Taken at the Various WWTWs for the Last Three Financial Years**

| WWTW | 2020/2021 | | | | | 2021/2022 | | | | | 2022/2023 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ammonia | Nitrites & Nitrates | COD | Ortho Phosphate | Overall | Ammonia | Nitrites & Nitrates | COD | Ortho Phosphate | Overall | Ammonia | Nitrites & Nitrates | COD | Ortho Phosphate | Overall |
| Kleinmond | 8.3% | 100.0% | 66.7% | 100.0% | **68.8%** | 16.7% | 100.0% | 33.3% | 100.0% | **62.5%** | 16.7% | 100.0% | 0.0% | 100.0% | **54.2%** |
| Hawston | 83.3% | 100.0% | 75.0% | 100.0% | **89.6%** | 25.0% | 100.0% | 33.3% | 75.0% | **58.3%** | 33.3% | 100.0% | 16.7% | 66.7% | **54.2%** |
| Hermanus | 100.0% | 100.0% | 100.0% | 100.0% | **100.0%** | 91.7% | 100.0% | 91.7% | 100.0% | **95.8%** | 83.3% | 83.3% | 100.0% | 91.7% | **89.6%** |
| Stanford | 91.7% | 100.0% | 91.7% | 100.0% | **95.8%** | 100.0% | 100.0% | 100.0% | 100.0% | **100.0%** | 91.7% | 100.0% | 100.0% | 100.0% | **97.9%** |
| Gansbaai | 100.0% | 91.7% | 100.0% | 100.0% | **97.9%** | 66.7% | 66.7% | 100.0% | 91.7% | **81.3%** | 41.7% | 66.7% | 66.7% | 91.7% | **66.7%** |
| Pearly Beach | 58.3% | 100.0% | 0.0% | 83.3% | **60.4%** | 91.7% | 100.0% | 0.0% | 100.0% | **72.9%** | 91.7% | 100.0% | 0.0% | 100.0% | **72.9%** |
| **Total** | **73.6%** | **98.6%** | **72.2%** | **97.2%** | **85.4%** | **65.3%** | **94.4%** | **59.7%** | **94.4%** | **78.5%** | **59.7%** | **91.7%** | **47.2%** | **91.7%** | **72.6%** |

Note: Where parameters were resampled, due to failures, the resampled results were used to calculate the above compliance percentages.

**Table A.6.11: Percentage Physical Compliance of the Compliance Samples Taken at the Various WWTWs for the Last Three Financial Years.**

| WWTW | 2020/2021 | | | | 2021/2022 | | | | 2022/2023 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | Electrical Conductivity | Total Suspended Solids | Overall | pH | Electrical Conductivity | Total Suspended Solids | Overall | pH | Electrical Conductivity | Total Suspended Solids | Overall |
| Kleinmond | 100.0% | 91.7% | 83.3% | **91.7%** | 100.0% | 91.7% | 83.3% | **91.7%** | 100.0% | 100.0% | 50.0% | **83.3%** |
| Hawston | 100.0% | 16.7% | 100.0% | **72.2%** | 100.0% | 25.0% | 75.0% | **66.7%** | 91.7% | 50.0% | 75.0% | **72.2%** |
| Hermanus | 100.0% | 100.0% | 100.0% | **100.0%** | 100.0% | 100.0% | 100.0% | **100.0%** | 100.0% | 100.0% | 100.0% | **100.0%** |
| Stanford | 100.0% | 66.7% | 100.0% | **88.9%** | 100.0% | 91.7% | 100.0% | **97.2%** | 100.0% | 83.3% | 100.0% | **94.4%** |
| Gansbaai | 100.0% | 83.3% | 100.0% | **94.4%** | 100.0% | 100.0% | 100.0% | **100.0%** | 100.0% | 75.0% | 91.7% | **88.9%** |
| Pearly Beach | 75.0% | 0.0% | 25.0% | **33.3%** | 91.7% | 50.0% | 8.3% | **50.0%** | 50.0% | 25.0% | 0.0% | **25.0%** |
| **Total** | **95.8%** | **59.7%** | **84.7%** | **80.1%** | **98.6%** | **76.4%** | **77.8%** | **84.3%** | **90.3%** | **72.2%** | **69.4%** | **77.3%** |

Note: Where parameters were resampled, due to failures, the resampled results were used to calculate the above compliance percentages.

The trend of the wastewater quality compliance for the various WWTWs are summarised in the table below.

**Table A.6.12: Trend of Microbiological, Chemical and Physical Compliance Percentages for the various WWTWs.**

| WWTW | 2016/2017 to 2018/2019 | | | 2018/2019 to 2020/2021 | | | 2020/2021 to 2022/2023 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Micro. | Chemical | Physical | Micro. | Chemical | Physical | Micro. | Chemical | Physical |
| Kleinmond | Decrease | Decrease | Same | Increase | Decrease | Decrease | Decrease | Decrease | Decrease |
| Hawston | Same | Increase | Increase | Same | Decrease | Decrease | Same | Decrease | Same |
| Hermanus | Increase | Same | Same | Same | Same | Same | Decrease | Decrease | Same |
| Stanford | Same | Increase | Increase | Increase | Decrease | Decrease | Decrease | Increase | Increase |
| Gansbaai | Increase | Increase | Decrease | Same | Same | Same | Decrease | Decrease | Decrease |
| Pearly Beach | - | - | - | - | - | - | Decrease | Increase | Decrease |

**Industrial Consumers:** The Municipality completed the updating of their Water Supply and Sanitation Services By-law. The updating includes the reviewing of the charges that need to be paid by the industrial consumers for the quality of final effluent discharged into the municipality's sewer system by them. The Municipality liaise with the industrial consumers from time to time with regard to the quality of final effluent discharged by them. Industrial effluent quality sample results are received by the Municipality for private package plants that discharge effluent into the Municipality's sewer system or into the environment.

## TOPIC 7: FINANCIAL

Capital Budget: The table below gives an overview of Overstrand Municipality's historical water and sewerage capital expenditure over the last ten financial years.

**Table A.7.1: Historical Capital Expenditure of the Water and Sewerage Infrastructure Budgets**

| Financial Year | Water Infrastructure | | | Sewerage Infrastructure | | |
|---|---|---|---|---|---|---|
| | Budget | Expenditure | % Spend | Budget | Expenditure | % Spend |
| 2013/2014 | R23 831 730 | R23 630 683 | 99.16% | R12 153 413 | R10 159 365 | 83.59% |
| 2014/2015 | R16 384 323 | R16 275 016 | 99.33% | R12 070 996 | R11 969 551 | 99.16% |
| 2015/2016 | R16 390 184 | R14 232 323 | 86.83% | R8 360 500 | R6 418 821 | 76.78% |
| 2016/2017 | R15 588 846 | R15 772 309 | 101.18% | R14 848 519 | R14 821 358 | 99.82% |
| 2017/2018 | R1 447 495 | R1 432 532 | 98.97% | R12 252 782 | R8 294 387 | 67.69% |
| 2018/2019 | R21 945 225 | R12 270 442 | 55.91% | R44 868 863 | R34 962 591 | 77.92% |
| 2019/2020 | R39 982 374 | R24 903 681 | 62.29% | R20 240 106 | R15 641 239 | 77.28% |
| 2020/2021 | R50 035 705 | R34 573 765 | 69.10% | R41 458 465 | R30 513 335 | 73.60% |
| 2021/2022 | R37 333 918 | R36 630 152 | 98.11% | R50 890 147 | R40 005 632 | 78.61% |
| 2022/2023 | R35 789 052 | R31 607 552 | 88.32% | R31 285 030 | R31 123 018 | 99.48% |
| **Average over last 10 years** | **R25 872 885** | **R21 132 846** | **81.68%** | **R24 842 882** | **R20 390 930** | **82.08%** |

Operational Budget: The actual operational and maintenance expenditure and income for the last five financial years for water and sanitation services is summarised in the table below (Unaudited figures).

**Table A.7.2: Summary of Operational and Maintenance Expenditure and Income for Water and Sanitation Services**

| Service | Expenditure / Income | 18/19 | 19/20 | 20/21 | 21/22 | 22/23 |
|---|---|---|---|---|---|---|
| Water | Expenditure | R117 615 148 | R128 656 376 | R137 409 799 | R145 142 796 | R153 152 405 |
| | Income | R145 980 226 | R153 663 169 | R153 115 215 | R156 425 649 | R173 298 233 |
| | **Surplus / Deficit** | **R28 365 078** | **R25 006 793** | **R15 705 416** | **R11 282 853** | **R20 145 828** |
| Sanitation | Expenditure | R86 438 364 | R94 725 991 | R99 329 089 | R112 745 218 | R140 730 503 |
| | Income | R104 583 319 | R98 447 712 | R109 567 538 | R123 712 658 | R117 561 435 |
| | **Surplus / Deficit** | **R18 144 955** | **R3 721 721** | **R10 238 449** | **R10 967 440** | **R23 169 068** |

Tariff and Charges: The first ten (10) kl of water is provided free to all indigent registered households. Overstrand Municipality's tariffs support the viability and sustainability of water supply services to the poor through cross-subsidies (where feasible). Free basic water and sanitation services are linked to the Municipality's Indigent Policy and all indigent registered households therefore receive free basic water and sanitation services. This implies that either the equitable share is used to cover this cost, or higher consumption blocks are charged at a rate greater than the cost in order to generate a surplus to cross-subsidise indigent consumers who use up to ten (10) kilolitres per month.

Tariffs often comprise both a fixed charge and a variable charge based on consumption. The cost consumers had to pay for their water services in Overstrand Municipality's Management Area, for the various financial years, is presented on the graph below (Normal residential water tariffs).

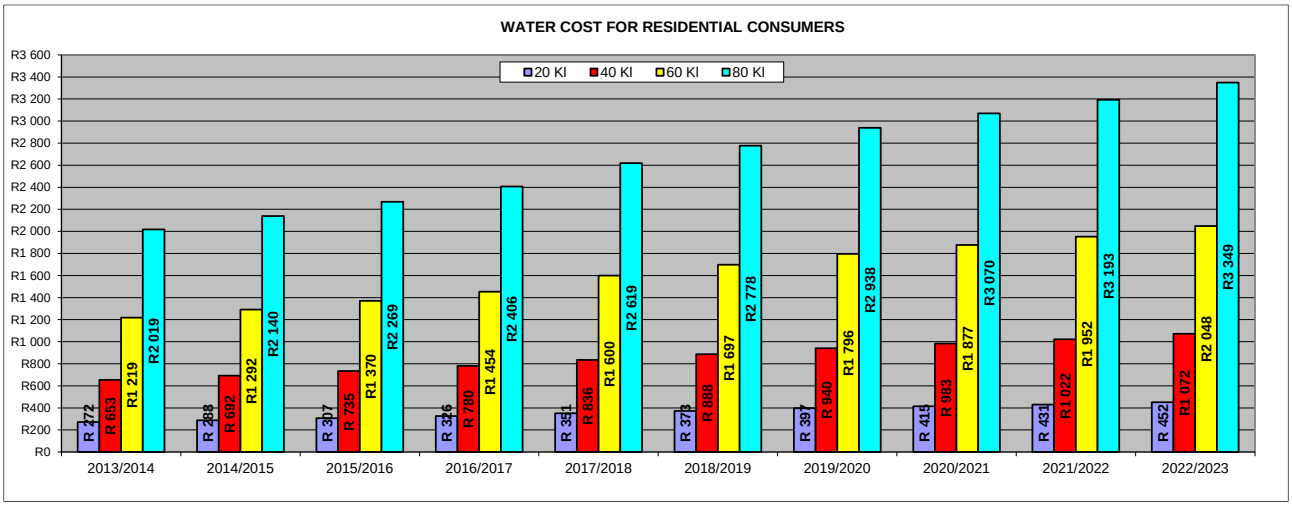



Figure A.7.1: Water Cost for Residential Consumers

The water tariff structures for Overstrand Municipality for the 2022/2023 financial year and the previous four financial years are summarised in the table below (Subject to VAT).

**Table A.7.3: Water Tariffs**

| Consumer / Description | Tariff Code | Category | 18/19 | 19/20 | 20/21 | 21/22 | 22/23 |
|---|---|---|---|---|---|---|---|
| Consumer Deposits | WD1 | Domestic Water | R562-00 | R594-03 | R620-76 | R646-00 | R678-00 |
| | WD2 | Commercial Water Cons. < 40 kl | R2 248-00 | R2 376-14 | R2 483-07 | R2 582-00 | R2 709-00 |
| | WD3 | Commercial Water Cons 40 – 100 kl | R7 866-00 | R8 314-36 | R8 688-51 | R9 036-00 | R9 479-00 |
| | WD4 | Commercial Water Cons. 100 kl + | R13 484-00 | R14 252-59 | R14 893-96 | R15 490-00 | R16 249-00 |
| | WD5 | Domestic – Water RUEs | Applicable RUE's x WD1A | | | | |
| | WD6 | Indigent Registered | R180-00 | R190-26 | R198-82 | R207-00 | R217-00 |
| Basic Charge | W1A1 | Basic Monthly Charge per erf/unit per month | R129-14 | R136-50 | R142-64 | R148-35 | R155-62 |
| | W1A2A | Basic Monthly Subsidy: Residential Indigent as per paragraph A of the Indigent Policy per erf/unit per month | - | R136-50 | R142-64 | R148-35 | R155-62 |
| | W1A2B | Basic Monthly Subsidy: Residential Indigent as per paragraph B, C & D of the Indigent Policy per erf/unit per month 1/7/22-31/10/22 | - | R129-14 | R129-14 | R129-14 | R129-14 |
| | W1A2B | Basic Monthly Subsidy: Residential Indigent as per paragraph B, C & D of the Indigent Policy per erf/unit per month 1/11/22-28/2/23 | - | - | - | - | R86-09 |
| | W1A2B | Basic Monthly Subsidy: Residential Indigent as per paragraph B, C & D of the Indigent Policy per erf/unit per month 1/3/23-30/6/23 | - | - | - | - | R43-05 |
| | W1A3A | Fixed Infrastructure Basic Charge per erf/unit per month | R15-45 | R15-45 | R15-45 | R15-45 | R15-45 |
| | W1A3B | Fixed Infrastructure Basic Charge per erf/unit per month | R8-41 | R8-41 | R8-41 | R8-41 | R8-41 |
| | W1A3C | Subsidised Fixed Infrastructure Basic Charge per erf/unit per | - | R8-41 | R8-41 | R8-41 | R8-41 |

| Table A.7.3: Water Tariffs | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Consumer / Description** | **Tariff Code** | **Category** | | **18/19** | **19/20** | **20/21** | **21/22** | **22/23** |
| | | month – Registered Indigent Households | | | | | | |
| Consumption Households and Registered Indigent Households (0 - 10 kl subsidised for indigent households) | W1B1 | Normal Tariff & Level 1 restrictions | 0 – 6 kl per kl | R5-02 | R5-60 | R5-85 | R6-08 | R6-38 |
| | W1B2 | | 7 - 18 kl per kl | R10-85 | R11-47 | R11-99 | R12-47 | R13-08 |
| | W1B3 | | 19 – 30 kl per kl | R17-61 | R18-61 | R19-45 | R20-23 | R21-22 |
| | W1B4 | | 31 – 45 kl per kl | R27-11 | R28-66 | R29-95 | R31-15 | R32-68 |
| | W1B5 | | 46 - 60 kl per kl | R35-21 | R37-22 | R38-89 | R40-45 | R42-43 |
| | W1B6 | | > 60 kl per kl | R46-96 | R49-64 | R51-87 | R53-94 | R56-58 |
| | W1B7 | Restriction Tariff 1 (level 2 & 3 restrictions) | 0 – 6 kl per kl | R5-02 | R5-60 | R5-85 | R6-08 | R6-38 |
| | W1B8 | | 7 – 18 kl per kl | R14-11 | R14-91 | R15-58 | R16-20 | R17-01 |
| | W1B9 | | 19 - 30 kl per kl | R22-89 | R24-19 | R25-28 | R26-29 | R27-59 |
| | W1B10 | | 31 - 45 kl per kl | R35-24 | R37-25 | R38-93 | R40-49 | R42-48 |
| | W1B11 | | 46 - 60 kl per kl | R48-37 | R51-13 | R53-43 | R55-57 | R55-16 |
| | W1B12 | | > 60 kl | R64-50 | R68-18 | R71-25 | R74-10 | R73-56 |
| | W1B13 | Restriction Tariff 2 (level 4 & 5 restrictions) | 0 – 6 kl per kl | R5-02 | R5-60 | R5-85 | R6-08 | R6-38 |
| | W1B14 | | 7 – 18 kl per | R17-38 | R18-37 | R19-20 | R19-97 | R20-93 |
| | W1B15 | | 19 - 30 kl per kl | R28-18 | R29-79 | R31-13 | R32-38 | R33-95 |
| | W1B16 | | 31 - 45 kl per kl | R43-38 | R45-85 | R47-91 | R49-83 | R52-28 |
| | W1B17 | | 46 - 60 kl per kl | R59-55 | R62-94 | R65-77 | R68-40 | R67-89 |
| | W1B18 | | > 60 kl | R79-38 | R83-90 | R87-68 | R91-19 | R90-53 |
| | W1B19 | Restriction Tariff 3 (level 6 restrictions) | 0 – 6 kl per kl | R5-02 | R5-60 | R5-85 | R6-08 | R6-38 |
| | W1B20 | | 7 – 18 kl per kl | R22-94 | R24-25 | R25-34 | R26-35 | R26-16 |
| | W1B21 | | 19 – 30 kl per kl | R99-23 | R104-89 | R109-61 | R113-99 | R42-44 |
| | W1B22 | | 31 – 45 kl per kl | | | | | R65-35 |
| | W1B23 | | 46 – 60 kl per kl | | | | | R84-86 |
| | W1B24 | | > 60 kl per kl | | | | | R113-17 |
| Consumption – All other | W1C1 | Normal Tariff & Level 1 restrictions | 0 – 18 kl per kl | R12-01 | R12-69 | R13-26 | R13-79 | R14-47 |
| | W1C2 | | 19 - 30 kl per kl | R17-61 | R18-61 | R19-45 | R20-23 | R21-22 |
| | W1C3 | | 31 – 45 kl per kl | R27-11 | R28-66 | R29-95 | R31-15 | R32-68 |
| | W1C4 | | 46 – 60 kl per kl | R35-21 | R37-22 | R38-89 | R40-45 | R42-43 |
| | W1C5 | | > 60 kl per kl | R46-96 | R49-64 | R51-87 | R53-94 | R56-58 |
| | W1C6 | Restriction Tariff 1 (level 2 & 3 restrictions) | 0 – 18 kl per kl | R15-61 | R16-50 | R17-24 | R17-93 | R18-81 |
| | W1C7 | | 19 – 30 kl per kl | R22-89 | R24-19 | R25-28 | R26-29 | R27-59 |
| | W1C8 | | 31 - 45 kl per kl | R35-24 | R37-25 | R38-93 | R40-49 | R42-48 |
| | W1C9 | | 46 - 60 kl per kl | R48-38 | R51-14 | R53-44 | R55-58 | R55-16 |
| | W1C10 | | > 60 kl | R64-49 | R68-17 | R71-24 | R74-09 | R73-56 |
| | W1C11 | Restriction Tariff 2 (level 4 & 5 restrictions) | 0 – 18 kl per kl | R19-22 | R20-32 | R21-23 | R22-08 | R23-15 |
| | W1C12 | | 19 - 30 kl per kl | R28-18 | R29-79 | R31-13 | R32-38 | R33-95 |
| | W1C13 | | 31 - 45 kl per kl | R43-38 | R45-85 | R47-91 | R49-83 | R52-28 |
| | W1C14 | | 46 - 60 kl per kl | R59-55 | R62-94 | R65-77 | R68-40 | R67-89 |
| | W1C15 | | > 60 kl | R79-38 | R83-90 | R87-68 | R91-19 | R90-53 |
| | W1C16 | Restriction Tariff 3 (level 6 restrictions) | 0 – 10 kl per kl | R24-02 | R25-39 | R26-53 | R27-59 | - |
| | | | 0 – 18 kl per kl | - | - | - | - | R28-93 |
| | | | 19 – 30 kl per kl | - | - | - | - | R42-44 |
| | | | 31 - 45 kl per kl | - | - | - | - | R65-35 |
| | | | 46 - 60 kl per kl | - | - | - | - | R84-86 |
| | W1C17 | | > 10 kl per kl | R99-23 | R104-89 | R109-61 | R113-99 | - |
| | | | > 60 kl | - | - | - | - | R113-17 |
| Other Consumers | W1D1 | Departmental per kl | | R21-63 | R23-39 | R24-86 | R25-19 | R28-46 |
| | W1D2 | Fire Hoses: Basic per month | | R164-34 | R173-71 | R181-53 | R188-79 | R198-04 |
| | W1D3 | Bulk usage (Unconnected to networks) per kl – Consumers permanently residing within Overstrand municipal area | | R13-29 | R14-05 | R14-68 | R15-27 | R16-02 |
| | W1D3A | Restriction Tariff 1 (level 2 & 3 water restrictions) | | - | R18-27 | R19-09 | R19-85 | R20-82 |

| Table A.7.3: Water Tariffs | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Consumer / Description** | **Tariff Code** | **Category** | | **18/19** | **19/20** | **20/21** | **21/22** | **22/23** |
| | W1D3B | Restriction Tariff 2 (level 4 & 5 water restrictions) | | - | R22-28 | R23-28 | R24-21 | R25-63 |
| | W1D3C | Restriction Tariff 3 (level 6 water restrictions) | | - | R28-10 | R29-39 | R30-53 | R32-04 |
| | W1D4 | Kidbrooke (Van Cauter 0 – 8000 kl /a) | | R0-08 | R0-08 | R0-08 | R0-08 | R0-08 |
| | W1D5 | Onrus Small Holdings Tariff 2 (Van Cauter) | | R0-08 | R0-08 | R0-08 | R0-08 | R0-08 |
| | W1D6 | Onrus Small Holdings Tariff 4 (Per Agreement) | | R1-05 | R1-11 | R1-11 | R1-11 | R1-11 |
| | W1D7 | Contractors water consumption – temporary connection | | R21-63 | R23-39 | R24-86 | R25-19 | R28-46 |
| | W1D8 | Bulk usage (Unconnected to networks) per Kl - People residing outside the Overstrand municipal area | | R49-30 | R52-11 | R54-45 | R56-63 | R59-40 |
| | W1D8A | Restriction Tariff 1 (level 2 & 3 restrictions) | | R64-09 | R67-74 | R70-79 | R73-62 | R77-23 |
| | W1D8B | Restriction Tariff 2 (level 4 & 5 restrictions) | | R78-88 | R83-38 | R87-13 | R90-62 | R95-05 |
| | W1D8C | Restriction Tariff 3 (level 6 restrictions) | | R98-60 | R104-22 | R108-91 | R113-27 | R118-81 |
| Wet Commercial, Sport, Parks etc. (must apply for this tariff) | W1E1 | Normal Tariff & Level 1 restrictions | 0 – 500 kl per kl | R17-47 | R18-47 | R19-30 | R20-07 | R21-05 |
| | W1E2 | | 501 – 1 000 kl per kl | R26-41 | R27-92 | R29-18 | R30-35 | R31-84 |
| | W1E3 | | > 1 000 kl per kl | R35-22 | R37-23 | R38-91 | R40-47 | R42-45 |
| | W1E4 | Restriction Tariff 1 (level 2 & 3 restrictions) | 0 – 300 kl per kl | R22-72 | R24-02 | R25-10 | R26-10 | R27-37 |
| | W1E5 | | 301 – 700 kl per kl | R34-33 | R36-29 | R37-92 | R39-44 | R41-39 |
| | W1E6 | | > 700 kl per kl | R45-79 | R48-40 | R50-58 | R52-60 | R55-19 |
| | W1E7 | Restriction Tariff 2 (level 4 & 5 restrictions) | 0 – 250 kl per kl | R27-96 | R29-55 | R30-88 | R32-12 | R33-69 |
| | W1E8 | | 251 – 500 kl per kl | R42-26 | R44-67 | R46-68 | R48-55 | R50-94 |
| | W1E9 | | > 500 kl per kl | R56-35 | R59-56 | R62-24 | R64-73 | R67-92 |
| | W1E10 | Restriction Tariff 3 (level 6 restrictions) | 0 – 100 kl per kl | R34-95 | R36-94 | R38-60 | R40-14 | R42-11 |
| | W1E11 | | >100 kl per kl | R70-44 | R74-46 | R77-81 | R80-92 | R84-91 |
| Wet Industry (Marine etc, must apply for this tariff) (Average of 100kl per day over prev. 365 days) | W1F1 | Normal Tariff & Level 1 restrictions | 0 – 5 800 kl per kl | R18-20 | R19-24 | R20-11 | R20-91 | R21-93 |
| | W1F2 | | > 5 800 kl per kl | R35-22 | R37-23 | R38-91 | R40-47 | R42-45 |
| | W1F3 | Restriction Tariff 1 (level 2 & 3 restrictions) | 0 – 5 800 kl per kl | R23-66 | R25-01 | R26-14 | R27-19 | R28-51 |
| | W1F4 | | > 5 800 kl per kl | R45-79 | R48-40 | R50-58 | R52-60 | R55-19 |
| | W1F5 | Restriction Tariff 2 (level 4 & 5 restrictions) | 0 – 5 800 kl per kl | R29-12 | R30-78 | R32-17 | R33-46 | R35-10 |
| | W1F6 | | > 5 800 kl per kl | R56-35 | R59-56 | R62-24 | R64-73 | R67-92 |
| | W1F7 | Restriction Tariff 3 (level 6 restrictions | 0 – 5 800 kl per kl | R36-40 | R38-47 | R40-20 | R41-81 | R43-87 |
| | W1F8 | | > 5 800 kl per kl | R70-44 | R74-46 | R77-81 | R80-92 | R84-91 |
| Availability Charges | W2A1 | Overstrand per month | | R129-14 | R136-50 | R142-64 | R148-35 | R155-62 |
| | W2A2 | Farms connected to water pipeline | | R129-14 | R136-50 | R142-64 | R148-35 | R155-62 |
| Rebates (Granted by Municipal Manager after application) | W2J1 | Kl above average – per kl | | R21-63 | R23-39 | R24-86 | R25-19 | R28-46 |
| Irrigation Water (Leiwater) & Raw Water | W3A1 | Use and pump water (80-90min) per month Stanford | | R39-47 | R41-72 | R43-60 | R45-34 | R47-56 |
| | W3A2 | Pearly Beach Small Holdings: Basic | | R48-16 | R50-91 | R53-20 | R55-33 | R58-04 |

| Table A.7.3: Water Tariffs | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Consumer / Description** | **Tariff Code** | **Category** | **18/19** | **19/20** | **20/21** | **21/22** | **22/23** |
| | W3A3 | Pearly Beach Small Holdings: Consumption 0 – 70 kl per kl | R3-77 | R3-98 | R4-16 | R4-33 | R4-52 |
| | W3A4 | Pearly Beach Small Holdings: Consumption > 70 kl per kl | R8-82 | R9-32 | R9-74 | R10-13 | R10-63 |
| | W3A5 | Others per kl | R3-77 | R3-98 | R4-16 | R4-33 | R4-52 |
| | W3A6 | Farm 1/722 Stanford as per agreement 0.875% of raw water abstraction from municipal boreholes, max 4380 kl/a, per kl | R0-00 | R0-00 | R0-00 | R0-00 | R0-00 |
| | W3A6A | Farm 10/722 Stanford as per agreement 0.875% of raw water abstraction from municipal boreholes, max 4380 kl/a, per kl | R0-00 | R0-00 | R0-00 | R0-00 | R0-00 |
| | W3A6B | Farms Rem 1/722 and 10/722 Stanford as per agreement, raw water abstraction from boreholes in excess of 0.875% of municipal abstraction per property, per kl | R0-00 | R0-00 | R0-00 | R0-00 | R4-52 |
| | W3A7 | Farm 586 Volmoed raw water from De Bos pipeline consumption 0-300 kl/month per kl | R0-00 | R0-00 | R0-00 | R0-00 | R0-00 |
| | W3A8 | Farm 586 Volmoed raw water from De Bos pipeline consumption >300 kl/month per kl | R3-55 | R3-75 | R3-92 | R4-31 | R4-52 |
| Irrigation Water (Treated Effluent) | W3B2 | Hermanus Golf Club per month | R42 847-33 | R45 289-63 | R47 325-57 | R49 218-59 | R51 630-30 |
| | W3B3 | All other per kl | R2-41 | R2-55 | R2-66 | R2-77 | R2-91 |
| | W3B4 | Schools, municipal sports grounds and project sport grounds as per agreement | No Charge | No Charge | No Charge | No Charge | No Charge |
| | W3B5 | Curro Holdings – 250kl free per day as per deed of sale | R2-41 | R2-55 | R2-66 | R2-77 | R2-91 |
| Sundry Charges | W4A1 | Testing of a meter (Call-out fee incl.) | R862-61 | R912-17 | R953-04 | R991-30 | R1 035-65 |
| | W4A2 | Testing of a meter (Ind. / Bulk Meter) | Cost + 15% Min charge of R500-00 | Cost + 15% Min charge of R500-00 | Cost + 15% Min charge of R500-00 | Cost + 15% Min charge of R500-00 | Cost + 15% Min charge of R500-00 |
| | W4A3 | Disconnection | R391-30 | R413-91 | R432-17 | R449-57 | R469-57 |
| | W4A4 | Reconnection | R391-30 | R413-91 | R432-17 | R449-57 | R469-57 |
| | W4A5 | Reconnection after normal working hrs | R782-61 | R826-96 | R864-35 | R899-13 | R940-00 |
| | W4A6 | Administration fee – recalculation due to no meter access | R153-04 | R161-74 | R168-70 | R175-65 | R182-61 |
| | W4A7 | Verification of a meter reading | R213-91 | R226-09 | R236-52 | R246-09 | R257-39 |
| | W4A8 | Final and special readings | R195-65 | R206-96 | R216-52 | R225-22 | R235-65 |
| | W4A9 | Call-out fee – Normal working hrs | R390-44 | R413-04 | R431-30 | R448-70 | R468-70 |
| | W4A10 | Call-out fee – After hrs | R781-74 | R826-09 | R863-48 | R898-26 | R938-26 |
| | W4A11 | Replacement of damage meter | R1 049-57 | R1 109-57 | R1 159-13 | R1 205-22 | R1 259-13 |
| | W4A12 | Removal of Meter (based on call out fee) | R862-61 | R912-17 | R953-04 | R991-30 | R1 035-65 |
| | W4A13 | Registration of Borehole (Incl. inspection fee) | R293-04 | R309-57 | R323-48 | R336-52 | R351-30 |
| | W4A14 | Repositioning of Meter (Excl. pipe) | R859-13 | R907-83 | R948-70 | R986-96 | R1 031-30 |
| | W4A15 | Convert to water flow restrictor meter | R2 797-39 | R2 956-52 | R3 089-57 | R3 213-04 | R3 357-39 |
| | W4A16 | Temporary connections – deposit | R7 360-00 | R7 780-00 | R8 130-00 | R8 455-00 | R8 835-00 |
| | W4A17 | Temporary connection – usage per kl | R18-96 | R23-39 | R24-35 | R25-19 | R28-46 |
| | W4A18 | Damage to Water Meter | Actual cost plus 15% | Actual cost plus 15% | Actual cost plus 15% | Actual cost plus 15% | Actual cost plus 15% |
| | W4A19 | Damage of Watermain | Actual cost plus R2 958-44 | Actual cost plus R3 127-07 | Actual cost plus R3 268-00 | Actual cost plus R3 398-72 | Actual cost plus R3 551-66 |

| Table A.7.3: Water Tariffs | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Consumer / Description** | **Tariff Code** | **Category** | **18/19** | **19/20** | **20/21** | **21/22** | **22/23** |
| | W4A20 | Damage of Service Connection (including water meter) | Actual cost plus R777-69 | Actual cost plus R822-02 | Actual cost plus R859-00 | Actual cost plus R893-36 | Actual cost plus R933-56 |
| Illegal Connection / Tampering Fee | W5A1 | 1st Offence | R6 529-00 | R6 901-00 | R7 212-00 | R7 500-00 | R7 838-00 |
| | W5A2 | 2nd Offence – Must convert to a flow-restriction water meter at applicable tariff | R7 661-00 | R8 098-00 | R8 462-00 | R8 800-00 | R9 196-00 |
| | W5A3 | 3rd Offence (Restriction of service and remedial action fee = double previous offence fee) | Previous offence amount x 2 | Previous offence amount x 2 | Previous offence amount x 2 | Previous offence amount x 2 | Previous offence amount x 2 |
| Connection Fee | W6A1 | 20mm Connection Conventional Meter | R4 782-61 | R5 055-65 | R5 283-48 | R5 494-78 | R5 741-74 |
| | W6A2 | 20mm Connection Water Flow Restrictor Meter | R5 680-00 | R6 003-48 | R6 273-91 | R6 525-22 | R6 819-13 |
| | W6A3 | Other Connections | Actual Cost + 15% | Actual Cost + 15% | Actual cost plus + 15% | Actual Cost + 15% | Actual Cost + 15% |
| | W6A4 | Connections (Erf Boundary – by Dev.) | R1 243-48 | R1 314-78 | R1 373-91 | R1 428-70 | R1 493-04 |
| Bulk Service Dev. Fees | W7 | Tariffs set out in Development Contribution Tariff list | Development Contributions will be determined as set out in the Annexure in respect of Dev. Contribution Policy | | | | |

The sewerage tariff structures for Overstrand Municipality for the 2022/2023 financial year and the previous four financial years are summarised in the table below (Subject to VAT).

| Table A.7.4: Sewerage Tariffs | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Consumer / Description** | **Tariff Code** | **Category** | **18/19** | **19/20** | **20/21** | **21/22** | **22/23** |
| Sewerage – Single and Intermediate Residential (Dwelling house and duplex flats, Conventional sewers, small bore sewers and conservancy tanks) | SE7A1 | 0 – 35 kl per kl (based on 70% of 50 kl water usage) – per unit per month. Conservancy tank service only during office hours per month. For after-hours service, refer to tariff SE9B. | R12-96 | R12-22 | R14-32 | R14-89 | R15-53 |
| | SE7A2 | Where no municipal water is used – per RUE per month. Conservancy tank service only during office hours per month. For after-hours service, refer to tariff SE9B. | - | - | R128-83 | R131-57 | R137-88 |
| Sewerage – registered indigent households | SE7A4 | 0 – 4.2 kl – subsidised | R12-96 | R12-22 | R14-32 | R14-89 | - |
| | | 0 – 7 kl - subsidised | - | - | - | - | R15-53 |
| | SE7A5 | 4.3 – 35 kl per kl (based on 70% of max 50 kl water usage) – per unit per month, Conservancy tank service only during office hours per month. For after-hours service, refer to tariff SE9B. | R12-96 | R12-22 | R14-32 | R14-89 | - |
| | | 8 – 35 kl per kl (based on 70% of max 50 kl water usage) – per unit per month, Conservancy tank service only during office hours per month. For after-hours service, refer to tariff SE9B. | - | - | - | - | R15-53 |
| Sewerage – General residential (Blocks of flats and residential buildings) | SE7B1 | 0 – 45kl per kl (based on 90% of max 50 kl water usage) per unit per month. | R12-96 | R12-22 | R14-32 | R14-89 | R15-53 |
| Sewerage – Guest house, bed & breakfast establishments | SE7C1 | Per kl (based on 70% of water usage) per unit per month | R12-96 | R12-22 | R14-32 | R14-89 | R15-53 |
| Consumption – All other (Including Commercial, | SE7D1 | Per kl (based on 90% of water usage) per unit per month – this percentage may be adjusted | R12-96 | R12-22 | R14-32 | R14-89 | R15-53 |

| Table A.7.4: Sewerage Tariffs | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Consumer / Description** | **Tariff Code** | **Category** | | **18/19** | **19/20** | **20/21** | **21/22** | **22/23** |
| Industrial, School, Sport, etc.) | | according to the Tariff Policy after investigation | | | | | | |
| Consumption - Departmental | SE7E1 | 0 – 35 kl per kl (based on 70% of max 50 kl water usage) per unit per month. | | R12-96 | R12-22 | R14-32 | R14-89 | R15-53 |
| Basic Charge | SE8A | Basic Monthly Charge Developed sites per erf/unit per month. | | R115-09 | R108-54 | R127-12 | R132-20 | R137-88 |
| | SE8A1 | Basic Monthly Subsidy Residential Indigent as per paragraph A of the Indigent Policy per month | | - | R121-65 | R127-12 | R132-20 | R137-88 |
| | SE8A2 | Basic Monthly Subsidy Residential Indigent as per paragraph B, C & E of the Indigent Policy per month (01/07/2022 – 31/10/2022) | | - | R115-09 | R115-09 | R115-09 | R115-09 |
| | SE8A2 | Basic Monthly Subsidy Residential Indigent as per paragraph B, C & E of the Indigent Policy per month (01/11/2022 – 28/02/2023) | | - | R115-09 | R115-09 | R115-09 | R76-73 |
| | SE8A2 | Basic Monthly Subsidy Residential Indigent as per paragraph B, C & E of the Indigent Policy per month (01/03/2023 – 30/06/2023) | | - | R115-09 | R115-09 | R115-09 | R38-36 |
| | SE8B | Basic Monthly Charge Undeveloped sites – cannot connect to the network per erf/unit per month. | | R77-54 | R73-13 | R85-65 | R89-08 | R92-91 |
| | SE8C | Basic Monthly Charge Undeveloped sites – can connect to the network per erf/unit per month | | R115-09 | R108-54 | R127-12 | R132-20 | R137-88 |
| | SE8D | Basic Monthly Charge Developed sites – with a septic Tank per erf/unit per month | | R77-54 | R73-13 | R85-65 | R89-08 | R92-91 |
| | SE8E | Basic Monthly Charge – Low Cost Housing & Single Quarters per erf/unit per month | | R77-54 | R73-13 | R85-65 | R89-08 | R92-91 |
| | SE8F1 | Fixed Infrastructure Basic Charge per erf/unit per month | | R9-60 | R9-60 | R9-60 | R9-60 | R9-60 |
| | SE8F2 | Fixed Infrastructure Basic Charge per erf/unit per month | | R3-43 | R3-43 | R3-43 | R3-43 | R3-43 |
| | SE8F3 | Subsidised Fixed Infrastructure Basic Charge per erf/unit per month – Registered Indigent | | - | R3-43 | R3-43 | R3-43 | R3-43 |
| Other Sewerage Charges and Sundry Charges | SE9A1 | Vacuum Tanker Service for users not paying tariffs SE7 above – Provided on request | Vacuum Tanker service provided on request <6kl (per 6kl or part thereof) | R529-39 | R559-57 | R584-75 | R608-14 | R634-29 |
| | SE9A2 | | Vacuum Tanker service provided on request <5kl (per 5kl or part thereof) | R529-39 | R559-57 | R584-75 | R608-14 | R634-29 |
| | SE9A4 | | Vacuum Tanker service provided on request >6kl (per 6kl or part thereof) | R529-39 | R559-57 | R584-75 | R608-14 | R634-29 |
| | SE9A5 | | Call out fee for Tank Service request but no service due to another defect | R529-39 | R559-57 | R584-75 | R608-14 | R634-29 |
| | SE9A6 | | More than 3 pipes an additional fee per pipe for users not paying tariff SE7 above | R77-54 | R81-96 | R85-65 | R89-08 | R92-91 |
| | SE9B1 | After Hours Vacuum Tanker Service – Provided on request | After hours per request < 6kl (per 6kl or part thereof) | R1 058-78 | R1 119-13 | R1 169-49 | R1 216-28 | R1 268-58 |
| | SE9B2 | | After hours per request > 6kl (per 6kl or part thereof) | R1 058-78 | R1 119-13 | R1 169-49 | R1 216-28 | R1 268-58 |

| Table A.7.4: Sewerage Tariffs | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Consumer / Description** | **Tariff Code** | **Category** | | **18/19** | **19/20** | **20/21** | **21/22** | **22/23** |
| | SE9B3 | | After hours per request < 5kl (per 5 kl or part thereof) | R1 058-78 | R1 119-13 | R1 169-49 | R1 216-28 | R1 268-58 |
| | SE9B2 | | After hours businesses with Public Toilets per removal | R317-91 | R336-03 | R351-15 | R365-20 | R380-90 |
| | SE9C1 | Vacuum Tanker Service outside urban areas – Provided on request | Normal applicable Tariff (SE9A1 or SE9A2 or SE9A4) plus additional per hour plus SE9C2 | R317-91 | R336-03 | R351-16 | R365-21 | R380-91 |
| | SE9C2 | | Normal applicable Tariff (SE9A1 or SE9A2 or SE9A4) plus additional per km | R15-52 | R16-40 | R17-14 | R17-83 | R18-60 |
| | SE9C6 | After Hours Vacuum Tanker Service outside urban areas – Provided on request | After hours applicable Tariff (SE9B1 or SE9B2 or SE9B3) plus additional per hour plus SE9C7 | R317-91 | R336-03 | R351-15 | R365-20 | R380-90 |
| | SE9C7 | | After hours applicable Tariff (SE9B1 or SE9B2 or SE9B3) plus additional per km | R15-52 | R16-40 | R17-14 | R17-83 | R18-60 |
| | SE9D1 | Testing and Connection Fees | Testing of septic and conservancy tanks per test | R1 377-39 | R1 456-52 | R1 521-74 | R1 582-61 | R1 650-44 |
| | SE9D2 | | Small bore sewerage connection fee + tank test | R6 320-87 | R6 680-87 | R6 981-74 | R7 260-87 | R7 573-04 |
| | SE9D3 | | Sewer connection | R4 736-52 | R5 006-09 | R5 231-30 | R5 448-70 | R5 682-61 |
| | SE9E1 | Disposal | Charge per kl or part thereof | R68-96 | R73-04 | R76-52 | R80-00 | R15-65 |
| Bulk services development fees | SEW10 | Bulk services development fees | | Development Contributions will be determined as set out in the Annexure in respect of Development Contribution Policy | | | | |
| Illegal Connection / Tampering Fee | SE11A | 1st Offence | | R6 495-00 | R6 866-00 | R7 175-00 | R7 462-00 | R7 783-00 |
| | SE11B | 2nd Offence (SE11A x 2) | | R12 990-00 | R13 730-00 | R14 348-00 | R14 924-00 | R15 566-00 |

## TOPIC 8: WATER SERVICES INSTITUTIONAL ARRANGEMENTS AND CUSTOMER SERVICES

Overstrand Municipality is the official WSA for the entire Municipal Management Area and act as the WSP for the whole area. Current water services are delivered by way of an internally operated and managed mechanism. A Water and Wastewater Bulk Works Contract commenced on the 8th of December 2018 between Overstrand Municipality and Veolia Services Southern Africa (Pty) Ltd to operate and maintain the bulk infrastructure in Overstrand Municipality's Management Area for a period of fifteen (15) years. The Municipality also has the right to extend the contract for a further five (5) years.

The updated Water Supply and Sanitation Services By-law was approved by Council on 26 April 2022.

The IDP is the Municipality's single most strategic document that drives and directs all implementation and related processes. The Municipality's budget is developed based on the priorities, programmes and projects of the IDP, after which a Service Delivery Budget Implementation Plan (SDBIP) is developed, to ensure that the organisation actually delivers on the IDP targets.

The overall performance of the municipality is managed and evaluated by a municipal scorecard (Top Layer SDBIP) at organisational level and through monitoring and evaluation of the detailed Departmental SDBIP at directorate and departmental (HOD) levels. The municipal scorecard (Top Layer SDBIP) sets out consolidated service delivery targets for senior management and provides an overall picture of performance for the municipality as a whole, reflecting the performance on each strategic objective and service delivery priorities. The SDBIP includes non-financial KPIs.

The Municipal personnel and the bulk water services contractor's personnel are continuously exposed to training opportunities, skills development and capacity building at a technical, operations and management level in an effort to create a more efficient overall service to the users. A Workplace Skills Plan is compiled every year and the specific training needs of the personnel, with regard to water and wastewater management are determined annually.

**Municipal Strategic Self-Assessment (MuSSA):** Overseen by the DWS the MuSSA conveys an overall business health of municipal water business and serves as a key source of information around municipal performance. The MuSSA also identifies key municipal vulnerabilities that are strategically important to DWS, the Department of Cooperative Government (DCoG), National Treasury, the planning Commission/Office of the Presidency, the South African Local Government Association (SALGA) and the municipalities themselves. The MuSSA team continues to engage (1) DWS directorates and their associated programmes (e.g. Water Services Development Plan, Water Services Regulation), and (2) other sector departments and their associated programmes (e.g. LGTAS, MISA) to minimize duplication and ensure alignment. Through the tracking of current and likely future performance, the key areas of vulnerability identified, allow municipalities to effectively plan and direct appropriate resources that will also enable DWS and the sector to provide more effective support.

The Spider Diagram below effectively indicates the vulnerability levels of Overstrand Municipality across the eighteen key service areas, as identified through the Municipal Strategic Self-Assessment of Water Services process.

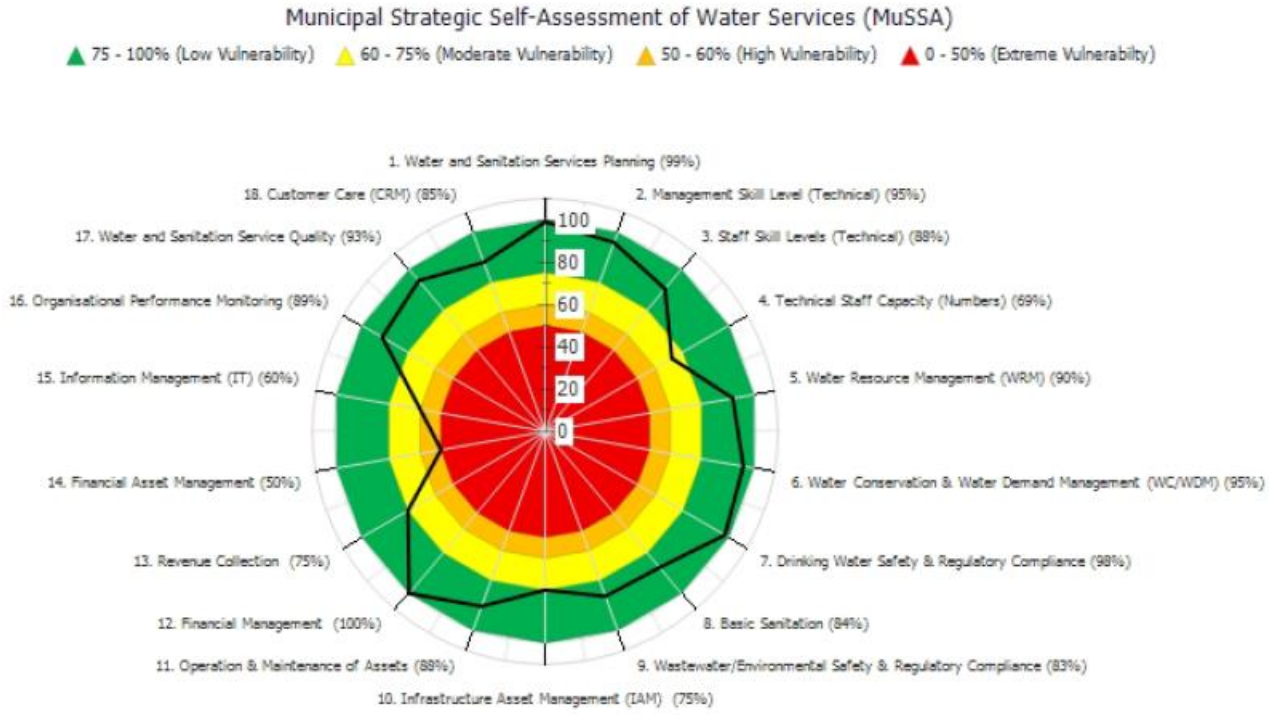



Figure A.8.1: Spider Diagram of the Vulnerability Levels of Overstrand Municipality for 2023

Overstrand Municipality's Vulnerability Index for 2023 was indicated as 0.23 "Low Vulnerability". The only area of concern evident from the 2023 assessment is Financial Asset Management (High Vulnerability, 50.0%).

In line with Overstrand Municipality's Vision – **to be a centre of excellence to the community** – the Municipality has developed a comprehensive customer care strategy. The strategy has now rolled out into consumer services charters for the following departments: electricity, water and sanitation, solid waste management and roads and storm water.

Overstrand Municipality completed a snap community survey during the 2021/2022 financial year. 2 574 People participated in the structured questionnaire. The performance indicated as satisfactory were 67% for water supply and 75% for sewerage provision. The percentage indicates the proportion of those surveyed that believed that the relevant performance was at least satisfactory.

The consumer services charter for water and sanitation includes the following commitments with regard to water services quality and service standards.

Our Purpose: To provide consumers with potable water and appropriate sanitation services.

Water Services Quality:

- We commit ourselves to supply – where the infrastructure allows – water that meets the standards set out for drinking water (SANS 0241) and treat effluent to a standard prescribed by law before disposal thereof into our water sources.
- We have a water quality management programme in terms of which potable water is frequently sampled at various places and tested by an independent accredited laboratory. The results of our treated water and effluent analyses are reported monthly to the Department of Water and Sanitation and thus monitored nationally.
- We strive to obtain Blue Drop status for all our water supply systems and Green Drop status for all our wastewater systems when the National Department continues with these programs.

Vacuum Tanker Service:

- Overstrand Municipality is rendering a vacuum tanker service to properties in Gansbaai, Stanford, Hermanus and Kleinmond areas where no sewer networks are installed.
- Affected clients must monitor the sewer levels of their conservancy tanks and submit a request for service at least 72 hours before capacity of a tank is reached.
- Last-mentioned action will also promote the scheduling of requests (jobs) to be executed by the Administration.

Our Service Standards: We will

- Respond to any reports about poor water quality within 12 business hours;
- Ensure that prolonged water supply interruptions (12 hours) are not more than 3 times per annum;
- Give 2 days prior notice in case of planned interruptions;
- Have an alternative supply of water available to meet basic needs in case of unplanned interruptions that last longer than 24 hours;
- Install new connections within 30 days of receiving the application and all prescribed requirements have been met;
- Clean up sewer overflows due to blockages or system failure within 24 hours;
- Report the spillage of sewerage in a watercourse or sea to the relevant authorities within 24 hours of such occurrence;
- Promote the use of alternative water sources for irrigation and industry. Note that the use of grey water is allowed, but we may inspect such use and impose conditions;
- Upgrade and monitor telemetry systems, to act as an early warning system for e.g. pipe failures, reservoir overflows and sewer pump stations failures;
- Replace old consumer water meters in phases;
- Test water meters on request. If the meter complies with the specifications the consumer will be liable for the cost thereof. If the meter is faulty, there will be no cost for the consumer;
- Monitor and investigate individual municipal users, consumption on a monthly basis;
- Monitor and investigate abnormal high or low water consumption of consumers;
- Ensure that all requests for vacuum tanker services are rendered within 72 hours of receipt of requests by the Administration; and
- Requests for vacuum tanker services received by the Administration after 15:00 to be executed after 16:30 on the same day must receive preference and will be charged at the applicable after hour tariffs.

A comprehensive Customer Services and Complaints system is in place at Overstrand Municipality. The Municipality has maintained a high and a very consistent level of service to its urban water consumers. Help-desks were developed at all the municipal administrations with the objective to assist customers. Disabled people are supported to do business from the help-desks. Requests by the illiterate are being captured and forwarded to the relevant official / section. All municipal buildings are accessible and wheel-chair friendly.

After hour emergency requests are being dealt with by the control room on a twenty-four hour basis. Requests are furthermore captured on an electronic works-order system to ensure execution thereof. All help desks were equipped with Batho Pele picture signage.

The table below gives an overview of logged queries/complaints responded to within 24 hours for the last three financial years by the various Departments (July to June).

**Table A.8.1: Queries/Complaints Responded within 24 Hours by the Various Departments for the last three financial years**

| Department | 2020/2021 | | | 2021/2022 | | | 2022/2023 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total received | Completed within 24 hours | Percentage completed within 24 hours | Total received | Completed within 24 hours | Percentage completed within 24 hours | Total received | Completed within 24 hours | Percentage completed within 24 hours |
| Sewer | 863 | 831 | 96.3% | 867 | 896 | 96.8% | 913 | 940 | 97.1% |
| Tankers | 840 | 697 | 83.0% | 631 | 815 | 77.4% | 647 | 890 | 72.7% |
| Water | 1 192 | 1 144 | 96.0% | 1 292 | 1 339 | 96.5% | 1 260 | 1 314 | 95.9% |

The table below gives a summary of the water and sanitation records that are kept by Overstrand Municipality and the maintenance work that was carried out over the last five financial years for the various areas.

**Table A.8.2: Water and Sanitation Indicators Monitored by Overstrand Municipality with regard to Customer Services and Maintenance Work**

| Service | Definition | All Areas | | | | |
|---|---|---|---|---|---|---|
| | | 18/19 | 19/20 | 20/21 | 21/22 | 22/23 |
| Sewerage connection | Provision of connection or inspection of existing connections | - | - | - | 22 | 101 |
| Smallbore Connections | Test new tanks smallbore | - | - | - | - | - |
| Sewer blockages | Repair blockages on main sewer pipelines up to connection points | 1 823 | 1 828 | 2 032 | 1 904 | 2 006 |
| Other sewer reticulation | Any other sewer reticulation inspections | 152 | 106 | 156 | 204 | 248 |
| PDA toilets repairs | Previously disadvantaged toilets repaired | 188 | 137 | 151 | 165 | 274 |
| Pipeline sewer | Installation of sewer pipelines or repair of pipelines | 148 | 114 | 167 | 209 | 232 |
| Investigate sewer reticulation pump stations | Work carried out at sewer pump stations | 34 | 1 | 1 | 2 | 2 |
| Replace water meters | Replace water meters | 15 | 9 | 25 | 1 782 | 79 |
| Test water meter | Testing of water meter for accuracy | 24 | 20 | 23 | 17 | 11 |
| Disconnect water connection | Disconnect supply | 8 | 6 | 34 | 23 | 17 |
| Install drip system | Installation and inspection of drip systems | 1 | - | 0 | 5 | 1 |
| Inspect water connections | Inspect connections | 38 | 28 | 21 | 21 | 31 |
| New water connections | New water connections | 311 | 171 | 284 | 536 | 678 |
| Other water connections | Inspections and work carried out at water connections | 25 | 61 | 31 | 16 | 64 |
| Pipelines water | Installation or repair of water pipelines | 6 | 28 | 48 | 16 | 9 |
| Pressure | Complaints with regard to pressure in the system | 116 | 81 | 135 | 190 | 158 |
| Water Pump Stations | Inspections and work carried out at water pump stations. | - | 1 | 3 | - | 2 |
| Repair pipe bursts | Repair of burst water pipelines | 433 | 232 | 267 | 333 | 307 |
| Reservoirs | Inspection of reservoirs and work carried out at reservoirs | 4 | - | 7 | 2 | 2 |
| Water Routine Inspections | Any water related inspections | - | - | 0 | 1 | - |
| Water Valves | Inspection of valves and work carried out on valves | 2 | 6 | 14 | 21 | 11 |

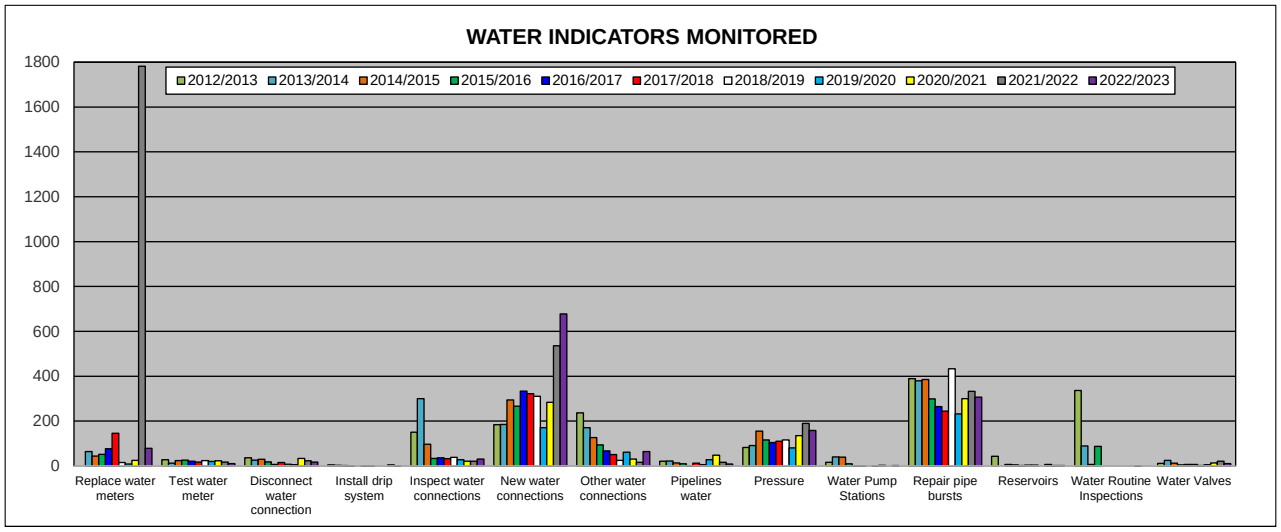



Figure A.8.2: Water Indicators Monitored by Overstrand Municipality

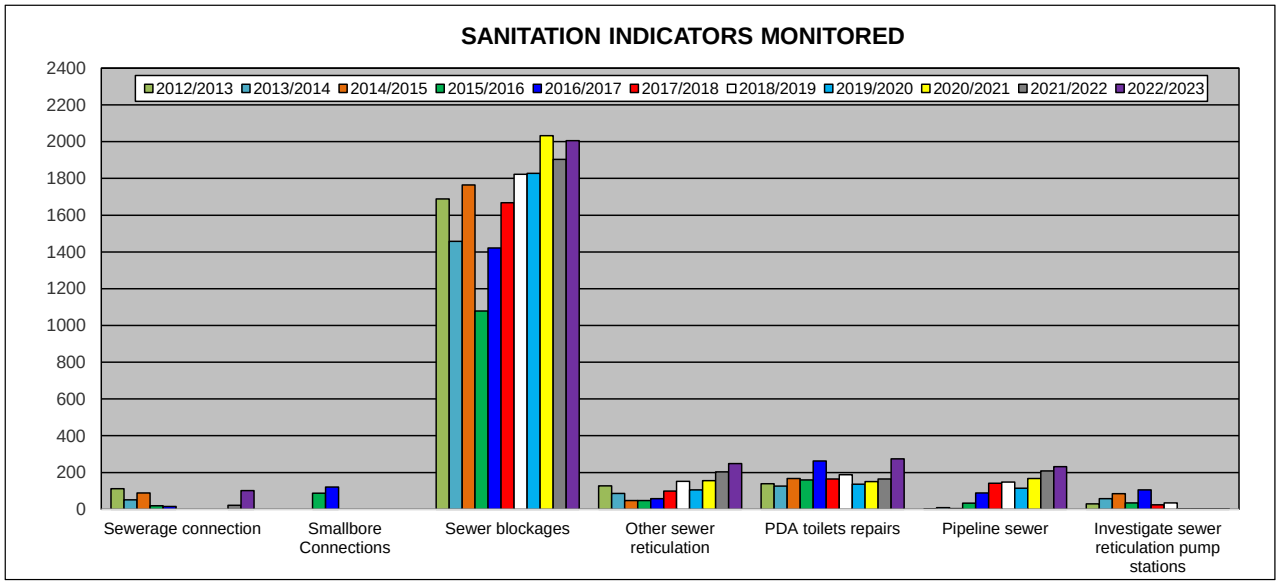



Figure A.8.3: Sanitation Indicators Monitored by Overstrand Municipality

Overstrand Municipality also received their 2023 No Drop Score, as calculated through the 2023 assessment done by the DWS. The 2023 No Drop assessments were performed using a reduced set of No Drop Criteria. These criteria were selected to assess a WSA's understanding of their WC/WDM status, the plans, strategies, budgets, and implementation of remedial projects. Below is a brief description of the Criteria used for the 2023 assessment.

| **Table A.8.3: Description of No Drop Criteria** | |
|---|---|
| Criteria 1 | WC/WDM status quo, plans and strategies, budgets, and implementation of projects (Water Resource Diagram, Water Balance, Council approved WC/WDM strategies and budgets). |
| Criteria 2 | Asset management as it relates to meter replacement. Monitoring, analysis, and action of high loss District Metered Areas (DMAs) in metropolitan municipalities. |
| Criteria 3 | Technical skills of WC/WDM team. |
| Criteria 5 | Compliance and Performance based on the water loss and efficiency Key Performance Indicators (KPI) and year on year improvement there-of. |

The purpose of the 2023 No Drop Assessments was twofold:

- To complete the consultative assessment of the 144 WSAs as per the No Drop Requirements based on the 2021/22 financial year.

- To update the water balance and water loss benchmarking for the 2022/23 financial year. This is reported on in the Status of Water Loss, Water Use Efficiency and Non-Revenue Water in South African Municipalities (2012/13 to 2022/23).

The No Drop results for Overstrand Municipality are presented in the table below.

| **Table A.8.4: No Drop Performance of the Municipality (DWS's 2023 No Drop Report)** | | |
|---|---|---|
| **No Drop Score (2021/2022)** | | **101%** |
| **Criteria** | **Weight** | **Score** |
| 1: WC/WDM Strategy, Planning and Implementation | 45% | 100% (Excellent) |
| 2: Asset Management | 10% | 100% (Excellent) |
| 3: Technical Skills | 10% | 100% (Excellent) |
| 5: Compliance and Performance | 35% | 74% (Average) |
| **Weighted Sub-Total** | | **91%** |
| Bonus | | 10% |
| **Score** | | **101% (Excellent)** |
| Penalty 1: No evidence of approved budget | | 0.0% |
| Penalty 2: Section 82 of the Water Servies Act | | 0.0% |
| **Criteria 1 Sub-Items: WC/WDM Strategy, Planning and Implementation** | | |
| **Item** | | **Score (Max = 1)** |
| 1.1: Water Resources | | 1.0 (Excellent) |
| 1.2: Water Balance | | 1.0 (Excellent) |
| 1.2: WC/WDM Strategy and Business Plan | | 1.0 (Excellent) |
| Penalty 1: No evidence of approved budget | | 0.0 |
| **Criteria 5 Sub-Items: Compliance and Performance** | | |
| **Item** | | **Score (Max = 1)** |
| 5.1: Reticulation Leak Repair | | 0.3 (Poor) |
| 5.2: Physical Water Losses | | 0.9 (Excellent) |
| 5.3: Commercial Water Losses | | 1.0 (Excellent) |
| 5.4: Non-Revenue Water | | 0.8 (Good) |
| 5.5: Water Use Efficiency | | 0.7 (Average) |
| Water Balance Integrity | | **High (Excellent)** |

## DWS's Blue Drop Process

The DWS completed the Blue Drop process for the WSAs in 2023. Blue drop status is awarded to those towns that comply with 95% criteria on drinking water quality management. The blue drop performance of Overstrand Municipality was summarised as follows in the DWS's 2023 Blue Drop Report.

| **Table A.8.5: Blue Drop Performance of the Municipality (DWS's 2023 Blue Drop Report)** | |
|---|---|
| **Municipal Blue Drop Score** | **2011 – 90.56%, 2012 – 96.82%, 2014 - 90.79% and 2023 – 99.99%** |

**Introductions:** The Overstrand Local Municipality (OLM) supplies approximately 109 703 people with potable water through its 8 water supply systems, with a total SIV of 20.33 Ml/day and a combined design capacity of 61.11 Ml/day. The OLM is the Water Services Authority responsible for 100% of the total SIV and sub-contracts the operation of all the treatment plants to VEOLIA (water service provider). The distribution network is solely maintained by the Overstrand Local Municipality:

- The Baardskeerdersbos Supply system abstracts raw water from boreholes for treatment at the Baardskeerdersbos WTP (OLM) which serves 128 people, delivered at an SIV of 37 kl/d.
- The Buffeljags Bay Supply system abstracts raw water from boreholes for treatment at the Buffeljags Bay WTW (OLM) which serves 154 people, delivered at an SIV of 14 kl/d.
- The Buffels River Supply system abstracts raw water from the Buffels River Dam for treatment at the Buffels River WTP (OLM) which serves 3 312 people, delivered at an SIV of 2 020 kl/d.
- The Greater Gansbaai Supply system serves 20 479 people, delivered at a total SIV of 3 743 kl/d. The system abstracts raw water from the Klipgat & De Kelders Grotte Fountain for treatment at the De Kelders WTP (OLM) at an SIV of 763 kl/d, and the Kraaibosch and Franskraal Dams for treatment at the Franskraal WTP (OLM) at an SIV of 2 980 kl/d.
- The Greater Hermanus Supply system abstracts raw water from the De Bos Dam, Gateway Borehole Field (5 boreholes) and Volmoed and Camphill borehole fields (7 boreholes) for treatment at the Preekstoel WTP (OLM) which serves 70 038 people, delivered at an SIV of 11 154 kl/d.
- The Kleinmond Supply system abstracts raw water from the Palmiet River and Dorpsfontein for treatment at the Kleinmond WTP (OLM) which serves 8 279 people, delivered at an SIV of 2 260 kl/d.
- The Pearly Beach Supply system abstracts raw water from the Pearly Beach and Koekemoer Dams for treatment at the Pearly Beach WTP (OLM) which serves 1 263 people, delivered at an SIV of 380 kl/d.
- The Stanford Supply system abstracts raw water from the Stanford Spring Kouevlakte Boreholes for treatment at the Stanford Water Treatment Works (OLM) which serves 6 050 people, delivered at an SIV of 720 kl/d.

**Regulatory Impression:** The Overstrand Local Municipality (OLM) was represented by the Director of Engineering planning and accompanied by two technical managers as well as the operations manager from VEOLIA appointed for the operation of all the treatment works for the OLM. The WSI representatives were very well prepared for the Blue Drop assessment, well informed of all aspects of their systems, and provided an outstanding portfolio of evidence which made the audit process easy and efficient. The OLM had a significant decline in its Blue Drop score history from 93.70% in 2011 to 63.90% in 2014.

The regulator would like to applaud the OLM for their commitment to a high standard of service delivery by taking the initiative in appointing VEOLIA for the operation of their treatment plants. With very-low risk ratings, and excellent compliance for both microbiological and chemical acute health across all their systems it is plain to see the value added by this appointment, which resulted in a praiseworthy overall Blue Drop score of 99.99%.

The WSI completed comprehensive high-quality water safety plans for all their systems including extensive proof of implementation and monthly reports on the performance and O&M expenditures on all their plants. Their operational monitoring, data capturing, and analysis is commendable, and they have well-defined and implemented compliance monitoring and risk-based monitoring programs. The team was questioned on their knowledge of the risks identified in the WaSP and was able to readily identify the major risk in the catchments, at the treatment works and within the network including the mitigation measures and status of implementation thereof.

The WSI provided detailed system assessments informed by high-quality process audits including technical site assessments, water reticulation inspections/assessments, and IWA water balances.

The maintenance teams are sufficiently capacitated and managed with competent staff and term contracts are in place for outsourcing of specialised maintenance.

**Table A.8.5: Blue Drop Performance of the Municipality (DWS's 2023 Blue Drop Report)**

A capital budget was provided together with a five-year forecast. The budget for the audit year was R7.17 million for bulk (delivery and treatment) projects and R30.16 million for network/distribution with respective expenditures of R7.15 million and R29.48 million. The projects were listed as follows:

Capital works executed under bulk contract:

- Security Fencing Water Facilities. Hawston and Pearly Beach Booster WPS (budget R1.0 mil; spent: R0.99 mil)
- Replace Kraaibosch Booster Pump; Replace membranes at Pearly Beach WTW; Replace Membranes at De Bos WTW; Refurbish sand filters; install solar pump and DAF upgrade at Pearly Beach (budget R 2.18 mil; spent: R 2.17 mil)
- Refurbishment of Bulk Water Pipelines (All systems) (budget R1.988 mil; expenditure: R1.986 mil).
- Upgrade access roads to Kleinmond and Buffels River WTW (budget R2.0 mil; expenditure: R1.99 mil)

Capital projects implemented by the Municipality:

- Replacement of Overstrand water pipes (f1/3) - (budget R7.05 mil; expenditure: R7.05 mil).
- Replacement of Overstrand water pipes (f2/3) - (budget R8.00mil; expenditure: R8.00 mil).
- Replacement of Overstrand water pipes (f3/3) - (budget R3.62 mil; expenditure: R3.62 mil).
- Upgrade Hermanus well fields phase 2- (budget R3.59 mil; expenditure: R3.58 mil).
- Water master plan implementation- (budget R7.22 mil; expenditure: R7.22 mil).

**Blue Drop Findings:** The OLM, across all their system, has very few shortcomings.

- The WSI should ensure that all their Water Use Licenses are in place for Raw Water Abstraction.
- The WSI to ensure up-to-date proof of accuracy for flow meters of the Buffeljags WSS.
- Although the WSI are complying with the regulations for Process controllers and supervisors required for this audit period, the WSI should ensure compliance with the newly promulgated requirement of regulation 3630 for future.

**Technical Site Assessment:**

The ***Preekstoel WTP*** was inspected to verify the Blue Drop audit findings and received a technical site assessment score of 94%. The plant is owned by the Overstand LM and operated by a private company, Veolia. The works comprises of 3 plants, a 21 Ml/d conventional treatment, a 7 Ml/d chemical oxidation plant ($KMnO_4$), and a 10 Ml/d biological filter plant for Fe & Mn removal giving a combined treatment capacity of 38 Ml/d. The works was found to be in prime condition, excellently managed and maintained and only required some minor general concrete repairs and general upkeep of the buildings. The inspected raw water pump station requires refurbishment of corroded valves and pipes, and a gland leakage sump / pump should be considered. Due to the chemical oxidation process, non-corrosive materials should be considered in areas. All considered the total VROOM amount comes to R56 679/Ml. The final water quality produced by the treatment plant is excellent with a Microbiological (Acute Health) compliance of 98.53% (samples taken fortnightly), and a Chemical compliance (Acute and Chronic Health) of >99.90% and 99.75% respectively. The Operational, Aesthetic and Risk Def compliance monitoring are also excellent, scoring 99.23%, 99.91% and 99.59% respectively. The team on site is aware of what is listed in the safety plan on risks associated from the catchment to the reticulation system. Workplace satisfaction has been indicated as 90% with training identified as the only aspect to improve.

| Performance Area | | Baardskeerdersbos | Buffeljags Bay | Buffels River | Greater Gansbaai | Greater Hermanus | Kleinmond | Pearly Beach | Stanford |
|---|---|---|---|---|---|---|---|---|---|
| Bulk/WSP | | - | - | - | - | - | - | - | - |
| Capacity Management | 15% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| DWQ Risk Management | 20% | 96.00% | 95.00% | 96.00% | 95.29% | 96.00% | 96.00% | 96.00% | 96.00% |
| Financial Management | 10% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| Technical Management | 20% | 98.50% | 83.50% | 100.00% | 98.81% | 100.00% | 98.50% | 98.50% | 98.50% |
| DWQ Compliance | 35% | 98.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| Bonus | 10% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| Penalties | 10% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Disqualifiers | | None | None | None | None | None | None | None | None |
| **Blue Drop Score (2023)** | **%** | **99.70%** | **98.20%** | **99.99%** | **99.99%** | **99.99%** | **99.99%** | **99.99%** | **99.99%** |
| Blue Drop Score (2014) | % | 63.87% | 71.83% | 87.20% | 88.30% | 96.44% | 86.59% | 87.35% | 90.94% |
| Blue Drop Score (2012) | % | 91.60% | 93.80% | 95.00% | 97.10% | 97.90% | 95.00% | 95.20% | 92.70% |
| Blue Drop Score (2011) | % | 93.70% | 75.40% | 95.10% | 95.10% | 87.20% | 93.10% | 94.30% | 95.20% |
| System Design Capacity | kl/d | 185 | 80 | 5 500 | 8 100 | 38 000 | 5 800 | 1 440 | 1 000 |
| System Available Capacity | kl/d | 185 | 28 | 5 500 | 8 100 | 38 000 | 5 800 | 1 440 | 2 000 |
| System Input Value | kl/d | 37 | 14 | 2 020 | 3 743 | 11 154 | 2 260 | 380 | 720 |
| Capacity Utilization | % | 20.00% | 50.00% | 36.73% | 46.22% | 29.35% | 38.97% | 26.39% | 36.00% |
| Average Daily Consumption | l/p/d | 289 | 92 | 610 | 183 | 159 | 273 | 301 | 119 |
| Resource Abstracted From | | Boreholes | Borehole | Buffels River Dam | Klipgat & De Kelders Grotte Fountain, Kraaibosch & Franskraal Dams | De Bos Dam; Gateway Borehole Field (5 boreholes); Volmoed and Camphill borehole fields (7 boreholes) | Palmiet River and Dorpsfontein | Pearly Beach Dam & Koekemoer Dam | Stanford Spring Kouevlakte Boreholes |
| Microbiological Compliance | % | 98.70% | 99.99% | 99.99% | 99.05% | 98.53% | 99.99% | 97.30% | 98.77% |
| Chemical Health Compliance | % | 98.51% | 98.28% | 99.47% | 98.85% | 99.76% | 98.73% | 98.80% | 98.11% |
| Risk Defined Compliance | % | 97.97% | 98.04% | 96.79% | 99.70% | 99.59% | 99.71% | 99.43% | 99.05% |
| VROOM | Rand | - | - | R311 735 | - | R2 153 802 | - | - | - |
| BDRR 2023 | % | 9.57% | 14.21% | 15.08% | 19.97% | 18.44% | 14.53% | 13.39% | 15.98% |
| BDRR 2022 | % | 12.80% | 16.20% | 16.70% | 17.00% | 20.70% | 16.20% | 13.80% | 17.80% |

The average daily consumption (l/p/d) for the last four financial years are summarised in the table below.

**Table A.8.6: Average Residential Daily Consumption (l/p/d) for the Last Four Financial Years.**

| Distribution System | 2019/2020 | | | 2020/2021 | | | 2021/2022 | | | 2022/2023 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Estimated Permanent Population | Aver. Daily Billed Metered Res. Consump-tion (kl) | Estimated Permanent Population | Aver. Daily Billed Metered Res. Consump-tion (kl) | Estimated Permanent Population | Aver. Daily Billed Metered Res. Consump-tion (kl) | Estimated Permanent Population | Aver. Daily Billed Metered Res. Consump-tion (kl) | Aver. Daily consumption (l/p/d) | Estimated Permanent Population | Aver. Daily Billed Metered Res. Consump-tion (kl) | Aver. Daily consumption (l/p/d) |
| Buffels River | 3 180 | 797 | 3 180 | 797 | 3 180 | 797 | 3 449 | 931 | **270** | 3 593 | 893 | **249** |
| Kleinmond | 8 077 | 1 063 | 8 077 | 1 063 | 8 077 | 1 063 | 8 486 | 1 076 | **127** | 8 698 | 1 089 | **125** |
| Greater Hermanus | 67 054 | 6 376 | 67 054 | 6 376 | 67 054 | 6 376 | 73 154 | 7 113 | **97** | 76 410 | 7 067 | **92** |
| Stanford | 5 894 | 459 | 5 894 | 459 | 5 894 | 459 | 6 210 | 487 | **78** | 6 375 | 482 | **76** |
| Greater Gansbaai | 19 524 | 1 720 | 19 524 | 1 720 | 19 524 | 1 720 | 21 480 | 1 778 | **83** | 22 531 | 1 829 | **81** |
| Pearly Beach | 1 237 | 239 | 1 237 | 239 | 1 237 | 239 | 1 290 | 266 | **206** | 1 317 | 263 | **200** |
| Baardskeerdersbos | 127 | 20 | 127 | 20 | 127 | 20 | 128 | 19 | **148** | 129 | 19 | **147** |
| Buffeljags Bay | 153 | 8 | 153 | 8 | 153 | 8 | 155 | 6 | **39** | 155 | 7 | **45** |
| **All Systems** | **105 246** | **10 682** | **105 246** | **10 682** | **105 246** | **10 682** | **114 352** | **11 676** | **102** | **119 208** | **11 649** | **98** |

Note: The average residential billed metered consumption in the above table is for the period July to June each financial year, excluding the period November to February

## DWS's Green Drop Process

The DWS completed the new Green Drop assessment for the WSAs in 2021 and the results were received early in 2022. Green drop status is awarded to those WSAs that comply with 90% criteria on key selected indicators on wastewater quality management. The green drop performance of Overstrand Municipality is summarised as follows in the DWS's 2022 Green Drop Report.

| **Table A.8.7: Green Drop Performance of the Municipality (DWS's 2022 Green Drop Report)** | |
|---|---|
| **Average Green Drop Score** | **2009 – 63%, 2011 – 89%, 2013 - 89%, 2021 – 89%** |

**Regulatory Impression:** Overstrand Municipality and WSP Veolia delivered a sterling performance that was awarded with an overall 89% Green Drop score. The municipality continues to maintain a remarkable record of 89% over 10 years, marked by a highlight committed, competent team. In addition, Gansbaai, Hermanus and Stanford were serious contenders for Green Drop Certification, which regrettably had to be waived due to not achieving excellent standards (>90%) on their final microbiological and/or chemical qualities. The WSA should be able to attain Certification status in 2023 if this matter can be resolved.

The Regulator is impressed with the level of preparation and professional conduct during the audit, represented by managers in various roles, supported by Veolia Water. All required information was loaded onto IRIS for various KPAs prior which ensure a seamless preliminary assessment. The team then used the main audit and verification audit events to maximise their scores by providing clarification and further evidence on sludge classification (landfilling), stormwater- and water demand management and capital projects. The striking performance and sustained services are not surprising if noting the strength of the engineering, technical, scientific, and laboratory competence, supported by committed senior management and municipal leadership. Perfect score (100%) were achieved for KPA Capacity Management for the expertise, supported by comprehensive operation, maintenance and monitoring plans and records, including financials and energy management. Human capacity is optimised via the adoption of automation and telemetry. This aspect must be taken up with the Regulator to align with capacity requirements to ensure that any risks associated with such innovations are managed. Flow monitoring is in place for inflow and outflow, and online monitoring for night flows (Mycity) is in place. Energy optimisation via LED is standard procedure and $CO_2$ equivalents are calculated to monitor the benefit. Well done. These best practices set a high standard for wastewater services in South Africa.

In a nutshell, the municipality performed exceptionally well in all KPA (>90%), with the exception of Effluent and Sludge Compliance. Areas for improvement include the laboratory turn-around time, monitoring of dedicated sludge streams and performance evaluation against design expectations, flow meter calibration / verification, sludge classification according to the WRC guidelines (noting new landfill regulations).

The adoption of site specific $W_2$RAP process is an encouraging; notably that risk management is informed and influenced by a process audit, sewer master plan and supported by budget for implementation. Improvement should focus on having (independent) Risk Reviews every 6 months to monitor (quantify) risk movement. The Regulator congratulates Overstrand and hope the 2023 audit cycle will result in an exponential improvement until Green Drop excellence is achieved for all six systems.

**Green Drop Findings:**

1. All WWTW achieved a full score for capacity management, thereby verifying the availability of registered and qualified process controllers, maintenance teams (inhouse and outsourced services), engineering, technical (technicians and technologists) and scientific expertise tied to wastewater management and asset planning.
2. $W_2$RAPs are in place and implemented and its impact monitored through operational monitoring and compliance monitoring.
3. All systems presented financial evidence viz. allocated budgets and expenditure, treatment cost (R/m³ treated), energy costs (R/kWh) and contracts for external services.
4. Six of six WWTWs logged full records for compliance monitoring, including biomonitoring.
5. Operational monitoring with online meters for most process streams are implemented. Gaps are still noted with regard to sludge monitoring of dedicated streams, e.g. in and output from settlers and thickeners, anaerobic digesters, belt presses, drying beds, etc.
6. High quality reports were presented for process audits, sewage inspection reports and sewer master planning.
7. Bylaws are updated and enforced.
8. Twelve months of data uploaded on IRIS for all six WWTWs, supported by relevant site-specific water use authorisation and general authorisations.
9. Sludge classification for landfill disposal is done, but not complemented by WRC classification – the latter not only intending to guide disposal but also to monitor the quality of biosolids produced by the site.
10. No penalties and no directives were issued for any systems.
11. No plants in the critical or high-risk positions.
12. Capital projects are part of a three-year plan, with 2021 projects listed as follows:
    - R6 700 000: Sewer network extension in Gansbaai WWTWs and associated infrastructure
    - R16 154 000: Hawston WWTW refurbishment on civil and mechanical equipment's for various unit processes.
    - R8 836 000: Hermanus WWTW refurbishments and associated infrastructure.
    - R1 645 000: Kleinmond WWTW refurbishments and associated infrastructure.
    - R1 797 000: Stanford WWTW refurbishments and associated infrastructure.

| GREEN DROP REPORT CARD | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Key Performance Area** | **Weight** | **Gansbaai** | **Hawston** | **Hermanus** | **Kleinmond** | **Pearly Beach** | **Stanford** |
| A: Capacity Management | 15% | 100% | 100% | 100% | 100% | 100% | 100% |
| B: Environmental Management | 15% | 91.0% | 85.0% | 85.0% | 86.0% | 98.8% | 92.0% |
| C: Financial Management | 20% | 98.0% | 98.0% | 98.0% | 78.0% | 97.5% | 98.0% |
| D: Technical Management | 20% | 97.5% | 97.5% | 97.5% | 93.5% | 97.1% | 97.5% |
| E: Effluent & Sludge Management | 30% | 70.0% | 50.0% | 85.0% | 64.0% | 62.5% | 50.0% |
| F: Bonus | | 94.0% | 94.0% | 94.0% | 94.0% | 56.0% | 94.0% |
| G: Penalties | | 0.0% | 0.0% | 0.0% | 0.0% | -25.0% | 0.0% |
| H: Disqualifiers | | None | None | None | None | None | None |
| **2021 Green Drop Score** | | **89% - 96%** | **89%** | **89% - 96%** | **88%** | **88%** | **89% - 90%** |
| **2013 Green Drop Score** | | **92%** | **90%** | **91%** | **78%** | **NA** | **93%** |
| **2011 Green Drop Score** | | **76%** | **88%** | **92%** | **83%** | **NA** | **83%** |
| **2009 Green Drop Score** | | **66%** | **57%** | **66%** | **66%** | **NA** | **61%** |
| System Design Capacity (Ml/d) | | 2.000 | 1.000 | 12.000 | 2.000 | 0.259 | 1.200 |
| Design Capacity Utilisation (%) | | 43% | 61% | 54% | 76% | 31% | 89% |
| Resource Discharged into | | Irrigation Sports Complex | Maturation Pond into Wetland | Ocean and Irrigation | Reed-bed / wetland area lined to sea | An aquifer | Constructed reed bed to Klein River |
| Microbiological Compliance (%) | | 68% | 80% | 87% | 91% | 100% | 82% |
| Chemical Compliance (%) | | 86% | 74% | 98% | 51% | 58% | 78% |
| Physical Compliance (%) | | 95% | 62% | 100% | 88% | 27% | 82% |
| **Wastewater Risk Rating (CRR% of CRR max)** | | | | | | | |
| **2011 CRR (%)** | | **31.0%** | **33.0%** | **35.0%** | **44.0%** | **NA** | **44.0%** |
| **2013 CRR (%)** | | **35.3%** | **29.0%** | **45.0%** | **47.0%** | **NA** | **29.0%** |
| **2021 CRR (%)** | | **41.2%** | **52.9%** | **36.4%** | **47.1%** | **52.9%** | **64.7%** |

The Hermanus WWTW was inspected to verify the Green Drop audit findings (Hermanus WWTW Technical Site Assessment Score: 74%)

- The network and pumpstation was in good condition, noticed for routine maintenance and adequate response to sewage blockages.
- Trespassing seems to be a risk at the WWTW, compounded by land invasion close to the site. Neighbours to the WWTW resort to jumping over the fence to access their residence. Overstrand has plans to raise the wall to secure the facility and mitigate security risks.
- Plant infrastructure is aging; however, its lifespan is extended via preventative maintenance strategies. All equipment is functional.
- The site office displays certificates for PCs and WWTW – a satisfactory working environment is observed.
- Operational monitoring, daily logbook or maintenance records were in place.
- Safety signs were displayed at various unit processes i.e. chlorination, belt presses, lime storage, reactors, etc.
- Parts of the site was untidy and not evident of good groundskeeping – used as storage whilst network upgrades / refurbishments underway. Good housekeeping was evident at the maturation ponds.
- Sludge drying beds were not well kept and used only during emergency. Belt presses are used for primary sludge handling.
- Veolia Water developed a reactor control- and sludge management plan.
- All required documents were presented on site including comprehensive O&M manual with manufacturers specs, PFD and model of plant and record of all maintenance issues (job cards, works orders, tracking of outstanding jobs).

Overstrand Municipality also received their 2023 Green Drop Risk Ratings, as calculated from the 2023 assessment done by the DWS.

**Table A.8.8: Green Drop Risk Rating of the Overstrand Municipality (DWS's 2023 Green Drop Progress Report)**

| CRR 2023 (%CRR/CRRmax) | 51.3% |
|---|---|

**Introduction:**

Overstrand LM has six (6) WWTWs which are owned by the WSA, and operated and maintained by Veolia Southern Africa, a private company. The systems design capacities range in size, from 250 -12 000 kl/day.

**Regulator's Comments:** The Overstrand LM has impressed with their preparedness for the GD PAT. It is commendable to note that all the WWTWs design information is available (Criteria A) and that all WWTWs are operating well within their design capacities (Criteria B). Kleinmond is running at 82.4% of capacity however it is encouraging to note than there is a refurbishment and upgrade planned at this site along with the sewer network extension. In addition to this capital work, the Gansbaai region is upgrading the sewer networks and supply lines while significant refurbishment is noted at Hermanus with a new inlet screw pump station belt press and RAS upgrade. Therefore, all the systems have provided sufficient supporting data to allow for the calculation of the Cumulative Risk Rating (CRR). Many of the sites have improved their CRR scores from 2022 to 2023 except for Hawston and Hermanus where the scores have increased slightly. The upcoming refurbishment of the Hermanus site will improve the status of the CRR score for the Hermanus WWTW.

Effluent compliance is generally good at all systems although the Hawston site has a total of 6 non-compliant parameters measured which requires technical intervention to improve the situation. The WSA is applauded for the technical skills and Supervisor competence evident at all sites which is indicative of good planning and infrastructure maintenance. There are some gaps in the availability of technical and operational staff which should be prioritized to ensure effective operation of the WWTWs, especially evident at Hermanus and Pearly Beach where process controller and technical skill availability is lower than desired. The WSA must address the final effluent non-compliance in the Hawston WWTW to improve the CRR scores. The WSA is encouraged to work on decreasing the risks by reviewing their $W_2$RAP documentation to address all risks as well as ensure that the GDIP is fully implemented in order to reduce the CRR score for all systems, by targeting the poor performing KPIs, especially effluent quality.

All Overstrand systems have $W_2$RAPs in place and the WSA is encouraged to continually update and implement the available $W_2$RAPs as they are a vital management tool for effective wastewater management. The WSA has GDIPs in place for all systems and the WSA are evidently making sure that the wastewater generated in the Overstrand LM is managed by competent staff with budgets in place for refurbishment and upgrade work. Overstrand LM is commended for their good performance during this GDPAT, and the regulator will be looking forward to their future performance during the next round of GD Audits.

| Risk Assessment Areas | Weight | Gansbaai | Hawston | Hermanus | Kleinmond | Pearly Beach | Stanford |
|---|---|---|---|---|---|---|---|
| Class of Works | | D: Approved | D: Approved | C: Approved | D: Approved | E: Approved | D: Approved |
| Treatment Technology | | Activated Sludge | Activated Sludge | Activated Sludge | Activated Sludge | Oxidation ponds | Activated Sludge |
| **A: Total Design Capacity** | Kl/d | 2 000 | 1 000 | 12 000 | 2 000 | 250 | 1 200 |
| **B: Operational Capacity (% inflow / design)** | % | 41.2% | 61.0% | 54.1% | 82.4% | 41.6% | 70.8% |
| **C: Effluent Quality Non-compliance** | # | 2 | 6 | 3 | 3 | 3 | 1 |
| % Microbiological Compliance | % | 76.5% | 86.7% | 78.6% | 91.7% | 100.0% | 100.0% |
| % Physical Compliance | % | 100.0% | 63.4% | 100.0% | 91.2% | 50.0% | 97.2% |
| % Chemical Compliance | % | 84.2% | 34.6% | 90.9% | 35.3% | 63.9% | 100.0% |
| **D: Technical Skills Compliance** | % | 100.0% | 100.0% | 77.8% | 100.0% | 83.3% | 100.0% |
| Process Controller Compliance | % | 100% | 100% | 33% | 100% | 50% | 100.0% |
| Supervisor Compliance | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Maintenance Team Compliance | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| **CRR (2023)** | % | **31.3%** | **62.5%** | **57.1%** | **43.8%** | **50.0%** | **29.4%** |
| **CRR (2022)** | % | **41.2%** | **52.9%** | **36.4%** | **47.1%** | **52.9%** | **64.0%** |
| **CRR (2013)** | % | **35.3%** | **29.0%** | **45.0%** | **47.0%** | **-** | **29.0%** |
| **CRR (2011)** | % | **31.0%** | **33.0%** | **35.0%** | **44.0%** | **-** | **44.0%** |
| $W_2$RAP Status: 2022 Green Drop Report | | Final document (approved by Council) | Final document (approved by Council) | Final document (approved by Council) | Final document annual review no. 3 | Draft document (unapproved by Council) | Final document (approved by Council) |

| Table A.8.8: Green Drop Risk Rating of the Overstrand Municipality (DWS's 2023 Green Drop Progress Report) | | | | | | | |
|---|---|---|---|---|---|---|---|
| $W_2$RAP Status: 2023 Green Drop PAT | | Final document annual review no. 3 | Final document (approved by Council) | Final document (approved by Council) | Final document annual review no. 3 | Final document annual review no. 1 | Final document annual review no. 3 |
| Capital & Refurbishment Projects (Rand) | | 18 200 479 | 0 | 14 675 201 | 2 735 289 | 0 | 0 |
| Description of Capital & Refurbishment Projects | | 1. Masakhane Bulk Sewer Supply Line.<br>2. Gansbaai CBD Sewer Network Extension. | No projects for this financial year, but refurbishments and upgrades has been planned for 2024/25 and 2025/26. | 1) New Inlet Screw Pump station.<br>2) New Belt Press.<br>3) RAS Upgrade. | 1) Kleinmond WWTW Refurbishment & Upgrade.<br>2) Kleinmond Sewer Network Extension. | Non-Available. No capital projects were undertaken for the 2022/23 financial year. | No capital projects undertaken for the 2022/23 financial year. |
| 2022 GD Score | % | 89.0% | 89.0% | 89.0% | 88.0% | 88.0% | 89.0% |
| GD Improvement Plan (GDIP) | Y/N | Yes | Yes | Yes | Yes | Yes | Yes |
| Corrective Action Plan (CAP) | Y/N | No | No | No | No | No | No |

## SECTION B: STATE OF WATER SERVICES PLANNING

Overstrand Municipality updated their WSDP during the 2021/2022 financial year. The new WSDP is for the 2022-2027 five-year WSDP cycle and was approved by Council on the 31st of May 2022. The WSDP IDP Water Sector Input Report was also compiled as part of the updating of the WSDP.

The Municipality updated their existing Water Supply and Sanitation Services By-law during the 2021/2022 financial year. The updated Water Supply and Sanitation Services By-law was advertised for public comment, where after it was finalised and gazetted.

The Municipality annually compile the WSDP Performance- and Water Services Audit Report, which is submitted to Council with the Annual Report. The WSDP Performance- and Water Services Audit Report gives an overview of the implementation of the Municipality's previous year's WSDP and can be seen as an annexure to Overstrand Municipality's Annual Report. The 2022/2023 WSDP Performance- and Water Services Audit Report will be approved by Council as part of the Municipality's Annual Report.

Water Safety Plans are in place for the distribution systems and treatment facilities. $W_2$RAPs are also in place for all the WWTWs and the sewer drainage networks.

Water Safety Plans are a form of water quality assurance through a comprehensive risk assessment and risk management approach that encompasses all steps in water supply from catchment to consumer. The multiple barrier principle implies that actions are required at all stages in the process of producing and distributing water in order to protect water quality.

The $W_2$RAP is an all-inclusive risk analysis tool by which risks associated with the management of collection, treatment and disposal of wastewater are identified and rated (quantified). The $W_2$RAP is used by Overstrand Municipality to manage the identified risks according to its potential impacts on the receiving environment / community / resources.

Detail WWTW Process Audits were compiled for all the WTWs and the WWTWs (June 2022).

The Water and Sewer Master Plans were updated during the 2020/2021 financial year and were incorporated into the WSDP. The Water and Sewer Master Plan process entails the establishment of computer models for the water systems and the sewer systems in Overstrand Municipality, the linking of these models to the stand and water meter databases of the treasury financial system, evaluation and master planning of the networks and the posting of all the information to IMQS. The Water and Sewer Master Plans lists the analyses and findings of the study on Overstrand Municipality's water distribution and sewer drainage systems. All forward planning for water and sanitation services and water and sewerage infrastructure is guided by the Water and Sewer Master Plans.

The existing Water and Sewer Master Plans, which were available for inclusion in Overstrand Municipality's WSDP, were as follows:

- Water Master Plan, Overstrand Municipality, June 2021, GLS Consulting
- Sewer Master Plan, Overstrand Municipality, June 2021, GLS Consulting

The following water and sanitation related reporting and investigations were successfully completed during the 2022/2023 financial year.

- The Water Services Audit Report for 2022/2023 was finalised and will be approved by Council as part of the Annual Report. The NRW water balance models were updated for each of the distribution systems (Up to the end of June 2023) as part of the Water Services Audit Process.
- Overstrand Municipality continues with the implementation of their Drinking Water Quality and Effluent Quality Sampling Programmes (Both Operational and Compliance Monitoring). Sample results are loaded monthly onto DWS's IRIS. All the WTWs and WWTWs are registered on the IRIS website. The quality of the treated effluent re-used for irrigation purposes from the Hermanus- and Gansbaai WWTW is also sampled monthly.
- Overstrand Municipality is continuing with their Groundwater Monitoring and Management Programmes.

- The Asset Register was updated to include all the water and sewerage capital projects completed during the 2022/2023 financial year.
- Plant and Process Audits were done for the Kleinmond-, Hawston-, Hermanus-, Gansbaai- and Pearly Beach WWTW.
- The following Technical investigations were completed during the 2022/2023 financial year:
  - Water Source Development and Management Plan for the Overstrand Local Municipality. Baardskeerdersbos Wellfield Annual Monitoring Report, Umvoto, October 2021 to September 2022.
  - Gansbaai Groundwater Monitoring at the WWTW and Communal Sports Centre. Gansbaai Annual Groundwater Monitoring Report, Umvoto, October 2021 to September 2022.
  - Water Resource Development and Management Plan for the Hermanus Area. Gateway, Camphill and Volmoed Wellfields Annual Monitoring Report, Umvoto, October 2021 to September 2022.
  - Water Resource Development and Management Plan for the Stanford Area. Kouevlakte Wellfield Annual Monitoring Report, Umvoto, October 2021 to September 2022.
  - Overstrand Water and Wastewater Treatment Plants. Various Site Investigation Report, Zutari, November 2022.
  - Basic Assessment Report for the Hemel and Aarde Wellfield Augmentation, Umvoto, April 2023.
  - Technical Report: Upgrading of the Kleinmond WWTW, Zutari, June 2023.
  - Report on the technical and environmental assessment of the Onrus Main Sewerage Pumpstation, Lyners, June 2023.
  - Energy Efficiency and Alternative Energy Proposals for Preekstoel WTW and Hermanus WWTW, Veolia, April 2023.

Overstrand Municipality completed the following key water and sewerage capital infrastructure projects during the 2022/2023 financial year.

- Various sections of the water reticulation networks and sewer drainage networks and pump stations were upgraded as recommended in the Water and Sewer Master Plans. Sections of the old water reticulation networks were also replaced (Implementation of the Pipeline Replacement Programme).
- The Municipality continued with the Hermanus Wellfield Phase 2 upgrade project, including the basic assessment process for the upgrade of the wellfields in the Hemel-en-Aarde valley.
- The Municipality continued with the provision of communal water and sanitation services for the informal areas.
- The RO tank at the De Kelders WTW was replaced and the filters at the Franskraal WTW were refurbished.
- The MCC Panel of the Kraaibosch Dam raw water pump stations was refurbished.
- The Municipality completed the upgrade of the access roads to the Kleinmond and Buffels River WTWs.
- New fencing was installed at some of the water and sewerage infrastructure facilities to improve security.
- The Gansbaai sewer network was extended.
- A new Archimedes Screw pumpstation was completed at the Hermanus WWTW inlet works.
- The Municipality started with the refurbishment and upgrade of the Kleinmond WWTW.
- The rerouting of the treated effluent irrigation pipeline from the Hermanus WWTW was completed.

## SECTION C: WATER SERVICES EXISTING NEEDS PERSPECTIVE

The existing needs perspective as presented below was developed through a systematic and comprehensive review of the water services function in terms of the WSDP Guide Framework. The output from this process is presented below and includes compliance assessment in terms of:

- The intervention required to address the gap;
- The proposed solution to address the gap; and
- The Future plan / identified project that would meet the requirement.

The water services situation analysis prompted the development of problem statements which formed the input for the development of the water services objectives and strategies which follows in Section D.

Overstrand Municipality's **Strategic Goals** are indicated below (2023/2024 IDP):

- The provision of democratic, accountable and ethical governance.
- The provision and maintenance of municipal services.
- The encouragement of structured community participation in the matters of the municipality.
- The creation and maintenance of a safe and healthy environment.
- The promotion of tourism, economic and social development.

The Breede-Olifants Catchment Management Agency was established by extending the boundary and area of operation of the Breede-Gouritz CMA Water Management Area (Government Gazette No.47559, 25 November 2022).

The area of operation of the Breede-Olifants Catchment Management Agency includes the previous Breede-Gouritz and Berg-Olifants water management areas as pronounced in the National Water Resource Strategy second edition, 2013.

A Catchment Management Strategy is not yet available for the Breede-Olifants Water Management Area (BOWMA), but the Catchment Management Strategy of the former Breede-Gouritz Water Management Area (BGWMA), July 2017, included the following Vision and three Strategic Focus Areas.

**"Healthy water resources, for all, forever,"**

- **Strategic Area 1: Protecting for People and Nature:** Focusing primarily on management of streamflow, water quality, habitat and riparian zones related to riverine, wetland, estuarine and groundwater resources, to maintain important ecosystem goods and services and biodiversity.
- **Strategic Area 2: Sharing for Equity and Development:** Focusing primarily on management of water use from surface and groundwater resources through the operation of infrastructure, in order to provide water for productive and social purposes within and outside of the WMA.
- **Strategic Area 3: Co-operating for Compliance and Resilience:** Focusing primarily on co-operation and management of institutional aspects to enable and facilitate the protection and sharing of water, including the more co-operative stakeholders, partnerships, information sharing, disaster risk and adaptation elements of the strategy.

## TOPIC 1: SETTLEMENTS AND DEMOGRAPHICS

| Topic C.1.1: Settlement Demographics and Public Amenities | | | | | | |
|---|---|---|---|---|---|---|
| **Section** | **Intervention Required** | **% (1)** | **Solution description as identified by Master Plan** | **% (2)** | **Is there an Existing project/activity addressing this problem?** | **Current Demand Overall Scoring % (3)** |
| Settlements Summary | Yes | 100.0 | All resources, especially surface water resources, need to be re-evaluated, especially where demand is close to the safe one in twenty-year yields. Establish assurance of supply levels of all water sources. Continue with the implementation of the SDF and Growth Management Strategy for each of the towns and ensure that new developments are in line with these priority action plans. Ensure that the provision of bulk water and sewerage infrastructure are aligned with the Housing Strategy and that housing projects only continue once the required bulk water and sewerage infrastructure are in place. | 100.0 | Yes | 92.9 |
| Summary by Settlement Group | No | 100.0 | | | | 100.0 |
| Assessment Score by Settlement Type | No | 100.0 | | | | 100.0 |
| Amenities Summary | No | 100.0 | | | | 100.0 |

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?
(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem? Does this current listed project/activity address the problem totally? Project/Activity approved by Council as part of WSDP database? Approved by Council in project activity database and part of 5yr IDP cycle projects? Project/Activity listed in 3yr MTEF Cycle?

The seven key strategies that should underpin all spatially related decision making in the Overstrand Municipality's Management Area, as included in Overstrand Municipality's Spatial Development Framework (May 2020), are as follows:

| Table C.1.2: Seven Key Strategies that should Underpin all Spatially Related Decision Making (SDF) | |
|---|---|
| **Spatial Development Strategy** | **Strategy** |
| Managing Population Growth and In-migration | Adopt a selective "supply driven" approach by only providing for housing growth and related community facilities in the urban areas where the highest potential for sustained economic growth exists. |
| Mixed Use Densification | Implement a bold mixed use densification policy which earmarks densification areas within urban settlement in order to accommodate growth in the Overstrand based on the extremely limited amount of greenfield land available for development. |
| Housing Strategy | Eliminate the current housing need based on the revision of the Overstrand Human Settlement Plan. The key principle of this plan being the establishment of human settlements which include the required community facilities, are located in proximity to economic opportunities etc. |
| Bulk Service Infrastructure Provision | Compile a co-ordinated bulk infrastructure supply provision policy, which prioritises the implementation of bulk infrastructure based on the municipality spatial development concept – Growth Management Framework. |
| Initiate – Place specific key economic development projects / drivers | Stimulate economic growth and development linked to the comparative locational advantage. Municipality must identify and actively facilitate key catalyst projects in conjunction with strategic partnerships with business / investors. |
| Priority areas for biodiversity conservation | All public owned land (including State property, Municipal and Provincial property) that is of high conservation importance is to be included in a formal municipal protection area network. The mechanism being to establishing contract nature reserves negotiated in conjunction with the WCNCB conservation stewardship programme, providing legally binding guidelines for land use. |
| Rural development strategy | Rural development to be informed by the DEADP Rural Development Guidelines (2017), where applicable. |

The concept of using a Growth Management Strategy to promote the long-term sustainability of the municipal area and its sub-region is strongly supported by the Overstrand Municipality's Council. The Growth Management Strategies for the various areas identifies and discusses the factors that affect densification within the context of the Overstrand Municipal Area and include the proposed strategies and associated policies.

Recommendations were also made in the Growth Management Strategies regarding the proposed densification priority areas for the next five years and the strategic actions required for the implementation thereof.

A Housing Strategy is in place and the main vision of the Strategy is to not only eradicate the current housing backlog, but to develop and plan for future integrated communities and settlements that would be able to sustain the growing needs for housing in such a way that all people will benefit from the housing developments.

The table below gives an overview of the Objectives of the Housing Strategy, as well as the Housing Programmes and Related Projects (2023/2024 IDP).

**Table C.1.3: Objectives of the Housing Strategy and Housing Programmes and Related Projects**

| Objectives | Housing Programmes and Related Projects |
|---|---|
| • Upscale provision and implementation of serviced sites.<br>• Increasing densities of new human settlement developments on well-located land.<br>• Reduce bulk infrastructure as a constraint to human settlement development.<br>• Acquiring well-located land for well-planned integrated Human Settlements.<br>• Provide a fair allocation of housing opportunities.<br>• Increase beneficiary involvement in the development of housing opportunities.<br>• Enhancing supply of new rental housing opportunities and encourage improved property management and rental stock.<br>• Increase sustainable resource use by exploring alternative technologies and building methodologies.<br>• Implement Overstrand Municipal Growth Management Strategy. | • Integrated Residential Development Programme (IRDP)<br>• Upgrading of Informal Settlements<br>• Upgrading of Informal Settlement Programme (UISP)<br>• Provision of Economic and Social Facilities<br>• Institutional Subsidies<br>• Enhanced People's Housing Process (EPHP)<br>• Emergency Housing Programme (EHP)<br>• Social Housing Programme in Restructuring Zones<br>• Social Housing Programme<br>• Community Residential Units (CRU)<br>• Finance Linked Individual Subsidy Programme |

A detailed action plan has been set in place to reduce the backlog and address the current and future housing need. The Housing Strategy Five-Year Plan will incorporate several housing programmes, each focused on and addressing different needs. The Overstrand Municipality has compiled a comprehensive 5 Year Human Settlement Programme to guide and improve housing development and is specifically focused on delivery within the Municipality. The Programme is updated and revised on a six-monthly basis due to the rapid changing environment in which it operates. Funding allocations from the Provincial Department of Housing are amended from time to time and subsidy amounts are also revised from time to time.

## TOPIC 2: SERVICE LEVELS

**Topic C.2.1: Service Levels Profile**

| Section | Intervention Required? | % (1) | Solution description as defined by topic situation assessment | % (2) | Is there an Existing project/activity addressing this problem? | Current Demand Overall Scoring % (3) |
|---|---|---|---|---|---|---|
| Direct Backlog Water | Yes | 100.0 | Assist private landowners as far as possible with the provision of basic water services to all the households in the Municipality's Management Area with existing water service levels below RDP standard, once practical guidelines and funding become available from the DWS. | 100.0 | No | 28.6 |
| Direct Backlog Sanitation | Yes | 100.0 | Assist private landowners as far as possible with the provision of basic sanitation services to all the households in the Municipality's Management Area with existing sanitation service levels below RDP standard, once practical guidelines and funding become available from the DWS. | 100.0 | No | 28.6 |
| Water Services Infrastructure Supply Level Profile | No | 100.0 | | | | 100.0 |
| Water Reliability Profile | Yes | 100.0 | Continue with the provision of communal services in informal areas in order to ensure that the ratio of number of households per facility complies with the target of 25 or less households per tap.<br>Assist private landowners as far as possible with the provision of basic water services to all the households on the farms in the rural areas with existing water service levels still below RDP standard, once practical guidelines and funding become available from DWS. | 100.0 | Partially | 92.9 |

| Topic C.2.1: Service Levels Profile | | | | | | |
|---|---|---|---|---|---|---|
| **Section** | **Intervention Required?** | **% (1)** | **Solution description as defined by topic situation assessment** | **% (2)** | **Is there an Existing project/activity addressing this problem?** | **Current Demand Overall Scoring % (3)** |
| Sanitation Service Infrastructure Supply Level Profile | No | 100.0 | | | | 100.0 |
| Sanitation Reliability Profile | Yes | 100.0 | Continue with the provision of communal services in informal areas in order to ensure that the ratio of number of households per facility complies with the target of 5 or less households per toilet facility.<br>Assist private landowners as far as possible with the provision of basic sanitation services to all the households on the farms in the rural areas with existing sanitation service levels still below RDP standard, once practical guidelines and funding become available from DWS. | 100.0 | Partially | 92.9 |
| Water Services: Education | No | 100.0 | | | | 100.0 |
| Water Services: Health | No | 100.0 | | | | 100.0 |
| Sanitation Services: Education | No | 100.0 | | | | 100.0 |
| Sanitation Services: Health | No | 100.0 | | | | 100.0 |
| Health and Educational Facilities | No | 100.0 | | | | 100.0 |

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?
(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem? Does this current listed project/activity address the problem totally? Project/Activity approved by Council as part of WSDP database? Approved by Council in project activity database and part of 5yr IDP cycle projects? Project/Activity listed in 3yr MTEF Cycle?

As a priority it is the responsibility of Overstrand Municipality to make sure that adequate and appropriate investments are made to ensure the progressive realisation of the right of all people in its area of jurisdiction to receive at least a basic level of water and sanitation services. Whilst the provision of basic water services is the most important and immediate priority, WSAs are expected to provide intermediate and higher levels of services (for example, water on-site) wherever it is practical and provided it is financially viable and sustainable to do so.

The service levels to be provided by Overstrand Municipality to the consumers in their Management Area are included in the Consumer Charter and also in the Water Supply and Sanitation Services By-law. All water and sanitation services provided by Overstrand Municipality to consumers within the Municipal Management Area are linked to the Municipality's Tariff Policy and Rates Policy and poor households are incorporated through Overstrand Municipality's Indigent Policy.

The large number of residents in the lowest income groups (living in informal areas) places a major challenge on Overstrand Municipality to provide suitable housing.

Overstrand Municipality acknowledges the fact that communal standpipes represent probably the weakest part of a network's water supply services. Standpipes must be constructed in ways that can withstand excessive use and should not be neglected in terms of operation and maintenance. Malfunctioning standpipes may adversely affect the health of its already vulnerable and poor users. Communal standpipes are also used by poor households who normally don't pay for water. Therefore a contract was awarded for the maintenance of these facilities.

Overstrand Municipality is committed to support the private landowners as far as possible with regard to addressing the basic water services backlog that might still exist on the farms in the rural areas once clear and practical policy guidelines are available from the DWS and funding is made available.

Overstrand Municipality is however faced with various challenges with regard to the provision of services on private owned land in a financial sustainable manner (enabling the ongoing operation of services and adequate maintenance and rehabilitation of the assets), which include the following:

Free basic water policy:

- The provision of the infrastructure (facilities) necessary to provide access to water to all households in a sustainable and economically viable manner.
- The development of subsidy mechanisms which benefit those who need it most.

Free basic sanitation policy:

- Provision of the most appropriate sanitation facility to the poor households.
- Health and hygiene promotion must be provided in a co-ordinated manner and must be properly managed and adequately funded if free basic sanitation is to become a reality. This requires close collaboration between the EHPs of the Overberg District Municipality responsible for environmental health and Overstrand Municipality.
- Subsidising the operating and maintenance costs. If the basic service is to be provided free to the poor then Overstrand Municipality must ensure that the costs of providing the service are covered by the local government equitable share and / or through cross-subsidies within Overstrand Municipality's Management Area.

The ownership of water services assets may be in the hands of the person owning the land where an "on-site" water or sanitation facility is provided to a household. There is no legal impediment to the use of government grants to fund infrastructure for a poor household on private land not owned by that household, provided that the intermediary (the private landowner) makes a financial contribution (this is because the intermediary becomes the owner of the infrastructure once it is installed). Government is looking at specific policies with regard to the appropriate level of contribution.

**Public Amenities Education**: All education facilities in Overstrand Municipality's Management Area are provided with adequate water services and no specific strategies, with regard to the provision of water services to these facilities, were therefore identified. Overstrand Municipality is however committed to work with the Education Department to address any possible shortcomings with regard to the provision of water services that might exist at any school or tertiary education facilities. It is important for the schools in Overstrand Municipality's Management Area to focus on Water Demand Management activities and for Overstrand Municipality to continue to support the schools with WC/WDM initiatives.

**Public Amenities Health**: All medical facilities in Overstrand Municipality's Management Area are provided with adequate water services and no specific strategies, with regard to the provision of water services to these facilities, were therefore identified.

Overstrand Municipality will strive to continue to ensure that the minimum required SANS241:2015 water quality standards are met through proper management, operation and maintenance of their WTWs and the systematic upgrading of their WTWs when required. The monitoring of provision of basic minimum services to farm dwellers remains a challenge, in view of the limited funding and human resources.

The environmental health function is currently with the Overberg District Municipality. The Municipal Health Services of the Overberg District Municipality also report monthly to the Department of Health on water quality. The quality of life of the people within a Municipality is influenced by the available health care. Various factors influence the health conditions of people in any region, for example access to clean water, good sanitation, proper nutrition and adequate housing.

It is important that a co-operative relationship be maintained between the Overberg District Municipality and Overstrand Municipality with regard to environmental health issues and that a good communication protocol is followed between the District Municipality and Overstrand Municipality to report on health issues.

The health profile in relation to treated water is excellent. Within the urban context, drinking water throughout the municipal area is considered to be of a high quality. The most vulnerable groups within Overstrand Municipality's Management Area are the persons living in informal areas with shared services. It is therefore of outmost importance that the communal standpipes are properly maintained, to promote better health and hygiene among users. It is necessary to:

- keep the standpipe area clean and free from stagnant water;
- avoid water spillage by keeping the tap closed when not in use;
- report and rectify leakages immediately;
- keep straying animals away from standpipe area; and
- keep the tap outlet, standpipe slab and soak away clean.

Overstrand Municipality further needs to promote health and hygiene awareness amongst standpipe users by focusing on the following:

- users must use the standpipe only for the filling of containers;
- no body or clothes washing is allowed at standpipes;
- no house pipes or other objects may be attached to the standpipes;
- use clean containers and close containers with a suitable lid when transporting water;
- disinfect containers when necessary; and
- immediately report any irregularities, contamination, tampering or vandalism at standpipes

The rehabilitation and maintenance of the basic services in informal areas have also had positive results, in that the installations appear neater, a healthier environment has been created and less pollution takes place. It is believed that this played a significant role in reducing disease previously caused by unhygienic conditions and absence of basic services.

The supply of basic sanitation services on the farms needs to be linked to the provision of health and hygiene education. Improved health requires behaviour change, which also cannot be achieved with a single health education talk given by an outside expert. Behaviour change requires sustained monitoring and promotion within the community. This is the key-function of the community health workers employed on sanitation projects.

Overstrand Municipality needs to continue to actively engage with service providers and NGO's in the fight against illnesses such as HIV/Aids and TB. A solution to the sustainability of the community health worker's position and employment within the community has been to link their position and function to the activities of the Department of Health. In addition support can be provided to the Community Health Workers through local clinics and through the programmes of the EHPs. Education on the HIV/Aids pandemic would play a key role in stemming the spread of the disease.

Overstrand Municipality will therefore endeavour to improve their efforts to foster partnership-driven development in planning and implementation where partnerships include community members, CBOs, NGOs, the private sector and other spheres of government. In this regard the Department of Health is considered a particularly important partner whose collaboration is much needed.

## TOPIC 3: WATER SERVICES ASSET MANAGEMENT

| Topic C.3.1: Water Services Asset Management | | | | | | |
|---|---|---|---|---|---|---|
| **Section** | **Intervention Required?** | **% (1)** | **Solution description as defined by topic situation assessment** | **% (2)** | **Is there an Existing project/activity addressing this problem?** | **Current Demand Overall Scoring % (3)** |
| General Information | No | 100.0 | | | | 100.0 |
| Operation | No | 100.0 | Implement recommendations from the Water Safety Plans and WTW Process Audits. Improvement/Upgrade plans to be implemented. | 100.0 | Partially | 92.9 |
| | No | 100.0 | Implement recommendations from the $W_2$RAPs and WWTW Process Audits. Improvement/Upgrade plans to be implemented. | 100.0 | Partially | 92.9 |
| Functionality Observation | No | 100.0 | Provide additional reservoir storage capacity for the towns with inadequate storage capacity. Upgrade existing water pump stations and provide new water pump stations for the identified areas. Upgrade existing WTWs and WWTWs as recommended. Upgrade existing sewer pump stations and provide new sewer pump stations for the identified areas. | 100.0 | Partially | 92.9 |
| Asset Assessment Spectrum | No | 100.0 | Increase O&M budget for repairs and maintenance of infrastructure. A budget of approximately 2% of the total asset value per annum should be allocated towards the replacement of the existing water and sewerage infrastructure (Best Practice). In the case of operations and maintenance of the system, a budget of approximately 1% to 2% of the value of the system is typically required to ensure that the system remains in good condition (Best Practice). | 100.0 | Partially | 92.9 |
| Water and Sanitation schemes | No | 100.0 | Upgrade sections of the water reticulation network and sewer drainage network as proposed in the Water and Sewer Master Plan | 100.0 | Partially | 92.9 |

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?
(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem? Does this current listed project/activity address the problem totally? Project/Activity approved by Council as part of WSDP database? Approved by Council in project activity database and part of 5yr IDP cycle projects? Project/Activity listed in 3yr MTEF Cycle?

**Asset Management Plan:** It is believed that the technology and the expansion of infrastructure and the personnel capacity has not been developed in the same manner, accordingly the human resources previously found it difficult to operate and maintain the infrastructure and did not necessarily have the skills to operate the infrastructure optimally. The Water and Wastewater Bulk Works Contract ensures the adequate operation and maintenance of the WTWs and WWTWs and the other bulk water and sewerage infrastructure.

The Municipality's current Asset Register is adequate for the information required for the WSDP. An Asset Management Policy is also in place to ensure efficient, effective and optimal management, operation and maintenance of all assets, which includes treatment plants, reservoirs, structures, buildings, pipelines, sites, etc. An Asset Management Plan also needs to be drafted with the following purpose.

- Ensure the operation and maintenance functions are well planned.
- Demonstrate responsible management.
- Justify and communicate funding requirements.
- Service provisioning complies with regulatory requirements.

An Asset Management Plan normally includes the following:

- documents the nature, extent, age, utilisation, condition, performance and value of the infrastructure work;
- identifies existing and target levels of service, as well as expected changes in demand;
- identifies the life-cycle management needs of the infrastructure (development, renewal, operations and maintenance);
- assesses capital and operational budget needs; and
- identifies infrastructure asset management improvement needs.

Overstrand Municipality needs to differentiate between budget allocated towards the operation and maintenance of the water and sewerage infrastructure and the budget allocated towards the replacement of the water and sewerage infrastructure. A budget of approximately 2% of the total asset value per annum should be allocated towards the replacement of the existing water and sewerage infrastructure (Best Practice). In the case of operations and maintenance of the system, a budget of approximately 1% to 2% of the value of the system is typically required to ensure that the system remains in good condition (Best Practice).

The objective of an Asset Management Plan is to support the achievement of the strategic goals of the Municipality and facilitate prudent technical and financial decision-making. It is also a vehicle for improved internal communication and to demonstrate to external stakeholders the Municipality's ability to effectively maintain its existing infrastructure as well as the new infrastructure to be developed over the next 20 years.

Priority should be given to rehabilitating existing infrastructure as this generally makes best use of financial resources and can achieve an increase in (operational) services level coverage's most rapidly. The preparation of maintenance plans and the allocation of sufficient funding for maintenance are required to prevent the development of a large condition backlog. The potential renewal projects for water and sanitation infrastructure need to be identified from the Asset Register. All assets with a condition grading of "poor" and "very poor" need to be prioritised.

The Asset Management Plan must be based on the principle of preventative maintenance in order to ensure that, as far as this is practical, damage to assets is prevented before it occurs. Overstrand Municipality must ensure that the maintenance and rehabilitation plan is part of the WSDP and that the plan is implemented. Assets must be rehabilitated and / or replaced before the end of their economic life and the necessary capital funds must be allocated for this purpose.

One of the key challenges of Overstrand Municipality is to identify adequate funds for the rehabilitation and maintenance of their existing infrastructure, which is critical to ensure the sustainability of the services that are provided by the Municipality. It is important for the Municipality to secure adequate funding for major refurbishment and maintenance work, the provision of bulk infrastructure and the development of additional sources in order to keep up with the high demand for services.

**Disaster Management Plan:** An updated Disaster Management Plan is available for Overstrand Municipality. The role of the Disaster Management Unit include the following.

- To compile and adopt a disaster management policy;
- Compile and maintain disaster management plans / framework;
- Establish a disaster management committee; and
- Establish community partnerships that combine the access and attributes of everyone with a stake in disaster resistance.

Risk reduction includes: Risk awareness programs; Risk prevention programs; Formal and informal training about emergency services and disaster relief; Research in formal and informal settlements about location, growth and development and Upgrading of vehicles, equipment and protective clothing.

The 2023/2024 IDP include the following Disaster Management Analysis for Overstrand Municipality.

**Table C.3.2: Disaster Management Analysis for Overstrand Municipality**

| Functions | | Yes | No | Comments, if No |
|---|---|---|---|---|
| A Hazard, Risk and Vulnerability Assessment have been performed. | For the Municipal Area | | X | Budget and capacity constraints |
| | For projects identified in the IDP | | X | New function, no projects in place. No budget for projects. |
| The identified disaster risks have been prevented or mitigated through the implementation of risk reduction programmes. | For the Municipal Area | X | | |
| | For projects identified in the IDP | | X | New function, no projects in place. No budget for projects. |
| Appropriate disaster preparedness, response and recovery plans have been developed for a risk that cannot be prepared or mitigated. | For the Municipal Area | X | | |
| | For projects identified in the IDP | | X | New function, no projects in place. No budget for projects. |
| The Municipality has instituted the following disaster management requirements. | Establish a functional Disaster Management Centre | | X | Budget Constraints |
| | Appoint a Head of Centre | | X | Do not have a Centre |

| Table C.3.2: Disaster Management Analysis for Overstrand Municipality | | | | |
|---|---|---|---|---|
| **Functions** | | **Yes** | **No** | **Comments, if No** |
| | A functional Disaster Management Advisory Forum | | X | DMAF to be established. Provincial Government hosted presentation on importance of DMAF. |
| | A Disaster Management Plan has been developed | X | | |
| | This DM Plan does include Sectoral Plans. | X | | |
| Disaster Management has functional systems that comply with the following. | GIS data for disaster management | | X | Limited DM Capacity |
| | Risk reduction planning | | X | Limited DM Capacity |
| | Early warning system | | X | Budget Constraints |
| | Preparedness, response and recovery planning (Generic Plan) | X | | |
| These systems are linked to: | Other line functions in the Municipality | | X | Overberg District |
| | Other Municipalities | X | | |
| | Security Forces (SAPS and SANDF) | | X | Overberg District DMC |
| | Provincial MES | | X | Overberg District DMC |
| | Provincial Departments | | X | Overberg District DMC |
| | The National Disaster Management Centre | | X | Overberg District DMC |
| The Municipal Disaster Management Plan is completed, submitted and approved by: | Other Municipalities in District Municipal Area | X | | |
| | District Municipal Disaster Management Centre | X | | |
| | Provincial Disaster Management Centre | X | | |

**Untreated Effluent Management Plan:** There are no known untreated effluent discharges to the environment. The $W_2$RAP include Management Procedures and Incident Response and Emergency Protocols to respond to incidents.

**Future Water and Sewerage Infrastructure Requirements:** The Water and Sewer Master Plans (June 2021) for the various distribution and drainage systems in Overstrand Municipality's Management Area recommends upgrades of the water and sewerage infrastructure to the values indicated in the table below in the foreseeable future in order to accommodate development and population growth according to the SDF.

**Table C.3.3: Summary of the Future Water and Sewerage Infrastructure Requirements for Overstrand Municipality, as included in the 2021 Water and Sewer Master Plans**

| Zone / Area | Water Infrastructure | Sewerage Infrastructure | Total |
|---|---|---|---|
| Buffels River | R52 112 000 | R362 954 000 | R415 066 000 |
| Kleinmond | R5 623 000 | R65 460 000 | R71 083 000 |
| Greater Hermanus | R191 077 000 | R186 234 000 | R377 311 000 |
| Stanford | R16 778 000 | R13 458 000 | R30 236 000 |
| Greater Gansbaai | R178 917 000 | R314 524 000 | R493 441 000 |
| Pearly Beach | R9 986 000 | R54 833 000 | R64 819 000 |
| Baardskeerdersbos | R4 155 000 | R5 424 000 | R9 579 000 |
| Buffeljags Bay | R50 000 | R537 000 | R587 000 |
| *Overberg Water* | *R448 691 000* | - | *R448 691 000* |
| **Total (Excluding Overberg Water)** | **R458 698 000** | **R1 003 424 000** | **R1 462 122 000** |

Notes: 1) Costs include P&G's, Contingencies & Fees, but exclude EIA studies, registration of servitudes and/or land acquisition and VAT.

2) The above requirements do not include the cost for the upgrading or the refurbishment of the WTWs and WWTWs or the cost for the augmentation of the water resources for the various towns.

## GROUNDWATER INFRASTRUCTURE

Overstrand Municipality will continue with the implementation of their Groundwater Monitoring Programmes for areas where groundwater is abstracted. The groundwater monitoring data is regularly processed, analysed and reported on by experienced hydrogeologists in order to ascertain whether the resources are being sustainably utilised and to ensure compliance with the approved Groundwater Monitoring Programmes and water use licenses. Managing groundwater for water supply purposes should have the following three main functions.

- Ensure that the aquifer is used optimally: The aquifer should not be over-pumped as that would negatively impact on its long-term sustainable yield or on the environment. It also means that if the aquifer is being

under-utilised, this will become known. Over-abstraction close to the coastline can also result in seawater intrusion into the aquifer, and irreversible damage to the system.

- Ensure that the water quality in the aquifer is not negatively affected: This may be as a result of high abstraction from the aquifer, or from poor groundwater protection (from latrines, animal enclosures, etc.).

- Optimise borehole pumping rates so that the pumping equipment operates efficiently: Pumping rates are frequently set too high and this cause unnecessarily high pumping heads, a waste of energy, and at times, pump failure.

An additional function, which is usually captured in the first two points, is to ensure that environmental integrity is maintained. A botanical and streamflow monitoring programme is therefore also in place. It is important for Overstrand Municipality to continue to focus on aquifer protection, groundwater monitoring and wellfield management, in order to meet the town's future water requirements.

The table below gives an overview of the key groundwater management functions.

**Table C.3.4: Key Groundwater Management Functions (Best Practice)**

| Activity | Responsible Person | Skills and qualifications required | Resources, tools and equipment | Remarks |
|---|---|---|---|---|
| Measuring and recording of water levels. | Pump operator | Literacy, numeracy, trained in taking water levels | Dip meter, ruler, logbook, pen. | Done as part of operators' regular O&M activities. |
| Measuring and recording abstraction | Pump operator | Literacy, numeracy, trained in reading water meters. | Logbook, pen | Done as part of operators' regular O&M activities. |
| Providing data to the authority that is responsible for water supply on a regular basis. | Pump operator and pump operator supervisor | Literacy, numeracy, keeping records. | Postal service or public transport. | Include as part of the reporting requirements of the pump operator. |
| Taking water samples | The authority that is responsible for water supply. | Trained in taking water samples, driving license. | Transport, sample bottles, cooler box. | Sampling routine defined by sampling plan. |
| Sending water samples for testing. | The authority that is responsible for water supply. | Keeping records. | Transport to laboratory | Sent to nearest accredited laboratory. |
| Defining the monitoring requirements of an individual borehole. | Technical manager of operations or hydrogeologist. | Hydrogeological degree or diploma, experience of hydrogeological conditions. | Reports and records on borehole, monitoring data. | |
| Ensuring that boreholes are equipped with piezometer tubes for measuring water levels and water meters for measuring abstraction. | The authority that is responsible for water supply. | Project management | In house technical staff, suppliers, contractors, specifications. | |
| Ensuring that operators have the equipment and skills to do monitoring. | The authority that is responsible for water supply. | Project management | Trainers, suppliers, specifications. | |
| Monitoring the pump operator's competence to collect and record data. | Pump operator supervisor | Staff supervision, knowledge of pump operators' tasks. | Transport | Done as part of the supervision of O&M activities. |
| Processing data collected at the local level | Data clerk | Data capture, record keeping, filing, trained in operating software. | Computer, spreadsheet or groundwater management software, files. | Maintains an electronic and physical record of data. |
| Studying water level, water quality and abstraction data on a regular basis. | Technical manager of operations. | Technical training, operations experience. | Project files, monitoring data | Done as part of the management of O&M |
| Revising pumping recommendations and adjusting the monitoring requirements. Ensuring the recommendations are carried out and monitoring the implementation of the recommendations. | Technical manager with hydrogeologist as required. | Technical training, operations experience. | Reports and records on borehole, monitoring data, operational information. | Ongoing management of operations and groundwater resources. |
| Reporting to council and pump operator, providing summary data to the CMA. | Data clerk with supervision from technical manager. | Training in operating software. | Computer, spreadsheet or groundwater management software, printer. | Summary data defined by license (frequency, what data, form of data) |

## WATER TREATMENT WORKS INFRASTRUCTURE

The existing capacities and current flows at each of the WTWs are summarised in the table below.

**Table C.3.5: Existing Capacities and Flows at each of the WTWs (Ml/d)**

| WTW | Existing Hydraulic Capacity | Peak Month Average Daily Flow | Average Daily Flow (Jul 2022 – Jun 2023) | Average Daily Flow as a % of Capacity | Current Required Treatment Capacity (1.5 x AADD10yr) | 2022/2023 Water Quality Failures (SANS0241:2015) |
|---|---|---|---|---|---|---|
| Buffels River | 5.500 | 2.371 (Dec) | 1.840 | 33.45% | 3.533 | Turbidity (Operational) |
| Kleinmond | 5.800 | 2.930 (Dec) | 2.515 | 43.36% | 4.830 | - |
| Preekstoel | 38.000 | 13.861 (Jan) | 11.691 | 30.77% | 23.568 | - |
| Stanford | 2.710 * | 1.638 (Oct) | 1.365 | 50.37% | 2.622 | Total Coliforms |
| Franskraal | 6.500 | 4.157 (Jan) | 3.479 | 53.52% | 7.013 | Total Coliforms |
| De Kelders | 1.600 | 1.197 (Mar) | 0.990 | 61.88% | 1.600 | |
| Pearly Beach | 1.440 | 0.536 (Jan) | 0.407 | 28.26% | 0.782 | Total Coliforms |
| Baardskeerdersbos | 0.185 | 0.070 (Nov) | 0.053 | 28.65% | 0.101 | Manganese and Turbidity (Operational) |

Note: * The Stanford RO Plant has a hydraulic design capacity of 1.250 Ml/d. The water from the RO plant is however blended with the raw water and the level of blending is controlled through the monitoring of the hardness of the water. The overall treatment capacity for the Stanford system is therefore 2.710 Ml/d.

**Buffels River WTW**: The WTW treats water from the nearby Buffels River dam for usage in the Rooi Els, Betty's Bay and Pringle Bay areas. Under normal circumstances the plant is operated below its design capacity and is only in operation for approximately eight (8) hours per day. There is therefore considerable spare capacity available by operating the plant for longer duration per day and no capacity increase will be required in the near future. The Buffels River distribution system received a Blue Drop score of 99.99% in 2023 (highest in the country). The 2023 Blue Drop Risk Rating for the Buffels River supply system was 15.08% (Low).

The recommendations from the detail Buffels River WTW Process Audit (June 2022), as completed during the 2021/2022 financial year, are summarised in the table below.

**Table C.3.6 Recommendations from the detail Buffels River WTW Process Audit**

- Formalise soda ash dosing configuration.
- Expedite repairs to the inlet flowmeter.
- Monitor and record turbidity values for the individual settling tanks and continue to optimise the operation of this Process Unit.
- Record actual "Filter-to-waste" durations.
- Perform Specific Deposit determination on filter media.
- Investigate underdrain system of filtration. Re-install nozzles in a more secure manner.
- Monitor and record turbidity values for the individual filters and continue to optimise the operation of this Process Unit.
- Install a formal, fixed treated water sampling point.
- A formal plan for dealing with a chlorine leak needs to be developed, it seems like there is no safe way in which to ventilate the area.
- Current stacking practices related to cylinders needs to be addressed, both full and empty cylinders should be securely chained. It is furthermore ideal to have demarcated areas for these.
- There should be 30 days' stock on site.
- Another full-face mask should be provided. Ideally, every process controller should have his/her own one.
- Having spare chlorine connector lines, "pigtails", on site is always advisable.
- Ensure all the required information is captured, i.e., ensure the turbidity values from the individual settling tanks are recorded.
- Ensure spreadsheet is being kept up to date and not only populated once a month.
- Process Controllers to interact with the data collected on site, draw graphs etc. to track operational changes (quality & quantities).
- Process Controllers should receive feedback from both the internal lab and the independent laboratory.
- The calibration of the equipment used on site should be verified by the internal lab.
- Consider expanding the spreadsheet to provide operational feedback and not act as database only.
- The inclusion of Electrical Conductivity in the daily testing is a requirement stipulated in SANS241:2015 – Table 1 and needs to be included.
- Ensure Process Controllers are aware of the Preventative Maintenance Schedule.
- Ensure records / logbooks pertaining to preventative maintenance are also available on site.

| Table C.3.6 Recommendations from the detail Buffels River WTW Process Audit |
|---|
| • Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the Works. |

The WTW structure is 35 to 45 years old except for the new flocculation and sedimentation tanks that were added in 2008. The WTW comfortably meets the coagulation, flocculation and sedimentation requirements given the oversized flocculation and settling tanks. The Refurbishment Investigation (Conditional Assessment) of the Buffels River WTW, as completed in August 2020, indicated the following challenges:

- Filtration was identified as the bottle neck limiting the capacity of the WTW. Due to the low driving head, the filters are effectively limited to an average filtration rate of 45 l/s (160 $m^3$ /h over 20 hours, or 3.2 Ml/d). This can be remedied by increasing the driving head by lowering the outlet weir level. Further, the current filter backwash is inadequate to clean the filters. This can be fixed by increasing the size of the header tank to provide the necessary backwash water volumes.

- The WTW chlorine dosing facilities appear to be undersized and there is no chlorine contact tank. Baffles can be introduced to the reservoir on site to increase the dispersion factor to avoid constructing a new chlorine contact tank. The chlorine room which does not meet SANS health and safety standards and poses a health risk.

- The water is aggressive and there is no provision for stabilisation of the water. Hydrated lime or limestone contact tanks are proposed with the latter being recommended.

- Process monitoring and chemical optimisation can also be improved by adding in-line pH meters and monitoring chemical dosages.

- The waste streams from the WTW are poorly managed and sludge currently overflows into the environment. There is no dedicated backwash recovery system, and the sludge settling tank is not operational. It is proposed that a new backwash recovery system is introduced and the existing sludge settling tank be dedicated to sedimentation desludging streams only.

The majority of the mechanical equipment on site is in working order but requires ongoing maintenance. A few valves need to be replaced along with the modifications to the flowmeter.

In general, the electrical infrastructure is in a working condition aside from some minor problems. These can be fixed by testing and repairing all electrical panels and wiring. In the long term, the MCC should be replaced along with the electrical and instrument cabling. The control system and SCADA should also be upgraded.

A structural conditional assessment along with core sample testing revealed that the majority of the structures are generally safe and there is no urgent need to condemn any of them. A few key areas were highlighted that need immediate repair such as the chemical dosing area, the steel conveyor belt and all places with spalling. There will be ongoing maintenance and repair work required, in particular to ensure leaks do not arise in the structure and removal of the asbestos superstructure but these do not pose immediate risks to the operators or surroundings.

A professional service provider was appointed to commence with the detailed planning of refurbishing and upgrading the Buffels River WTW. The project is included in the draft Capital Budget for the next 3 years.

**Kleinmond WTW:** The WTW treats water from the Palmiet River for usage in Kleinmond. The plant operates well within its design capacity. The Kleinmond WTW is generally operated and maintained satisfactorily. The Kleinmond distribution system received a Blue Drop score of 99.99% in 2023 (highest in the country). The 2023 Blue Drop Risk Rating for the Kleinmond supply system was 14.53% (Low).

The recommendations from the detail Kleinmond WTW Process Audit (June 2022), as completed during the 2021/2022 financial year, are summarised in the table below.

**Table C.3.7: Recommendations from the detail Kleinmond WTW Process Audit**

- Provide standby Flocculant Dosing Pump.
- Monitor and record turbidity values for the individual settling tanks and continue to optimise the operation of this Process Unit.
- Provide flow control to the individual settling tank inlets (currently isolation sluice gates are provided).
- Control flow to the filters as to ensure they are equally loaded.
- Install a second Backwash Pump & Blower.
- Theoretically, the plant should be able to cope with only two filters in operation.
- Perform Specific Deposit determination on filter media.
- Current stacking practices related to cylinders needs to be addressed, both full and empty cylinders should be securely chained. It is furthermore ideal to have demarcated areas for these.
- There should be 30 days stock on site.
- Another full-face mask should be provided. Ideally, every process controller should have his/her own one.
- Having spare chlorine connector lines, “pigtails”, on site is always advisable.
- Capture the units being used in the logbook – there is, as an example, no indication of the unit in which flow is measured.
- Monitor (and record) turbidity values for the individual settling tanks in order to optimise the operation of this Process Unit.
- Ensure spreadsheet is being kept up to date and not only populated once a month.
- Process Controllers to interact with the data collected on site, draw graphs etc. to track operational changes (quality & quantities).
- Process Controllers should receive feedback from both the internal lab and the independent laboratory.
- The calibration of the equipment used on site should be verified by the internal lab.
- Consider expanding the spreadsheet to provide operational feedback and not act as database only.
- The inclusion of Electrical Conductivity in the daily testing is a requirement stipulated in SANS241:2015 – Table 1 and needs to be included.
- Ensure Process Controllers are aware of the Preventative Maintenance Schedule.
- Ensure records / logbooks pertaining to preventative maintenance are also available on site.
- Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the Works.

The Conditional Assessment of the Kleinmond WTW, as completed in June 2021, indicated the following conclusions and way forward for the plant.

- The treated water currently meets all SANS:241 (2015) criteria.

- All process units can meet criteria at 61 l/s.

- Sedimentation was identified as the bottleneck limiting the capacity of the WTW to 61 l/s followed by filtration with a capacity of 64 l/s. Modifications to the inlet configuration at the lamellas to improve settlement thereby improving operation would theoretically increase sedimentation capacity to 85 l/s. This results in filtration as the limiting capacity

- Both filter backwash and sedimentation sludge is directed to a backwash holding tank where it gravitates to the Kleinmond WWTW. There is no recovery system. It is recommended to add pumps in the backwash holding tank to recover filter backwash and to direct sedimentation sludge to the sewer directly bypassing the backwash holding tank.

- Process monitoring and chemical optimisation can also be improved by adding in-line pH meters and monitoring chemical dosages.

- From theoretical calculations, the water is aggressive, but clearwell and reservoir walls should be inspected more thoroughly before dosing additional chemicals.

- An additional water source is used on an ad hoc basis called Dorpsfontein fountain. When used, the source is added directly into the treated water reservoir. No water quality data could be sourced, and it is highly recommended to test this water as it bypasses the WTW when used.

A majority of the mechanical equipment on site is in working order but requires general valve and pump maintenance.

In general, the electrical infrastructure is in a working condition. The WTW does not have a SCADA system but rather a SCADA mimic. All equipment at the WTW is controlled by switching them on and off on the MCC panels next to the equipment. The high-lift pumps were previously controlled using radio telemetry, but this stopped functioning forcing the operators to drive to the pumpstation. In the short term, the telemetry can be fixed and testing and repairing of all electrical panels and wiring is recommended. In the long run (and in the interest of the municipality) the electrical and electronic infrastructure can be upgraded to allow for all equipment to be controlled through a centralised SCADA system. This upgrade may help optimise the WTW, but not necessary for the operation of the works.

The high, medium and low refurbishment priorities for the Kleinmond WTW and the estimated costs are indicated in the table below.

**Table C.3.8: High, Medium and Low Refurbishment Priorities for the Kleinmond WTW**

| Criteria | High Priority | Medium Priority | Low Priority |
|---|---|---|---|
| Plant performance | • Condition assessment of the rising main<br>• Sedimentation tank lamella plates | | • Treated water stability.<br>• Additional chlorinator.<br>• Improve Dorpsfontein fountain disinfection. |
| Improved operations and control | • Backwash water recovery system.<br>• Sedimentation sludge bypass system. | • Fix flow measurement at the Palmiet Booster pump station.<br>• Allowance to start and stop booster pumps from WTW.<br>• Blower and backwash pump redundancy. | • Chemical dose monitoring.<br>• In-line pH meter.<br>• Electrical control and instrument upgrade. |
| Safety | • Fix safety shower in chemical storage and add a new shower in the dosing area.<br>• Improve chlorine dosing facility.<br>• Filter float valve access.<br>• Testing Dorpsfontein fountain water quality. | | |
| Longevity | • Inspect reservoir internal walls | | • Brick plaster in flocculation tanks. |
| Operator comfort | | | • Reconfigure admin area |
| General maintenance | | • Valve maintenance.<br>• Pump maintenance.<br>• EC&I maintenance. | |
| **Total Cost (Excl. VAT)** | **R1 780 000** | **R1 650 000** | **R6 350 000** |

**Preekstoel WTWs:** The Preekstoel WTWs include the following treatment processes.

- The Preekstoel WTW treats water from the De Bos dam for usage in the Greater Hermanus area.
- The bio-filtration plant treats groundwater from the Hemel en Aarde boreholes (Camphill and Volmoed wellfields), before it is further disinfected at the Preekstoel WTW.
- The chemical oxidation treatment plant treats water from the Gateway boreholes, before it is further treated at the conventional plant.

The Preekstoel WTW was upgraded from 24 Ml/d to 28 Ml/d during the 2011/2012 financial year. A new 10 Ml/day biological WTW for iron and manganese removal was also constructed at the Preekstoel WTW during the 2012/2013 financial year, in order to treat the newly developed groundwater sources and to increase the overall treatment capacity for the Greater Hermanus to 38 Ml/d. Both plants are operated well within the design capacities. The distribution system received a Blue Drop score of 99.99% in 2023 (highest in the country). The 2023 Blue Drop Risk Rating for the Hermanus supply system was 18.44% (Low).

The recommendations from the detail Preekstoel WTW Process Audit (June 2022), as completed during the 2021/2022 financial year, are summarised in the table below.

**Table C.3.9: Recommendations from the detail Preekstoel WTW Process Audit**

- Clean off some of the residue that forms on the dosing points.
- Monitor and record turbidity values for the individual settling tanks and continue to optimise the operation of this Process Unit.
- Consider moving the inlet to the centre of the distribution box as to establish better flow distribution between the two basins.
- Control flow to the filters as to ensure they are equally loaded.
- Monitor and record turbidity values for the individual filters in order to optimise the operation of this Process Unit.
- Theoretically, the plant should be able to cope with only two filters per bank in operation.
- Perform Specific Deposit determination on filter media.
- There should be 30 days stock on site.
- Having spare chlorine connector lines, “pigtails”, on site is always advisable.
- Monitor and record turbidity values for the individual Process Units.
- Ensure Process Controllers are aware of the Preventative Maintenance Schedule.
- Ensure records / logbooks pertaining to preventative maintenance are also available on site.
- Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the Works.
- Ensure spreadsheet is being kept up to date and not only populated once a month.
- Process Controllers to interact with the data collected on site, draw graphs etc. to track operational changes (quality & quantities).
- Process Controllers should receive feedback from both the internal lab and the independent laboratory.
- The calibration of the equipment used on site should be verified by the internal lab.
- Consider expanding the spreadsheet to provide operational feedback and not act as database only.
- The inclusion of Electrical Conductivity in the daily testing is a requirement stipulated in SANS241:2015 – Table 1 and needs to be included.
- Ensure Process Controllers are aware of the Preventative Maintenance Schedule.
- Ensure records / logbooks pertaining to preventative maintenance are also available on site.
- Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the Works.

**Stanford WTW:** The ultrafiltration and reverse osmosis plant treats water from the spring and the two Kouevlakte boreholes. The Stanford distribution system received a Blue Drop score of 99.99% in 2023 (highest in the country). The 2023 Blue Drop Risk Rating for the Stanford supply system was 15.98% (Low).

The recommendations from the detail Stanford WTW Process Audit (June 2022), as completed during the 2021/2022 financial year, are summarised in the table below.

**Table C.3.10: Recommendations from the detail Stanford WTW Process Audit**

- Maintenance of membranes are crucial, ensure all schedules are adhered to.
- Ensure spare membranes are available, either on site or in storage.
- Ensure a standby RO Feed Pump is available in storage (Only a duty pump is currently installed).
- Ensure maintenance of dosing pumps are scheduled.
- Closely monitor residual chlorine levels. Maintain a balance between providing additional residual protection in the network and raising levels to appoint where a “chlorine taste and smell” become evident to consumers.
- Ensure spreadsheet is being kept up to date and not only populated once a month.
- Process Controllers to interact with the data collected on site, draw graphs etc. to track operational changes (quality & quantities).
- Process Controllers should receive feedback from both the internal lab and the independent laboratory.
- The calibration of the equipment used on site should be verified by the internal lab.
- Consider expanding the spreadsheet to provide operational feedback and not act as database only.
- The inclusion of Electrical Conductivity in the daily testing is a requirement stipulated in SANS241:2015 – Table 1 and needs to be included.
- Ensure Process Controllers are aware of the Preventative Maintenance Schedule.
- Ensure records / logbooks pertaining to preventative maintenance are also available on site.
- Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the Works.

**Franskraal WTW*:*** The WTW treats water from the Franskraal and Kraaibosch dams for usage in the Greater Gansbaai area. The WTW was completely rebuilt in 2009 and is currently well equipped and well-operated. The plant operates well within its design capacity under normal conditions. The Greater Gansbaai distribution system received a Blue Drop score of 99.99% in 2023 (highest in the country). The 2023 Blue Drop Risk Rating for the Greater Gansbaai supply system was 19.97% (Low).

The recommendations from the detail Franskraal WTW Process Audit (June 2022), as completed during the 2021/2022 financial year, are summarised in the table below.

**Table C.3.11: Recommendations from the detail Franskraal WTW Process Audit**

- Connect (electrically) the standby Flocculant Dosing Pump.
- Formalise the flocculant dosing point.
- Monitor and record turbidity values for the individual settling tanks in order to optimise the operation of this Process Unit.
- Control flow to the filters as to ensure they are equally loaded.
- Theoretically, the plant should be able to cope with only two filters in operation.
- Perform Specific Deposit determination on filter media.
- Current stacking practices related to cylinders needs to be addressed, both full and empty cylinders should be securely chained. It is furthermore ideal to have demarcated areas for these.
- There should be 30 days stock on site.
- Another full-face mask should be provided. Ideally, every process controller should have his/her own one.
- Repair the chlorine scales.
- Ensure all the required information is captured, i.e., ensure the turbidity values from the individual filters are recorded.
- Ensure spreadsheet is being kept up to date and not only populated once a month.
- Process Controllers to interact with the data collected on site, draw graphs etc. to track operational changes (quality & quantities).
- Process Controllers should receive feedback from both the internal lab and the independent laboratory.
- The calibration of the equipment used on site should be verified by the internal lab.
- Consider expanding the spreadsheet to provide operational feedback and not act as database only.
- The inclusion of Electrical Conductivity in the daily testing is a requirement stipulated in SANS241:2015 – Table 1 and needs to be included.
- Ensure Process Controllers are aware of the Preventative Maintenance Schedule.
- Ensure records / logbooks pertaining to preventative maintenance are also available on site.
- Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the Works.

**De Kelders WTW:** The WTW treats water from the Klipgat fountain and The Grotte fountain for usage in the De Kelders area. This Reverse Osmosis WTW was constructed during 2011 at De Kelders. The recommendations from the detail De Kelders WTW Process Audit (June 2022), as completed during the 2021/2022 financial year, are summarised in the table below.

**Table C.3.12: Recommendations from the detail De Kelders WTW Process Audit**

- Maintenance of membranes are crucial, ensure all schedules are adhered to.
- Ensure spare membranes are available, either on site or in storage.
- Ensure maintenance of dosing pumps are scheduled.
- Provide a containment barrier around the dosing station to prevent any spillages or leaks from becoming a hazard to plant personnel.
- Closely monitor residual chlorine levels. Maintain a balance between providing additional residual protection in the network and raising levels to appoint where a “chlorine taste and smell” become evident to consumers.
- Ensure spreadsheet is being kept up to date and not only populated once a month.
- Process Controllers to interact with the data collected on site, draw graphs etc. to track operational changes (quality & quantities).
- Process Controllers should receive feedback from both the internal lab and the independent laboratory.
- The calibration of the equipment used on site should be verified by the internal lab.
- Consider expanding the spreadsheet to provide operational feedback and not act as database only.
- The inclusion of Electrical Conductivity in the daily testing is a requirement stipulated in SANS241:2015 – Table 1 and needs to be included.
- Ensure Process Controllers are aware of the Preventative Maintenance Schedule.
- Ensure records / logbooks pertaining to preventative maintenance are also available on site.
- Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the Works.

**Pearly Beach WTW:** The WTW treats water from the Pearly Beach and Koekemoer dams for usage in Pearly Beach. The Pearly Beach WTW uses state-of-the-art ultrafiltration membrane technology to ensure a high quality final effluent. The plant operates at its design treatment rate, but does not operate for 24 hours per day. It is only operated for approximately 4 – 6 hours per day and therefore does not exceed the rated capacity of the plant. The Pearly Beach distribution system received a Blue Drop score of 99.99% in 2023 (highest in the country). The 2023 Blue Drop Risk Rating for the Pearly Beach supply system was 13.39% (Low).

The recommendations from the detail Pearly Beach WTW Process Audit (June 2022), as completed during the 2021/2022 financial year, are summarised in the table below.

**Table C.3.13: Recommendations from the detail Pearly Beach WTW Process Audit**

- Ensure sludge disposal records are kept.
- Maintenance of membranes are crucial, ensure all schedules are adhered to.
- Ensure spare membranes are available, either on site or in storage.
- Ensure maintenance of dosing pumps are scheduled.
- A general clean-up of the area would be advisable.
- Provide a containment barrier around the dosing station to prevent any spillages or leaks from becoming a hazard to plant personnel.
- Closely monitor residual chlorine levels. Maintain a balance between providing additional residual protection in the network and raising levels to a point where a "chlorine taste and smell" become evident to consumers.
- Ensure spreadsheet is being kept up to date and not only populated once a month.
- Process Controllers to interact with the data collected on site, draw graphs etc. to track operational changes (quality & quantities).
- Process Controllers should receive feedback from both the internal lab and the independent laboratory.
- The calibration of the equipment used on site should be verified by the internal lab.
- Consider expanding the spreadsheet to provide operational feedback and not act as database only.
- The inclusion of Electrical Conductivity in the daily testing is a requirement stipulated in SANS241:2015 – Table 1 and needs to be included.
- Ensure Process Controllers are aware of the Preventative Maintenance Schedule.
- Ensure records / logbooks pertaining to preventative maintenance are also available on site.
- Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the Works.

**Baardskeerdersbos WTW:** The WTW treats water from the two boreholes for usage in Baardskeerdersbos. The plant operates well within its design capacity. The Baardskeerdersbos distribution system received a Blue Drop score of 99.70% in 2023 (second highest in the country). The 2023 Blue Drop Risk Rating for the Baardskeerdersbos supply system was 9.57% (Low).

The recommendations from the detail Baardskeerdersbos WTW Process Audit (June 2022), as completed during the 2021/2022 financial year, are summarised in the table below.

**Table C.3.14: Recommendations from the detail Baardskeerdersbos WTW Process Audit**

- Should deficiencies in the removal of manganese be noted, determine the concentration or organic compounds in the raw water.
- Automate desludging of the second settler.
- Ensure sludge disposal records are kept.
- Ensure water quality results from the sludge drainage water, flowing back into the natural water course, are kept on site.
- Maintenance of membranes are crucial, ensure all schedules are adhered to.
- Ensure spare membranes are available, either on site or in storage.
- Ensure maintenance of dosing pumps are schedules.
- A general clean-up of the area would be advisable.
- Provide a containment barrier around the dosing station to prevent any spillages or leaks from becoming a hazard to plant personnel.
- Closely monitor residual chlorine levels. Maintain a balance between providing additional residual protection in the network and raising levels to a point where a "chlorine taste and smell" become evident to consumers.
- Ensure spreadsheet is being kept up to date and not only populated once a month.
- Process Controllers to interact with the data collected on site, draw graphs etc. to track operational changes (quality & quantities).
- Process Controllers should receive feedback from both the internal lab and the independent laboratory.
- The calibration of the equipment used on site should be verified by the internal lab.
- Consider expanding the spreadsheet to provide operational feedback and not act as database only.
- The inclusion of Electrical Conductivity in the daily testing is a requirement stipulated in SANS241:2015 – Table 1 and needs to be included.
- Ensure Process Controllers are aware of the Preventative Maintenance Schedule.
- Ensure records / logbooks pertaining to preventative maintenance are also available on site.
- Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the Works.

**Buffeljags Bay WTW:** No water treatment is done, except for disinfection. The Buffeljags Bay distribution system received a Blue Drop score of 98.20% in 2023. The 2023 Blue Drop Risk Rating for the Buffeljags Bay supply system was 14.21% (Low). The only recommendation from the Buffeljags Bay WTW Process Audit (June 2022), as completed during the 2021/2022 financial year, was that the Municipality needs to ensure that monitoring is done in accordance with SANS241:2015 (Table 1), which is the case.

The WTWs to be upgraded in Overstrand Municipality are summarised in the table below.

| Table C.3.15: WTWs to be Upgraded or New WTWs for the Future | | |
|---|---|---|
| **WTW** | **Short, Medium, Long Term** | **Estimated Cost (Vat Excluded)** |
| *Refurbishment of Buffels River WTW Options 1:*<br>*The existing infrastructure is maintained in its current condition with various mitigation measures implemented in-situ.* | *Short* | *R35 000 000* |
| *Refurbishment of Buffels River WTW Option 2:*<br>*Urgent work on the existing WTW is done to keep it operational for another 5-years while a new site is sought to procure a new 5.5 Ml/d WTW, thereafter the old WTW would be demolished.* | *Short* | *R33 300 000* |
| Refurbishment of Buffels River WTW Option 3 (Recommended):<br>The existing WTW site is retained, but it is sequentially rebuilt to a modern WTW and the aspects of the existing infrastructure which is in good condition are retained. | Short | R32 700 000 |
| Refurbishment of the Kleinmond WTW (High Priority) | Short | R1 780 000 |
| Refurbishment of the Kleinmond WTW (Medium Priority) | Medium | R1 650 000 |
| Refurbishment of the Kleinmond WTW (Low Priority) | Medium | R6 350 000 |
| Hermanus 3 Ml/d desalination plant (Phase 1) | Short | R90 000 000 |
| Hermanus 3 Ml/d desalination plant (Phase 2) | Medium | R90 000 000 |
| Hermanus 4 Ml/d desalination plant (Phase 3) | Long | R120 000 000 |
| Buffeljags Bay | Medium | R3 000 000 |
| **Total** | | **R345 480 000** |

## BULK WATER PIPELINE INFRASTRUCTURE

The Water Master Plan (June 2021) has indicated that based on the most likely land-use development scenario, it will be necessary to upgrade the following bulk water supply systems.

- **Buffels River, Greater Hermanus, Greater Gansbaai, Pearly Beach and Baardskeerdersbos:** The existing bulk water supply systems (Bulk pipelines) have insufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas.

- **Kleinmond, Stanford, Pearly Beach and Buffeljags Bay:** The existing bulk water supply systems (Bulk pipelines) have sufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas.

| Table C.3.16: Future bulk water supply pipelines required | | | | | |
|---|---|---|---|---|---|
| **Scheme** | **New feeder mains that are proposed or existing feeder mains that require upgrading in the future** | **Year** | **Distance (m)** | **Diameter (mm)** | **Cost (R million)** |
| Buffels River | Abandon existing 150 mm bulk pipeline to Rooi Els and replace with a new 200 dia. pipe (item OBW.B11) | Completed | 5 029 | 200 | R9.173 |
| | Restrict flow into the sump of the Sunny Seas bulk PS in order to sustain pressure in the upstream Voorberg reservoir zone network, install 14 l/s FCV (item OBW.B8). | 2024 | - | 150 | R0.241 |
| | The remaining section of 300 mm dia. bulk pipeline from Buffels River WTP to the Pringle bay draw-off point supplying Pringle Bay and Voorberg reservoirs. (item OBW.B6). | 2025 | 104 | 400 | R0.598 |
| | **Subtotal** | | **5 133** | **-** | **R10.012** |
| Greater Hermanus | New 500 mm dia. parallel reinforcement of the existing 300 mm dia. bulk supply pipeline to the Mount Pleasant take-off in order to augment supply to the reservoirs on the Hermanus bulk line (item OHW.B24). | 2024 | 665 | 500 | R4.417 |
| | Replace the existing 100 mm dia. bulk supply pipeline to the Mount Pleasant reservoir with a 200 mm dia. pipeline (item OHW.B34). | 2024 | 142 | 200 | R0.300 |
| | New 160 mm dia. connection pipe from the main pipelines downstream of the Preekstoel WTP to the Sandbaai and Mount Pleasant reservoirs as an alternative supply (items OHW.B41 & OHW.B42). | 2024 | 160 | 160 | R0.260 |
| | | 2024 | 265 | 160 | R0.407 |
| | Connect existing Gateway pipeline to existing 600 mm dia. Hermanus bulk pipeline (alternative option in order to supply bulk water to Sandbaai reservoir) (item OHW.B40). | 2024 | 4 | 160 | R0.041 |
| | New 315 mm dia. parallel reinforcement of the existing 150 mm dia. bulk supply pipeline to the Hawston LL reservoir in order to augment supply to the reservoir (item OHW.B20). | 2024 | 296 | 315 | R0.450 |

| Table C.3.16: Future bulk water supply pipelines required | | | | | |
|---|---|---|---|---|---|
| **Scheme** | **New feeder mains that are proposed or existing feeder mains that require upgrading in the future** | **Year** | **Distance (m)** | **Diameter (mm)** | **Cost (R million)** |
| | New 250 mm dia. parallel reinforcement of the existing 150 mm dia. bulk supply pipeline to the Sandbaai reservoir in order to augment supply to the reservoir (item OHW.B14). | 2024 | 193 | 250 | R0.522 |
| | New 200 mm dia. parallel reinforcement of the existing 160 mm dia. bulk supply pipeline to the Onrus reservoir in order to augment supply to the reservoir (item OHW.B28). | 2024 | 236 | 200 | R0.472 |
| | Install inter-connection pipe between 200 mm dia. bulk and 200 mm dia. network pipe as part of bulk system (after item OHW1.1 is implemented) (item OHW.B22c). | 2025 | 1 | 200 | R0.024 |
| | Insert and close valve between network and bulk system (after item OHW1.1 is implemented) (item OHW.B22d). | 2025 | - | 200 | R0.121 |
| | It is proposed that the existing 200 mm dia. supply pipeline from the Fisherhaven LL reservoir to the existing network is replaced with a new 315 mm dia. pipe (item OHW1.1) in order to transfer the existing 200 mm dia. network pipe to the existing bulk system (Items OHW.B22a & OHW.B22b). This will improve bulk supply from the Coastal bulk system to Fisherhaven LL reservoir. | 2025 | 19 | 200 | R1.078 |
| | | 2025 | - | 200 | R0.121 |
| | New 400 mm dia. parallel reinforcement of the existing 400 mm dia. bulk supply pipeline when the 400 mm dia. pipe reaches capacity (item OHW.B25). | 2030 | 1 387 | 400 | R7.214 |
| | New 315 mm dia. parallel reinforcement of the existing 250 mm dia. Vermont to Hawston bulk pipeline when the existing 250 mm dia. bulk pipe reaches capacity (item OHW.B19). | 2035 | 3 329 | 355 | R13.682 |
| | New 500 mm dia. parallel reinforcement of the existing 400 & 600 mm dia. bulk pipelines (from the Preekstoel WTP to the Coastal & Hermanus bulk pipelines) when the existing 400 & 600 mm dia. bulk pipes from the Preekstoel WTP reaches capacity (item OHW.B23). | 2040 | 472 | 500 | R3.179 |
| | New 355 mm dia. bulk supply pipeline from the Fisherhaven HL reservoir to the existing bulk water infrastructure at the Hawston reservoir (item OHW.B35). | 2040 | 2 611 | 355 | R10.746 |
| | Install pipeline when Overberg pipeline is constructed, to feed Fisherhaven LL from HL reservoir (item OHW.B37). | 2040 | 39 | 200 | R0.114 |
| | Insert and close valve when Overberg pipeline is constructed, to feed Fisherhaven LL from HL reservoir (item OHW.B38). | 2040 | - | 200 | R0.121 |
| | Install Flow Control Valve (41 l/s) when Overberg pipeline is constructed, to feed Fisherhaven LL from HL reservoir (item OHW.B39). | 2040 | - | 200 | R0.279 |
| | Install Flow Control Valve (67 l/s) to transfer bulk water from Fisherhaven HL reservoir to the Hawston reservoir (item OHW.B43). | 2040 | - | 400 | R1.420 |
| | **Subtotal** | | **9 961** | **-** | **R44.968** |
| Greater Gansbaai | Dedicate the existing 250 mm dia. pipeline between the Greater Gansbaai bulk system and the De Kelders reservoirs as 'n bulk supply pipeline to the De Kelders reservoirs (item OGW.B24). | 2030 | 59 | 250 | R0.150 |
| | New 600 dia. mm bulk supply pipeline from the Franskraal WTP clearwell reservoir to the main Franskraal bulk PS (item OGW.B9). | 2030 | 42 | 600 | R1.240 |
| | Reinforce existing Franskraal WTP raw water supply (item OGW.B23 | 2030 | 203 | 500 | R1.454 |
| | New 500 mm dia. bulk supply pipeline from the main Franskraal bulk PS to the existing 355 mm dia. and future 400 mm dia. pipeline bulk pipes to Kleinbaai, Gansbaai and De Kelders (item OGW.B19). | 2030 | 205 | 500 | R1.466 |
| | Replace the existing 200 mm dia. bulk pipeline with a 400 mm dia. pipeline when the existing 200 and 355 mm dia. bulk pipes reaches capacity (items OGW.B2 & B3). | 2035 | 715 | 400 | R1.246 |
| | | 2035 | 2 169 | 400 | R3.714 |
| | New 315 mm dia. bulk supply pipeline from the main Franskraal bulk PS to the proposed Franskraal HL reservoir (item OGW.B16). | 2040 | 864 | 315 | R2.653 |
| | New 355 mm dia. dedicated bulk supply pipeline from the main Franskraal bulk PS to the existing Franskraal LL reservoirs (item OGW.B21). | 2040 | 182 | 355 | R0.816 |
| | **Subtotal** | | **4 439** | **-** | **R12.739** |
| Baardskeerdersbos | A new dedicated bulk pipeline is proposed when master plan item OBBW.B2 (new reservoir) is implemented. | 2030 | 939 | 110 | R0.987 |
| | **Subtotal** | | **939** | **-** | **R0.987** |
| *Overberg Water* | *New bulk supply pipeline to Hermanus (item RVW5.1)* | *2035* | *7 229* | *450* | *R46.543* |
| | *New bulk supply pipeline to Hermanus (item RVW5.4)* | *2035* | *34 547* | *450* | *R221.861* |
| | ***Subtotal*** | | ***41 776*** | **-** | ***R268.404*** |
| **Total (Excluding Overberg Water)** | | | **20 472** | **-** | **R68.706** |

## WATER PUMP STATIONS

The water pump stations are well maintained and all the motors and pumps are operational. The Water Master Plan (June 2021) has indicated that based on the most likely land-use development scenario, it will be necessary for the following water pump stations:

**Table C.3.17: Future Water Pump Stations Required**

| Scheme | Recommendations included in the Water Master Plan | Year | Capacity (l/s) | Head (m) | Cost (R Million) |
|---|---|---|---|---|---|
| Buffels River | A new booster pump station is proposed on the 300 mm Ø Betty's Bay Voorberg reservoir supply pipeline in order to augment bulk water supply to Betty's Bay in the future (item OBW.B7). | 2025 | 75 | 12 | R2.729 |
| | A new booster pump station for the higher lying areas in the Voorberg reservoir zone is proposed (item OBW.B4). | 2030 | 10 | 25 | R1.781 |
| | **Subtotal** | | | | **R4.510** |
| Greater Hermanus | A new booster pump station to augment water supply through the Coastal bulk pipeline (item OHW.B17) to Hawston and Fisherhaven. | 2024 | 90 | 20 | R3.037 |
| | Upgrading of the existing bulk pump station to augment bulk water supply from the Fisherhaven LL to the Fisherhaven HL reservoir is proposed for when future areas GH1, GH5,1 & GH50 develop (item OHW.B3). | 2025 | 40 | 70 | R0.626 |
| | **Subtotal** | | | | **R3.663** |
| Greater Gansbaai | New booster pump station when future area GG30 develops (item OGW5.1). | 2024 | 30 | 20 | - |
| | New booster pump station to supply sufficient water pressure Masakhane informal area (Item OGW7.1) | 2025 | 30 | 15 | R2.069 |
| | New bulk pump station to supply water from the Gansbaai reservoirs to the De Kelder reservoirs (item OGW.B7). | 2030 | 45 | 60 | R2.545 |
| | New dedicated bulk PS to Kleinbaai & Gansbaai when existing bulk supply reaches capacity (item OGW.B18). | 2030 | 220 | 35 | R5.500 |
| | Dedicated PS to Franskraal reservoirs when existing bulk PS reaches capacity (item OGW.B20). | 2040 | 130 | 5 | R3.440 |
| | New dedicated pump station from the Franskraal clearwater reservoir to the proposed Franskraal HL reservoir (item OGW.B15). | 2040 | 60 | 65 | R2.883 |
| | **Subtotal** | | | | **R16.437** |
| Pearly Beach | Upgrading of the existing Pearly Beach pump system (item OPW.B3). | 2035 | 75 | 45 | R0.693 |
| | **Subtotal** | | | | **R0.693** |
| Baardskeerdersbos | Pump station to augment bulk supply to Baardskeerdersbos reservoir (item OBBW.B3) | 2060 | 6 | 100 | **R1.765** |
| | **Subtotal** | | | | **R1.765** |
| *Overberg Water* | *Pump station for new bulk supply to Hermanus (item RVW5.3)* | *2035* | *250* | *250* | *R11.367* |
| | ***Subtotal*** | | | | ***R11.367*** |
| **Total (Excluding Overberg Water)** | | | | | **R27.068** |

## RESERVOIR INFRASTRUCTURE

The condition of most of the reservoirs in Overstrand Municipality's Management Area is good and the reservoirs are well maintained. New security fences were also recently installed at some of the reservoir sites to reduce possible vandalism.

Overstrand Municipality's overall storage factors of the reservoirs for the various schemes for 2022/2023, based on 1 x PDD (24 hours storage capacity), are 1.89 for Buffels River, 2.00 for Kleinmond, 2.05 for Greater Hermanus, 1.29 for Stanford, 1.78 for Greater Gansbaai, 2.40 for Pearly Beach, 1.47 for Baardskeerdersbos and 3.31 for Buffeljags Bay.

Even though the town's overall storage capacity might be adequate there might be some distribution zones within the town's network with inadequate storage capacity, as identified through the Water Master Planning process (June 2021) and indicated in the table below.

**Table C.3.18: Future Reservoir Storage Capacities Required**

| Area | Recommendations included in the Water Master Plan | Year | Capacity (Ml) | Cost (R Million) |
|---|---|---|---|---|
| Buffels River | A new 3.0 Ml reservoir is proposed at the existing Voorberg reservoir site to augment reservoir storage for Betty's Bay (item OBW.B3). | 2025 | 3.000 | R10.962 |
| | A new 1.0 Ml reservoir is proposed at the existing Sunny Seas reservoir site to augment reservoir storage for Betty's Bay (item OBW.B9). | 2030 | 1.000 | R5.220 |
| | A new 1.5 Ml reservoir is proposed at the existing Pringle Bay reservoir site to augment reservoir storage for Pringle Bay (item OBW.B2). | 2050 | 1.500 | R6.888 |
| | **Subtotal** | | | **R23.070** |
| Greater Hermanus | A new 3.0 Ml reservoir is proposed at the existing Sandbaai reservoir site to augment reservoir storage in Sandbaai (item OHW.B11). | 2024 | 3.000 | R10.962 |
| | A new 1.5 Ml reservoir is proposed at the existing Onrus reservoir site to augment reservoir storage in Onrus (item OHW.B9). | 2024 | 1.500 | R6.888 |
| | 12.0 Ml reservoir storage is proposed at the existing Fisherhaven HL reservoir site to augment reservoir storage for the Fisherhaven HL reservoir zone. It is proposed that this is phased in 2 x 6 Ml reservoirs (item OHW.B30a). | 2030 | 6.000 | R18.009 |
| | A new 3.5 Ml reservoir is proposed at the existing Hawston LL reservoir site to augment reservoir storage in Hawston (item OHW.B2). | 2030 | 3.500 | R12.345 |
| | A new 1.0 Ml reservoir is proposed at the existing Vermont reservoir site to augment reservoir storage for the Vermont reservoir zone (item OHW.B36). | 2030 | 1.000 | R5.220 |
| | A new 0.5 Ml reservoir is proposed at the existing Chanteclair reservoir site to augment reservoir storage in the Onrus Manor reservoir zone (item OHW.B27). | 2030 | 0.500 | R3.321 |
| | A new 2.0 Ml reservoir is proposed at the existing Hermanus 1 & 2 reservoir site to augment reservoir storage for the zone when the AADD for the Hermanus reservoir zone exceeds 5 000 kl/d (item OHW.B32). | 2030 | 2.000 | R8.294 |
| | A new 2.0 Ml reservoir is proposed at the existing Fisherhaven LL reservoir site to augment reservoir storage for the Fisherhaven LL reservoir zone (item OHW.B1). | 2035 | 2.000 | R8.294 |
| | A new 0.25 Ml reservoir is proposed at the existing Northcliff reservoir site to augment reservoir storage in the Northcliff reservoir zone (item OHW.B12). | 2035 | 0.250 | R2.001 |
| | 12.0 Ml reservoir storage is proposed at the existing Fisherhaven HL reservoir site to augment reservoir storage for the Fisherhaven HL reservoir zone. It is proposed that this is phased in 2 x 6 Ml reservoirs (item OHW.B30b). | 2045 | 6.000 | R18.009 |
| | **Subtotal** | | | **R93.343** |
| Stanford | A new 3.0 Ml reservoir is proposed at the existing Stanford reservoir site to augment reservoir storage for Stanford when the AADD for the town exceeds 1 350 kl/d (item OSW.B1). | 2030 | 3.000 | R10.962 |
| | **Subtotal** | | | **R10.962** |
| Greater Gansbaai | A new 4.0 Ml reservoir (item OGW.B10) is proposed at the existing Franskraal reservoir site to augment reservoir storage for Franskraal. | 2030 | 4.000 | R13.601 |
| | A new 3.5 Ml reservoir (item OGW.B11) is proposed at the existing Kleinbaai reservoir site to augment reservoir storage for Kleinbaai, Romans Bay and the Birkenhead area. | 2035 | 3.500 | R12.345 |
| | A second 4.0 Ml reservoir (item OGW.B22) is proposed at the existing Gansbaai reservoir site to augment reservoir storage for the future. | 2035 | 4.000 | R13.601 |
| | A new 1.5 Ml reservoir (item OGW.B13) is proposed at the existing De Kelders reservoir site to augment reservoir storage for De Kelders. | 2035 | 1.500 | R6.888 |
| | A new 5.5 ML reservoir (item OGW.B17) is proposed to accommodate future development area GG32 and the higher lying erven of future development area GG33. | 2040 | 5.500 | R16.907 |
| | A new 4.5 Ml (item OGW.B14) is proposed at the existing Franskraal reservoir site to augment reservoir storage for Franskraal. The reservoir will only be required when future development area GG31 & the lower lying erven of future development area GG33 start to develop. | 2050 | 4.500 | R14.731 |
| | **Subtotal** | | | **R78.073** |
| Pearly Beach | A new 1.5 Ml reservoir is proposed at the existing Pearly Beach reservoir site to augment reservoir storage for Pearly Beach when the AADD reaches 1 000 kl/d (item OPW.B2). | 2035 | 1.500 | R6.888 |
| | **Subtotal** | | | **R6.888** |
| Baardskeerdersbos | A new 0.150 Ml tank is proposed to augment reservoir storage capacity for Baardskeerdersbos when the AADD exceeds 75 kl/d (item OBBW.B2) | 2050 | 0.150 | R1.201 |
| | **Subtotal** | | | **R1.201** |
| *Overberg Water* | *To augment balancing volume of Ruensveld West WTW (Item RVW1.8)* | *2035* | *5.500* | *R16.907* |
| | *Balancing volume for supply to Hermanus (item RVW5.2)* | *2035* | *10.000* | *R26.390* |

| Table C.3.18: Future Reservoir Storage Capacities Required | | | | |
|---|---|---|---|---|
| **Area** | **Recommendations included in the Water Master Plan** | **Year** | **Capacity (Ml)** | **Cost (R Million)** |
| | *Balancing volume for supply to Hermanus (item RVW5.5)* | *2035* | *20.000* | *R45.530* |
| | ***Subtotal*** | | | ***R88.827*** |
| **Total (Excluding Overberg Water)** | | | | **R213.537** |

## WATER RETICULATION INFRASTRUCTURE

The Water Master Plan (June 2021) has indicated that based on the most likely land-use development scenario, it will be necessary for the following water reticulation infrastructure.

| Table C.3.19: Future Water Reticulation Infrastructure Required | | | | | |
|---|---|---|---|---|---|
| **Scheme** | **Year** | **Recommendations included in the Water Master Plan** | **Distance (m)** | **Diameter (mm)** | **Cost (R Million)** |
| Buffels River | 2024 | Upgrade existing 75 and 100 mm pipelines (Item OBW5.1) | 91 | 200 | R0.114 |
| | | New dedicated feeder main for high lying erven (Items OBW5.2 and OBW5.3) | 109 | 200 | R0.242 |
| | | | 363 | 110 | R0.398 |
| | 2025 | Replace existing 75 mm to improve network conveyance (Item OBW1.1) | 330 | 200 | R0.310 |
| | | Replace existing 50 mm to improve network conveyance (to be verified, potentially already upgraded) (Item OBW1.2) | 691 | 160 | R0.486 |
| | | Replace existing 50 mm to improve network conveyance (Item OBW1.3) | 428 | 110 | R0.310 |
| | | Replace existing 75 mm and connect to Disa Kloof 160 mm pipeline to improve network conveyance (including main road crossing) (Item OBW4.3) | 292 | 160 | R1.625 |
| | 2030 | Replace existing 75 and 100 mm pipelines to improve network conveyance (Item OBW4.1) | 57 | 160 | R0.079 |
| | | Replace existing 75 mm to improve network conveyance (Item OBW7.3) | 177 | 160 | R0.178 |
| | | Required to augment supply to Sunny Seas reservoir when supply problems occur (Item OBW2.2) | 602 | 200 | R1.136 |
| | | Required to rezone network when Betty's Bay booster zone is implemented (Item OBW2.3) | 1 887 | 200 | R3.469 |
| | | Replace existing 75 mm to improve network conveyance when Voorberg booster zone is implemented (Item OBW3.1) | 155 | 110 | R0.151 |
| | | Inter-connection pipe to improve network redundancy (including main road crossing) (Item OBW3.2) | 17 | 110 | R0.042 |
| | | Required to rezone network, check valve to install (Item OBW3.3) | - | 100 | 0.140 |
| | | Required to rezone network, valve to insert and close (Item OBW3.4a) | - | 75 | 0.102 |
| | | Required to rezone network, valve to insert and close (Item OBW3.4b) | - | 160 | 0.114 |
| | | Required to rezone network, check valve to install (Item OBW3.5) | - | 150 | 0.151 |
| | 2040 | To improve network conveyance (Item OBW2.1) | 1 736 | 315 | R5.273 |
| | **Subtotal** | | **6 935** | **-** | **R14.320** |
| Kleinmond | 2024 | Required soon for pressure requirements (Item OKW1.2) | 502 | 315 | R1.564 |
| | | To improve network conveyance (Item OKW1.9) | 7 | 160 | R0.044 |
| | | To improve network conveyance (Item OKW1.10) | 4 | 160 | R0.040 |
| | | 75 mm and 100 mm valves to close and 160 mm valve to open | - | - | - |
| | 2025 | To improve network conveyance (Item OKW1.8) | 863 | 200 | R1.609 |
| | 2035 | Replace existing 50 mm required when future areas KM3 and KM4 develop (Item OKW1.6) | 356 | 200 | R0.262 |
| | | Required when future areas KM3 and KM4 develop (Item OKW1.7) | 369 | 200 | R0.713 |
| | | Replace existing 75 mm with 200 mm when future area KM20 develops (Item OKW1.11) | 750 | 200 | R0.672 |
| | | Required when future area KM16 develops (Item OKW1.12) | 452 | 160 | R0.669 |
| | **Subtotal** | | **3 303** | **-** | **R5.573** |
| Greater Hermanus | 2024 | Replace existing 75mm pipes and reinforce network when future areas GH32 and GH33 develop (Item OHW8.3) | 277 | 160 | R0.316 |
| | | To improve network redundancy (Item OHW8.4) | 80 | 110 | R0.108 |
| | | Replace existing 225 mm to improve network conveyance (Item OHW9.2) | 111 | 315 | R0.323 |
| | | Required to rezone network, valve to insert and close (Item OHW10.1b) | - | 75 | R0.102 |
| | | Required to rezone network, open and close various valves (Items OHW10.1a, OHW10.2a-c, OHW10.3a-d) | - | - | - |
| | | To improve network conveyance (Item OHW10.4) | 185 | 110 | R0.176 |
| | | To improve network conveyance (with implementation of item OHWB.20) (Item OHW2.1) | 313 | 400 | R1.705 |

| Table C.3.19: Future Water Reticulation Infrastructure Required | | | | | |
|---|---|---|---|---|---|
| **Scheme** | **Year** | **Recommendations included in the Water Master Plan** | **Distance (m)** | **Diameter (mm)** | **Cost (R Million)** |
| | | Inter-connection pipe to improve network redundancy (Item OHW9.5) | 105 | 110 | R0.134 |
| | | Replace existing 75 mm to improve network conveyance (Item OHW9.9) | 572 | 160 | R0.519 |
| | | To improve network conveyance (Item OHW9.12) | 324 | 160 | R0.489 |
| | | To improve network conveyance (Item OHW9.13) | 117 | 110 | R0.145 |
| | | Required to improve network conveyance (Item OHW9.14) | 1 534 | 400 | R7.968 |
| | | To improve network conveyance (Item OHW9.15) | 92 | 160 | R0.112 |
| | | To improve network conveyance (Item OHW9.16) | 25 | 110 | R0.052 |
| | | Required when Zwelihle informal area is formalized (Item OHW9.3) | 431 | 200 | R0.826 |
| | | Required when Zwelihle informal area is formalized (Item OHW9.6) | 621 | 160 | R0.834 |
| | | Required when Zwelihle informal area is formalized (Item OHW9.10) | 449 | 160 | R0.613 |
| | | Required to improve network conveyance (Item OHW9.11) | 591 | 160 | R0.864 |
| | 2025 | Required when future area GH5.2 develops (Item OHW2.3) | 610 | 200 | R1.150 |
| | | Replace existing 50 mm to improve network conveyance when GH6.2 and GH6.6 develops (Item OHW2.6) | 580 | 110 | R0.412 |
| | | To improve network conveyance when future area GH5.1 develops (Item OHW13.1) | 466 | 355 | R1.807 |
| | | To improve network conveyance (Item OHW5.1) | 80 | 75 | R0.095 |
| | | Required when future area GH28.1 develops (Item OHW7.4) | 212 | 110 | R0.177 |
| | | New supply pipe from reservoir to network (when AADD of Fisherhaven LL reaches 1 000 kl/d) (Item OHW1.1) | 976 | 315 | R4.280 |
| | | To improve network conveyance (including main road crossing) (Item OHW6.1) | 432 | 200 | R0.827 |
| | | Required for even withdrawal from existing network, flow control valve to install (Item OHW14.1) | - | 75 | R0.182 |
| | | Fernkloof tank internal water network (Item OHW14.2) | 200 | 110 | R0.230 |
| | 2030 | Replace existing 50 mm required to improve network conveyance (Item OHW1.5) | 492 | 110 | R0.382 |
| | | Replace existing 75 mm required to improve network conveyance (Item OHW1.6) | 623 | 110 | R0.563 |
| | | Replace existing 150 mm Ø to improve network conveyance (Item OHW2.2) | 287 | 315 | R0.437 |
| | | Replace existing 150 mm Ø to improve network conveyance (Item OHW2.4) | 252 | 315 | R0.389 |
| | | Required to manage static pressures in zone, install PRV (Item OHW3.6) | - | 110 | R0.241 |
| | | Required when future area GH5.1 develops (Item OHW13.2) | 397 | 355 | R1.550 |
| | | Required when future area GH5.1 develops (Item OHW13.3) | 1 391 | 315 | R4.236 |
| | | Required when future area GH5.1 develops (Item OHW13.4) | 623 | 250 | R1.844 |
| | | Required when future area GH5.1 develops (Item OHW13.5) | 1 905 | 160 | R2.531 |
| | | Required when future areas GH6.3, GH6.4 & GH6.5 develop (including main road crossing) (Item OHW13.8) | 1 052 | 250 | R2.606 |
| | | Required when future area GH11 develops (Item OHW7.6) | 522 | 160 | R0.767 |
| | 2035 | Replace existing 50 and 75 mm to improve network redundancy when future area GH2 develops (Item OHW1.2) | 650 | 160 | R0.467 |
| | | Required when future area GH2 develops (Item OHW1.3) | 932 | 160 | R1.343 |
| | | Required when future area GH6.6 develops (Item OHW2.10) | 590 | 110 | R0.593 |
| | | Replace existing 50 mm required to improve network conveyance (Item OHW2.11) | 1 224 | 250 | R0.867 |
| | | Required when future area GH6.4 develops (Item OHW3.8) | 325 | 200 | R0.582 |
| | | Required when future area GH6.1 develops (Item OHW5.2) | 378 | 160 | R0.566 |
| | | To improve network conveyance (Item OHW12.1) | 473 | 200 | R0.902 |
| | 2040 | Required when future area GH3 develops (Item OHW1.4) | 148 | 250 | R0.414 |
| | | To improve network redundancy (Item OHW12.2) | 194 | 110 | R0.225 |
| | 2045 | Replace existing 100 mm required to improve network conveyance (Item OHW2.5) | 423 | 315 | R0.575 |
| | | Required when future areas GH1 & GH50 develop (Item OHW13.12) | 152 | 400 | R0.880 |
| | 2050 | Required when future area GH1 develops (Item OHW13.13) | 285 | 315 | R0.997 |
| | **Subtotal** | | **22 701** | **-** | **R48.403** |
| Stanford | 2024 | To improve network conveyance (when future area SF7 develops) (Item OSW1.6) | 614 | 250 | R1.455 |
| | | Replace existing 100 mm pipeline to improve network conveyance (Item OSW2.5) | 264 | 200 | R0.296 |
| | | Replace existing 50 and 75 mm pipelines to improve network conveyance (Item OSW2.8) | 261 | 160 | R0.235 |

| Table C.3.19: Future Water Reticulation Infrastructure Required | | | | | |
|---|---|---|---|---|---|
| **Scheme** | **Year** | **Recommendations included in the Water Master Plan** | **Distance (m)** | **Diameter (mm)** | **Cost (R Million)** |
| | | Required for isolating of Stanford PRV and reservoir zones, close valves (Items OSW2.9a and OSW2.9b) | - | 110 | - |
| | | Replace existing 50 and 75 mm pipelines and connect lower lying erven of LCH area to PRV zone (Item OSW2.10) | 110 | 160 | R0.111 |
| | | Required for isolating of Stanford PRV and reservoir zones, install PRV (Item OSW2.2) | - | 110 | R0.241 |
| | 2025 | To improve network redundancy (Item OSW1.8) | 100 | 110 | R0.129 |
| | | Replace existing 50 mm to improve network conveyance (Item OSW2.6) | 564 | 110 | R0.401 |
| | 2030 | Required when future areas SF1, SF3, SF4 and SF5 develop (Item OSW1.3) | 1 147 | 200 | R2.126 |
| | 2035 | Required when future areas SF1, SF3 and SF4 develop (Item OSW1.4) | 374 | 200 | R0.722 |
| | **Subtotal** | | **3 434** | **-** | **R5.716** |
| Greater Gansbaai | 2024 | Replace existing 50 mm to improve network conveyance (Item OGW1.3) | 76 | 110 | R0.074 |
| | | To improve network redundancy (Item OGW1.6) | 119 | 75 | R0.129 |
| | | To improve network redundancy (OGW1.8) | 296 | 110 | R0.329 |
| | | To improve network conveyance (Item OGW2.1) | 1 006 | 450 | R5.407 |
| | | To improve network conveyance (Item OGW2.2) | 200 | 355 | R0.818 |
| | | To improve network conveyance (Item OGW2.16) | 155 | 160 | R0.252 |
| | | To improve network conveyance (Item OGW2.17) | 52 | 160 | R0.108 |
| | | To improve network conveyance (Item OGW2.3) | 398 | 200 | R0.765 |
| | 2025 | To improve network conveyance (Item OGW3.1a) | 83 | 315 | R0.236 |
| | | To improve network conveyance (Item OGW3.4) | 134 | 110 | R0.164 |
| | | Required when future areas GG25 and GG34 develop (Item OGW3.10) | 733 | 110 | R0.721 |
| | | Required when future area GG34 develops (Item OGW3.12) | 1 405 | 110 | R1.357 |
| | | To improve network conveyance (Item OGW7.2) | 139 | 200 | R0.295 |
| | | To isolate booster zone from reservoir zone, insert two 75 mm valves and close (Items OGW7.3 and OGW7.4) | - | 75 | R0.204 |
| | | Required when future area GG8.2 develops (Item OGW2.13) | 399 | 160 | R0.595 |
| | | To improve network conveyance and redundancy (Item OGW2.14) | 703 | 160 | R1.021 |
| | 2030 | Required when future area GG2 develops (Item OGW1.5) | 94 | 160 | R0.166 |
| | | To improve network conveyance (Item OGW2.8a) | 332 | 200 | R0.646 |
| | | Replace existing 50 mm to improve network conveyance (Item OGW2.8b) | 486 | 200 | R0.349 |
| | | To improve network conveyance (Item OGW2.9) | 612 | 160 | R0.894 |
| | | To improve network conveyance (Item OGW3.1b) | 601 | 200 | R1.379 |
| | | Required when future areas GG12, 16, 17 and 18 develop (Item OGW3.2) | 1 308 | 200 | R2.417 |
| | | To improve network conveyance (Item OGW4.1) | 204 | 160 | R0.320 |
| | 2035 | Required when future area GG1 develops (Item OGW1.2) | 782 | 200 | R1.463 |
| | | Replace existing 75 mm when future area GG28 develops (Item OGW1.12) | 238 | 110 | R0.202 |
| | | Required when future areas GG16, 17 and 18 develop (Item OGW3.3) | 1 105 | 160 | R1.585 |
| | 2040 | Required when future area GG1 develops (Item OGW1.13) | 1 022 | 160 | R1.470 |
| | | Required when future area GG10.2 develops (Item OGW2.18) | 512 | 160 | R0.753 |
| | | Required when future area GG31 and lower lying erven of GG33 develops (Item OGW4.3) | 801 | 550 | R5.995 |
| | | Inter-connection pipe to improve network conveyance when MP item OGW4.3 is constructed (Item OGW4.4) | 20 | 355 | R0.149 |
| | | Required when lower lying erven of future area GG33 develops (Item OGW4.8) | 1 762 | 315 | R5.352 |
| | | New supply pipe when Franskraal HL reservoir is constructed (Item OGW6.1) | 572 | 400 | R2.771 |
| | | Required when higher lying erven of future area GG33 develops (Item OGW6.4) | 1 043 | 400 | R4.973 |
| | | Required when higher lying erven of future area GG33 develops (Item OGW6.5) | 814 | 315 | R2.501 |
| | 2045 | Required when future area GG25 develops (Item OGW3.6) | 640 | 110 | R0.632 |
| | | Required when future area GG25 develops (Item OGW3.7) | 1 347 | 110 | R1.301 |
| | | Required when future area GG25 develops (Item OGW3.8) | 1 120 | 110 | R1.087 |
| | | Required when future area GG25 develops (Item OGW3.9) | 1 517 | 110 | R1.463 |
| | | To improve network conveyance (Item OGW4.2) | 1 171 | 160 | R1.679 |
| | | Required when future area GG31 develops (Item OGW4.5) | 1 176 | 315 | R3.589 |
| | | Required when lower lying erven of future area GG33 develops (Item OGW4.9) | 771 | 250 | R1.759 |

| Table C.3.19: Future Water Reticulation Infrastructure Required | | | | | |
|---|---|---|---|---|---|
| **Scheme** | **Year** | **Recommendations included in the Water Master Plan** | **Distance (m)** | **Diameter (mm)** | **Cost (R Million)** |
| | | Required when lower lying erven of future area GG33 develops (Item OGW4.10) | 597 | 200 | R1.033 |
| | | Required when lower lying erven of future area GG33 develops (Item OGW6.6) | 1 008 | 250 | R2.283 |
| | 2050 | Required when future area GG31 develops (Item OGW4.6) | 1 613 | 250 | R3.620 |
| | 2055 | Required when future area GG31 develops (Item OGW4.7) | 805 | 200 | R1.377 |
| | **Subtotal** | | **29 971** | **-** | **R65.683** |
| Pearly Beach | 2035 | To improve network conveyance when capacity of the booster PS is upgraded (Item OPW1.4) | 595 | 250 | R1.497 |
| | 2040 | Required when future area PB4 develops (Item OPW1.3) | 817 | 110 | R0.808 |
| | **Subtotal** | | **1 412** | **-** | **R2.305** |
| Baardskeer-dersbos | 2030 | Dedicated bulk water supply to Baardskeerdersbos reservoir, valve to insert and close (Item OBBW1.1) | - | 90 | R0.102 |
| | **Subtotal** | | **-** | **-** | **R0.102** |
| **Total** | | | **67 756** | | **R142.102** |

The Water Master Plan (June 2021) indicated the following Water Demand Management infrastructure requirements.

| Table C.3.20: Future Water Demand Management Infrastructure Required | | | |
|---|---|---|---|
| **Scheme** | **Year** | **Project** | **Cost (R Million)** |
| Buffels River | - | Telemetry at reservoirs, pumping stations and bulk water meters | R0.200 |
| Kleinmond | - | Telemetry at reservoirs, pumping stations and bulk water meters | R0.050 |
| Greater Hermanus | - | Telemetry at reservoirs, pumping stations and bulk water meters | R0.700 |
| Stanford | - | Telemetry at reservoirs, pumping stations and bulk water meters | R0.100 |
| Greater Gansbaai | 2024 | Various pipelines and valves, PRJ-OGW002 | R5.287 |
| | 2035 | Various valves, PRJ-OGW016 | R0.198 |
| | - | Telemetry at reservoirs, pumping stations and bulk water meters | R0.500 |
| Pearly Beach | - | Telemetry at reservoirs, pumping stations and bulk water meters | R0.100 |
| Baardskeerdersbos | - | Telemetry at reservoirs, pumping stations and bulk water meters | R0.100 |
| Buffeljags Bay | - | Telemetry at reservoirs, pumping stations and bulk water meters | R0.050 |
| **Total** | | | **R7.285** |

## BULK SEWER PIPELINE AND SEWER DRAINAGE NETWORK INFRASTRUCTURE

The waterborne sewerage drainage networks need to be extended in Kleinmond, Greater Gansbaai, Greater Hermanus, Hawston and Pearly Beach, while the entire towns of Betty's Bay, Pringle Bay, Rooi-Els, Baardskeerdersbos and Buffeljags Bay are still dependent on the sewerage tanker truck service. Some of the bulk sewer rising main pipelines need to be refurbished.

The Sewer Master Plan (June 2021) has indicated that based on the most likely land-use development scenario, it will be necessary for the following bulk sewer pipeline and sewer drainage network infrastructure.

| Table C.3.21: Future Bulk Sewer Pipeline and Sewer Drainage Network Infrastructure Required | | | |
|---|---|---|---|
| **Scheme** | **Year** | **Project** | **Cost (R Million)** |
| Buffels River | 2030 | New outfall sewer for unserviced erven in Betty's Bay (Item OBS8.1 – OBS15.1) | R148.905 |
| | | New rising main when Betty's Bay Main pump station no. 1 is constructed (Item OBS.B6) | R21.895 |
| | | New rising main when Betty's Bay Main pump station no. 2 is constructed (Item OBS.B8) | R12.137 |
| | | New rising main when Betty's Bay Main pump station no. 3 is constructed (Item OBS.B10) | R17.641 |
| | | New rising main when future Betty's Bay pump station 1 is constructed (Item OBS8.3) | R0.383 |
| | | New rising main when future Betty's Bay pump station 2 is constructed (Item OBS9.6) | R2.362 |
| | | New rising main when future Betty's Bay pump station 3 is constructed (Item OBS10.4) | R0.882 |
| | | New rising main when future Betty's Bay pump station 4 is constructed (Item OBS11.3) | R0.455 |
| | | New rising main when future Betty's Bay pump station 5 is constructed (Item OBS12.3) | R0.343 |

| Table C.3.21: Future Bulk Sewer Pipeline and Sewer Drainage Network Infrastructure Required | | | |
|---|---|---|---|
| **Scheme** | **Year** | **Project** | **Cost (R Million)** |
| | | New rising main when future Betty's Bay pump station 6 is constructed (Item OBS13.3) | R0.565 |
| | | New rising main when future Betty's Bay pump station 7 is constructed (Item OBS14.5) | R0.763 |
| | | New rising main when future Betty's Bay pump station 8 is constructed (Item OBS15.3) | R0.102 |
| | 2035 | New gravity outfall sewers for unserviced erven in Pringle Bay (Items OBS5.1, OBS5.2, OBS6.1, OBS6.2 and OBS7.1)) | R69.134 |
| | | New rising main when future Pringle Bay pump station 1 is constructed (Item OBS5.4) | R2.556 |
| | | New rising main when future Pringle Bay pump station 2 is constructed (Item OBS6.4) | R0.939 |
| | | New rising main when future Pringle Bay pump station 3 is constructed (Item OBS7.3) | R0.773 |
| | | New rising main when future Rooi Els pump station 1 is constructed (Item OBS1.3) | R0.310 |
| | | New rising main when future Rooi Els pump station 2 is constructed (Item OBS2.4) | R0.522 |
| | | New rising main when future Rooi Els pump station 3 is constructed (Item OBS3.6) | R0.282 |
| | | New rising main when future Rooi Els pump station 4 is constructed (Item OBS4.3) | R0.331 |
| | | New rising main when Pringle Bay Main pump station is constructed (Item OBS.B4) | R10.664 |
| | 2040 | New gravity outfall sewers for unserviced erven in Rooi Els (Item OBS1.1, OBS2.1, OBS2.2, OBS3.1, OBS3.2, OBS3.3, OBS3.4 and OBS4.1) | R20.013 |
| | | New rising main when Rooi Els Main pump station is constructed (Item OBS.B2) | R7.105 |
| | **Subtotal** | | **R319.062** |
| Kleinmond | 2024 | New gravity outfall sewer for unserviced erven in Kleinmond (Item OKS2.1) | R39.146 |
| | | Upgrade existing 160 mm dia. outfall gravity sewer when it reaches capacity (Investigate first) (Item OKS2.4) | R1.289 |
| | 2025 | New gravity outfall sewer for unserviced erven in Kleinmond (Item OKS1.1) | R20.639 |
| | | New gravity outfall sewer for future development area KM9 (Item OKS2.6) | R0.501 |
| | | Upgrade existing 100 mm dia. gravity sewer when it reaches capacity (Item OKS5.1) | R0.742 |
| | 2030 | New gravity sewer required when future area KM3 develops (Item OKS2.3) | R0.577 |
| | 2035 | Upgrade existing rising main when Kleinmond PS5 is upgraded (Item OKS6.2) | R0.565 |
| | | Upgrade existing gravity sewer when future area KM20 develops (Item OKS6.3) | R0.904 |
| | **Subtotal** | | **R64.363** |
| Greater Hermanus | 2024 | Upgrade existing rising main. Verify diameter of rising main (Item OHS22.2) | - |
| | | Upgrade existing 225 mm dia. outfall gravity sewer when it reaches capacity (Item OHS13.1) | R2.507 |
| | | Upgrade existing 450 & 525 mm dia. bulk gravity outfall sewer when it reaches capacity (Item OHS13.4) | R3.426 |
| | | New gravity sewer when existing 525 mm dia. outfall sewer reaches capacity (Item OHS13.2) | R4.506 |
| | | Upgrade existing gravity (Investigate first). Verify the capacity of the Onrus Milkwood pump station first (Item OHS11.8) | R1.179 |
| | | Upgrade existing gravity when overflow problems occur when Whale Rock PS is upgraded (Item OHS19.1) | R1.600 |
| | 2025 | Abandon existing Peach House rising main when outfall sewer is constructed to divert flow to Whale Rock PS (Item OHS30.2) | R0.008 |
| | | Decommission existing Hemel-en-Aarde rising main (Item OHS29.4) | R0.008 |
| | | New outfall gravity sewer for future areas GH1, GH5.1, GH5.2 & GH50 (Item OHS8.3) | R3.912 |
| | | New outfall gravity sewer for unserviced erven in Fisherhaven (Item OHS2.1) | R8.674 |
| | | New outfall gravity sewers for unserviced erven in Hawston (Item OHS6.3, Item OHS8.1, Item OHS8.10) | R10.455 |
| | | New outfall gravity sewer for unserviced erven in Onrus (Item OHS11.1) | R4.005 |
| | | New outfall gravity sewer to divert flow from Peach House PS to Whale Rock PS. Abandon existing gravity sewer (Item OHS30.3, Item OHS30.4) | R0.783 |
| | | New gravity sewer to divert flow from existing Hemel en Aarde PS to Sandbaai PS (Item OHS29.1) | R0.274 |
| | | Upgrade existing gravity sewer when existing Hemel en Aarde drainage area is diverted to Sandbaai PS (Item OHS29.2) | R2.203 |
| | | New rising main when future Greater Hermanus PS 1 is constructed (Item OHS2.3) | R0.330 |
| | | New rising main when future Greater Hermanus PS 12 is constructed (Item OHS24.3) | R1.204 |
| | | New rising main when future Greater Hermanus PS 3 is constructed (cost to the developer) (Item OHS4.2) | - |
| | | New rising main when future Greater Hermanus PS 4 is constructed (Item OHS6.5) | R1.480 |
| | | New rising main when future Greater Hermanus PS 7 is constructed (Item OHS9.2) | R0.353 |
| | | New rising main when future pump station GH15 is constructed (cost to the developer (Item OHS28.2) | - |
| | 2030 | New outfall gravity sewer for future area GH2 (Item OHS3.2) | R1.472 |
| | | New outfall gravity sewer for future areas GH6.3 and GH6.5 (Item OHS7.5) | R1.570 |
| | | New outfall gravity sewers for unserviced erven in Fisherhaven (Item OHS1.1, OHS1.2, OHS1.4, OHS3.1) | R23.745 |

| Table C.3.21: Future Bulk Sewer Pipeline and Sewer Drainage Network Infrastructure Required | | | |
|---|---|---|---|
| **Scheme** | **Year** | **Project** | **Cost (R Million)** |
| | | New outfall gravity sewer for unserviced erven in Hawston (Item OHS6.1) | R16.003 |
| | | New outfall gravity sewers for unserviced erven in Hermanus (Item OHS15.1, Item OHS16.1, Item OHS17.1 and OHS18.1) | R18.550 |
| | | Upgrade existing 200 mm dia. outfall gravity sewer when it reaches capacity (Investigate first), modelled on minimum slope (Item OHS11.3) | R0.632 |
| | | Upgrade existing 400 mm dia. outfall gravity sewer when it reaches capacity (when Onrus Main PS is upgraded) (Item OHS13.5) | R2.544 |
| | | Upgrade existing outfall gravity sewer when it reaches capacity, modelled on minimum slope and diameter of 90 mm (Item OHS11.7) | R0.395 |
| | | Upgrade existing gravity sewer when future areas GH13 and GH28.1 develops (Item OHS12.4) | R0.710 |
| | | Upgrade existing gravity sewer when future areas GH8.3 - GH8.6 develop (Item OHS11.12) | R1.069 |
| | | Upgrade existing gravity when future areas GH8.5 and GH8.6 develop (Item OHS11.11) | R0.604 |
| | | New rising main when future Greater Hermanus PS 10 is constructed (Item OHS17.3) | R0.428 |
| | | New rising main when future Greater Hermanus PS 2 is constructed (Item OHS3.4) | R0.304 |
| | | New rising main when future Greater Hermanus PS 5 is constructed (Item OHS7.4) | R0.366 |
| | | New rising main when future Greater Hermanus PS 9 is constructed (Item OHS18.3) | R0.404 |
| | | Upgrade existing rising main when Sandbaai pump station 1 reaches capacity (Item OHS12.6) | R5.182 |
| | 2035 | Upgrade existing rising main when Fisherhaven pump station reaches capacity (Item OHS1.6) | R4.695 |
| | | New outfall gravity sewer for future areas GH1, GH5.1 & GH50 (including main road crossing) (Item OHS8.2) | R4.440 |
| | | New outfall gravity sewer for unserviced erven in Hawston (Item OHS7.1) | R6.388 |
| | | New outfall gravity sewer for unserviced erven in Voëlklip (Item OHS14.1) | R5.750 |
| | | Upgrade existing gravity sewers when existing 250 mm dia. outfall sewer reaches capacity (Item OHS1.3, OHS1.7) | R1.278 |
| | | Upgrade existing 300 mm dia. outfall gravity sewer when it reaches capacity (Item OHS8.6) | R1.631 |
| | | Upgrade existing outfall gravity sewer when it reaches capacity (Item OHS8.5) | R2.173 |
| | | Upgrade existing outfall gravity sewers when it reaches capacity, modelled on minimum slope (Item OHS12.7, OHS12.8) | R2.458 |
| | | New gravity sewer when future area GH6.4 develops (Item OHS9.3) | R0.450 |
| | | New gravity sewer when future area GH6.6 develops (Item OHS9.4) | R0.447 |
| | | New gravity sewer when future areas GH8.3 - GH8.6 develop (Item OHS11.13) | R1.300 |
| | | Upgrade existing gravity sewers when overflow problem occur (Investigate first) (Item OHS8.8, OHS8.9) | R1.245 |
| | 2040 | New outfall gravity sewer for future area GH46 (Item OHS27.1) | R1.302 |
| | | New outfall gravity sewer for future areas GH1 and GH50 (Item OHS8.7) | R4.544 |
| | 2045 | Upgrade existing 315 mm dia. outfall gravity sewer when it reaches capacity (Item OHS27.2) | R5.697 |
| | | New rising main when future Greater Hermanus PS 6 is constructed (Item OHS5.2) | R2.434 |
| | 2050 | New rising main when future areas GH1 and GH50 develop (Item OHS20.2) | R1.465 |
| | | New gravity sewer when future areas GH1 and GH50 develop (Item OHS20.3) | R1.314 |
| | 2060 | New rising main when future areas GH1 and GH50 develop (Item OHS20.4) | R1.225 |
| | **Subtotal** | | **R171.151** |
| Stanford | 2030 | New gravity sewer required when future Stanford PS1 is constructed (Item OSS2.2) | R0.222 |
| | | New rising main when future Stanford PS 1 is constructed (Item OSS3.3) | R0.285 |
| | | New gravity outfall sewer for unserviced erven in Stanford South (Item OSS3.1) | R2.439 |
| | | Upgrade existing gravity outfall sewer (Investigate first) when it reaches capacity, modelled on minimum slope (Item OSS2.4) | R0.850 |
| | 2035 | Upgrade existing gravity sewers (Investigate first) when it reaches capacity, modelled on minimum slope (Item OSS1.3. OSS2.3) | R1.920 |
| | | Upgrade existing 200 mm dia. gravity outfall sewer when it reaches capacity (Item OSS1.4) | R3.561 |
| | 2040 | Upgrade existing gravity outfall sewer (Investigate first) when it reaches capacity, modelled on minimum slope, verify capacity of Sunrise Estate PS first (Item OSS1.2) | R1.272 |
| | 2045 | Upgrade existing gravity (Investigate first). Modelled on minimum slope and diameter of 160 mm, verify capacity of Sunrise Estate PS first (Item OSS1.1) | R0.440 |
| | 2050 | New rising main when future Stanford PS 2 is constructed (Item OSS5.3) | R0.443 |
| | **Subtotal** | | **R11.432** |
| Greater Gansbaai | 2024 | Upgrade existing outfall gravity sewers when it reaches capacity, modelled on minimum slope (Investigate first) (Item OGS8.2, Item OGS8.3) | R1.840 |
| | 2025 | New outfall gravity sewer for future area GG30 (Item OGS24.1) | R1.005 |
| | | New outfall gravity sewers for unserviced erven in Gansbaai (Item OGS7.2, Item OGS7.3, Item OGS8.1) | R7.939 |
| | | New gravity sewer required to decommission Conservancy Tank no. 1 (Item OGS14.2) | R0.581 |

| Table C.3.21: Future Bulk Sewer Pipeline and Sewer Drainage Network Infrastructure Required | | | |
|---|---|---|---|
| **Scheme** | **Year** | **Project** | **Cost (R Million)** |
| | | New gravity sewer required to decommission Conservancy Tank no. 2 (Item OGS15.3b) | R0.086 |
| | | Upgrade existing outfall gravity sewers when it reaches capacity, modelled on minimum slope (Item OGS7.10, Item OGS7.11) | R0.393 |
| | | New rising main when future De Kelders Main PS is constructed (Item OGS.B4) | R5.268 |
| | | New rising main when future De Kelders PS 4 is constructed (Item OGS4.7) | R1.294 |
| | | New rising main when future Kleinbaai Main PS is constructed (Item OGS.B2) | R8.105 |
| | | New rising main when future Kleinbaai PS 1 is constructed (Item OGS14.4) | R0.451 |
| | | New rising main when future Kleinbaai PS 2 is constructed (Item OGS15.11) | R3.054 |
| | | New rising main when Future PS KB 6 is constructed (Item OGS22.2) | R0.592 |
| | | New gravity sewer when Kleinbaai PS 1 and rising main is constructed (Item OGS15.7) | R0.895 |
| | 2030 | New outfall gravity sewer for Birkenhead (Item OGS24.4) | R1.580 |
| | | New outfall gravity sewer for future area GG2 (Item OGS4.5) | R1.001 |
| | | New outfall gravity sewer for future area GG3 (Item OGS7.5) | R0.488 |
| | | New outfall gravity sewers for unserviced erven in De Kelders (Item OGS3.2, Item OGS4.2, Item OGS4.3, Item OGS4.4) | R5.520 |
| | | New outfall gravity sewers for unserviced erven in Gansbaai (Item OGS7.1, Item OGS7.4, Item OGS7.9a, Item OGS12.1, Item OGS13.1, Item OGS13.2) | R23.381 |
| | | New outfall gravity sewer for unserviced erven in Kleinbaai (Item OGS14.1) | R9.741 |
| | | New rising main when Birkenhead Main pump station is constructed (Item OGS24.2) | R1.489 |
| | | New gravity sewers required to decommission Conservancy Tank no. 2 (Item OGS15.2, Item OGS15.3a) | R2.749 |
| | | New gravity sewer required to decommission Conservancy Tank no. 3 (Item OGS15.4) | R1.753 |
| | | New gravity sewer when future area GG2 develops (Item OGS3.3) | R0.673 |
| | | New gravity sewer when future area GG6 develops (Item OGS7.6) | R1.213 |
| | | New rising main when future De Kelders PS 3 is constructed (Item OGS3.5) | R0.820 |
| | | New rising main when future Gansbaai PS 2 is constructed (Item OGS9.2) | R0.353 |
| | | New rising main when future Gansbaai PS 4 is constructed (Item OGS12.3) | R0.245 |
| | | Upgrade existing rising main when Kolgans pump station 2 reaches capacity (Item OGS10.2) | R0.568 |
| | 2035 | New outfall gravity sewer for future area GG16.2 (Item OGS15.12) | R0.388 |
| | | New outfall gravity sewer for future area GG17 (Item OGS15.6) | R0.495 |
| | | New outfall gravity sewer for future area GG18 (Item OGS17.3) | R2.894 |
| | | New outfall gravity sewer for future areas GG22.1 and GG23.2 (Item OGS7.9b) | R0.507 |
| | | New outfall gravity sewers for unserviced erven in De Kelders (Item OGS2.2, Item OGS4.1, Item OGS5.1) | R21.514 |
| | | New outfall gravity sewers for unserviced erven in Franskraal (Item OGS17.2, OGS18.3) | R1.051 |
| | | New outfall gravity sewer for unserviced erven in Gansbaai (Item OGS6.1) | R12.895 |
| | | New outfall gravity sewers for unserviced erven in Kleinbaai (Item OGS15.1, 16.1) | R8.461 |
| | | New gravity sewer required to decommission Conservancy Tank no. 3 (Item OGS15.5) | R0.358 |
| | | New gravity sewer required when future area GG12 develops (Item OGS15.8) | R0.433 |
| | | New gravity sewer required when future area GG13 develops (Item OGS15.9) | R0.448 |
| | | Upgrade existing outfall gravity sewers when it reaches capacity (Investigate first), modelled on minimum slope (Item OGS7.7, OGS8.10, OGS8.8) | R2.663 |
| | | New gravity sewers when future area GG1 develops (Item OGS2.6, OGS3.6) | R1.411 |
| | | New gravity sewer when future area GG28 develops (Item OGS1.4) | R0.675 |
| | | New rising main when future De Kelders PS 1 is constructed (Item OGS1.3) | R0.058 |
| | | New rising main when future De Kelders PS 2 is constructed (Item OGS2.5) | R0.472 |
| | | New rising main when future De Kelders PS 5 is constructed (Item OGS5.3) | R0.313 |
| | | New rising main when future Franskraal PS 1 is constructed (Item OGS17.5) | R4.574 |
| | | New rising main when future Gansbaai PS 1 is constructed (Item OGS6.3) | R0.231 |
| | | New rising main when future Kleinbaai PS 3 is constructed (Item OGS16.3) | R0.366 |
| | 2040 | New rising sewer for Birkenhead (Item OGS20.1) | R0.599 |
| | | New outfall gravity sewers for unserviced erven in De Kelders (Item OGS1.1, OGS3.1) | R15.420 |
| | | New gravity sewers for unserviced erven in Franskraal (Item OGS17.1, OGS18.2, OGS19.5) | R10.518 |
| | | New gravity sewers for unserviced erven in Franskraal, when future area GG19 develops (Item OGS18.4, OGS19.2) | R1.930 |
| | | New gravity sewer required to transfer sewage flow from Uilenskraalmond to future Franskraal PS no. 9 (Item OGS32.1) | R0.638 |
| | | New gravity sewer when future area GG1 develops (Item OGS2.3) | R0.552 |
| | | New gravity sewers when future area GG31 develops (Item OGS27.1, OGS27.2, OGS28.1) | R6.906 |

| Table C.3.21: Future Bulk Sewer Pipeline and Sewer Drainage Network Infrastructure Required | | | |
|---|---|---|---|
| **Scheme** | **Year** | **Project** | **Cost (R Million)** |
| | | New rising main when future area GG33 develops (Item OGS33.2) | R0.451 |
| | | Upgrade existing gravity sewers when future area GG33 develops and existing system reaches capacity (Item OGS8.4, OGS8.6) | R5.227 |
| | | New gravity sewers when future area GG33 develops and existing system reaches capacity (Item OGS8.7) | R11.232 |
| | | New gravity when future areas GG32 and GG33 develop (Item OGS31.1) | R2.880 |
| | | New rising main when future Franskraal PS 2 is constructed (Item OGS18.6) | R1.354 |
| | | New rising main when future Franskraal PS 3 is constructed (Item OGS19.4) | R0.861 |
| | | New rising main when future Franskraal PS 6 is constructed (Item OGS28.3 | R1.054 |
| | | New rising main when future Franskraal PS 7 is constructed (Item OGS29.2) | R1.020 |
| | | New rising main when future Franskraal PS 8 is constructed (Item OGS31.3) | R2.135 |
| | | New rising main when future Franskraal PS 9 is constructed (Item OGS32.3) | R3.548 |
| | | New rising main when future Gansbaai PS 5 is constructed (Item OGS23.2) | R0.435 |
| | 2045 | New outfall gravity sewers for Birkenhead (Item OGS20.3, OGS21.1) | R6.364 |
| | | New outfall gravity sewer for unserviced erven in De Kelders (Item OGS2.1) | R7.830 |
| | | New outfall gravity sewers for unserviced erven in Franskraal (Item OGS18.1, OGS19.1) | R14.149 |
| | | New rising main when future Franskraal PS 4 is constructed (Item OGS25.4) | R0.426 |
| | | New rising main when Future PS KB 5 is constructed (Item OGS21.3) | R0.895 |
| | 2050 | New outfall gravity sewers for unserviced erven in Franskraal (Item OGS25.1, OGS25.2) | R8.889 |
| | | New rising main when future Franskraal PS 5 is constructed (Item OGS26.3) | R0.377 |
| | 2055 | New outfall gravity sewer for unserviced erven in Franskraal (Item OGS26.1) | R10.402 |
| | **Subtotal** | | **R259.376** |
| Pearly Beach | 2024 | New rising main when Package plant is decommissioned (Item OPS4.5) | R0.770 |
| | 2030 | New gravity outfall sewer for unserviced erven in Pearly Beach (Item OPS1.4b, OPS1.5, OPS1.6, OPS1.7) | R3.526 |
| | | New gravity sewer required when future area PB1.3 develops (Item OPS1.4a) | R0.392 |
| | | New rising main when future Pearly Beach PS 1 is constructed (Item OPS1.3) | R2.253 |
| | 2035 | New gravity outfall sewers for unserviced erven in Pearly Beach (Item OPS1.1, OPS2.1, OPS3.2, OPS4.2) | R12.427 |
| | | New rising main when future Pearly Beach PS 2 is constructed (Item OPS2.3) | R0.173 |
| | | New rising main when future Pearly Beach PS 3 is constructed (Item OPS3.4) | R1.504 |
| | | New rising main when future Pearly Beach PS 4 is constructed (Item OPS4.4) | R0.491 |
| | | New gravity outfall sewers for unserviced erven in Pearly Beach (Item OPS3.1, OPS4.1) | R25.866 |
| | **Subtotal** | | **R47.402** |
| Baardskeerdersbos | 2040 | New gravity outfall sewer for unserviced erven in Baardskeerdersbos (ItemOBaS1.1) | R5.424 |
| | **Subtotal** | | **R5.424** |
| Buffeljags Bay | 2045 | New gravity outfall sewer for unserviced erven in Buffeljags Bay (Item OBJS1.1) | R0.537 |
| | **Subtotal** | | **R0.537** |
| **Total** | | | **R878.747** |

## SEWER PUMP STATIONS

The Sewer Master Plan (June 2021) has indicated that based on the most likely land-use development scenario, it will be necessary for the following sewer pump stations.

| Table C.3.22: Future Sewer Pump Stations Required | | | |
|---|---|---|---|
| **Scheme** | **Year** | **Project** | **Cost (R Million)** |
| Buffels River | 2030 | New pump stations for Betty's Bay (Items OBS8.2, OBS9.5, OBS10.3, OBS11.2, OBS12.2, OBS13.2, OBS14.4, OBS15.2) | R13.431 |
| | | New pump stations required to pump sewage from Betty's Bay to Kleinmond WWTW (Items OBS.B5, OBS.B7, OBS.B9) | R13.811 |
| | 2035 | New pump stations for Pringle Bay (Item OBS5.3, OBS6.3, OBS7.2) | R5.705 |
| | | Required to pump sewage from Pringle Bay to Betty's Bay (Item OBS.B3) | R2.974 |
| | 2040 | New pump stations for Rooi Els (Item OBS1.2, OBS2.3, OBS3.5, OBS4.2) | R6.154 |
| | | New pump station required to pump sewage from Rooi Els to Pringle Bay (Item OBS.B1) | R1.817 |
| | **Subtotal** | | **R43.892** |
| Kleinmond | 2024 | Upgrade existing pump station when it reaches capacity, verify existing pump capacity first (Item OKS1.3) | R0.024 |

| Table C.3.22: Future Sewer Pump Stations Required | | | |
|---|---|---|---|
| **Scheme** | **Year** | **Project** | **Cost (R Million)** |
| | 2025 | Upgrade existing pump station when it reaches capacity (Item OKS3.1) | R0.976 |
| | 2035 | Upgrade existing pump station when it reaches capacity with development of future area KM20 (Item OKS6.1) | R0.097 |
| | **Subtotal** | | **R1.097** |
| Greater Hermanus | 2024 | Upgrade existing pump station when it reaches capacity, verify existing pump capacity first (Item OHS22.1) | R0.024 |
| | | Upgrade existing PS when it reaches capacity. Investigate existing capacity and operation of system from WWTW Main PS to Hermanus WWTW first (Item OHS19.2) | R0.024 |
| | | Upgrade existing PS capacity in order to reach scouring velocity through rising main (Item OHS23.1) | R0.644 |
| | 2025 | Abandon existing Peach House PS when outfall sewer is constructed to divert flow to Whale Rock PS (Item OHS30.1) | R0.216 |
| | | Decommission existing Hemel-en-Aarde PS (Item OHS29.3) | R0.216 |
| | | New pump station for Fisherhaven (Item OHS2.2) | R1.508 |
| | | New pump station for Hawston (Item OHS6.4) | R2.148 |
| | | New PS when future area GH49 develops (cost to the developer) (Item OHS4.1) | - |
| | | New PS when future areas GH6.2 and GH6.5 develop (Item OHS9.1) | R0.620 |
| | | New PS when future development area GH6.1 develops (cost to the developer) (Item OHS28.1) | R0.414 |
| | | Upgrade existing PS (Investigate first) when overflow problems occur (capacity of upstream PS more than Hermanus PS 4) (Item OHS21.1) | R0.024 |
| | | New PS when Zwelihle informal area is formalized (Item OHS24.2) | R0.620 |
| | 2030 | New pump station for Fisherhaven (Item OHS3.3) | R1.628 |
| | | New pump station for Hawston (Item OHS7.3) | R1.579 |
| | | New pump stations for Hermanus (Item OHS17.2, OHS18.2) | R3.096 |
| | | Upgrade existing PS (Investigate first) when it reaches capacity (Item OHS11.10) | R0.024 |
| | | Upgrade existing PS when it reaches capacity, verify existing pump capacity first (Item OHS12.5) | R0.024 |
| | 2035 | Upgrade existing PS when it reaches capacity, verify existing pump capacity first (Item OHS1.5) | R0.024 |
| | 2045 | New PS when future area GH4 develops (Item OHS5.1) | R2.250 |
| | 2050 | New PS when future areas GH1 & GH50 develop (Item OHS20.1) | - |
| | 2060 | New PS when Future areas GH1 & GH50 develop (Item OHS20.5) | - |
| | **Subtotal** | | **R15.083** |
| Stanford | 2030 | New pump station for Stanford South (Item OSS3.2) | R1.508 |
| | 2050 | New pump station for Stanford North (Item OSS5.2) | R0.518 |
| | **Subtotal** | | **R2.026** |
| Greater Gansbaai | 2024 | New pump station required to pump sewage from Kleinbaai and Franskraal to Gansbaai WWTW (Item OGS.B1) | R5.300 |
| | 2025 | New pump station for De Kelders (Item OGS4.6) | R2.542 |
| | | New pump stations for Kleinbaai (Item OGS14.3, OGS15.10) | R4.451 |
| | | New pump station required to pump sewage from De Kelders to Gansbaai Hawe pumping station (Item OGSB.3) | R2.832 |
| | | New pump station when lower lying erven of Perlemoenpunt develop (Item OGS22.1) | R1.658 |
| | 2030 | New Main pump station for Birkenhead drainage area (Item OGS24.3) | R1.628 |
| | | New pump station for De Kelders (Item OGS3.4) | R2.104 |
| | | New pump stations for Gansbaai (Item OGS12.2, OGS9.1) | R2.381 |
| | | Upgrade existing pump station when existing pump station reaches capacity, verify existing pump capacity first (Item OGS.B5, OGS10.1) | R0.637 |
| | 2035 | New pump stations for De Kelders (Item OGS1.2, OGS2.4, OGS5.2) | R4.432 |
| | | New pump stations for Franskraal (Item OGS17.4, OGS18.5) | R4.501 |
| | | New pump station for Gansbaai (Item OGS6.2) | R1.598 |
| | 2040 | New pump station for Birkenhead drainage area (Item OGS20.2) | R1.568 |
| | | New pump station for Franskraal (Item OGS19.3) | R1.866 |
| | | New pump station for Kleinbaai (Item OGS16.2) | R1.508 |
| | | New pump station when future area GG31 develops (Item OGS28.2, OGS29.1) | R3.613 |
| | | New pump stations when future area GG33 develops (Item OGS32.2, OGS33.1) | R3.680 |
| | | New pump station when future areas GG10.2 & GG11.2 develop (Item OGS23.1) | R0.538 |
| | | New pump station when future areas GG32 & GG33 develop (Item OGS31.2) | R3.819 |
| | 2045 | New pump station for Birkenhead drainage area (Item OGS21.2) | R1.206 |
| | | New pump station for Franskraal (Item OGS25.3) | R1.718 |
| | 2050 | New pump station for Franskraal (Item OGS26.2) | R1.568 |

| Table C.3.22: Future Sewer Pump Stations Required | | | |
|---|---|---|---|
| **Scheme** | **Year** | **Project** | **Cost (R Million)** |
| | **Subtotal** | | **R55.148** |
| Pearly Beach | 2030 | New pump station for Pearly Beach (Item OPS1.2) | R2.250 |
| | 2035 | New pump stations for Pearly Beach (Item OPS2.2, OPS3.3, OPS4.3) | R5.181 |
| | **Subtotal** | | **R7.431** |
| **Total** | | | **R124.677** |

## WASTE WATER TREATMENT INFRASTRUCTURE

The table below gives a summary of the existing hydraulic design capacities and current flows at each of the WWTWs, as well as the final effluent quality compliance percentages for the 2022/2023 financial year (Ml/d).

| Table C.3.23: Existing Hydraulic Design Capacities and Flows at each of the WWTWs (Ml/d) | | | | | | |
|---|---|---|---|---|---|---|
| **WWTW** | **Existing Hydraulic Capacity** | **Peak Month Average Daily Flow** | **Average Daily Flow (2022/2023)** | **Average Wet Weather Flow (Jun'23, Jul'22, Aug'22)** | **Average Daily Flow as a % of Design Capacity** | **Final Effluent Compliance for 2022/2023 against *Authorisation*** |
| Kleinmond | 0.997 | 3.015 (Jun) | 1.591 | 2.051 | 159.6% | Microbiological: 91.7%<br>Chemical: 54.2%<br>Physical: 83.3%<br>*General Limits* |
| Hawston | 0.700 | 1.469 (Jun) | 0.726 | 0.958 | 103.7% | Microbiological: 100.0%<br>Chemical: 54.2%<br>Physical: 72.2%<br>*General Limits* |
| Hermanus | 12.000 | 14.529 (Jun) | 8.076 | 10.095 | 67.3% | Microbiological: 91.7%<br>Chemical: 89.6%<br>Physical: 100.0%<br>*Licence 17 October 2016* |
| Stanford | 1.2000 | 1.229 (Jun) | 1.042 | 1.182 | 86.8% | Microbiological: 33.3%<br>Chemical: 97.9%<br>Physical: 94.4%<br>*General Limits* |
| Gansbaai | 2.000 | 1.115 (Jun) | 0.997 | 0.989 | 49.9% | Microbiological: 16.7%<br>Chemical: 66.7%<br>Physical: 88.9%<br>*General Limits* |
| Eluxolweni | 0.259 | 0.135 (Jun) | 0.098 | 0.078 | 37.8% | Microbiological: 83.3%<br>Chemical: 72.9%<br>Physical: 25.0%<br>*General Limits* |

Note: Where parameters were resampled, due to failures, the resampled results were used to calculate the above compliance percentages.

The organic design capacities of the WWTWs and the current loadings at the WWTWs are indicated in the table below.

| Table C.3.24: Existing Organic Design Capacities and Historical Loads at the WWTWs | | | | | | | |
|---|---|---|---|---|---|---|---|
| **WWTW** | **Organic Design Capacity (kg COD/d)** | **2020/2021** | | **2021/2022** | | **2022/2023** | |
| | | **Average Load (kg COD/d)** | **% of Design Capacity** | **Average Load (kg COD/d)** | **% of Design Capacity** | **Average Load (kg COD/d)** | **% of Design Capacity** |
| Kleinmond | 843 | 1 133 | 134.4% | 1 045 | 124.0% | 1 050 * | 124.6% |
| Hawston | 968 | 1 748 | 180.6% | 1 234 | 127.5% | 850 | 87.8% |
| Hermanus | 9 000 | 4 935 | 54.8% | 4 696 * | 52.2% | 6 221 | 69.1% |
| Stanford | 1 200 | 1 116 | 93.0% | 933 | 77.8% | 1 033 | 86.1% |
| Gansbaai | 3 600 | 1 136 | 31.6% | 979 | 27.2% | 1 405 | 39.0% |
| Euvolemia | 198 | 103 | 52.0% | 190 | 96.0% | 267 | 134.8% |

Note: * Extremely high COD readings of September 2021 for Hermanus WWTW and March 2023 for Kleinmond WWTW were not taken into account

The projected future WWTW flows are included in the future water requirement projection models. The table below gives an overview of the average daily future projected WWTW flows.

**Table C.3.25: Average Daily and Peak Month Future Projected WWTW Flows (Ml/d)**

| WWTW | Existing Hydraulic Capacity | Average Daily Future Projected WWTW Flows | | | | | Peak Month Average Daily Future Projected WWTW Flows | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2027 | 2032 | 2037 | 2042 | 2047 | 2027 | 2032 | 2037 | 2042 | 2047 |
| Kleinmond | 0.997 | 1.890 | 2.279 | 2.747 | 3.114 | 3.544 | 2.533 | 3.054 | 3.681 | 4.173 | 4.749 |
| Hawston | 0.700 | 8.888 | 11.897 | 15.914 | 21.285 | 26.797 | 11.999 | 16.061 | 21.484 | 28.735 | 36.176 |
| Hermanus | 12.000 | | | | | | | | | | |
| Stanford | 1.200 | 1.657 | 2.005 | 2.434 | 2.962 | 3.613 | 1.922 | 2.326 | 2.823 | 3.436 | 4.191 |
| Gansbaai | 2.000 | 1.242 | 1.757 | 2.432 | 3.319 | 4.485 | 1.379 | 1.950 | 2.700 | 3.684 | 4.978 |
| Eluxolweni | 0.259 | 0.121 | 0.181 | 0.264 | 0.380 | 0.541 | 0.167 | 0.250 | 0.364 | 0.524 | 0.747 |

Note: The peak month factors used in the above table are 1.34 for Kleinmond, 1.35 for Hawston and Hermanus, 1.16 for Stanford, 1.11 for Gansbaai and 1.38 for Eluxolweni (Average PMF over last three years).

**Kleinmond WWTW**: The 2021 Green Drop score for the WWTW was 88% and the wastewater risk rating decreased from 47.1% in 2022 to 43.8% in 2023. **It can be noted from Tables C.3.23 and C.3.24 that both the current hydraulic and organic design capacities are inadequate to meet the current demands.** The Municipality is currently busy with the upgrading of the WWTW. The approved 2023/2024 Capital Budget of the Municipality include a budget of R37.548 million for the current 2023/2024 financial year for the upgrade.

The recommendations from the detail Kleinmond WWTW Process Audit (June 2022), as completed during the 2021/2022 financial year, are summarised in the table below.

**Table C.3.26: Recommendations from the detail Kleinmond WWTW Process Audit**

- Install outlet flowmeter.
- Control the MLSS concentration at around 3 500 mg/l by daily wasting.
- Monitor and maintain alkalinity above 500 mg/l.
- Gather data on peak flows to better understand the effect these have on clarifier performance.
- Complete installation of new dosing pump (Disinfection).
- Manager (or independent laboratory's sampler) to conduct random residual chlorine and/or microbiological sampling to verify disinfection.
- Run the press 6.5 hours per day, every day.
- Allow Sludge Lagoons to dry out and start with the cleaning of these as to create spare capacity should the press be out of order for an extended period.
- Ensure spreadsheet is being kept up to date and not only populated once a month.
- Process Controllers to interact with the data collected on site - draw graphs etc. to track operational changes (quality & quantities).
- Process Controllers should receive feedback from both the internal lab and the independent laboratory.
- The calibration of the equipment used on site should be verified by the internal lab.
- Consider expanding the spreadsheet to provide operational feedback and not act as database only.
- Ensure Process Controllers are aware of the Preventative Maintenance Schedule.
- Ensure records / logbooks pertaining to preventative maintenance are also available on site.
- Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the Works.

The Technical Feasibility Report for the upgrading of the Kleinmond WWTW (February 2021), included the following four options to upgrade the process.

- Option 1 (Cost R15 900 000): Change the existing reactor to an anoxic basin and build a new aerobic reactor basin equipped with surface aerators.

- Option 2 (Cost R13 100 000): Retain the existing reactor as an aerobic basin and build a new anoxic reactor basin. The existing aerobic reactor basin will make use of the existing floating aerators until they have reached the end of their economic life cycle.

- Option 3 (Cost R19 800 000): Retain the existing reactor as an aerobic basin and build a new deep aerobic reactor basin equipped with FBD aeration.

- Option 4 (Cost R15 600 000): Add a new anoxic / aerobic reactor basin and split the existing reactor into an anoxic/aerobic reactor basin.

Each of the options have their advantages and disadvantages. Option 1 allows for a new aerobic reactor that can be designed to suit aeration requirements. Option 2 is the cheapest option but uses the existing aerator that will likely need replacing in 5 years. Also, the current reactor whose depth is less than optimum depth for aeration will be used. Option 3 has a high initial capital cost but allows for a smaller reactor footprint which may be important if environmental requirements restrict the reactor size. Also, lower aeration power is required with fine bubble diffusers. Option 4 is more expensive than Option 2 but allows for future modularisation of the WWTW. The above estimated cost exclude professional fees of all options.

The above options do not allow for upgrading other important refurbishments / replacements that were highlighted in the 2018 Conditional Assessment report. The required refurbishments were reassessed in February 2021 and the table below gives an overview of the priority items for refurbishment.

**Table C.3.27: Refurbishment Priority Items for the Kleinmond WWTW**

| Process Area | Refurbishment | Cost (Excl. VAT) | Comment with regard to Cost |
|---|---|---|---|
| **Priority 1: Important** | | | |
| Disinfection | Upgrading chemical dosing system | R75 000 | This costing is for an HTH disinfection system where chemical preparation tank and dosing system is added. Chlorine disinfection would require a new building and chlorination system, so it has been ignored. |
| | Contact tank | R200 000 | This will strongly depend on environmental requirements. For a contact time of 30 minutes, a simple 4m x 4m x 3m deep tank would be sufficient. |
| Dewatering facility | Investigate reticulation system | N/A | Could not give price, limited information. Price could range from less than 100 000 if only buffer tanks are provided to over a million if pipeline from Kleinmond and a booster pump is provided. |
| | Booster pump | | |
| | Extension of building | R1 680 000 | Cost accounts for a new dewatering building built to house equipment. |
| Electronic | Add outlet flowmeter | R100 000 | Will replace pipework and flow meter in existing flow meter chamber. |
| Sub-Total | | R2 055 000 | |
| P&Gs | | R1 030 000 | |
| Contingency | | R360 000 | |
| **Total** | | **R3 445 000** | |
| **Priority 2: Semi-important** | | | |
| Screening and grit removal | Minimal concrete corrosion | R35 000 | Priced for internal walls, further investigation required for accurate costing. |
| | Platform and cut-out | R120 000 | |
| | Built in sluice gates | R250 000 | |
| Secondary settling tank | Motor | R58 000 | Motor inspection |
| | Scrapper | R175 000 | Inspection and general repairs where required. |
| | General | R175 000 | Tank emptying and cleaning |
| Bioreactor | Remove splash guards | N/A | Will be done as part of existing reactor refurbishment. |
| RAS pump station | Lower flowrate if possible | N/A | Need to source more information on pump curves. Either the impeller could be replaced or a belt between the motor and pump can be added. |
| | Check air release valve and repair/replace | R50 000 | Price for replacing instead of repair as the cost is similar. |
| Disinfection | Allow for effluent sampling | R20 000 | Price based on Monitor labs estimate for different project. |
| | Install second service water pump | R95 000 | Need to understand limitation with existing service water supply, so the price is an estimate only. |
| Dewatering Facility | Reconfigure pipework | R250 000 | |
| | Restoration of lagoons | R2 900 000 | Emptying, cleaning and restoration of lagoons. |
| Electrical | Wiring and MCC servicing | R240 000 | Service electrical infrastructure and replace / repair faults and inspect MCC wiring. |
| Electronic | Link important signals to Master SCADA at Preekstoel WTW | R140 000 | |
| | SCADA reporting system to monitor performance of infrastructure e.g. do comparisons $m^3$/d/kWh | R590 000 | |
| General | Computer for data capturing and communication | R10 000 | Price for general desktop |
| | Pepper spray system | N/A | Need more information |
| | Fencing | R975 000 | Site fence and security kiosk |

| Table C.3.27: Refurbishment Priority Items for the Kleinmond WWTW | | | |
|---|---|---|---|
| **Process Area** | **Refurbishment** | **Cost (Excl. VAT)** | **Comment with regard to Cost** |
| | Site lighting | R50 000 | General lighting upgrade across site |
| Sub-Total | | R6 133 000 | |
| P&Gs | | R3 050 000 | |
| Contingency | | R1 060 000 | |
| **Total** | | **R10 243 000** | |
| **Priority 3: Nice to have** | | | |
| Dewatering Facility | Add a second belt press | R6 000 000 | |
| Electrical | New MCC building | R330 000 | |
| | Move MCC to new building | R175 000 | |
| | MIS: Management Information System | N/A | Further investigation is required |
| General | Relocate admin building | R750 000 | Build new admin building |
| Sub-Total | | R7 255 000 | |
| P&Gs | | R3 630 000 | |
| Contingency | | R1 250 000 | |
| **Total** | | **R12 135 000** | |

**Hawston WWTW**: The 2021 Green Drop score for the WWTW was 89% and the wastewater risk rating increased from 52.9% in 2022 to 62.5% in 2023. **It can be noted from Tables C.3.23 and C.3.24 that the Hawston WWTW also needs to be upgraded in the nearby future.** The approved 2023/2024 Capital Budget of the Municipality include a total budget of R37.537 million for the 2024/2025 to 2026/2027 financial years for the upgrade.

The recommendations from the detail Hawston WWTW Process Audit (June 2022), as completed during the 2021/2022 financial year, are summarised in the table below.

| Table C.3.28: Recommendations from the detail Hawston WWTW Process Audit |
|---|
| • As there is no grit removal prior to the transfer pumpstation scheduled cleaning of the sump should be prioritised.<br>• Look into ways of reducing the concentrated velocity onto the Head of Works screen.<br>• Provide a dedicated area for vacuum tanker discharge / secure the operation by providing a built-in quick-couple connection for discharge (eliminate the need to open and close the manhole). As an interim measure, ensure the team follows a Standard Operating Procedure which includes securing the area while they are working and ensure the manhole cover is replaced once they leave.<br>• Reduce the MLSS concentration to no more than 3 500 mg/l and then maintain these levels by daily wasting.<br>• Measure alkalinity and ensure it remains in excess of 871 mg/l.<br>• Install standby dosing pump / ensure standby unit is available (in safe storage) for quick installation should the need arise.<br>• Running the press 12 hours per day, every day.<br>• Clean the drying beds and prepare them for use. Should they be required on a regular basis one could consider laying some bricks with holes in them onto the sand - this minimises weed re-growth and facilitates easy sludge removal while still allowing drainage to take place.<br>• Ensure spreadsheet is being kept up to date and not only populated once a month.<br>• Process Controllers to interact with the data collected on site - draw graphs etc. to track operational changes (quality & quantities).<br>• Process Controllers should receive feedback from both the internal lab and the independent laboratory.<br>• The calibration of the equipment used on site should be verified by the internal lab.<br>• Consider expanding the spreadsheet to provide operational feedback and not act as database only.<br>• Ensure Process Controllers are aware of the Preventative Maintenance Schedule.<br>• Ensure records / logbooks pertaining to preventative maintenance are also available on site.<br>• Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the works. |

The Refurbishment of the Hawston WWTW Report, March 2018, recommended the following Operation-, Refurbishment- and Upgrade interventions for the Hawston WWTW.

Operation Interventions: Operation interventions include changing or optimising sludge age, recycle rates, etc. The capacity assessment in Section 8 of the Report showed that operating at 20 days sludge age can provide compliant wastewater treatment of up to 700 $m^3$/d ADWF capacity.

However, the 700 $m^3$/d ADWF capacity can only be achieved under average influent concentrations and with adequate sludge wasting. The latter requirement is approximately 253 kgDS/d, or 4.3 $m^3$/h @ 0.58% TSS sludge feed to dewatering plant for 9.8 hours per day. Operating the dewatering plant under these conditions is not practical and thus the Municipality should consider upgrading the entire dewatering system.

No other operation interventions were identified that can improve plant performance as there is limited flexibility in the disinfection system and RAS recycle pumps.

Refurbishment Interventions: These interventions are primarily civil and mechanical in nature. The table below gives an overview of the recommended refurbishment items.

**Table C.3.29: Refurbishment Interventions for the Hawston WWTW**

| Process Area | Refurbishment | Comment / Description |
|---|---|---|
| **Priority 1: Critical: Failure will result in complete process failure or cause plant shutdown or increased risk of severe health and safety events. Estimated Project Cost R13 490 000 (Excl. Fees)** | | |
| Sludge Treatment | New sludge feed pump (2 No) | Feed pump and conveyer is undersized for the capacity of the screw press.<br>Screw press capacity is not adequate for activated sludge plant. Recommended to service current press and relocate to a more suitable works.<br>Provide new sludge belt-press sized sufficiently for this application.<br>The intake sump is a collection point for scum and debris. |
| | Maintenance of screw press (see note on right) | |
| | New wash water pump and intake location reconfiguration | |
| | New belt press 2m wide | |
| | Dewatering MCC and related cabling | |
| General | New MCC building for bioreactor, dosing system and dewatering MCC | New building to house all MCC equipment |
| Bioreactor | Replace aerator (22kW) | Has exceeded operational lifespan |
| | Replace aerator (30kW) | |
| | Replace two mixers | |
| | Bioreactor MCC and related cabling | Mixer shafts are damaged/bent |
| | New disinfection system – Contact Tank | Age of MCC is a concern |
| Disinfection | New disinfection system – Pumps and Equipment | A disinfection system does not exist on site, operators are dosing chemicals manually. |
| | Disinfection system MCC and related cabling. | |
| | Reconfiguration of pipework at pump station (Separate RAS / WAS and ML Recycle) | |
| RAS / WAS / ML Recycle | New pipework for RAS / WAS and ML Recycle | The combined RAS / WAS / Mixed liquor pump station and pipe work is undesirable. System is difficult to operate and flooding issues are occurring.<br>Standby pumps are not available and valves show signs of deterioration. It is proposed that a new pump station with a new pipework configuration and standby pumps be installed. |
| | New ML pump station | |
| | Second RAS / WAS Pump | |
| | Second ML Recycle Pump | |
| | New valves for RAS / WAS / ML Recycle | |
| **Priority 2: Urgent: Failure will result in reduced plant capacity, or poor effluent compliance or difficult process control and operation. Such failure will however not cause plant shutdown or severe health and safety events. Estimated Project Cost R1 155 000 (Excl. Fees)** | | |
| Inlet works | Additional hand-rake screen at lower inlet works | Screening facility is difficult to operate. A drying slab and second hand-screen will improve operation. |
| | Improve screening removal and disposal and concrete repairs/adjustments | |
| SCADA | Integrate reporting of influent, effluent and sludge flow into telemetry system at inlet works | Better reporting will assist in plant monitoring, operation and control. |
| Settling Tank | Settling bridge motor | General maintenance on settling tank is needed. Emphasis on scum box and the discharge chamber. |
| | Settling tank inspection of scraper blades | |
| | Settling tank emptying and cleaning | |
| | Scum box repair | |
| **Priority 3: Moderate: Items or issues that do not pose imminent plant failure or health and safety risks. Estimated Project Cost R980 000 (Excl. Fees)** | | |
| Inlet works | Replace hand stops with sluice gates | |
| Sludge Treatment | Drying beds repairs and refurbishment | Repairs to concrete and sand-layer is needed |
| General | Site perimeter fence repairs | |

Upgrade Interventions: The activated sludge system does not need an upgrade as the bioreactor and settling tank are sufficiently sized. Improvements to the sludge dewatering plant and RAS/WAS pump station are however recommended.

**Hermanus WWTW:** The 2021 Green Drop score for the WWTW was 89% - 96% and the wastewater risk rating increased from 36.4% in 2022 to 57.1% in 2023. **The capacity of the WWTW is adequate to meet the short term future treatment requirements.** The approved 2023/2024 Capital Budget of the Municipality include a total budget of R5.9 million over the 2023/2024 to 2025/2026 financial years for the upgrading of the screens, RAS and sludge dewatering facilities.

The recommendations from the detail Hermanus WWTW Process Audit (June 2022), as completed during the 2021/2022 financial year, are summarised in the table below.

**Table C.3.30: Recommendations from the detail Hermanus WWTW Process Audit**

- Ensure tankers keep on discharging in the same way that they are currently doing. It would however be advisable to do periodic spot-check analyses on the contents being discharged.
- As the mechanical degritters seem to break down quite frequently, it would be advisable to consider a full refurbishment of these units.
- Aerators seems to be switching on and off quite frequently (DO control) – consider providing some delay function on the switchgear as to prevent this frequent switching from causing damage to the motors (also refer to O&M manual for maximum number of starts per hour recommended).
- Calibration / verification of the in-line DO meters should be done on a routine basis.
- Reduce the MLSS concentration to no more than 3 500 mg/l and then maintain these levels by daily wasting.
- Monitor and maintain raw alkalinity at levels above 420 mg/l.
- Investigate options for dealing with scum. As installing a scum draw-off system would be quite complex, one could consider a sprayer system to break up the scum and allow it to settle. This would have to include the installation of scum baffles. If scum is going to continue flowing into the Maturation Ponds, regular cleaning would be required.
- Increase RAS Pump capacity, i.e. provide bigger motors for pumps.
- Investigate options of dealing with back-flow from maturation ponds after heavy rains.
- Do not be over-reliant on the automated system - Process Controllers should be encouraged to closely monitor the performance of this section of their Works.
- Operate the press for 4.5 hours per day, every day.
- Continue cleaning the drying beds and prepare them for use as and when required. Clean more beds as to provide more standby capacity.
- Process Controllers to interact with the data collected on site - draw graphs etc. to track operational changes (quality & quantities).
- The calibration of the equipment used on site should be verified by the internal lab
- Consider expanding the spreadsheet to provide operational feedback and not act as database only.
- Ensure Process Controllers are aware of the Preventative Maintenance Schedule.
- Ensure records / logbooks pertaining to preventative maintenance are also available on site.
- Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the works.

The Hermanus Clarifier Flow Balance Investigation, June 2020, recommended the following mitigation measures for the Hermanus WWTW at an estimated cost of R1 100 000.

- Fixed V-notch weirs should be introduced to the splitter boxes to ensure a proportional distribution of flows to the SSTs is achieved across the range of flows that the clarification system would need to handle. Alternatively the system could be left as it is as even though flow is distributed unevenly the SSTs performance would remain within guideline values, with the exception that SST2 would be borderline at PWWF.

- V-notch sluice gates should be introduced at the discharge point of the RAS return lines to the RAS WAS pumpstation sump. The V-notch weirs would allow the operators to approximate the RAS flows and thus optimise them, while the sluice gates would enable the operators to flush the sludge collection lines to discourage blockages from forming.

- The provision of additional facilities to enable the operators to service the SSTs more readily such as a portable centrifugal pump to drain the SSTs more readily and an eductor to enable the operators to prime the siphon more easily.

- The pumpstation itself requires ongoing maintenance. In particular the handrailing at the RAS WAS pumpstation sump needs to be repaired.

- The pumpstation inspection revealed that the RAS pumps are in good condition and are performing as per the original design intent. A RAS flow meter should be introduced on the RAS pipeline. This would require a flow meter chamber with connections into the existing AC pipeline. This would enable the operators to optimise the RAS return flow and better maintain the pumps.

- The removal of scum was considered, but the authors experience is that scum removal mechanisms merely provide another layer of complexity to the plant and tend to become an operational headache. It is thus preferable to address the source of the scum, which is likely to either be biological, or due to the presence of fats, oils and grease (FOG). To determine this the samples of the MLSS was sent for analysis to determine the presence FOG, as well as a microbiological analysis report to describe the bacterial composition of the sludge to confirm if the source of scum accumulation is biological.

- The analysis indicated that there was no bulking sludge which could cause scum, but nor could it demonstrate that FOG was present in appreciable quantities. This will need to be investigated further through a sampling campaign for FOG.

**Stanford WWTW**: The 2021 Green Drop score for the WWTW was 89% - 90% and the wastewater risk rating decreased from 64.0% in 2022 to 29.4% in 2023. The WWTW was recently upgraded and an updated Process Audit was therefore not done during 2021/2022 for the new plant. **The capacity of the WWTW is adequate to meet the short term future treatment requirements.**

**Gansbaai WWTW**: The 2021 Green Drop score for the WWTW was 89% - 96% and the wastewater risk rating decreased from 41.2% in 2022 to 31.3% in 2023. **The capacity of the WWTW is adequate to meet the short term future treatment requirements.** The approved 2023/2024 Capital Budget of the Municipality include a budget of R2.0 million for the 2025/2026 financial year for the commissioning of the second reactor.

The recommendations from the detail Gansbaai WWTW Process Audit (June 2022), as completed during the 2021/2022 financial year, are summarised in the table below.

**Table C.3.31: Recommendations from the detail Gansbaai WWTW Process Audit**

- Ensure maintenance is performed in a way that will ensure minimum downtime of equipment.
- Reduce the MLSS concentration to no more than 3 500 mg/l and then maintain these levels by daily wasting.
- Measure Alkalinity and ensure it remains in excess of 814 mg/l.
- Clean out Chlorine Contact Channel.
- Continue running the press 3.5 hours per day, every day.
- Clean the drying beds to ensure spare capacity as / when required.
- Ensure spreadsheet is being kept up to date and not only populated once a month.
- Process Controllers to interact with the data collected on site - draw graphs etc. to track operational changes (quality & quantities).
- The calibration of the equipment used on site should be verified by the internal lab.
- Consider expanding the spreadsheet to provide operational feedback and not act as database only.
- Ensure Process Controllers are aware of the Preventative Maintenance Schedule.
- Ensure records / logbooks pertaining to preventative maintenance are also available on site.
- Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the works.

**Pearly Beach WWTW**: The 2021 Green Drop score for the WWTW was 88% and the wastewater risk rating for the plant decreased from 52.9% in 2022 to 50.0% in 2023. **The capacity of the WWTW is still adequate to meet the short to medium term future treatment requirements.**

The recommendations from the detail Pearly Beach WWTW Process Audit (June 2022), as completed during the 2021/2022 financial year, are summarised in the table below.

**Table C.3.32: Recommendations from the detail Pearly Beach WWTW Process Audit**

- Clean screen on a regular basis (as the plant is left unattended this should not be neglected).
- Ensure screenings are periodically removed from the primary pond (Anaerobic Pond).
- Ensure the grit channels are cleaned on a routine basis (as the plant is left unattended this should not be neglected).
- Check grit channel flow velocity during tanker discharge – velocity not to exceed 0.3 m/s.
- Ensure that screenings are periodically removed from the primary pond.
- Remove floating "grass island" from primary pond.
- Investigate grit accumulation in the primary pond / Clean out the primary pond.
- Consider "boosting" the process in an attempt to improve process performance (short-term remedial step).
- Check Residual Chlorine readings on regular basis.
- Ensure grit is removed, screenings are cleared, required readings recorded and grounds are maintained.
- Ensure operational monitoring, including flowmeter readings and residual chlorine testing is done on a frequent basis.
- Filtered COD analyses could provide a different perspective on the system's compliance.
- Ensure records pertaining to maintenance are in line with best-practice principles.

The WWTWs to be upgraded in Overstrand Municipality are summarised in the table below.

**Table C.3.33: WWTWs to be Upgraded in the Future**

| WWTW | Short, Medium, Long Term | Estimated Cost (Vat Excluded) |
|---|---|---|
| Upgraded Kleinmond WWTW (Option 1) | Short | Actual R45 900 000 |
| Refurbishment of Kleinmond WWTW (Important and Semi-important priority items) | Short | R13 688 000 |
| Upgrade Kleinmond WWTW to 3.5 Ml/d | Medium | R50 000 000 |
| Upgrade Hawston WWTW to 2.0 Ml/d | Short | R30 000 000 |
| Upgrade Stanford WWTW to 2.0 Ml/d | Medium | R20 000 000 |
| High priority interventions recommended for the Hermanus WWTW | Short | R1 100 000 |
| Refurbishment interventions for the Hawston WWTW (Priority 1, 2 and 3) | Short | R16 154 000 |
| **Total** | | **R146 842 000** |

## TOPIC 4: WATER SERVICES OPERATION AND MANAGEMENT

**Topic C.4.1: Water Services O&M**

| Section | Intervention Required? | % (1) | Solution description as defined by topic situation assessment | % (2) | Is there an Existing project / activity addressing this problem? | Current Demand Overall Scoring % (3) |
|---|---|---|---|---|---|---|
| O & M Plan<br>Is There an O & M Plan? | No | 100.0 | All required O&M tasks for the various water and sewerage infrastructure components should be implemented. Ensure the required O&M schedules are in place and signed off on a monthly basis at least. | 100.0 | Partially | 92.9 |
| Resources | No | 100.0 | A budget of approximately 2% of the total asset value per annum should be allocated towards the replacement of existing water and sewerage infrastructure (Best Practice). In the case of operations and maintenance of the system, a budget of approximately 1% to 2% of the value of the system is typically required to ensure that the system remains in good condition (Best Practice). | 100.0 | Partially | 92.9 |
| | No | 100.0 | The External Service Provider is responsible to ensure that the number of process controllers at each of the WTWs and WWTWs and the class of process controller complies with the required number of process controllers and class of process controller per plant. Overstrand Municipality will monitor the External Service Provider's compliance with regard hereto. | 100.0 | Partially | 92.9 |
| Information | No | 100.0 | All incidents at the WTWs and WWTWs and on the water reticulation networks and sewer drainage networks need to be recorded and the Incident Management Protocols, as included in the Water Safety Plan and $W_2$RAPs, need to be followed. | 100.0 | Yes | 100.0 |
| | No | 100.0 | Ensure that the required O&M Manuals are in place for all the water and sewerage infrastructure. | 100.0 | Partially | 92.9 |
| Activity Control & Management | No | 100.0 | Groundwater: Implement recommended daily, weekly, monthly and six monthly O&M activities for the boreholes. | 100.0 | Yes | 100.0 |

| Topic C.4.1: Water Services O&M | | | | | | |
|---|---|---|---|---|---|---|
| **Section** | **Intervention Required?** | **% (1)** | **Solution description as defined by topic situation assessment** | **% (2)** | **Is there an Existing project / activity addressing this problem?** | **Current Demand Overall Scoring % (3)** |
| | No | 100.0 | Surface water infrastructure: Implement preventative maintenance procedures. | 100.0 | Partially | 92.9 |
| | No | 100.0 | Bulk and water reticulation networks and fittings: Compile daily, weekly, monthly and annual maintenance checklists for the maintenance activities for the water reticulation networks and fittings. | 100.0 | Partially | 92.9 |
| | No | 100.0 | WTWs: Evaluate the existing O&M schedules for the WTWs against the recommended O&M tasks and ensure all required activities are adequately monitored and recorded. | 100.0 | Partially | 92.9 |
| | No | 100.0 | Water PSs: Compile weekly and monthly maintenance checklists for the recommended activities for all the water PSs and continue to inspect all PSs on at least a weekly basis. | 100.0 | Partially | 92.9 |
| | No | 100.0 | Reservoirs: Compile maintenance checklists for the recommended reservoir maintenance activities and document all inspections. | 100.0 | Partially | 92.9 |
| | No | 100.0 | Remote monitoring and Control Systems: Ensure adequate maintenance is carried out on the SCADA systems and compile maintenance checklists for the recommended activities. | 100.0 | Partially | 92.9 |
| | No | 100.0 | Sewer PSs: Compile weekly and quarterly maintenance checklists for the recommended activities for all the sewer PSs and all centrifugal pump stations need to be inspected on at least a weekly basis. | 100.0 | Partially | 92.9 |
| | No | 100.0 | Bulk and sewer drainage networks: Annual, monthly and weekly schedules for maintenance should be drawn up for the bulk and sewerage networks. Regular cleaning of sewer lines and all blockages and their precise locations should be recorded. | 100.0 | Partially | 92.9 |
| | No | 100.0 | WWTWs: Evaluate the existing O&M schedules for the WWTWs against the recommended O&M tasks and ensure all required activities are adequately monitored and recorded. | 100.0 | Partially | 92.9 |

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?
(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem? Does this current listed project/activity address the problem totally? Project/Activity approved by Council as part of WSDP database? Approved by Council in project activity database and part of 5yr IDP cycle projects? Project/Activity listed in 3yr MTEF Cycle?

It is important for Councils to understand the value of maintenance and provide the necessary funding to properly operate and maintain infrastructure. It is the responsibility of the municipal and technical managers to educate and inform Councils on this and help councillors explain these issues to their communities. **Successful municipalities depend to a large extent on a single principle – effective and efficient management!**

Much of the routine work of technical departments involves managing and undertaking the O&M of services that is done in-house by municipal staff. A second major aspect of work is managing O&M undertaken by external service providers. The third major area is new or capital projects, also usually undertaken by external service providers.

Each service area in Overstrand Municipality needs an O&M system that monitors and assesses infrastructure condition and plans for the required preventative maintenance, and when necessary, rehabilitation, upgrading or replacement of the infrastructure. This is a major part of an overall Asset Management System, which

- records and describes all infrastructure assets;
- monitors and assesses their condition;
- plans and monitors maintenance;
- plans upgrading, rehabilitation and replacement; and
- values assets and the costs of maintenance, upgrading, rehabilitation and replacement.

There is a wide range of **desirable objectives** that should be achieved with the help of maintenance.

- Retain an asset in a serviceable condition during its designed life span.
- Optimize the reliability of equipment and infrastructure.
- Ensure that the equipment and infrastructure are kept in a good condition.
- Ensure prompt emergency repair of equipment and infrastructure to sustain service delivery.
- Take action before repair costs become too high.
- Ensure operation by eliminating breakdown risks or limiting them as much as possible.
- Improve delivery by upgrading infrastructure.
- Enable repairs under the best possible conditions.
- Improve operational safety and remove causes of accidents.
- Reduce the overall management burden through better work preparation and reduced unforeseen production stoppages.
- Protect the environment.

To achieve these objectives, it is necessary to train personnel in specific maintenance skills and to influence their attitudes, as better operational results depend on motivated staff who are committed to proper maintenance procedures and standards.

Setting up a preventative maintenance programme is one of the most effective ways of reducing breakdowns and keeping equipment and infrastructure in good condition. It is important to implement such a programme as soon as new equipment or infrastructure is put into service.

Implementing a preventative maintenance programme requires a **maintenance plan**, with particular emphasis placed on the following:

- Periodic inspection of equipment according to a pre-established programme so that working conditions may be checked.
- Systematic servicing – the first step in devising this programme is to forecast the life of parts and components subject to wear, i.e. the study of reliability, failure modes and effects and fault analysis.
- Overhauls, which often require considerable work, should be planned during low production periods.

**The Water and Wastewater Bulk Works Contract of Overstrand Municipality includes both Operational services and Maintenance services for the bulk water and sewerage infrastructure.**

The complexity of maintenance activities should be analysed to set up an efficient maintenance plan and to take management decisions, e.g. regarding use of own resources and unskilled or skilled resources. **Five levels of maintenance** can be distinguished, depending on the complexity of the work and the urgency of action.

- Simple adjustments are generally applicable to accessible components and require no dismantling or opening of the equipment. These adjustments involve the completely safe replacement of accessible consumable components such as signal lights or some types of fuses. Servicing of this type may be performed by the operator on site, without tools, following the instructions for use. The stock of consumable parts required is very small.

- Troubleshooting entails minor preventative maintenance operations such as greasing or checking for proper functioning. Servicing of this type may be performed on site by an authorised technician. An authorised technician has received training that enables him/her to perform such maintenance work safely and is well aware of potential problems.

- Breakdowns require identification, diagnosis and repairs by replacing components or working parts. Servicing of this type must be carried out by trained persons, on site or in the maintenance shop, using the documentation (manuals, spare part lists, etc.) necessary for maintenance of equipment.

- Major maintenance work covers all major corrective or preventative work except modernization and rebuilding. Servicing of this type must be carried out by a team that comprises highly skilled technical specialists, using the relevant documentation.

- Modernising and rebuilding equipment or executing major repairs is usually done by the manufacturer or builder. Resources are specified and usually very similar to those used in the original manufacturing or construction.

In order to ensure **good quality O&M**, technical managers firstly need to ensure that staff responsible for in-house O&M

- understand equipment and infrastructure;
- understand and implement the proper O&M requirements and procedures;
- understand the required service and operating standards;
- have and develop the necessary O&M skills;
- assess equipment and infrastructure conditions;
- understand and identify typical defects and problems;
- solve problems and make necessary repairs, or engage experts to do so; and
- record all activities to provide data for planning and analysis of O&M.

Secondly technical managers must ensure that they contract competent external service providers.

The bulk of O&M activities should be of a preventative nature. That is regular checking all the water and sewerage infrastructure and ensuring that everything is in good operational condition. Overstrand Municipality and the Contractor appointed for the Water and Wastewater Bulk Works Contract need to continue to implement the standard recommended O&M tasks, for the various water and sewerage infrastructure components.

## TOPIC 5: CONSERVATION AND DEMAND MANAGEMENT

| Topic C.5.1: Conservation and Demand Management - Water Resource Management | | | | | | |
|---|---|---|---|---|---|---|
| **Section** | **Intervention Required?** | **% (1)** | **Solution description as defined by topic situation assessment** | **% (2)** | **Is there an Existing project/activity addressing this problem?** | **Current Demand Overall Scoring % (3)** |
| Reducing unaccounted water and water inefficiencies | Yes | 100.0 | The Municipality will continue with the implementation of their WDM Strategy and Action Plan and the proposed WC/WDM Strategy to further reduce the NRW and Water Losses for the various water distribution systems. | 100.0 | Partially | 92.9 |
| | Yes | 100.0 | Continue with the implementation of the pipeline replacement programme. The location of pipe failures is recorded with accurate GPS coordinates. This improves the integrity of the output of the pipe failure model. It was recommended in the pipe replacement study that the pipe replacement in Overstrand Municipality is performed in accordance with the PRP values calculated in the study. Pipes with the highest PRP values should be considered to be replaced first. | 100.0 | Partially | 92.9 |
| Leak and meter repair programmes. | Yes | 100.0 | Continue with the monitoring of the MNFs for specific zones in order to identify areas for the implementation of specific WDM activities (Pressure Management, Repair of leaks, etc.). | 100.0 | Partially | 92.9 |
| | Yes | 100.0 | The Municipality will continue with the repairing of leaks at all the indigent households and the phased pro-active replacement of the old water meters, as identified through the detail water meter audit. | 100.0 | Partially | 92.9 |
| Consumer/end-use demand management: Public Information & Education Programmes | Yes | 100.0 | Continue to focus on the installation of water saving devices (specific water efficient toilets) and raising awareness regarding conservation projects and the installation of these products in order to reduce water demand. The use and installation of these fittings should be included as a condition for the approval of building plans as well as provided for in the Water Services By-law. | 100.0 | Partially | 92.9 |
| | Yes | 100.0 | Continue to support schools with WDM initiatives (Especially during Water Week). Raise awareness amongst the public of water efficient devices and water conservation projects. | 100.0 | Partially | 92.9 |

| Topic C.5.1: Conservation and Demand Management - Water Resource Management | | | | | | |
|---|---|---|---|---|---|---|
| **Section** | **Intervention Required?** | **% (1)** | **Solution description as defined by topic situation assessment** | **% (2)** | **Is there an Existing project/activity addressing this problem?** | **Current Demand Overall Scoring % (3)** |
| Conjunctive use of surface - and groundwater | No | 100.0 | | | | 100.0 |
| Working for Water | No | 100.0 | | | | 100.0 |

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?
(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem? Does this current listed project/activity address the problem totally? Project/Activity approved by Council as part of WSDP database? Approved by Council in project activity database and part of 5yr IDP cycle projects? Project/Activity listed in 3yr MTEF Cycle?

| Topic C.5.2: Conservation and Demand Management - Water Balance | | | | | | |
|---|---|---|---|---|---|---|
| **Section** | **Intervention Required?** | **% (1)** | **Solution description as defined by topic situation assessment** | **% (2)** | **Is there an Existing project/activity addressing this problem?** | **Current Demand Overall Scoring % (3)** |
| Water Balance | No | 100.00 | | | | 100.00 |

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?
(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem? Does this current listed project/activity address the problem totally? Project/Activity approved by Council as part of WSDP database? Approved by Council in project activity database and part of 5yr IDP cycle projects? Project/Activity listed in 3yr MTEF Cycle?

A WDM Strategy and Action Plan is in place for Overstrand Municipality. DWS's Municipal Scorecard for assessing the potential for WC/WDM efforts in Municipalities was used to assess the potential for WC/WDM efforts in Overstrand Municipality. The proposed WC/WDM Strategy for Overstrand Municipality is based on the 25 items included in the Scorecard and the sections below discuss each of these items in detail.

**Table C.5.3: Proposed WC/WDM Strategy Items for Overstrand Municipality**

**Item 1: Development of a Standard Water Balance**

**Recommendation and Strategy:**

- Continue with the monthly updating of the IWA Water Balances for all the systems and reporting on the NRW and Water Losses for each of the systems to management.
- Continue with the drafting of the annual WSDP Performance and Water Services Audit Report, which include the IWA Water Balances, as required by the Water Services Act.
- Implement the recommended WC/WDM activities in order to reduce the NRW and Water Losses further.
- Continue to calculate and quantify all unbilled authorized consumption by firstly identifying all the relevant consumers, e.g. Municipal buildings, parks, fire services, sport fields, etc. Unbilled consumption does not generate income but will enable the municipality to better quantify their actual water losses.

**Funding and Budget Requirements:**

The IWA Water Balances for the systems are updated on a monthly basis by the municipality.

**Item 2: Pressurised System at all times**

**Recommendation and Strategy:**

- Adequate human resources, technical skills and O&M budgets need to be allocated towards the operation, maintenance and refurbishment of the existing infrastructure, in order to ensure that systems are always pressurised.
- Existing water pump stations that are in a poor condition needs to be refurbished.

**Funding and Budget Requirements:**

Budgets as indicated under the individual items of the WC/WDM Strategy. Increase O&M budget allocations towards the refurbishment and replacement of old water infrastructure.

**Items 3 and 4: Metering System**

**Recommendation and Strategy:**

- All un-metered water connections need to be provided with water meters. Meters need to be read on a monthly basis and consumers need to be billed monthly according to their actual water usage. In addition to water theft, many water accounts go unnoticed in the system or have some type of data inconsistency that results in no revenue being generated for the particular water use event. Overstrand Municipality therefore needs to continue with the cleaning of the Treasury data and the municipality needs to identify and correct any inaccurate data in the system (See Table 7.5.1 of the Administration, Information and Comprehensive Overview Report for the 2021 Swift results).

**Table C.5.3: Proposed WC/WDM Strategy Items for Overstrand Municipality**

- Consumer consumption checks / investigations need to be carried out where water usage is very low, but there are households on the property. This project will give a clear indication of where illegal or unregistered connections is being made and whether the meter is under reading the actual consumption, thus water is being used but not billed or recorded.
- The Municipality needs to continue with their meter audits for all the towns. All illegible / broken / old meters should be replaced. Any un-metered stands should be metered and meter readings in the billing system should be updated where required. All meter boxes should also be cleaned as part of the audits.
- Municipality needs to continue with the implementation of their Meter Management / Replacement program. An effective Meter Management / Replacement Program needs to achieve the following objectives:
  - Determine the on-going meter replacement programme;
  - Determine exception reports on meters which are suspected to be faulty;
  - Test and replace faulty meters; and
  - Size meters correctly.

  The activities of this program that needs to be budgeted for are as follows:
  - Research and development of a meter replacement policy and meter management / replacement programme;
  - Implementation of a uniform meter management information system;
  - Testing and replacing faulty meters reported by consumers (Part of reticulation function).
  - Replacement of domestic meters with AMR enabled format (where appropriate) in accordance with meter management / replacement programme.

**Funding and Budget Requirements:**

Continue to install water meters for all un-metered water connections. Estimated annual budget requirement for the installation of individual water meters is R1 000 000.

**Item 5: Effective and Informative Billing System**

**Recommendation and Strategy:**

- Municipality needs to continue to ensure that all customer's meters are read on a monthly basis and that the customers are billed on a monthly basis according to the actual volume of water used for the specific month.
- Municipality needs to continue with the commercial data analysis done on the billed metered consumption data, which include the identification of un-metered erven, investigating meters with zero consumption, investigating abnormal low and high consumption readings, oversized / undersized meters, etc.
- The Municipality should continue with measures to keep the consumer bills informative and to improve on it.
  - Overstrand Municipality provides a moving 24-month water consumption graph on each account on a monthly basis. Hints on water usage are included on the accounts from time to time.
  - Alert consumers of possible leaks on their properties. For instance if the consumption for a particular month is >25% than the average consumption of the previous months the consumer may be alerted of a possible leak on the property.
  - Monitor trends and follow up telephonically.

**Funding and Budget Requirements:**

Estimated cost to enhance the user friendliness of the municipal bill is R300 000.

**Items 6 and 7: General Complaints System**

**Recommendation and Strategy:**

The municipality needs to continue to ensure that all consumers are familiar with the telephone numbers to lodge complaints and report leaks. Telephone numbers to lodge complaints and report leaks are included on the monthly water bills and on the Municipality's website. Suggestions would be to also include it on strategically located notice boards, radio broadcasts, etc.

The projects and measures that can be implemented for passive leakage control are as follows:

- Improve the help-line and install an automated answering system.
- Advertise the help-line.
- Investigate current problems in responding to leaks and allocate adequate resources to avoid lengthy delays.
- Review and develop a policy regarding responses to leaks with the aim of reducing response time, prioritising and keeping consumers informed.
- Develop a monitoring system and quality assurance measures to ensure problems are resolved adequately. Link such a KPI to the SDBIP.

The Customer Services Charter should include the following information:

- Commitment to deliver excellent services to our clients (Executive Mayor and Municipal Manager).
- Standards of services (Enquiries written and telephonic; Accounts enquiries and distribution of accounts).
- Response times for different services (Water: Repairs to networks, installation of new household water connections, etc.)
- Contact details for different areas.

**Funding and Budget Requirements:**

Budget requirement for improved customer awareness raising with regard to the Municipality's Complaints System R150 000/annum.

**Item 8: Asset Register for Water Infrastructure**

**Recommendation and Strategy:**

Continue to ensure that all the existing water and sewerage infrastructure are included in the Asset Register.

**Funding and Budget Requirements:**

| Table C.5.3: Proposed WC/WDM Strategy Items for Overstrand Municipality |
|---|
| None - To be done as part of the annual updating of the Asset Register by the municipality. |
| **Item 9: Asset Management Capital Works** |
| **Recommendation and Strategy:**<br>Allocate a budget of at least 2% of the total water asset value per annum towards the replacement of existing infrastructure. Municipality needs to differentiate in their capital budget between new projects and projects that are for the replacement of existing infrastructure, in order to accurately calculate the annual percentage allocated towards the replacement of existing infrastructure (Best Practice). |
| **Funding and Budget Requirements:**<br>Capital budget of at least 2% of the total water and sewerage asset value allocated annually towards the replacement of the existing water and sewerage infrastructure (Best Practice). |
| **Item 10: Asset Management Operation and Maintenance** |
| **Recommendation and Strategy:**<br>The municipality needs to continue to differentiate between the budget allocated towards the operation and maintenance of the water infrastructure and the budget allocated towards the replacement of the water and sewerage infrastructure. A budget of approximately 1% to 2% of the value of the system is typically required for the operations and maintenance of the system to ensure that the system remains in good condition (Best Practice).<br><br>The municipality needs to compile an Asset Management Plan (AMP) to ensure efficient, effective and optimal management, operation and maintenance of all assets, which includes treatment plants, reservoirs, structures, buildings, pipelines, sites, etc.<br><br>It is important for the municipality to develop an AMP from their Asset Register. The objective of an AMP is to support the achievement of the strategic goals of the Municipality and facilitate prudent technical and financial decision-making. It is also a vehicle for improved internal communication and to demonstrate to external stakeholders the Municipality's ability to effectively manage its existing infrastructure as well as the new infrastructure to be developed over the next 20 years.<br><br>This plan must be based on the principle of preventative maintenance in order to ensure that, as far as this is practical, damage to assets is prevented before it occurs. The municipality needs to ensure that the maintenance and rehabilitation plan is part of the WSDP and that the plan is implemented. Assets must be rehabilitated and / or replaced before the end of their economic life and the necessary capital funds must be allocated for this purpose. Priority should be given to rehabilitating existing infrastructure as this generally makes best use of financial resources and can achieve an increase in (operational) services level coverage's most rapidly. The preparation of maintenance plans and the allocation of sufficient funding for maintenance are required to prevent the development of a large condition backlog. The potential renewal projects for the water infrastructure need to be identified from the Asset Register. All assets with a condition grading of "poor" and "very poor" need to be prioritised.<br><br>The O&M Budget allocated towards repairs and maintenance should include the replacement of malfunctioning and old bulk water meters and consumer water meters, clearing of meter chambers, buying replacement mechanisms for bulk water meters, speedy repair of leaks, leak detection in areas with high water losses and NRW and higher than expected night flows, etc. |
| **Funding and Budget Requirements:**<br>Municipality needs to continue to allocate adequate budget towards the repairs and maintenance of the existing water and sewerage infrastructure. A budget of approximately 1% to 2% of the value of the system is typically required for the operations and maintenance of the system to ensure that the system remains in good condition (Best Practice).<br><br>An estimated budget for the drafting of an AMP for all the water and sewerage infrastructure is R750 000. |
| **Item 11: Dedicated WC/WDM Support** |
| **Recommendation and Strategy:**<br>The municipality should allocate at least one (1) person to head WC/WDM for a start. The number of people involved with WC/WDM measures can later be increased as and when required. |
| **Funding and Budget Requirements:**<br>The municipality may be able to use one of their existing staff members. If a new person has to be appointed the municipality can determine the costs involved with such an appointment. |
| **Item 12: Active Leakage Control** |
| **Recommendation and Strategy:**<br>The following process needs to be followed for active leakage control of the reticulation network:<br>Decide on how the work will be undertaken:<br>• Option 1: The appointment and training of additional staff.<br>• Option 2: The training of existing staff.<br>• Option 3: Appoint an external contractor in the first few years with the objective of using this contractor to train the internal teams and build capacity to do all work internally.<br>• Option 4: Complete outsourcing of the activity.<br><br>The first three options need to include the purchase or re-allocation of equipment.<br><br>Leak detection: Identify areas with highest leaks and send teams into the field to detect leaks.<br>Repair of leaks once identified: Once leaks were detected they will need to be repaired. Depending on the extent of the leaks and other workloads, the leak repairs need to be carried out by either the internal teams or a contractor. |
| **Funding and Budget Requirements:**<br>R300 000 to undertake leak detection in zones with high excess night flows. In addition allocate approximately R200 000 per year for general visual leak inspections. |

**Table C.5.3: Proposed WC/WDM Strategy Items for Overstrand Municipality**

**Item 13: Sectorization of Reticulation Systems**

**Recommendation and Strategy:**

The billed metered data currently linked to the various water distribution systems should also be linked to the different reservoir zones in the future where possible, in order to accurately determine the NRW and water losses for the specific reservoir zones in the future. Faulty bulk water meters need to be replaced and new meters need to be installed for the reservoirs with no bulk water meters.

The Financial Department needs to provide the billed metered consumption data separately for the different zones in the future in order to assist with the following:

- Clear indication of how much water is being used per area / zone.
- Areas with high NRW and water losses can easily be identified.
- Leakage and pressure control can be better managed.
- Water demand per area / zone can be determined.

Night flows need to be measured for zones with expected high water losses. It is recommended to re-log the night flows every few years to determine if there was an increase in leakage.

**Funding and Budget Requirements:**

The estimated cost for the logging of flows and pressures for zones with expected high water losses is R450 000. The logging exercise should be repeated at least every three years.

A budget should be allocated to investigate and resolve possible zone interconnections. It is however difficult to price such investigations at this stage.

**Item 14: Effective Bulk Metering Management System**

**Recommendation and Strategy:**

- Continue to read and record all the bulk water meter readings at the existing WTWs, reservoirs and pump stations on at least a weekly basis.
- Broken bulk water meters need to be repaired or replaced.
- Meter chambers need to be cleaned.
- All bulk water meters need to be installed in lockable meter chambers and reservoir sites and water pump stations need to be secured in order to prevent unauthorised access and possible damage to the water meters.
- New bulk water meters need to be correctly installed. Ideally a straight pipe section upstream of the meter of at least 5x the meter diameter and 3x the meter diameter downstream of the meter. Strainers need to be installed to protect the meters. These strainer elements must be removable from the top, for ease of cleaning. Gate valves are required for maintenance before and after meters.
- Every informal area with unmetered communal services to be supplied with a bulk water meter in order to determine the unbilled metered consumption. All discrete zones are to be supplied with a bulk water meter. The meter readings must be recorded on at least a weekly basis. The readings can be used to quantify both the water supplied and the leakage for a specific area.

**Funding and Budget Requirements:**

Allow an annual budget of approximately R350 000 for the installation of new bulk water meters, the replacement of faulty bulk water meters and to adequately protect existing bulk water meters.

**Item 15: Effective Zone Meter Management and Assessment of Night Flows**

**Recommendation and Strategy:**

See recommendations under Item “Effective Bulk Metering Management System” above.

**Funding and Budget Requirements:**

See funding and budget requirements included under Item “Effective Bulk Metering Management System” above.

**Item 16: Pressure Management**

**Recommendation and Strategy:**

The reticulation networks need to be divided into pressure zones, prior to implementing pressure management, and the pressures and flows need to be metered and logged. The activities of such a programme are as follows:

- Undertake feasibility studies to determine the ranking of areas / projects (Desktop Study, Logging of pressures and flows, Analysis of data).
- Implement advanced pressure management in areas identified (Design PRV Chambers, Pressure management implementation of new PRVs, Supply and installation of smart electronic pressure controllers for existing PRVs).
- Impact assessment (Post pressure management logging to determine impact of new PRVs and / or installation of smart pressure controllers on existing PRVs).
- The on-going operation, maintenance and optimisation of advanced pressure management installations.

**Funding and Budget Requirements:**

Funding and Budget requirements for pressure management to be determined once a decision is taken on the further areas prioritised for pressure management (From recommended flow and pressure logging exercise).

**Item 17: As-built Drawings of Bulk and Reticulation Infrastructure**

**Recommendation and Strategy:**

Continue with the current record system for all “as-built” drawings and the regular updating of the Water and Sewer Master Plans with this information.

**Funding and Budget Requirements:**

The Municipality currently adequately budgeted for the updating of their Water and Sewer Master Plans with the most recent “As-built” drawings.

| Table C.5.3: Proposed WC/WDM Strategy Items for Overstrand Municipality |
|---|
| **Item 18: Schematic Layouts of Water Reticulation Systems** |
| **Recommendation and Strategy:**<br>Municipality needs to continue to update the schematic layouts and the Aerial Maps on a regular basis, in order to ensure they remain accurate. |
| **Funding and Budget Requirements:**<br>None |
| **Item 19: Regulation and Bylaws** |
| **Recommendation and Strategy:**<br>The updated Water Supply and Sanitation Services By-law needs to be enforced and adequate human resources need to be allocated for this purpose. |
| **Funding and Budget Requirements:**<br>No additional budget and funding requirements. |
| **Item 20: Tariffs** |
| **Recommendation and Strategy:**<br>See Section 7.3 under Topic 7 of the Future Demand and Functionality Requirements WSDP Report. |
| **Funding and Budget Requirements:**<br>None |
| **Item 21: Technical Support to Customers** |
| **Recommendation and Strategy:**<br>The objective of a Technical Support programme is not limited to assisting consumers in reducing their water demand, but is also to look at wastewater, monitor compliance with by-laws and service conditions and offer general customer support. Once a dedicated person has been allocated to WC/WDM it is recommended to engage with large customers and to identify areas where the municipality can provide assistance. The proposed activities of this programme that can be budgeted for are as follows:<br>• Train existing staff;<br>• Identify and visit large consumers (Checking that large consumers are correctly metered and billed, providing tips on WC/WDM, test the accuracy of all large consumer meters, install data-loggers on all large consumer meters and informing consumers of any sudden change in consumption patterns).<br>• Arrange leakage inspections in public buildings;<br>• Provide assistance and technical know-how for large consumers; and<br>• Introduce compulsory water management plan for large consumers. |
| **Funding and Budget Requirements:**<br>No additional funding – pending the appointment of a dedicated person for WC/WDM. |
| **Item 22: Removal of Un-authorised Connections** |
| **Recommendation and Strategy:**<br>Meters need to be installed at the estimated 409 unmetered erven, as identified through the 2021 Swift analyses. |
| **Funding and Budget Requirements:**<br>Estimated budget of R1.227 million is required to install water meters at the unmetered erven. |
| **Item 23: Community Awareness on WDM** |
| **Recommendation and Strategy:**<br>See Section 5.1.3 of the Future Demand and Functionality Requirements WSDP Report. |
| **Funding and Budget Requirements:**<br>It is estimated that R250 000 / year should be allocated for WC/WDM awareness campaigns and activities, material to be included with monthly water bills, placing notices in newspapers, billboards, competitions, etc. |
| **Item 24: Schools Education on WDM** |
| **Recommendation and Strategy:**<br>See Section 5.1.3.1 of the Future Demand and Functionality Requirements WSDP Report. |
| **Funding and Budget Requirements:**<br>Continue with the current schools education programme in Overstrand Municipality. The DWS can also assist the municipality with pamphlets and posters on WC/WDM initiatives. |
| **Item 25: Retrofitting** |
| **Recommendation and Strategy:**<br>See Sections 5.1.2.1 and 5.1.2.2 of the Future Demand and Functionality Requirements WSDP Report. |
| **Funding and Budget Requirements:**<br>Leak repair assistance programmes: R400 000 per annum for ongoing exercise to repair leakages at indigent properties using in excess of 18 kl/month. WSIG funding or “War on Leaks” funding from DWS can be requested in this regard. |

The way forward for Overstrand Municipality with the implementation of the proposed WC/WDM Strategy is as follows:

- Develop a detailed methodology for measuring the performance criteria for each of the twenty-five (25) WC/WDM Strategy items;
- Allow for budget required to implement the various measures;
- Monitor the impact of all WC/WDM measures on an on-going basis;
- Develop key benchmarks for all KPIs and categories and assign responsibility; and
- Review WC/WDM Strategy as necessary.

Overstrand Municipality needs to ensure that adequate funding is allocated under their Capital and Operational budgets towards the implementation of the WC/WDM Strategy. Key WDM projects to be taken into account during Overstrand Municipality's capital and operational budgeting process are as follows:

- Replacement of old water networks (Areas with regular pipe bursts);
- Replacement of old bulk and consumer water meters (Meter replacement programme);
- Telemetry systems to provide for early warning;
- Installation of zone meters;
- Pressure Management;
- Leak detection; and
- Data loggers to establish MNFs

The WDM initiatives can deliver excellent return on investment if well implemented and well managed. All external funding that could be utilised by Overstrand Municipality for this purpose should be sourced. The O&M Budget allocated to repairs and maintenance should be increased to address amongst other tasks the following:

- Replacement of malfunctioning and old bulk water meters and consumer meters;
- Construction of meter chambers for all bulk water meters not adequately protected against vandalism;
- Cleaning of bulk water meter boxes;
- Buying replacement mechanisms for bulk meters;
- Speedy repair of leaks; and
- Leak detection in areas with higher than expected night flows.

Overstrand Municipality has responded to the need to address NRW and water losses within their jurisdiction by implementing various WC/WDM initiatives. The Municipality will continue with the active implementation of their WDM Strategy and Action Plan in order to reduce the percentage of NRW and Water Losses and improve water use efficiency within the various schemes as follows.

**Table C.5.4: Commitment to Reduce NRW (Include Bulk Distribution, Treatment and Internal Distribution)**

| Distribution System | 2022/2023 | | Committed Future NRW | |
|---|---|---|---|---|
| | NRW (%/a) | Water Losses (%/a) | 2027 (%/a) | 2047 (%/a) |
| Buffels River | 35.99% | 26.29% | 30.0 | 20.0 |
| Kleinmond | 34.54% | 34.06% | 30.0 | 25.0 |
| Greater Hermanus | 19.67% | 18.85% | 15.0 | 15.0 |
| Stanford | 5.13% | 4.52% | 15.0 | 15.0 |
| Greater Gansbaai | 31.08% | 30.77% | 25.0 | 15.0 |
| Pearly Beach | 18.25% | 17.89% | 15.0 | 15.0 |
| Baardskeerdersbos | 47.67% | 44.82% | 40.0 | 30.0 |
| Buffeljags Bay | 35.11% | 34.09% | 30.0 | 20.0 |

**IWA Water Balance**: A segregated single variable future water requirement model was developed for the WSDP and is available in electronic format. The future water requirement for each of the schemes is obtained by means of this model. It is used in this analysis to estimate the future water requirement for each of the distribution systems. The model differentiates between the different income levels.

Water services must be provided in a manner that is consistent with the broader goals of integrated water resources management. There is therefore a need for an integrated planning approach between the development of water services and water resources.

The Infrastructure Leakage Index (ILI) can be used by Overstrand Municipality to determine an appropriate benchmark for managing the water losses according to their own specific circumstances. This ILI can also be compared with the averages for other towns within South Africa. The annual water losses within the various towns' distribution networks are therefore important indicators of the performance of the water supply and distribution systems.

The current water balance information database is adequate from a water services management perspective and Overstrand Municipality is committed to continue to record all flows, both water and sewerage, that are strategic in terms of medium and long term planning. Overstrand Municipality is committed to keep record of all bulk meter readings, flows at WWTWs and to continue to update their IWA water balance models on a monthly basis in order to determine locations of wastage and to enable Overstrand Municipality to actively implement the WC/WDM Strategy in order to reduce their current NRW and water losses even further. The water balance will not directly lead to the reduction of the demand, but is an imperative management tool that will inform the implementation of demand side management initiatives.

**Overstrand Municipality needs to focus on the following for the IWA water balances of all the systems.**

- Continue to use IMQS (Swift analysis) to identify treasury records that cannot be linked to GIS data, occupied stands with water meters, but with no water demand, occupied stands with no water meters, occupied stands with very low consumption and stands where the water demands have reduced or increased substantially in recent months.

**The following areas need to be focused on for the IWA water balances of each of the systems.**

- Buffels River: Quantify the monthly volume of effluent discharged at the Kleinmond WWTW from Betty's Bay, Pringle Bay and Rooi Els.
- Kleinmond: Install final effluent flow meter at the Kleinmond WWTW.
- Greater Hermanus:
  - Sum of monthly abstraction volumes per individual borehole for the Gateway, Camphill and Volmoed wellfields to be monitored against the total supply volume at the WTW, in order to identify any potential bulk raw water distribution losses.
  - Groundwater abstraction volumes per individual borehole to be included in water balance model, in order to monitor abstraction volumes against safe yields of boreholes and licence volumes (Results from current Groundwater Monitoring Programme to be incorporated where possible).
- Stanford: Repair vandalised cables and display unit of the Magflow meter at the balancing tank.
- Greater Gansbaai: Adequate
- Pearly Beach:
  - Calibrate Koekemoer and Pearly Beach inflow meters at the Pearly Beach WTW, because the inflow at the plant was less than the outflow (System Input Volume) for the 2020/2021 financial year.
  - Calibrate raw water meters at the Koekemoer and Pearly Beach dams, in order to accurately calculate the bulk raw water distribution losses between the dams and the treatment plant.
- Baardskeerdersbos: Adequate

- Buffeljags Bay: Calibrate borehole meter and meter at reservoir, because raw water abstraction volume is less than the system input volume for the last two financial years.

## TOPIC 6: WATER RESOURCES

| Topic C.6.1: Water Resource | | | | | | |
|---|---|---|---|---|---|---|
| **Section** | **Intervention Required?** | **% (1)** | **Solution description as defined by topic situation assessment** | **% (2)** | **Is there an Existing project/activity addressing this problem?** | **Current Demand Overall Scoring % (3)** |
| Current Water Sources | No | 100.0 | | | | 100.0 |
| Additional Sources Available | Yes | 100.0 | Continue with the further augmentation of the Greater Hermanus water resources. | 100.0 | Yes | 92.9 |
| Monitoring | Yes | 100.0 | Ensure that all industries apply for the discharge of industrial effluent into the sewer system, to monitor the quality and volume of industrial effluent discharged and to implement the set of by-laws with regard to the discharge of industrial effluent into Overstrand Municipality's sewer system in order to determine whether the quality comply with the standards and criteria. | 100.0 | Yes | 57.1 |
| Water Quality | No | 100.0 | | | | 100.0 |
| Operation | Yes | 100.0 | Ensure all surface and groundwater resources are registered with the DWS. | 100.0 | Yes | 92.9 |

Notes: (1) Is this section addressed in the WSDP?
(2) Were solutions identified for the possible gaps?
(3) Percentage calculated based on the above two percentages and whether there is an existing project/activity addressing this problem? Does this current listed project/activity address the problem totally? Project/Activity approved by Council as part of WSDP database? Approved by Council in project activity database and part of 5yr IDP cycle projects? Project/Activity listed in 3yr MTEF Cycle?

Groundwater sources were developed successfully in Hermanus, Stanford, Baardskeerdersbos and Buffeljags Bay, resulting in a significant reduction in the Municipality's dependence on surface water sources. The drilling of two additional productions boreholes for Hermanus was completed at Gateway during 2020, with the expansion of the well fields in the Hemel-en-Aarde Valley planned for the near future. In the medium term (5 to 10 years), a seawater desalination scheme is planned for the Greater Hermanus area, to assist in providing for the future water needs of the growing population.

Metering of all water supplied is one of the most significant steps in order to properly plan and manage water sources. Without metering no management is possible. Overstrand Municipality needs to continue with the monthly reading of all their existing bulk water meters, which is a valuable source of information.

The uncertainty in projected water-related climate change impacts is one of the biggest challenges facing water managers. The managers must understand how this uncertainty influences the management decisions to be made and that decisions must be appropriate to a possible range of scenarios. A critical tool in this regard is adaptive management, in which water resource systems are carefully monitored and management actions are tailored and revised in relation to the measured changes on the ground. One cannot predict climate change impacts with any certainty, and the recognition of this uncertainty must be built into all climate change response strategies.

Detail future water requirement projection models were developed for each of the distribution systems in Overstrand Municipality's Management Area. These models include the future projections up to 2047 and were calibrated by using historic billed metered consumption data and bulk metered abstraction data. The percentage NRW was determined for each of the distribution systems and growth in demand was based on agreed population and growth figures.

The table below gives an overview of the future water requirement projections for the various distribution systems and the yield / licence volume surplus or shortfall, based on the WSDP projection.

**Table C.6.2: Projected Future Water Requirements and Yield / Licence Surplus (+) / Shortfall (-) based on WSDP Model**

| Distribution System | Projection | PROJECTED FUTURE WATER REQUIREMENTS (Ml/a) | | | | |
|---|---|---|---|---|---|---|
| | | 2027 | 2032 | 2037 | 2042 | 2047 |
| Buffels River | 2.5% Annual Growth | 759.851 | 859.702 | 972.674 | 1 100.492 | 1 245.105 |
| | 3.5% Annual Growth | 797.648 | 947.355 | 1 125.161 | 1 336.338 | 1 587.151 |
| | **WSDP Model** | 745.108 | 857.817 | 993.334 | 1 156.791 | 1 354.545 |
| | **Yield surplus (+) / shortfall (-)** | **+971.892** | **+859.183** | **+723.666** | **+560.209** | **+362.455** |
| Kleinmond | 2.5% Annual Growth | 1 038.773 | 1 175.276 | 1 329.717 | 1 504.453 | 1 702.151 |
| | 3.5% Annual Growth | 1 090.443 | 1 295.105 | 1 538.178 | 1 826.873 | 2 169.752 |
| | **WSDP Model** | 985.509 | 1 109.252 | 1 253.130 | 1 420.889 | 1 617.045 |
| | **Yield surplus (+) / shortfall (-)** | **+1 603.861** | **+1 480.118** | **+1 336.240** | **+1 168.481** | **+972.325** |
| Greater Hermanus | 3.0% Annual Growth | 4 946.905 | 5 734.819 | 6 648.227 | 7 707.117 | 8 934.661 |
| | 4.0% Annual Growth | 5 191.755 | 6 316.564 | 7 685.065 | 9 350.057 | 11 375.774 |
| | **WSDP Model** | 4 991.192 | 6 203.258 | 7 744.927 | 9 711.343 | 12 225.926 |
| | **Licence surplus (+) / shortfall (-)** | **+1 008.808** | **-203.258** | **-1 744.927** | **-3 711.343** | **-6 225.926** |
| Stanford | 2.5% Annual Growth | 563.827 | 637.919 | 721.746 | 816.590 | 923.896 |
| | 3.5% Annual Growth | 591.873 | 702.959 | 834.895 | 991.593 | 1 177.702 |
| | **WSDP Model** | 672.039 | 813.216 | 986.980 | 1 201.093 | 1 465.185 |
| | **Licence surplus (+) / shortfall (-)** | **+927.961** | **+786.784** | **+613.020** | **+398.907** | **+134.815** |
| Greater Gansbaai | 3.0% Annual Growth | 1 891.196 | 2 192.414 | 2 541.609 | 2 946.421 | 3 415.710 |
| | 4.0% Annual Growth | 1 984.801 | 2 414.814 | 2 937.991 | 3 574.515 | 4 348.944 |
| | **WSDP Model** | 1 813.842 | 2 137.851 | 2 536.408 | 3 028.394 | 3 637.724 |
| | **Yield surplus (+) / shortfall (-)** | **+954.139** | **+630.130** | **+231.573** | **-260.413** | **-869.743** |
| Pearly Beach | 2.5% Annual Growth | 168.111 | 190.203 | 215.197 | 243.475 | 275.470 |
| | 3.5% Annual Growth | 176.474 | 209.595 | 248.933 | 295.655 | 351.145 |
| | **WSDP Model** | 177.371 | 220.326 | 275.486 | 346.616 | 438.694 |
| | **Yield surplus (+) / shortfall (-)** | **+129.529** | **+86.574** | **+31.414** | **-39.716** | **-131.794** |
| Baardskeer-dersbos | 2.5% Annual Growth | 21.807 | 24.672 | 27.914 | 31.583 | 35.733 |
| | 3.5% Annual Growth | 22.891 | 27.188 | 32.291 | 38.351 | 45.549 |
| | **WSDP Model** | 17.567 | 17.661 | 17.879 | 18.239 | 18.768 |
| | **Licence surplus (+) / shortfall (-)** | **+72.433** | **+72.339** | **+72.121** | **+71.761** | **+71.232** |
| Buffeljags Bay | 2.5% Annual Growth | 6.644 | 7.517 | 8.504 | 9.622 | 10.886 |
| | 3.5% Annual Growth | 6.974 | 8.283 | 9.838 | 11.684 | 13.877 |
| | **WSDP Model** | 5.992 | 6.459 | 7.058 | 7.818 | 8.779 |
| | **Yield surplus (+) / shortfall (-)** | **+22.391** | **+21.923** | **+21.325** | **+20.564** | **+19.603** |

The table below gives an overview of the years in which the annual water requirements are likely to exceed the sustainable yields / license volumes from the various resources.

**Table C.6.3: Years in which the Annual Water Requirement will Exceed the Sustainable Yields / License Volumes from the Various Resources**

| Distribution System | Total Sustainable Yield (Y) / License Volume (L) (x $10^6$ $m^3$/a) | Annual Growth on 2022/2023 requirement (2.5% or 3%) | Annual Growth on 2022/2023 requirement (3.5% or 4%) | WSDP Projection Model |
|---|---|---|---|---|
| Buffels River | 1.717 (Y) | > 2047 (2.5%) | > 2047 (3.5%) | > 2047 |
| Kleinmond | 2.589 (Y) | > 2047 (2.5%) | > 2047 (3.5%) | > 2047 |
| Greater Hermanus | 6.000 (L) * | 2033 (3.0%) | 2030 (4.0%) | 2031 |
| Stanford | 1.600 (L) | > 2047 (2.5%) | > 2047 (3.5%) | > 2047 |
| Greater Gansbaai | 2.768 (Y) | 2039 (3.0%) | 2035 (4.0%) | 2039 |
| Pearly Beach | 0.307 (Y) | > 2047 (2.5%) | 2043 (3.5%) | 2039 |
| Baardskeerdersbos | 0.090 (Y) | > 2047 (2.5%) | > 2047 (3.5%) | > 2047 |
| Buffeljags Bay | 0.028 (Y) | > 2047 (2.5%) | > 2047 (3.5%) | > 2047 |

Note * With Gateway, Camphill and Volmoed Well Fields fully operational according to the licensed volumes.

Overstrand Municipality continues with their groundwater monitoring programmes for Hermanus (Gateway and Hemel & Aarde Wellfields), Stanford and Baardskeerdersbos. **The water resources for the different systems are all considered to be adequate for the projected population and future growth until at least 2035, except for the Greater Hermanus system, where additional sources will have to be developed within the next 5 to 10 years to satisfy the growing demand.** Exploration for groundwater is in progress in Pearly Beach as potential supplement to the existing surface water sources which are under pressure due to changes in water quality in recent years.

The DWS is currently busy with the updating of the All Towns Reconciliation Strategies for the Western Cape, but updated strategies for Overstrand Municipality are not yet available. The table below gives an overview of the recommended potential future water resources, as included in the 2015 All Towns Reconciliation Strategies, for the towns in Overstrand Municipality **(Additional comments by Municipality).**

**Table C.6.4: Potential Future Water Resources for the Various Towns (Summary of DWS's All Towns Reconciliation Strategies)**

| Distribution System | Recommended Summary Options |
|---|---|
| Betty's Bay, Rooi Els and Pringle Bay | **The current water sources have adequate supply to cater for the medium and longer term future water requirements. The following sources are identified as potential sources to augment the water supply (In order of priority and implementation sequence):**<br>• Continue with the implementation of the WC/WDM Strategy and measures.<br>• Groundwater development in the TMG Aquifer.<br>• Raising of Buffels River dam wall<br>• Abstraction from the Palmiet River<br>• Abstraction from the Rooi Els River |
| Kleinmond | **The current water sources have adequate supply to cater for the medium and longer term future water requirements. The following sources are identified as potential sources to augment the water supply in the future if required (In order of priority and implementation sequence):**<br>• Continue with the implementation of the WC/WDM Strategy and measures.<br>• Increase allocation from the Palmiet River, when required.<br>• **Regional scheme with Overberg Water for possible bulk supply from the Theewaterskloof Dam.** |
| Hermanus | **Hermanus will experience a shortfall by 2030 in water supply under all growth scenarios. This will increase to 2.874 million $m^3$/a by 2040 under the low-growth scenario and to 8.632 million $m^3$/a under the high-growth scenario. The following sources are identified as potential sources to augment the water supply in the future if required (In order of priority and implementation sequence):**<br>• Full implementation of the WC/WDM Strategy and measures.<br>• **Develop groundwater to its full potential (Licenced volumes).**<br>• **Desalination of seawater.**<br>• **Regional scheme with Overberg Water for possible bulk supply from the Theewaterskloof Dam or the Palmiet River.**<br>• Direct and indirect potable water re-use. |
| Stanford | **The current water sources have adequate supply to cater for the medium and longer term future water requirements, if the Municipality continues with the full implementation of their WC/WDM Strategy. The following sources are identified as potential sources to augment the water supply in the future (In order of priority and implementation sequence):**<br>• Continue with the implementation of the WC/WDM Strategy and measures.<br>• Further Kouevlakte Wellfield development, if required. |
| Greater Gansbaai | **The current water sources have adequate supply to cater for the medium and longer term future water requirements. The Kraaibosch Dam will provide for Gansbaai until 2030. The following sources are identified as potential sources to augment the water supply in the future if required (In order of priority and implementation sequence):**<br>• Continue with the implementation of the WC/WDM Strategy and measures.<br>• Groundwater development in the TMG Aquifer.<br>• Re-use of water |
| Pearly Beach | **The current water sources have adequate supply to cater for the medium and longer term future water requirements up to 2030. The following sources are identified as potential sources to augment the water supply in the future if required (In order of priority and implementation sequence):**<br>• Continue with the full implementation of the WC/WDM Strategy and measures.<br>• Groundwater development, if required. **Exploration in progress.** |
| Baardskeer-dersbos | **The current water sources have adequate supply to cater for the medium and longer term future water requirements. If the town may require alternative water resource options in the future, the following sources were identified as potential sources to augment future water requirements (In order of priority and implementation sequence):**<br>• Continue with the full implementation of the WC/WDM Strategy and measures.<br>• Further groundwater development, if required. |

| Table C.6.4: Potential Future Water Resources for the Various Towns (Summary of DWS's All Towns Reconciliation Strategies) | |
|---|---|
| **Distribution System** | **Recommended Summary Options** |
| Buffeljags Bay | **The current water sources have adequate supply to cater for the medium and longer term future water requirements. If the town may require alternative water resource options in the future, the following sources are identified as potential sources to augment future requirements (In order of priority and implementation sequence):**<br>• Continue with the full implementation of the WC/WDM Strategy and measures.<br>• Further groundwater development, if required. |

Buffels River and Kleinmond Areas: Overstrand Municipality completed a detail investigation during 2010/2011 of the water resources for the area from Rooi Els to Kleinmond and the recommendations from the Study will be implemented.

Greater Hermanus Area: The Gateway, Camphill and Volmoed wellfields were developed by Overstrand Municipality as additional groundwater resources for the greater Hermanus Area. These boreholes are in production and the Municipality is maintaining their Groundwater Monitoring Programmes for all their wellfields, in order to comply with the License conditions. The License for the next phase of the Camphill and Volmoed wellfields was also received from the DWS. Environmental authorization was issued by DEADP for the augmentation of the Hemel & Aarde (Camphill and Volmoed well fields) boreholes.

A Scoping Report was also completed during August 2018 for the "Augmentation of potable water supplies to Hermanus". The report discusses various potable water augmentation schemes for the provision of 3 Ml/d of potable water to Hermanus. The following augmentation schemes were considered:

- Seawater reverse osmosis.
- Desalination-based direct reuse scheme.
- Non-desalination based direct reuse scheme.
- Remix scheme.
- Palmiet River abstraction and transfer scheme.
- Aquifer recharge.

In considering various potable water augmentation schemes for Hermanus, the following conclusions were made:

- Managed aquifer recharge does not seem to be a viable water augmentation solution for Hermanus as the process required to render the reclaimed wastewater suitable for aquifer recharge will be very similar to that of a direct potable water reuse scheme. This makes the option particularly unattractive due to the relatively high treatment costs which would be further compounded by the additional cost of abstracting the water and treating for consumption at a later date. On this basis, it will be better to rather implement a direct potable water reuse scheme before aquifer recharge is considered. In addition, the shallow water levels of the porous media aquifer in the area indicate that the aquifer will be unable to accept the required yield and there is a risk of flooding due to the limited available volume of unsaturated sands;

- The basis of financially ranking the various treatment options will be the cost of delivering a unit volume of treated water. Based on this criterion, abstraction of water from the Palmiet River seems to be most feasible option with a treated water delivery cost of R9.61/$m^3$ and a capital cost of ~R99,5 million. Included in the treated water delivery cost is the cost of treatment at Preekstoel WTW, which was estimated at R2.50/$m^3$. Of particular concern to the implementation of such a scheme is the reliability of this water source as the Palmiet river flow is too low during the summer months to accommodate the required 3.6 Ml/d of abstracted water, and during drought periods it can result in a lack of water security. In addition to the possibility of inadequate water supply, the pipeline route from the abstraction point to the De Bos dam covers extremely sensitive environmental areas and the need to route the pipeline through the coastal town of Kleinmond. Environmental & public approval for construction of such a pipeline may well be a stumbling block for implementation of this option. In addition, a new Water Use License Application (WULA) may well also be required for this option, while it will trigger a need for environmental authorisation from the Department of Environmental Affairs and Development Planning (DEADP). The latter will be difficult to obtain;

- Seawater desalination is the second most feasible solution with a treated water delivery cost of R16.10/$m^3$ and a capital cost of ~R88.5 million. However, there is an additional surcharge cost that Abagold may charge for using their facilities (seawater intake and brine discharge infrastructure), which is unknown at this moment. This cost may be charged per volume of abstracted water or as a flat cost, but this is still to be determined. Therefore, Overstrand Municipality will have to discuss this with Abagold and come to an agreement. Once this cost is determined, it will have to be added to the R16.10/$m^3$ operating cost figure of the seawater desalination process to determine the real cost of this scheme. From an environmental perspective, this option will require an amendment to Abagold's Coastal Water Discharge Permit (CWDP) for brine disposal, while it will trigger a need for environmental authorisation from the Department of Environmental Affairs and Development Planning (DEADP);

- The non-desalination-based reuse scheme has a capital cost of ~R122.5 million and an operating cost of R19.45/$m^3$. This cost could however be reduced if the reclaimed water is not pumped to the Preekstoel WTW for re-treatment via the Preekstoel WTW but rather introduced directly into the reticulation system via the Hermanus Reservoirs 1 & 2, similar to the desalination-based re-use scheme. If so, the capital cost would reduce to ~R118.5 million with an operational cost of R16.35/$m^3$. This could make it the most feasible scheme after the Palmiet River abstraction option. From a water quality perspective, the treated water from the non-desalination-based reuse scheme will comply with potable water standards, but the salinity will be on the high side. For this reason, blending with an alternative low salinity water source is recommended. Provided that the public perception of the potential risks associated with the elimination of a RO plant barrier as part of the treatment process can be addressed, the water does not require additional treatment and can be directly introduced into the reticulation system. The option of feeding the water to the Preekstoel WTW was made based on the fact that part of the pipeline was already constructed and further knowing that the additional barriers at Preekstoel WTW will give further comfort to the negative stigma of water reuse. From an environmental perspective, the reuse scheme options will require an amendment to Overstrand's Coastal Water Discharge Permit (CWDP), while it will trigger the need for environmental authorisation from the Department of Environmental Affairs and Development Planning (DEADP);

- The desalination-based reuse scheme requires a capital investment of ~R151 million and an operating cost of R21.53/$m^3$. The operational cost would increase with ~R3.00/$m^3$ to R24.53/$m^3$ if the water cannot be introduced into the Hermanus reservoirs 1 & 2 but is pumped to the Preekstoel WTW for introduction into the balancing reservoir at Preekstoel. From an environmental perspective, the desalination-based reuse scheme option will require an amendment to Overstrand's Coastal Water Discharge Permit (CWDP), while it will trigger a need for environmental authorisation from the Department of Environmental Affairs and Development Planning (DEADP);

- Despite having a slightly lower capital cost (~R147 million) than the desalination-based reuse scheme, the Remix scheme is the most expensive scheme to operate at R21.77/$m^3$. The operational cost would increase further with ~R3.00/$m^3$ to R24.77/$m^3$ if the treated water is not introduced into the Hermanus reservoirs 1 & 2 but rather pumped to the Preekstoel WTW for introduction into the balancing reservoir at Preekstoel. From an environmental perspective, the remix scheme option will require an amendment to Overstrand's Coastal Water Discharge Permit (CWDP), while it will trigger a need for environmental authorisation from the Department of Environmental Affairs and Development Planning (DEADP);

- The Hermanus wastewater treatment plant site assessment has identified the need for maintenance activities on certain components of the wastewater treatment plant. When considering a reuse scheme, the need to undertake maintenance on the wastewater treatment plant that feeds the reuse plant should also be considered as part of the capital outlay for a reuse scheme as the latter would rely on a stable source water supply. The site assessment undertaken by Zutari has identified the need to spend at least ~R17 million on maintenance activities. Whilst one can argue that maintenance on the wastewater treatment plant would be required in any event, it would not be that critical if the wastewater is discharged to sea. A reuse plant on the other hand relies on a stable quality water and without a proper functioning wastewater treatment plant, it would not be an option to consider.

- It was recommended that a further investigation is undertaken to explore the feasibility of utilising renewable energy as a potential energy source to support a seawater desalination plant. This would be the only way to reduce the operation cost of a SWRO plant. Some of the available renewable energy technologies have already been tested in Hermanus and although there is not excess energy available for the desalination or reuse plants from these sources, it is worth looking into it as a potential source (or partial source). There has also been significant technology development in harvesting wave energy and if such a system can be installed, SWRO may well just prove to be a very cost-effective solution for Hermanus;

- Overstrand Municipality completed a separate seawater sampling program over a 12-month period to confirm the design parameters for a SWRO plant.

The following additional work was completed during October 2019, after the completion of the previously mentioned “Augmentation of potable water supplies to Hermanus” Scoping Report.

- Sea water quality tests.
- Renewable energy options.
- Electricity cost sensitivity analysis.
- Contracting modes.
- Recommended water price plan.
- Suitability of earmarked SWRO site.

Stanford: The Municipality explored the groundwater potential of the Kouevlakte area since 2009, through exploration borehole siting and drilling. Two newly drilled boreholes were put into operation and new bulk supply pipelines were constructed during the 2011/2012 financial year in order to connect the two newly drilled boreholes to the existing water reticulation network. Irrigation of sports fields with treated effluent from the Stanford WWTW was also investigated. The current supply from the Spring and the two boreholes are adequate to meet the medium- and long-term future water requirements of Stanford.

Greater Gansbaai: A Reverse Osmosis Filtration Plant was constructed during the 2010/2011 financial year in order to fully utilise the Klipgat and Grotte resources and improve the quality of the water. Resource augmentation options will be investigated in the future in order to meet the medium- and long-term future water requirements for the greater Gansbaai area.

Pearly Beach: Overstrand Municipality is committed to manage the two dams as efficiently as possible, but it became challenging over the last few years mainly due to changes in raw water quality. Other future resource options include groundwater development and the possible Kraaibosch scheme.

Baardskeerdersbos: Two boreholes were commissioned and the supply from these boreholes will be adequate to meet the medium- and long-term future water requirements. The supply from the stream will only be utilised as a back-up supply when necessary.

Buffeljags Bay: The current supply from the borehole is adequate to supply the medium- and long-term future water requirements of Buffeljags Bay.

**Existing Lawful Use**: Volumes are registered on the DWS’s WARMS for the various resources. A registered water use however does not guarantee that the water use is accurate or lawful. Validation and verification of the accuracy and lawfulness of the water use is needed to qualify as an Existing Lawful Use. **It is important for the municipality to confirm the correct registration volumes and existing lawful use volumes for all their sources. This information, with the safe yields of the surface and groundwater sources, is critical to accurately determine which sources need to be augmented for the different schemes. Overstrand Municipality further needs to continue to ensure that all the individual sources are metered and that the abstraction volumes are recorded on at least a monthly basis.**

**Water Quality**: The operational water sampling programmes of Overstrand Municipality complies with the minimum monitoring requirements of the SANS 241-2:2015 (Table 1: Minimum monitoring for prescribed process risk indicators) for the various WTWs and distribution systems, as summarised below.

**Table C.6.5: Minimum Monitoring Frequency for Process Risk Indicators (SANS241-2:2015: Table 1)**

| Determinand | Raw Water | Final Water | Distribution System |
|---|---|---|---|
| Conductivity or total dissolved solids | Daily | Daily | Not applicable |
| pH value | Daily | Once per shift [a] | Fortnightly |
| Turbidity | Daily | Once per shift [a] | Fortnightly |
| Disinfectant residuals | Not applicable | Once per shift [a] | Fortnightly |
| E.Coli (or faecal coliforms) [b] | Not applicable | Weekly | Fortnightly but dependent on population served [d] |
| Heterotrophic plate count [c] | Not applicable | Weekly | Fortnightly |
| Treatment chemicals [d] | Not applicable | Monthly | Not applicable |

a: A shift is defined as an eight-hour work period.

b: If non-compliant with the numerical limits specified in SANS 241-1, implement corrective action and immediate follow-up sampling at an increased sampling frequency.

c: If non-compliant with the numerical limits specified in SANS 241-1, implement corrective action and follow-up sampling.

d: Includes all risk determinands that are added or formed as a result of the use of treatment chemicals (for example aluminium, iron and chlorine). If non-compliant with the numerical limits specified in SANS 241-1 in the final water, the distribution system monitoring frequencies of Table 3 in SANS241-2:2015 apply.

Comprehensive Compliance Sampling Programmes are also implemented for all the WTWs and water distribution systems.

**Effluent Quality**: Comprehensive Operational and Compliance Sampling programmes of the wastewater at the WWTWs are implemented by Overstrand Municipality. The Compliance Monitoring Programme includes the monthly sampling of the final effluent at the various WWTWs and analyses of all the main quality criteria. Results of the samples taken are loaded onto DWS's IRIS system. Monthly monitoring and inspection reports are also compiled by the external Service Provider for all the WWTWs. The Municipality and the Contractor appointed for the Water and Wastewater Bulk Works Contract takes immediate action to rectify problems and / or improve operational aspects as and when may be required. For serious failures, an Incident Response Management Protocol is followed to ensure rapid remedying of the problems, which includes notification to the DWS as may be necessary.

Operational Alert Levels are also in place for the various WWTWs in order to ensure that the various unit processes in the plant performs optimally. If these pre-determined Alert Levels are exceeded at any of the control points where samples are taken for operational purposes, then certain actions are taken by the Process Controllers to bring the operational parameters back to within the target ranges.

**Industrial Consumers**: Overstrand Municipality is committed to ensure that all industries apply for the discharge of industrial effluent into the sewer system, to monitor the quality and volume of industrial effluent discharged and to implement the set of by-laws with regard to the discharge of industrial effluent into Overstrand Municipality's sewer system in order to determine whether the quality comply with the standards and criteria.

Overstrand Municipality needs to adopt an approach whereby the various parameters at all the industrial consumers are monitored, as well as volumetric monitoring at the larger users. Adaptation of procedures must be undertaken in accordance with any changes to the wastewater discharge criteria set by DWS. It will also be necessary to consider limits above which volumetric monitoring will be necessary at new industries and existing smaller industries, where expansion is likely to take place.

All current industrial consumers will need to apply for discharge permits and they will have to supply and maintain a flow meter measuring the volume of water that is discharged into Overstrand Municipality's sewerage system. It is also recommended that the accounts generated by the Municipality include for each cycle a summary of the COD and flow results to enable industries to keep a record and look at ways of improving where possible.

## TOPIC 7: FINANCIAL

The 2023/2024 IDP list the following key long term financial considerations to be considered by Overstrand Municipality in order to remain financially sound.

- Overstrand LM has incurred a second consecutive operating deficit (excluding capital grants), but profitability is expected to recover as the Covid-19 pandemic dissipates and the global response to international events stabilises.

- Notwithstanding the impact of the Covid-19 pandemic and economic volatility due to other international events such as the Russian invasion of Ukraine and tensions between global superpowers, a strong liquidity ratio of 2.57 was achieved in FY2022, suggesting that the municipality will be able to service its liabilities as and when it becomes due.

- Strong consumer debtors' aging profile and a high consumer debtors' collection rate in FY2022. This is partly due to the relief measures applied during the height of pandemic lockdowns and some lasting effects thereof, but also reflects the strong collection efforts implemented by management.

- The cash generated by operations increased and was at similar levels to those observed between 2018 and 2019. As expected, debtors older than 90+ days increased as a percentage of total consumer debtors, though this should normalise as the residents and the municipality adjust to the setbacks that have been observed. The provision for bad debts decreased and were insufficient to cover all debtors older than 90+ days.

- Higher reliance on cash and reserves in the capital funding mix.

- Reasonably low level of grant dependency, supported by the municipality's ability to generate cash from operations.

- The Covid-19 pandemic had substantial detrimental effects, that are still being recovered from, on many municipalities and sectors of the economy. Many businesses were forced to close down and lay off employees. Much of which had an impact on municipalities, as the affected persons were subsequently unable to pay for municipal services and still are.

- Overstrand is in the fortunate position of having sufficient reserves and was able to absorb much of the pressure exerted by the continued fallout of the pandemic.

- In addition, the ongoing exorbitant increases in bulk electricity tariffs from ESKOM create additional pressure on tariff policies of municipalities with ever increasing spells of loadshedding driving consumers to alternative sources of electricity provision.

- To maintain gross surplus margins on electricity municipalities often pass on these increases to consumers to the extent possible. In tariff determination, however, the household bill (or full cost of the basket of municipal services) and households' ability to pay is considered, which lead to lower increases in other tariffs. This skews the tariff structure and makes it difficult to apply the principle of cost-reflective tariffs.

- Notwithstanding the addition of 625 households(1.9% household formation) in 2021, the Infrastructure Index remained high at 0.90, on par with both the province (0.90) and the district (0.90). This suggests that, on average, 90% of households receive the basic level of service with regards to all municipal services and housing.

- The household formation over the last ten years was 20.2% which indicate the longer-term trend of urbanisation, which adds additional pressure on the municipality to deliver municipal services.

- By comparing backlogs of sanitation, water, electricity and refuse removal in urban as well as non-urban areas, Overstrand municipality performed better with regards to all four services than the average of all the municipalities in the Overberg district. Overstrand also outperformed the average across the province in three of the infrastructure categories. Electricity services could still improve compared to the provincial average. Based on these averages, service provision in Overstrand compares very well with other municipalities in the province.

- A comparison of the Average Household Bill for the Middle Income- and Affordable Range of a selected number of municipalities in the WC (extracted from Budget Table SA14 as posted on the National Treasury local government database or the municipalities' websites), based on the 2022/23 tariffs, implies that Overstrand's household bill is currently toward the lower end of the scale when compared to its peers. Although this might imply that there is scope to increase tariffs, the effect on the entire household bill of the residents should be considered, especially in light of the appetite that exists to absorb such increases.

- Considering the high percentage of lower income households in the area, the household bill may become unaffordable to households and the rate of increases in tariffs need to be considered carefully.

- The municipality's indigent benefit for qualifying households offers one of the highest household income levels as criteria. Indigent consumers also receive 10 kl of water, 7 kl of sewerage and 50 units of electricity free per month.

A Long Term Financial Plan is in place for Overstrand Municipality, which is updated annually since 2015 with the latest financial information. The independent financial assessment list the following strengths and weaknesses (2023/2024 IDP).

Strengths:

- Overstrand Municipality has a proven ability to generate cash from operations despite experiencing total operating deficits (Excl. capital grants) in recent years.

- A high liquidity ratio of 2.57 in 2022, supported by a high cash and cash equivalents balance, suggesting that the municipality will be able to service its liabilities as and when it becomes due. The liquidity ratio has improved from the previous year and is supported by historically strong liquidity management.

- Strong Consumer Debtors aging profile and a high Consumer Debtors Collection Rate, as well as historically prudent financial management, helped the municipality maintain a healthy financial position despite the serious detrimental effects that the Covid-19 pandemic has had.

- Low level of grant dependency.

- Sufficient cash coverage for minimum liquidity requirements as well as three months' operating expenditure.

- Expenditure on repairs and maintenance on capital assets as a percentage of Property, Plant & Equipment as well as Investment property improved.

Weaknesses:

- Continued influx of lower income households.

The table below gives an overview of the Financial Strategies of Overstrand Municipality to ensure sound financial management over the medium to long term (2023/2024 IDP).

**Table C.7.1: Financial Strategies**

| Strategy | Status of the Strategy |
|---|---|
| Revenue Raising Strategies | The Municipality's revenue streams will be maximised:<br>• Assessment rates;<br>• Revenue from trading services;<br>• Agency fees and fines;<br>• Sundry revenue e.g. property management and other revenue;<br>• Grants;<br>• Donor funding from international agencies;<br>• Public Private Partnership; and<br>• Applying strict credit control measures. |
| Asset Management Strategies | • Asset conservation and supply of basic services as a constitutional obligation. |

| Table C.7.1: Financial Strategies | |
|---|---|
| **Strategy** | **Status of the Strategy** |
| | • Ensure that assets are properly accounted for and safeguarded, as averaging on the municipal assets will drive the economic growth and development of the Municipality. |
| Financial Management Strategies | • Compliance with GRAP standards;<br>• Prepare annual financial statements timeously;<br>• Compliance with the municipal Standard Chart of Accounts;<br>• Maintain an effective financial management system, to ensure proper reporting;<br>• Sustainable multi-year forecasts. |
| Capital Financing Strategies | Municipal infrastructure has a long term economic life and the general principle will be applied that future users of infrastructure should contribute towards the payment for capital expenditure by servicing the loans taken up to provide adequate infrastructure as required.<br>• Overstrand will maintain its process of utilizing the following main sources of financing to fund CAPEX, e.g. Grants, External Borrowing and Internal Revenue generated.<br>• Bulk infrastructure contributions as might be available, to fund applicable capital projects. |
| Operational Financing Strategies | • Business planning links back to priority needs and master planning, and informs the detail operating budget appropriations.<br>• Consideration of the economic realities and the subsequent prioritisation criteria for compilation of the Operational budget.<br>• Requirement of Top Management to discuss budget proposals and affordability. |
| Strategies that would enhance cost effectives | • Further operational efficiencies to be identified.<br>• Reduction in non-core expenditure and consideration of reviewing service levels standards. |

**Overstrand Municipality's KPA 3 is "Optimizing Financial Resources" and the Strategy is "Effective Financial Management".** The draft 2022/2023 Annual Report indicated that the Municipality has already implemented the following financial management reforms to ensure that resources are used efficiently.

- Efficient costing of services and projects by identifying and managing the cost drivers, inclusive of a sustained focus on cost containment, also in view of the promulgation of the Municipal Cost Containment Regulations on 7 June 2019 by the Minister of Finance, in concurrence with the Minister of Cooperative Governance and Traditional Affairs, in an attempt to "ensure that resources of a municipality and municipal entity are used effectively, efficiently and economically".
- Active use of forecasts and projections to manage cash flow efficiently.
- Active monitoring of income and expenditure against pre-determined budget targets/projections.
- Set financial benchmarks and monitor performance against them.
- Development of a feasible capital funding strategy.
- Development of a feasible cash and investment strategy.
- Exploring additional funding sources.

**Expenditure:**

Operational: The future planned expenditure by type for Overstrand Municipality, as included in the approved 2023/2024 Budget, is as follows.

**Table C.7.2: Expenditure Items by Type, as Included in the Approved 2023/2024 Budget**

| Expenditure Items | % of total 2022/2023 Expenditure | 2022/2023 Full Year Forecast | 2023/2024 Budget | 2024/2025 Budget | 2025/2026 Budget |
|---|---|---|---|---|---|
| Employee related costs | 31.45% | R505 935 000 | R537 911 000 | R549 447 000 | R577 299 000 |
| Remuneration of Councillors | 0.77% | R12 335 000 | R12 514 000 | R13 014 000 | R13 540 000 |
| Bulk purchases - Electricity | 23.10% | R371 533 000 | R429 805 000 | R484 562 000 | R533 019 000 |
| Inventory consumed | 3.95% | R63 584 000 | R62 499 000 | R68 235 000 | R66 340 000 |
| Debt Impairment | 1.22% | R19 617 000 | R19 414 000 | R19 608 000 | R19 804 000 |
| Depreciation and Asset Impairment | 9.11% | R146 596 000 | R149 154 000 | R151 672 000 | R154 226 000 |
| Interest | 2.99% | R48 056 000 | R49 658 000 | R51 817 000 | R49 865 000 |
| Contracted Services | 16.85% | R270 967 000 | R300 624 000 | R323 452 000 | R341 534 000 |
| Transfers and Grants | 0.92% | R14 786 000 | R16 380 000 | R17 143 000 | R17 944 000 |
| Operational costs | 9.64% | R155 038 000 | R164 252 000 | R164 418 000 | R144 263 000 |
| **Total** | **100.00%** | **R1 608 448 000** | **R1 742 212 000** | **R1 843 369 000** | **R1 917 834 000** |

Source: Medium Term Revenue and Expenditure Framework for Overstrand 2023/2024: Table A4 – Budgeted Financial Performance (Revenue and Expenditure)

Maintenance activities have been increasingly focused on reactive maintenance as a result of the progressive deterioration and failure of old infrastructure. Consequently, there has been dilution of preventative maintenance of other infrastructure. Expenditure on repairs and maintenance does not keep track with the increase in asset values as well as the ageing of the infrastructure.

An Integrated Maintenance Plan is necessary that optimises maintenance activities, appropriate to its specific needs and the local environment, and identifies the systems and resources required to support this. A regime of planned preventative maintenance should be established for all infrastructure assets classified as critical and important in the Asset Register. Consideration should be given to the establishment of a maintenance management system to enable Overstrand Municipality to better manage its risks, and more effectively plan and prioritise the wave of renewals that are going to be required over the next 20 years.

It is important to note that the maintenance budget requirements are going to increase substantially over the next twenty years in real terms, in line with the envisaged pace of development and the upgrading of the treatment works that were completed over the last number of years. It is estimated that the budget requirements will double over this period.

The recommendations for Overstrand Municipality, with regard to their Operational Budgets, are as follows:

- Continue with the implementation of the Asset Maintenance Plan, which will indicate the real replacement values and service lives of the assets and the funds required to provide for adequate operation and maintenance of the infrastructure. Current gaps include unrealistically low depreciation charges, which have to be rectified and ring-fenced into an asset replacement fund, as well as additional budget requirements above inflation for infrastructure development.

- The new depreciation charges will have to form part of the operating budget and subsequent tariffs, linked to a ring-fenced asset replacement fund.

- It is critical for Overstrand Municipality to ensure that sufficient funding is allocated towards an asset replacement fund, in order to ensure adequate rehabilitation and maintenance of the existing infrastructure.

- Water services operational surpluses have to be allocated to essential water services requirements in the future.

- Overstrand Municipality needs to ensure that the Credit Control and Debt Collection By-laws are strictly enforced.

Capital: The future estimated capital expenditure per functional classification are summarised in the table below.

**Table C.7.3: Estimated Capital Expenditure per Functional Classification of Overstrand Municipality's Future Capital Budget**

| Capital Expenditure Standard | 2022/2023 Full Year Forecast | 2023/2024 Budget | 2024/2025 Budget | 2025/2026 Budget |
|---|---|---|---|---|
| Executive and Council | R5 000 | R5 005 000 | - | - |
| Finance and Administration | R1 870 000 | R4 070 000 | - | - |
| Internal Audit | - | - | - | - |
| Community and Social Services | R4 781 000 | R1 330 000 | - | - |
| Sport and Recreation | R3 047 000 | R5 041 000 | R11 704 000 | R16 241 000 |
| Public Safety | R6 042 000 | R900 000 | - | - |
| Housing | R44 311 000 | R41 890 000 | R30 090 000 | R63 220 000 |
| Health | - | - | - | - |
| Planning and Development | R1 844 000 | R1 108 000 | - | - |
| Road Transport | R16 824 000 | R4 640 000 | - | R2 981 000 |
| Environmental Protection | - | - | - | - |
| Energy Sources | R58 907 000 | R59 526 000 | R33 500 000 | R34 000 000 |
| Water Management | R35 789 000 | R25 963 000 | R35 510 000 | R25 700 000 |
| Wastewater Management | R32 921 000 | R59 445 000 | R19 521 000 | R17 800 000 |
| Waste Management | R5 876 000 | R490 000 | - | R4 500 000 |
| **Total Capital Expenditure Functional** | **R212 216 000** | **R209 409 000** | **R130 325 000** | **R164 442 000** |

Source: Medium Term Revenue and Expenditure Framework for Overstrand 2023/2024: Table A5 - Capital Expenditure by Vote, Functional Classification and Funding Source

The Water and Sewer Master Plans (June 2021) for the various towns in Overstrand Municipality's Management Area recommends upgrades to the water and sewer networks to the value of R458.698 million and R1 003.424 million respectively in the foreseeable future in order to accommodate development and population growth according to the SDF. Most of the capital projects for water and sewerage are currently funded through the Municipality's own budget.

The CRC of the water and sewerage infrastructure that will need to be replaced over the next five years (RUL <5 yrs) is R674.743 million. The asset renewal needs for the water infrastructure assets over the next ten years is R65.436 million per year. The reinvestment required is R602.700 million in the first five years and R51.664 million in the second five-year period. The age of 56.9% of the water infrastructure assets is greater than twenty years. The CRC of the water infrastructure with a condition grading of "Very Poor" is R380.493 million. The asset renewal needs for the sewerage infrastructure assets over the next ten years is R17.435 million per year. The reinvestment required is R72.044 million in the first five years and R102.306 million in the second five-year period. The age of 65.4% of the sewerage infrastructure assets is greater than twenty years. The CRC of the sewerage infrastructure with a condition grading of "Very Poor" is R18.125 million.

The DWS will insist in the future that all water infrastructure which they fund is value engineered against the life-cycle cost with a specific emphasis on energy costs. Evidence will be required that the technical design is appropriate for the nature of the resource and that operation and maintenance of the assets is reasonably within the capability of the responsible institution. New water resources infrastructure will also not be developed or authorized unless effective WC/WDM interventions have been put in place in the affected area.

The recommendations for Overstrand Municipality, with regard to their Capital Funding, are as follows:

- Take the recommended projects, as identified through the Water and Sewer Master Plans and the WSDP, into account during the planning and prioritization process for new infrastructure. Prioritize from the desired list, those items which can be implemented from available funding in the particular financial year.

- Undertake revised master planning at least every three to five years and to use the Master Plans to list the desired infrastructure development requirements and reflect these in the IDP.

- Assign a high priority to the implementation of the WC/WDM Strategy in order to postpone additional capital investment for as long as possible, both from the water availability perspective as well as from the treatment of increased effluent volumes. The costs of physical water loss, the capital requirements for new water resources infrastructure, and the constraints of poor water availability on water dependent economic growth means that WC/WDM is a critical management priority for stretching the financial resources of the Municipality. WC/WDM is almost always a more cost-effective solution than the implementation of new infrastructure, and no new infrastructure should be developed until unauthorized water has been reduced to manageable volumes.

- To adopt appropriate technology solutions for the water and sewerage infrastructure challenges. Techniques such as value engineering should also be adopted to ensure that investments in infrastructure and other solutions are cost effective over the full life-cycle and designed to be fit for purpose.

- To ensure adequate funding for the full lifecycle cost of the new water and sewerage infrastructure, which will include funds for the operation and maintenance of the infrastructure and regular refurbishment.

- Balance land-use and development planning (SDFs) in accordance with the availability of water and the capacity of WTWs and WWTWs that are in place or that will be implemented.

- To focus strongly on revenue collection, in order to improve the Municipality's own funding sources, over and above the Grants received from National and Provincial Government. The Municipality also needs to actively implement their Customer Care, Credit Control and Debt Collection Policy in order to minimize the percentage of non-payment for municipal services.

- To identify all possible sources of external funding over the next three years to assist Overstrand Municipality to address the bulk infrastructure backlogs that exist in the various towns as indicated in the tables under Topic 3.

- Continue with the implementation of the Asset Maintenance Plan for all the water and sewerage infrastructure, which indicates the real replacement values, the service life of the assets and the funds required to provide for adequate asset replacement. The renewals burden is set to increase sharply over the next 20 years and it is therefore important for Overstrand Municipality to commit to a substantial and sustained programme of capital renewal works.

**Income:**

Operational: The future planned revenue sources for Overstrand Municipality, as included in the approved 2023/2024 Budget, is as follows.

**Table C.7.4: Revenue Items by Source, as Included in the 2023/2024 Budget**

| Revenue Item | 2022/2023 Full Year Forecast | 2023/2024 Budget | 2024/2025 Budget | 2025/2026 Budget |
|---|---|---|---|---|
| Service Charges - Electricity | R528 044 000 | R577 969 000 | R638 802 000 | R693 798 000 |
| Service Charges - Water | R138 138 000 | R147 269 000 | R156 593 000 | R166 263 000 |
| Service Charges – Waste Water Man. | R90 962 000 | R104 715 000 | R111 237 000 | R117 912 000 |
| Service Charges – Waste Man. | R78 850 000 | R85 430 000 | R90 563 000 | R95 995 000 |
| Sale of Goods & Rendering of Services | R116 250 000 | R131 673 000 | R112 040 000 | R119 146 000 |
| Agency Services | R7 858 000 | R8 319 000 | R8 818 000 | R9 346 000 |
| Interest | - | - | - | - |
| Interest earned from receivables | R3 136 000 | R6 400 000 | R6 700 000 | R7 100 000 |
| Interest earned from current and non current assets | R34 671 000 | R41 800 000 | R44 600 000 | R47 700 000 |
| Rent on land | R1 229 000 | R1 127 000 | R1 149 000 | R1 173 000 |
| Rental from fixed assets | R4 573 000 | R5 646 000 | R5 975 000 | R6 290 000 |
| Licences and Permits | R953 000 | R964 000 | R1 016 000 | R1 071 000 |
| Operational revenue | R7 819 000 | R8 242 000 | R8 556 000 | R8 867 000 |
| Property Rates | R287 941 000 | R340 506 000 | R357 532 000 | R375 408 000 |
| Surcharges and taxes | - | - | - | - |

| Table C.7.4: Revenue Items by Source, as Included in the 2023/2024 Budget | | | | |
|---|---|---|---|---|
| **Revenue Item** | **2022/2023 Full Year Forecast** | **2023/2024 Budget** | **2024/2025 Budget** | **2025/2026 Budget** |
| Fines, penalties and forfeits | R20 344 000 | R20 421 000 | R21 687 000 | R23 013 000 |
| Licences and Permits | R1 683 000 | R1 943 000 | R2 060 000 | R2 184 000 |
| Transfers and subsidies – Operational | R177 496 000 | R184 953 000 | R200 916 000 | R213 137 000 |
| Interest | R846 000 | R1 300 000 | R1 378 000 | R1 461 000 |
| Other gains | R8 225 000 | R7 900 000 | R8 000 000 | R8 100 000 |
| **Total** | **R1 509 017 000** | **R1 676 577 000** | **R1 777 621 000** | **R1 897 966 000** |

Source: Medium Term Revenue and Expenditure Framework for Overstrand 2023/2024: Table A4 – Budgeted Financial Performance (Revenue and Expenditure)

Capital: Capital funding will have to increase substantially if existing service levels are to be sustained, which has to be the goal. In this regard Overstrand Municipality's own funding, as well as the grant funding must significantly exceed inflation. Other possible sources of funding and innovative funding mechanisms have to be explored.

It is important for Overstrand Municipality to manage their charges for water and sanitation services and the control of consumer payments effectively, in order to ensure that adequate income is generated to fund their water and sewerage capital projects.

The future funding sources of Overstrand Municipality's total capital budget are summarised in the table below.

| Table C.7.5: Sources of Funding for the Future Capital Budgets of Overstrand Municipality | | | | |
|---|---|---|---|---|
| **Capital Funding Source** | **2022/2023 Full Year Forecast** | **2023/2024 Budget** | **2024/2025 Budget** | **2025/2026 Budget** |
| National Government | R81 741 000 | R54 293 000 | R40 235 000 | R41 222 000 |
| Provincial Government | R5 400 000 | - | - | - |
| District Municipality | - | - | - | - |
| Transfers and Subsidies | R56 853 000 | R41 890 000 | R30 090 000 | R63 220 000 |
| Public contributions and Donations | - | - | - | - |
| Borrowing | R38 411 000 | R95 214 000 | R60 000 000 | R60 000 000 |
| Internally generated funds | R29 811 000 | R18 013 000 | - | - |
| **Total Capital Funding** | **R212 216 000** | **R209 409 000** | **R130 325 000** | **R164 442 000** |

Source: Medium Term Revenue and Expenditure Framework for Overstrand 2023/2024: Table A5 - Capital Expenditure by Vote, Standard Classification and Funding

**Tariff and Charges**: The state of the economy, due to the Corona Virus pandemic, has an adverse effect on the consumers and their ability to pay for services. As a result municipalities' revenues and cash flows are expected to remain under pressure. Furthermore municipalities should carefully consider affordability of tariff increases, especially as it relates to domestic consumers while considering the level of services versus the associated cost. Water tariffs should always be cost reflective and the water tariff structure must therefore ensure that:

- Water tariffs are fully cost-reflective, including the cost of maintenance and renewal of purification plants, water networks and the cost associated with reticulation expansion;
- Water tariffs are structured to protect basic levels of service and ensure the provision of free water to the poorest of the poor (indigent); and
- Water tariffs are designed to encourage efficient and sustainable consumption.

Overstrand Municipality's current six (6) block step tariff system discourages the wasteful or inefficient use of water. It is expected that this tariff structure will continue to be applied in the future. The sustainable supply of potable water is however becoming an ever-increasing challenge. This scarce commodity has to be optimally managed. The continued increase in the price of electricity and chemicals for purification and load shedding has contributed to the cost of delivering the service. The water usage block tariff has been structured for a basic affordable tariff for up to 18 kl per household per month. Punitive tariffs are in place for excessive water consumption.

The table below gives some comments on the specific blocks, with regard to Overstrand Municipality's residential block step tariff structure, for the various years for water services.

**Table C.7.6: Comments on the Municipality's Residential Block Step Water Tariff Structure**

| Block (kl/month) | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | Comments |
|---|---|---|---|---|---|
| 0 - 6 | R5-60 | R5-85 | R6-08 | R6-38 | Free Basic Water |
| 7 - 15 | R11-47 | R11-99 | R12-47 | R13-08 | Low volume use |
| 16 - 18 | | | | | Typical use volume, including garden irrigation |
| 19 - 30 | R18-61 | R19-45 | R20-23 | R21-22 | |
| 31 - 45 | R28-66 | R29-95 | R31-15 | R32-68 | Above average use, including garden irrigation |
| 46 - 60 | R37-22 | R38-89 | R40-45 | R42-43 | Wasteful use and/or severe garden irrigation |
| 61 - 70 | R49-64 | R51-87 | R53-94 | R56-58 | |
| > 70 | | | | | Significant waste and/or unnecessary garden irrigation |

Overstrand Municipality will continue with their stepped block tariff system for water supply services. Wasteful or inefficient use of water is discouraged through increased tariffs. Overstrand Municipality also started in 2010/2011 with the implementation of volumetric sewerage tariffs.

The following tariff structure characteristics should remain in Overstrand Municipality's water tariffs in order to ensure efficient water use.

- Maintain a rising block tariff structure.
- Keep number of blocks in the tariff to a minimum. One block to address free basic water (the first step) and another to address the "cut-off" volume where consumers are discouraged to use water above this monthly volume (highest block) are required. In addition another three blocks could be used to distinguish between low users, typical use or high water use.
- The volumetric steps should be kept the same for all the areas within Overstrand Municipality's Management Area.
- The cost of water in the maximum step should severely discourage use in this category. The volumetric use for the highest category is 60 kl/month, above which residential water use is considered to be wasteful or unnecessary. Garden use requiring in excess of this volume should be reduced in accordance with xeriscape practices.

The MFMA Circular No.78 of 7 December 2015 stipulated the following with regard to the water and sanitation tariff increases:

"Municipalities should consider the full cost of rendering the water and sanitation services when determining tariffs related to these two services. If the tariffs are low and result in the municipality not recovering their full costs, the municipality should develop a pricing strategy to phase-in the necessary tariff increases in a manner that spreads the impact on consumers over a period of time."

"Municipalities are urged to design an Inclining Block Tariff (IBT) structure that is appropriate to its specific circumstances and ensures an appropriate balance between low income consumers and other domestic, commercial and business customers, and the financial interests of the municipality. While considering this structure, municipalities are advised to evaluate if the IBT system will be beneficial to them depending on consumption patterns in their areas."

"In light of the current drought being experienced across large parts of the country, and to mitigate the need for water tariff increases, municipalities must put in place appropriate strategies to limit water losses to acceptable levels. In this regard municipalities must ensure that water used by its own operations is charged to the relevant service, and not simply attributed to water losses."

The recommendations for the water and sewerage tariffs of Overstrand Municipality are as follows:

- Overstrand Municipality will continue to re-evaluate the tariffs they charge for their water and sanitation services on an annual basis in order to put the Municipality in a better financial position and to ensure that all the O&M expenditure for water and sanitation services are always recovered through their water and sanitation services income, to address the bulk infrastructure backlogs and to ensure the adequate rehabilitation and maintenance of all existing water and sewerage infrastructure within the various towns.

- The large commercial and industrial consumers could lower their current water demand by means of improved practices or re-use of wastewater. Overstrand Municipality should note that revenue could potentially decrease as a result of reuse practices.

- Overstrand Municipality needs to start with the monitoring of the volume and nutrient loading of all industrial effluent discharged by industrial consumers into the sewer system. A formula for the calculation of the extraordinary treatment cost to industrial consumers for the industrial effluent they discharge into Overstrand Municipality's sewer system needs to be put in place to form part of the existing tariff structure. The performance of WWTWs in general can be severely compromised by certain industrial effluent discharges. It is therefore also important for Overstrand Municipality to recalculate their treatment costs annually, in order to ensure that there is no under or over recovery of costs from industrial consumers.

  Regular sampling of the quality of industrial effluent discharged into the sewer system needs to be done and all industrial consumers need to be charged according to the quality of the effluent discharged into the Municipality's sewer system.

- The current water tariff codes adequately differentiate between the different types of consumers and their water usage.

**TOPIC 8: WATER SERVICES INSTITUTIONAL ARRANGEMENTS AND CUSTOMER SERVICES**

Sections 12 and 13 of the Water Services Act (Act No 108 of 1997) place a duty on WSAs to prepare and maintain a WSDP, as part of the process of preparing an IDP. The DWS has developed a new WSDP website to assist WSAs with the WSDP process and to provide a framework for the capturing of the data. The WSDP of Overstrand Municipality needs to be updated regularly.

The Municipality will also continue to report annually and in a public way on progress in implementing the plan (WSDP Performance- and Water Services Audit Report), as part of Overstrand Municipality's Annual Report, as required in terms of Section 18 of the Water Services Act, 1997 (Act No.108 of 1997), as well as the "Regulations relating to compulsory national standards and measures to conserve water", as issued in terms of Sections 9(1) and 73(1)(j) of the Water Services Act.

The Water Safety Plans for the various WTWs and water distribution systems and the $W_2$RAPs for the WWTWs and drainage networks need to be updated regularly. The WTW and WWTW Process Audits also needs to be updated regularly.

The 2021 Water and Sewer Master Plans of Overstrand Municipality summarise the projects (Master Plan Items) necessary in order to cope with the increased future demands and developments within the Overstrand Municipality's systems. The Water and Sewer Master Plans need to be updated regularly.

It is important for Overstrand Municipality to allocate adequate funding for the rehabilitation and maintenance of the existing infrastructure and all forward planning for new infrastructure should be guided by the new Water and Sewer Master Plans. Water and sanitation services are currently effectively managed by Overstrand Municipality.

Overstrand Municipality will continue with their mentoring role for operational personnel ensuring an adequately trained and DWS classified workforce with dedicated training programmes for supervisors and operational personnel. A Work Place Skills Plan for 2023/2024 is in place, which lists the training to be provided during the current financial year.

The effective management and monitoring of Veolia Services Southern Africa (Pty) Ltd, who was appointed for the Water and Wastewater Bulk Contract, is a very important factor that will determine the ability of Overstrand Municipality to sustainably deliver safe and reliable water and to treat the effluent at the WWTWs to an acceptable standard. Monitoring the Contractor's compliance with the KPIs related to treatment processes and quality monitoring and control is essential because the Contractor's actions (or failure to act) will have a major impact on the well-being of the communities and the environment as well as the reputation of the municipality.

Overstrand Municipality will continue to actively focus on training, which requires the identification of trainers (from senior operators / officers / professional ranks) for the development and facilitation of courses which relate to specific organizational knowledge and systems requirements. Overstrand Municipality's internal reports such as the Water Safety Plan, $W_2$RAP and this WSDP contain some information on which the courses can be based. This will assist Overstrand Municipality's Human Resources Department in general and the skills development facilitator in particular to develop and implement effective workplace skills plans relevant to Human Capacity Development requirements.

Overstrand Municipality is committed to maintain the existing high levels of customer service in their urban areas and to record all the necessary information for the WSDP on an annual basis. The present Customer Services and Complaints System adequately allow for the recording and management of all water and sanitation related complaints. The Municipality is committed to ensure that all water and sanitation related complaints are recorded and that the complaints are addressed within the time period stipulated in the Client Service Charter.

Access to safe drinking water is essential to health and is a human right. Safe drinking water that complies with the SANS:241 Drinking Water specification does not pose a significant risk to health over a lifetime of consumption, including different sensitivities that may occur between life stages. Overstrand Municipality is therefore committed to ensure that their water quality always complies with national safety standards.

The Water Safety Plans of Overstrand Municipality includes Improvement / Upgrade Plans. The purpose of the Improvement / Upgrade Plans is to address the existing significant risks where the existing controls were not effective or absent.

## SECTION D: WATER SERVICES OBJECTIVES AND STRATEGIES

The water services strategies presented below were derived from the 2023/2024 Top Layer SDBIP and the water services situational analysis as summarized in Section C: Water Services Existing Needs Perspective and presents the 5-year Water Services strategies as established in the WSA's WSDP.

| Table: Table D.1: Water Services Objectives and Strategies | | | | | | | |
|---|---|---|---|---|---|---|---|
| Objective / Strategy | Key Performance Indicator | Baseline (FY2022/2023 status quo) | WSDP FY2023/24 TARGET | WSDP FY2024/25 TARGET | WSDP FY2025/26 TARGET | WSDP FY2026/27 TARGET | WSDP FY2027/28 TARGET |
| **Topic 1: Settlement Demographics & Public Amenities** | | | | | | | |
| *Sustainable Integrated Human Settlements* | *Implement SDF and Growth Management Strategy for each of the towns and ensure new developments are in line with these priority action plans.* | *Targets to be set by other Department.* | *Targets to be set by other Department.* | *Targets to be set by other Department.* | *Targets to be set by other Department.* | *Targets to be set by other Department.* | *Targets to be set by other Department.* |
| **Topic 2: Service Levels** | | | | | | | |
| *Ensure all households on the farms are provided with at least basic water services, subject to DWS guidance and provision of resources.* | *Support all applications received for basic water services on the farms (Subject to availability of financial resources and sustainability of type of service).* | - | - | - | *100% of applications received are supported (Subject to availability of unding and sustainability of type of service).* | *100% of applications received are supported (Subject to availability of unding and sustainability of type of service).* | *100% of applications received are supported (Subject to availability of funding and sustainability of type of service).* |
| *Ensure all households on the farms are provided with at least basic sanitation services, subject to DWS guidance and provision of resources.* | *Support all applications received for basic sanitation services on the farms (Subject to availability of financial resources and sustainability of type of service).* | - | - | - | *100% of applications received are supported (Subject to availability of unding and sustainability of type of service).* | *100% of applications received are supported (Subject to availability of unding and sustainability of type of service).* | *100% of applications received are supported (Subject to availability of funding and sustainability of type of service).* |
| Provision of water to informal households based on the standard of 1 water point to 25 households. | Number of taps installed in relation to the number of informal households. | 328 | Provide at least 1 water point to every 25 households in informal areas. | Provide at least 1 water point to every 25 households in informal areas. | Provide at least 1 water point to every 25 households in informal areas. | Provide at least 1 water point to every 25 households in informal areas. | Provide at least 1 water point to every 25 households in informal areas. |
| Provision of cleaned piped water to all formal households within 200m from the household. | Number of formal households that meet agreed service standards for piped water. | 30 412 | Target to be set in future year. | Target to be set in future year. | Target to be set in future year. | Target to be set in future year. | Target to be set in future year. |
| The provision of sanitation services to informal households based on the standard of 1 toilet to 5 households. | Number of toilet structures provided in relation to the number of informal households. | 1 020 | Provide at least 1 toilet to every 5 households in informal areas. | Provide at least 1 toilet to every 5 households in informal areas. | Provide at least 1 toilet to every 5 households in informal areas. | Provide at least 1 toilet to every 5 households in informal areas. | Provide at least 1 toilet to every 5 households in informal areas. |
| Provision of sanitation services to formal residential households. | Number of formal households which are billed for sewerage in accordance to the SAMRAS financial system. | 30 724 | Target to be set in future year. | Target to be set in future year. | Target to be set in future year. | Target to be set in future year. | Target to be set in future year. |
| Provision of sanitation services to informal households on invaded land with available funding. | The number of toilets provided for informal households on invaded land with available funding. | 105 | Target to be set in future year. | Target to be set in future year. | Target to be set in future year. | Target to be set in future year. | Target to be set in future year. |
| Provision of water to informal households on invaded land with available funding. | The number of taps installed for informal households on invaded land with available funding. | 80 | Target to be set in future year. | Target to be set in future year. | Target to be set in future year. | Target to be set in future year. | Target to be set in future year. |
| **Topic 3: Water Services Asset Management** | | | | | | | |

| Table: Table D.1: Water Services Objectives and Strategies | | | | | | | |
|---|---|---|---|---|---|---|---|
| Objective / Strategy | Key Performance Indicator | Baseline (FY2022/2023 status quo) | WSDP FY2023/24 TARGET | WSDP FY2024/25 TARGET | WSDP FY2025/26 TARGET | WSDP FY2026/27 TARGET | WSDP FY2027/28 TARGET |
| *The provision and maintenance of municipal services.* | *Ensure adequate storage capacity for all towns (At least 48hrs AADD).* | - | - | *All eight areas with an overall storage capacity above 48hrs AADD.* | *All eight areas with an overall storage capacity above 48hrs AADD.* | *All eight areas with an overall storage capacity above 48hrs AADD.* | *All eight areas with an overall storage capacity above 48hrs AADD.* |
| *Implement projects included in the Water Master Plan* | *Ensure adequate water pump station and water reticulation capacity.* | - | - | *Upgrade existing water pump stations and provide new pump stations as identified in the Water Master Plan. Upgrade water reticulation networks as proposed in the Water Master Plan.* | *Upgrade existing water pump stations and provide new pump stations as identified in the Water Master Plan. Upgrade water reticulation networks as proposed in the Water Master Plan.* | *Upgrade existing water pump stations and provide new pump stations as identified in the Water Master Plan. Upgrade water reticulation networks as proposed in the Water Master Plan.* | *Upgrade existing water pump stations and provide new pump stations as identified in the Water Master Plan. Upgrade water reticulation networks as proposed in the Water Master Plan.* |
| *Implement projects included in the Sewer Master Plan* | *Ensure adequate sewer pump station and drainage network capacity.* | - | - | *Upgrade existing sewer pump stations and provide new pump stations as identified in the Sewer Master Plan. Upgrade sewer drainage networks as proposed in the Sewer Master Plan.* | *Upgrade existing sewer pump stations and provide new pump stations as identified in the Sewer Master Plan. Upgrade sewer drainage networks as proposed in the Sewer Master Plan.* | *Upgrade existing sewer pump stations and provide new pump stations as identified in the Sewer Master Plan. Upgrade sewer drainage networks as proposed in the Sewer Master Plan.* | *Upgrade existing sewer pump stations and provide new pump stations as identified in the Sewer Master Plan. Upgrade sewer drainage networks as proposed in the Sewer Master Plan.* |
| *The provision and maintenance of municipal services* | *Ensure all water and sewerage infrastructure assets are included in the Asset Register, with accurate CRC, DRC, RUL and Age.* | - | - | *Annual reporting to the Financial Department on water and sewerage assets not yet included in the Asset Register and assets for which the CRC, DRC, RUL and Age in the Asset Register is not correct.* | *Annual reporting to the Financial Department on water and sewerage assets not yet included in the Asset Register and assets for which the CRC, DRC, RUL and Age in the Asset Register is not correct.* | *Annual reporting to the Financial Department on water and sewerage assets not yet included in the Asset Register and assets for which the CRC, DRC, RUL and Age in the Asset Register is not correct.* | *Annual reporting to the Financial Department on water and sewerage assets not yet included in the Asset Register and assets for which the CRC, DRC, RUL and Age in the Asset Register is not correct.* |
| **Topic 4: Water Services Operation and Maintenance** | | | | | | | |
| *The provision and maintenance of municipal services.* | *% Of recommendations, as included in the WTW Process Audits, implemented.* | - | - | *60% of recommendations implemented.* | *70% of recommendations implemented.* | *80% of recommendations implemented.* | *90% of recommendations implemented.* |
| *The provision and maintenance of municipal services.* | *% Of recommendations, as included in the WWTW Process Audits, implemented.* | - | - | *60% of recommendations implemented.* | *70% of recommendations implemented.* | *80% of recommendations implemented.* | *90% of recommendations implemented.* |
| *The provision and maintenance of municipal services.* | *% Of recommendations, as included in the Improvement / Upgrade Plan of the Water Safety Plan, implemented.* | - | - | *60% of recommendations implemented.* | *70% of recommendations implemented.* | *80% of recommendations implemented.* | *90% of recommendations implemented.* |

| Table: Table D.1: Water Services Objectives and Strategies | | | | | | | |
|---|---|---|---|---|---|---|---|
| Objective / Strategy | Key Performance Indicator | Baseline (FY2022/2023 status quo) | WSDP FY2023/24 TARGET | WSDP FY2024/25 TARGET | WSDP FY2025/26 TARGET | WSDP FY2026/27 TARGET | WSDP FY2027/28 TARGET |
| *The provision and maintenance of municipal services.* | *% Of recommendations, as included in the Improvement / Upgrade Plan of the $W_2$RAP, implemented.* | - | - | *60% of recommendations implemented.* | *70% of recommendations implemented.* | *80% of recommendations implemented.* | *90% of recommendations implemented.* |
| *The provision and maintenance of municipal services* | *Ensure a budget of at least 1% of the total value of the water and sewerage assets is allocated towards the annual O&M of the systems.* | - | - | *A budget of 1% or more of the value of the water and sewerage assets is allocated towards the O&M of the systems.* | *A budget of 1% or more of the value of the water and sewerage assets is allocated towards the O&M of the systems.* | *A budget of 1% or more of the value of the water and sewerage assets is allocated towards the O&M of the systems.* | *A budget of 1% or more of the value of the water and sewerage assets is allocated towards the O&M of the systems.* |
| *The provision and maintenance of municipal services.* | *Ensure a budget of at least 2% of the total value of the water and sewerage assets is allocated towards the replacement of existing infrastructure per annum.* | - | - | *A budget of 2% or more of the value of the water and sewerage assets is allocated towards the replacement of existing infrastructure.* | *A budget of 2% or more of the value of the water and sewerage assets is allocated towards the replacement of existing infrastructure.* | *A budget of 2% or more of the value of the water and sewerage assets is allocated towards the replacement of existing infrastructure.* | *A budget of 2% or more of the value of the water and sewerage assets is allocated towards the replacement of existing infrastructure.* |
| *Reporting on water quality and wastewater quality compliance percentages.* | *Report at least annually on the percentage of water quality and wastewater quality compliance.* | - | - | *At least annual publication of water quality and wastewater quality compliance percentages.* | *At least annual publication of water quality and wastewater quality compliance percentages.* | *At least annual publication of water quality and wastewater quality compliance percentages.* | *At least annual publication of water quality and wastewater quality compliance percentages.* |
| Monthly monitoring of water and waste water quality results of all treatment plants and reporting to DWS via website. | Number of months monitored. | 12 | 12 | 12 | 12 | 12 | 12 |
| Quality of effluent comply 75% with general or special limit in terms of the Water Act (Act 36 of 1998). | % Compliance | 80% | 75% | 75% | 80% | 85% | 90% |
| Quality of potable water comply 95% with SANS241. | % Compliance with SANS241. | 98% | 95% | 95% | 95% | 95% | 95% |
| **Topic 5: Conservation and Demand Management (Topic 5.1: Water Resources)** | | | | | | | |
| Limit unaccounted water to less than 25%. | % of water unaccounted for | 25% | 25% | 23% | 22% | 21% | 20% |
| **Topic 5: Conservation and Demand Management (Topic 5.2: Water Balance)** | | | | | | | |
| *The provision and maintenance of municipal services.* | *Ensure all bulk water is metered at source, at WTW (incoming and outgoing) and at bulk storage reservoirs and the meters are read and recorded on at least a monthly basis.* | - | - | *95% of all sources metered and bulk water meters read and recorded at least monthly.* | *96% of all sources metered and bulk water meters read and recorded at least monthly.* | *97% of all sources metered and bulk water meters read and recorded at least monthly.* | *98% of all sources metered and bulk water meters read and recorded at least monthly.* |
| *The provision and maintenance of municipal services.* | *Ensure all incoming and outgoing flows at WWTWs are metered, as* | - | - | *95% of all flows at WWTWs metered and* | *96% of all flows at WWTWs metered* | *97% of all flows at WWTWs metered* | *98% of all flows at WWTWs metered and* |

| Table: Table D.1: Water Services Objectives and Strategies | | | | | | | |
|---|---|---|---|---|---|---|---|
| Objective / Strategy | Key Performance Indicator | Baseline (FY2022/2023 status quo) | WSDP FY2023/24 TARGET | WSDP FY2024/25 TARGET | WSDP FY2025/26 TARGET | WSDP FY2026/27 TARGET | WSDP FY2027/28 TARGET |
| | *well as final effluent re-used for irrigation purposes and that meters are read and recorded on at least a monthly basis.* | | | *meters read and recorded at least monthly.* | *and meters read and recorded at least monthly.* | *and meters read and recorded at least monthly.* | *meters read and recorded at least monthly.* |
| **Topic 6: Water Resources** | | | | | | | |
| *The provision and maintenance of municipal services.* | *% Of abstraction from sources registered and authorized by the DWS.* | - | - | *70% Compliance* | *80% Compliance* | *90% Compliance* | *95% Compliance* |
| *The provision and maintenance of municipal services.* | *Ensure yields and allocations are adequate to meet at least the projected five year water requirements for all eight areas.* | - | - | *100% adequate supply to meet water requirements for all eight areas.* | *100% adequate supply to meet water requirements for all eight areas.* | *100% adequate supply to meet water requirements for all eight areas.* | *100% adequate supply to meet water requirements for all eight areas.* |
| *The provision and maintenance of municipal services.* | *% Monitoring of effluent discharged by industrial consumers (Quantity and Quality)* | - | - | *50% of all industrial consumers monitored wrt quality and quantity of effluent discharged by them.* | *60% of all industrial consumers monitored wrt quality and quantity of effluent discharged by them.* | *70% of all industrial consumers monitored wrt quality and quantity of effluent discharged by them.* | *80% of all industrial consumers monitored wrt quality and quantity of effluent discharged by them.* |
| **Topic 7: Financial** | | | | | | | |
| 95% Of the approved capital budget spent. | % Of the capital budget spent | - | - | 95% | 95% | 95% | 95% |
| **Topic 8: Institutional Arrangements and Customer Care** | | | | | | | |
| Maintenance of sanitation services (tankers and networks) measured by the daily recording/completion of enquiries within 30 days. | % completed | 92% | 92% | 92% | 92% | 92% | 92% |
| Maintenance of water services measured by the daily recording/completion of enquiries/completed within 30 days | % completed | 92% | 92% | 92% | 92% | 92% | 92% |
| Report on the implementation of the WSDP annually by the end of October. | Report submitted. | 1 | 1 | 1 | 1 | 1 | 1 |

## SECTION E: WATER SERVICES MTEF PROJECTS

The draft 2024/2025 Water Services Medium-Term Expenditure Framework (MTEF) projects are presented below and outline the water services projects which might be funded for implementation within the next three financial years. Table E.2a provides the projects identified for implementation in FY2024/25, Table E.2b provides the projects identified for implementation in FY2025/26 and Table E2c provides the projects identified for implementation in FY2026/27.

It should be highlighted that the projects included herein, represents only projects for which funding might be secured, and therefore does not comprise the comprehensive water services project requirements of Overstrand Municipality.

The summary of the draft MTEF water services projects are presented as follows.

**Table E.1: Summary of MTEF Projects**

| Project Main Category | FY2024/25 | | FY2025/26 | | FY2026/27 | | MTEF Total | |
|---|---|---|---|---|---|---|---|---|
| | Nr | Value (R'000) | Nr | Value (R'000) | Nr | Value (R'000) | Nr | Value (R'000) |
| Water Projects | 13 | R39 945 | 9 | R40 610 | 8 | R57 070 | **15** | **R137 625** |
| Sanitation Projects | 7 | R22 087 | 7 | R25 000 | 5 | R21 200 | **9** | **R68 287** |
| **Combined Water & Sanitation Projects** | **20** | **R62 032** | **16** | **R65 610** | **13** | **R78 270** | **24** | **R205 912** |

**Table E.2a: Water Services MTEF Projects - FY2024/25 (1st year MTEF period)**

| Nr | Project Reference Number (Dept) | Project Name | Description | Project Driver | Main Category "W" or "S" | Sub Category | Component type | Project Budget / Funding Sources | | | | | | | | | | MTEF Project Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Prev spent FY2023/24 | FY2024/25 Budget | FY2024/25 Own | FY2024/25 MIG | FY2024/25 RBIG | FY2024/25 WSIG | FY2024/25 DR | FY2024/25 MWIG | FY2024/25 Other | Total Cost | |
| **1. Infrastructure Projects** | | | | | | | | **R0** | **R20 587** | | | | | | | | **R20 587** | |
| 1.1 | | Fencing at water installations | Install fencing at water infrastructure | Security | Water | Other | Security | | **R500** | R500 | | | | | | | **R500** | Water Safety Plans |
| 1.2 | | Water Facilities (Contingency) | Ensure adequate equipment at water facilities. | Water Quality | Water | Bulk | WTW | | **R500** | R500 | | | | | | | **R500** | WTW Process Audits |
| 1.3 | | Mount Pleasant Reservoir Link Water Lines | Install water pipelines | Services | Water | Internal | Reticulation | | **R6 000** | | R6 000 | | | | | | **R6 000** | Water Master Plan |
| 1.4 | | Sewerage Facilities (Contingency) | Ensure adequate equipment at sewerage facilities. | Effluent Quality | Sewerage | Bulk | WWTW | | **R700** | R700 | | | | | | | **R700** | WWTW Process Audits |
| 1.5 | | Hawston WWTW refurbishment and upgrade. | Upgrade and refurbish WWTW | Effluent Quality | Sewerage | Bulk | WWTW | | **R6 537** | | R6 537 | | | | | | **R6 537** | WSDP and WWTW Process Audit |
| 1.6 | | Fencing at sewerage installations | Install fencing at sewerage infrastructure | Security | Sewerage | Other | Security | | **R600** | R600 | | | | | | | **R600** | WSDP, $W_2RAP$, WWTW Process Audit |
| 1.7 | | Upgrading of pump stations and rising mains | Upgrade pump stations and rising mains | Waterborne sanitation | Sewerage | Bulk | Pump stations and rising mains | | **R2 550** | R2 550 | | | | | | | **R2 550** | WSDP and Sewer Master Plans |
| 1.8 | | Hermanus WWTW upgrade Screens RAS Sludge Dewatering | Upgrade screens, RAS and Sludge dewatering | Effluent Quality | Sewerage | Bulk | WWTW | | **R3 200** | R3 200 | | | | | | | **R3 200** | WWTW Process Audit |
| **2. Source Development Projects** | | | | | | | | **R0** | **R8 025** | | | | | | | | **R8 025** | |
| 2.1 | | Upgrade Hermanus Wellfields Phase 2 | Further groundwater development for Hermanus | Security of Supply | Water | Bulk | Sources | | **R8 025** | R2 100 | | | R5 925 | | | | **R8 025** | WSDP |
| **3. Demand Management projects** | | | | | | | | **R0** | **R7 000** | | | | | | | | **R7 000** | |
| 3.1 | | Replacement of water pipelines | Replace old sections of water reticulation network | Refurbishment | Water | Internal | Water reticulation | | **R7 000** | R7 000 | | | | | | | **R7 000** | Refurbishment |
| **4. O&M Commitments** | | | | | | | | **R0** | **R26 310** | | | | | | | | **R26 310** | |
| **Operations** | | | | | | | | | | | | | | | | | | |
| 4.1 | | Telemetry system upgrade | Telemetry system upgrade | Services | Sewerage | Other | Operations | | **R500** | R500 | | | | | | | **R500** | Operations |
| **Maintenance** | | | | | | | | | | | | | | | | | | |
| 4.2 | | Refurbishment of bulk water infrastructure | Replace old bulk water pipelines | Refurbishment | Water | Bulk | Bulk pipelines | | **R1 000** | R1 000 | | | | | | | **R1 000** | Refurbishment and WSDP |
| 4.3 | | Refurbishment of the Buffels River WTW | Refurbishment of WTWs | Refurbishment | Water | Bulk | WTW | | **R5 000** | R5 000 | | | | | | | **R5 000** | Refurbishment and WSDP |
| 4.4 | | Replacement of Water Pipes Proteadorp | Replace old sections of water reticulation network | Refurbishment | Water | Internal | Water reticulation | | **R2 010** | | R2 010 | | | | | | **R2 010** | Refurbishment |
| 4.5 | | De Kelders WTW Membrane Replacement | Replacement of Membranes | Refurbishment | Water | Bulk | WTW | | **R800** | R800 | | | | | | | **R800** | Refurbishment |
| 4.6 | | Pearly Beach Water Tower Refurbishment | Refurbishment of Water Tower | Refurbishment | Water | Internal | Reservoir | | **R1 000** | R1 000 | | | | | | | **R1 000** | Refurbishment |
| 4.7 | | New Disinfection System at Preekstoel WTW | Installation of new Disinfection System | Water Quality | Water | Bulk | WTW | | **R3 000** | R3 000 | | | | | | | **R3 000** | WTW Process Audit |
| 4.8 | | Pearly Beach WTW Process Upgrade | Upgrading of treatment process | Water Quality | Water | Bulk | WTW | | **R5 000** | R5 000 | | | | | | | **R5 000** | WTW Process Audit |
| 4.9 | | New Disinfection Systems at WWTW | Install new disinfection facilities | Effluent Quality | Sewerage | Bulk | WWTW | | **R8 000** | R8 000 | | | | | | | **R8 000** | WWTW Process Audits |
| **5. Institutional** | | | | | | | | **R0** | **R0** | | | | | | | | **R0** | |
| | | | | | | | | | | | | | | | | | | |
| **6. Water Services Programmes** | | | | | | | | **R0** | **R110** | | | | | | | | **R110** | |
| **Awareness Programs** | | | | | | | | | | | | | | | | | | |
| 6.1 | | School WC/WDM initiatives (OPEX) | Puppet shows and live shows (WC/WDM) | | | | | | **R110** | R110 | | | | | | | **R110** | WDM Strategy |
| **WASH Programs** | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | **Total** | | | | | | **R0** | **R62 032** | | | | | | | | **R62 032** | |

Note: Projects Water Facilities (Contingency) and Sewerage Facilities (Contingency) in the above table include i.a. the installation of standby generators in phases at critical water and sanitation facilities to ensure continuous operation during electricity supply interruptions.

**Table E.2b: Water Services MTEF Projects - FY2025/26 (2nd year MTEF period)**

| Nr | Project Reference Number (Dept) | Project Name | Description | Project Driver | Main Category "W" or "S" | Sub Category | Component type | Project Budget / Funding Sources | | | | | | | | | Total Cost | MTEF Project Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Prev spent FY2023/24 | FY2025/26 Budget | Own | MIG | RBIG | WSIG | DR | MWIG | Other | | |
| **1. Infrastructure Projects** | | | | | | | | **R0** | **R24 800** | | | | | | | | **R24 800** | |
| 1.1 | | Fencing at water installations | Install fencing at water infrastructure | Security | Water | Other | Security | | **R500** | R500 | | | | | | | **R500** | Water Safety Plans |
| 1.2 | | Water Facilities (Contingency) | Ensure adequate equipment at water facilities. | Water Quality | Water | Bulk | WTW | | **R500** | R500 | | | | | | | **R500** | WTW Process Audits |
| 1.3 | | Sewerage Facilities (Contingency) | Ensure adequate equipment at sewerage facilities. | Effluent Quality | Sewerage | Bulk | WWTW | | **R700** | R700 | | | | | | | **R700** | WWTW Process Audits |
| 1.4 | | Fencing at sewerage installations | Install fencing at sewerage infrastructure | Security | Sewerage | Other | Security | | **R600** | R600 | | | | | | | **R600** | WSDP, W$_2$RAP, WWTW Process Audit |
| 1.5 | | Upgrading of pump stations and rising mains | Upgrade pump stations and rising mains | Waterborne sanitation | Sewerage | Bulk | Pump stations and rising mains | | **R10 000** | R10 000 | | | | | | | **R10 000** | WSDP and Sewer Master Plans |
| 1.6 | | Hawston WWTW refurbishment and upgrade. | Upgrade and refurbish WWTW | Effluent Quality | Sewerage | Bulk | WWTW | | **R11 000** | R4 000 | R7 000 | | | | | | **R11 000** | WSDP and WWTW Process Audit |
| 1.7 | | Hermanus WWTW upgrade Screens RAS Sludge Dewatering | Upgrade screens, RAS and Sludge dewatering | Effluent Quality | Sewerage | Bulk | WWTW | | **R1 500** | R1 500 | | | | | | | **R1 500** | WWTW Process Audit |
| **2. Source Development Projects** | | | | | | | | **R0** | **R2 700** | | | | | | | | **R2 700** | |
| 2.1 | | Upgrade Hermanus Wellfields Phase 2 | Further groundwater development for Hermanus | Security of Supply | Water | Bulk | Sources | | **R2 700** | R2 700 | | | | | | | **R2 700** | WSDP |
| **3. Demand Management projects** | | | | | | | | **R0** | **R9 500** | | | | | | | | **R9 500** | |
| 3.1 | | Replacement of water pipelines | Replace old sections of water reticulation network | Refurbishment | Water | Internal | Water reticulation | | **R9 500** | R9 500 | | | | | | | **R9 500** | Refurbishment |
| **4. O&M Commitments** | | | | | | | | **R0** | **R28 500** | | | | | | | | **R28 500** | |
| **Operations** | | | | | | | | | | | | | | | | | | |
| 4.1 | | Telemetry system upgrade | Telemetry system upgrade | Services | Water | Other | Operations | | **R300** | R300 | | | | | | | **R300** | Operations |
| 4.2 | | Telemetry system upgrade | Telemetry system upgrade | Services | Sewerage | Other | Operations | | **R200** | R200 | | | | | | | **R200** | Operations |
| **Maintenance** | | | | | | | | | | | | | | | | | | |
| 4.3 | | Refurbishment of bulk water infrastructure | Replace old bulk water pipelines | Refurbishment | Water | Bulk | Bulk pipelines | | **R1 000** | R1 000 | | | | | | | **R1 000** | Refurbishment and WSDP |
| 4.4 | | Refurbishment of the Buffels River WTW | Refurbishment of WTWs | Refurbishment | Water | Bulk | WTW | | **R20 000** | R10 000 | R10 000 | | | | | | **R20 000** | Refurbishment and WSDP |
| 4.5 | | New Disinfection System at Preekstoel WTW | Installation of new Disinfection System | Water Quality | Water | Bulk | WTW | | **R6 000** | R6 000 | | | | | | | **R6 000** | WTW Process Audit |
| 4.6 | | New Disinfection Systems at WWTW | Install new disinfection facilities | Effluent Quality | Sewerage | Bulk | WWTW | | **R1 000** | R1 000 | | | | | | | **R1 000** | WWTW Process Audits |
| **5. Institutional** | | | | | | | | **R0** | **R0** | | | | | | | | **R0** | |
| | | | | | | | | | | | | | | | | | | |
| **6. Water Services Programmes** | | | | | | | | **R0** | **R110** | | | | | | | | **R110** | |
| **Awareness Programs** | | | | | | | | | | | | | | | | | | |
| 6.1 | | School WC/WDM initiatives (OPEX) | Puppet shows and live shows (WC/WDM) | | | | | | **R110** | R110 | | | | | | | **R110** | WDM Strategy |
| **WASH Programs** | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | **Total** | | | | | | **R0** | **R65 610** | | | | | | | | **R65 610** | |

Note: Projects Water Facilities (Contingency) and Sewerage Facilities (Contingency) in the above table include i.a. the installation of standby generators in phases at critical water and sanitation facilities to ensure continuous operation during electricity supply interruptions.

**Table E.2c: Water Services MTEF Projects - FY2026/27 (3rd year MTEF period)**

| Nr | Project Reference Number (Dept) | Project Name | Description | Project Driver | Main Category "W" or "S" | Sub Category | Component type | Project Budget / Funding Sources | | | | | | | | | | MTEF Project Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Prev spent FY2023/24 | FY2026/27 Budget | Own | MIG | RBIG | WSIG | DR | MWIG | Other | Total Cost | |
| **1. Infrastructure Projects** | | | | | | | | **R0** | **R22 000** | | | | | | | | **R22 000** | |
| 1.1 | | Fencing at water installations | Install fencing at water infrastructure | Security | Water | Other | Security | | **R500** | R500 | | | | | | | **R500** | Water Safety Plans |
| 1.2 | | Water Facilities (Contingency) | Ensure adequate equipment at water facilities. | Water Quality | Water | Bulk | WTW | | **R500** | R500 | | | | | | | **R500** | WTW Process Audits |
| 1.3 | | Kleinmond sewer network extension | Installation of sewer drainage network | Services | Sewerage | Internal | Drainage network | | **R2 000** | R2 000 | | | | | | | **R2 000** | WSDP and Sewer Master Plans |
| 1.4 | | Gansbaai CBD sewer network extension | Installation of sewer drainage network | Services | Sewerage | Internal | Drainage network | | **R2 000** | R2 000 | | | | | | | **R2 000** | WSDP and Sewer Master Plans |
| 1.5 | | Upgrading of pump stations and rising mains | Upgrade pump stations and rising mains | Waterborne sanitation | Sewerage | Bulk | Pump stations and rising mains | | **R7 000** | R7 000 | | | | | | | **R7 000** | WSDP and Sewer Master Plans |
| 1.6 | | Hawston WWTW refurbishment and upgrade. | Upgrade and refurbish WWTW | Effluent Quality | Sewerage | Bulk | WWTW | | **R10 000** | R10 000 | | | | | | | **R10 000** | WSDP and WWTW Process Audit |
| **2. Source Development Projects** | | | | | | | | **R0** | **R30 000** | | | | | | | | **R30 000** | |
| 2.1 | | Sea Water Desalination Plant | Sea Water Desalination plant for Hermanus | Security of Supply | Water | Bulk | Sources | | **R30 000** | | | | R30 000 | | | | **R30 000** | WSDP |
| **3. Demand Management projects** | | | | | | | | **R0** | **R7 660** | | | | | | | | **R7 660** | |
| 3.1 | | Replacement of water pipelines | Replace old sections of water reticulation network | Refurbishment | Water | Internal | Water reticulation | | **R7 660** | R7 660 | | | | | | | **R7 660** | Refurbishment |
| **4. O&M Commitments** | | | | | | | | **R0** | **R18 500** | | | | | | | | **R18 500** | |
| **Operations** | | | | | | | | | | | | | | | | | | |
| 4.1 | | Telemetry system upgrade | Telemetry system upgrade | Services | Water | Other | Operations | | **R300** | R300 | | | | | | | **R300** | Operations |
| 4.2 | | Telemetry system upgrade | Telemetry system upgrade | Services | Sewerage | Other | Operations | | **R200** | R200 | | | | | | | **R200** | Operations |
| **Maintenance** | | | | | | | | | | | | | | | | | | |
| 4.3 | | Refurbishment of bulk water infrastructure | Replace old bulk water pipelines | Refurbishment | Water | Bulk | Bulk pipelines | | **R1 000** | R1 000 | | | | | | | **R1 000** | Refurbishment and WSDP |
| 4.4 | | Refurbishment of the Buffels River WTW | Refurbishment of WTWs | Refurbishment | Water | Bulk | WTW | | **R17 000** | R7 000 | R10 000 | | | | | | **R17 000** | Refurbishment and WSDP |
| **5. Institutional** | | | | | | | | **R0** | **R0** | | | | | | | | **R0** | |
| | | | | | | | | | | | | | | | | | | |
| **6. Water Services Programmes** | | | | | | | | **R0** | **R110** | | | | | | | | **R110** | |
| **Awareness Programs** | | | | | | | | | | | | | | | | | | |
| 6.1 | | School WC/WDM initiatives (OPEX) | Puppet shows and live shows (WC/WDM) | | | | | | **R110** | R110 | | | | | | | **R110** | WDM Strategy |
| **WASH Programs** | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | **Total** | | | | | | **R0** | **R78 270** | | | | | | | | **R78 270** | |

Note: Projects Water Facilities (Contingency) and Sewerage Facilities (Contingency) in the above table include the installation of standby generators in phases at critical water and sanitation facilities to ensure continuous operation during electricity supply interruptions.

## SECTION F: WSDP PROJECTS

The identification of projects necessary to ensure the provision of adequate levels of water and sanitation services is based primarily, but not limited to, on the findings of the Water and Sewer Master Plans. Master Planning is typically based on a forward planning horizon of 20 years, but is usually updated every three to five years, taking into account improved water demand estimates and subsequent infrastructure developments which may have taken place. The recommended projects from the 2021 Master Plans were incorporated into the WSDP.

The Master Plans represent the ideal infrastructure development required to meet projected water demands over the next few years, while realistic capital investment in infrastructure projects is determined by budget availability. As a result, prioritization of projects is necessary to identify what can be done within the available and projected budget constraints. The prioritization of projects is done through the IDP and annual budget planning process.

Recommended infrastructure projects for implementation in the future will be based on the following plans and processes:

- Water and Sewer Master Plans and Water and Wastewater Treatment Works Master Plans/studies;
- Infrastructure replacement needs (Asset Register);
- Ad hoc technical investigations;
- Budget proposals; and
- Asset Management Plans.

Overstrand Municipality's 2023/2024 IDP list the following major water services projects, which are planned for the short to medium term.

- Expansion of the well fields in Hermanus;
- New reservoirs at Sandbaai, Onrus River and Betty's Bay;
- Phased replacement and upgrade of the bulk and reticulation water systems in all areas;
- Refurbishment of the Kleinmond and Buffels River Water Treatment Plants;
- Seawater Desalination scheme for the Greater Hermanus area;
- Installation of alternative disinfection systems at water treatment facilities; and
- Installation of power generators at several treatment facilities and pump stations.
- Improvement of the treatment process at the Pearly Beach WTW, development of groundwater sources, and refurbishment of the water tower.
- Energy efficiency and alternative energy projects at treatment plants.
- Improvement of security measures and telemetry systems.

The following major sanitation services projects are planned for the short to medium term.

- Upgrade of the Kleinmond and Hawston WWTWs and some processes at the Hermanus WWTW;
- Upgrade of sewerage pump stations at e.g. Zwinglers Corner, Peach Houses, Zwelihle Sports Grounds and at inlet of Hermanus WWTW and Onrus Main EIA to commence;
- Extension of sewer networks in Kleinmond, Gansbaai and Hawston;
- Replacement of sewer rising main pipelines in Kleinmond and Greater Hermanus;
- Installation of generators at several treatment facilities and pumpstations;
- Improvement of security measures at wastewater facilities (e.g., fencing and CCTV cameras); and
- Upgrade of telemetry systems.

- Energy efficiency and alternative energy projects at treatment plants.

The NWRS 2 list the following steps to raise the water profile in development planning:

- Water must be placed at the centre of integrated planning and decision-making, with a specific aim to respond to and support the achievement of national development and sector goals.
- Current budgets need to adequately provide for water, which might mean they have to be doubled to cater for the present needs.
- Current financial values need to appreciate water as a scarce resource and should thus reflect the real value of water. This requires a new value system across all sectors and stakeholders.
- Water efficiency and curbing water losses should be high on the agenda of each individual and institution in the country.
- Water management must be formally embedded in the sector businesses with associated accountability.

The DWS will insist in the future that all water infrastructure which they fund is value engineered against the life-cycle cost with a specific emphasis on energy costs. Evidence will be required that the technical design is appropriate for the nature of the resource and that operation and maintenance of the assets is reasonably within the capability of the responsible institution. New water resources infrastructure will also not be developed or authorized unless effective WC/WDM interventions have been put in place in the affected area.

The current needs projects are estimated at R435.706 million of which 47% are funded over the next three years, as included in the MTEF project list. It should however be emphasised that additional funding will be required to address the full achievement of the water services strategies as outlined in Section D, but that the extent of such additional funding can only be determined once initial investigations and activities have been concluded.

**Table F.1: WSDP FY2024/25: LIST OF CONCEPTUAL PROJECTS**

| Nr | Situation Assessment (Problem Definition) | Solution description as defined by topic situation assessment (Strategy) | Conceptual project | Is there an existing project addressing this problem? | Existing Projects Information | | | Does this current listed project address the problem totally? | Approved by Council, in project database and part of 5 year IDP cycle projects? | Project listed in 3yr MTEF - cycle? |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Project Number (Dept) | Project Title | Project Cost R'000 | | | |
| **CURRENT NEEDS** | | | | | | | | | | |
| **Topic 1: Settlements and Demographics** | | | | | | | | | | |
| | Done by other Department | | | | | | | | | |
| **Topic 2: Service Levels** | | | | | | | | | | |
| 2.1 | Some of the households on the farms without basic water services. | Ensure all households on farms are provided with at least basic water services, DWS guidance. (As soon as funding is provided by DWS) | WSDP | No | OS2425001 | Provide basic water services on the farms in the rural areas without basic water services. | R664 | Yes | No | No |
| 2.2 | Some of the households on the farms without basic sanitation services. | Ensure all households on farms are provided with at least basic sanitation services, DWS guidance. (As soon as funding is provided by DWS) | WSDP | No | OS2425002 | Provide basic sanitation services on the farms in the rural areas without basic sanitation services. | R2 160 | Yes | No | No |
| **Topic 3: Water Services Asset Management (Infrastructure)** | | | | | | | | | | |
| 3.1 | Security at water installations not adequate | Ensure all water installations are adequately secured | MTEF Project | Yes | OS2425003 | Fencing at water installations | R2 500 | No | Yes | Yes |
| 3.2 | Some equipment at water facilities needs to be replaced | Ensure compliance with water quality standards SANS241 | MTEF Project | Yes | OS2425004 | Water Facilities (Contingency) | R2 500 | No | Yes | Yes |
| 3.3 | Water Master Plan indicate recommended upgrades of water network | Implement recommended Water Master Plan items | MTEF Project | Yes | OS2425005 | Mount Pleasant Reservoir Link Water Lines | R6 000 | Yes | Yes | Yes |
| 3.4 | Inadequate supply to consumers | Ensure adequate supply for De Kelders | MTEF Project | Yes | OS2425006 | New Booster pump station Gansbaai to De Kelders & Pipeline Refurbishment | R10 000 | Yes | Yes | No |
| 3.5 | Lack of adequate storage capacity for treated water | Ensure adequate storage capacity | MTEF Project | Yes | OS2425007 | New reservoir Onrus River | R9 000 | Yes | Yes | No |
| 3.6 | Lack of adequate storage capacity for treated water | Ensure adequate storage capacity | MTEF Project | Yes | OS2425008 | New reservoir Bettiesbaai Voorberg | R9 000 | Yes | Yes | No |
| 3.7 | Capacity of existing bulk water pipeline is inadequate | Ensure adequate bulk water pipeline capacity | MTEF Project | Yes | OS2425009 | New bulk supply pipeline to reservoir (Baardskeerdersbos) | R2 000 | Yes | Yes | No |
| 3.8 | Lack of adequate storage capacity for treated water | Ensure adequate storage capacity | MTEF Project | Yes | OS2425010 | New reservoir Sandbaai | R9 000 | Yes | Yes | No |
| 3.9 | Some equipment at sewerage facilities needs to be replaced | Ensure compliance with final effluent quality standards | MTEF Project | Yes | OS2425011 | Sewerage Facilities (Contingency) | R1 400 | No | Yes | Yes |
| 3.10 | Area not yet fully service with drainage networks | Sewer drainage network extension | MTEF Project | Yes | OS2425012 | Kleinmond sewer network extension | R8 000 | No | Yes | Yes |
| 3.11 | Area not yet fully service with drainage networks | Sewer drainage network extension | MTEF Project | Yes | OS2425013 | Gansbaai CBD sewer network extension | R8 000 | No | Yes | Yes |
| 3.12 | Area not yet fully service with drainage networks | Sewer drainage network extension | MTEF Project | Yes | OS2425014 | Hawston sewer network extension | R2 000 | No | Yes | No |
| 3.13 | Security at sewerage installations not adequate | Ensure all sewerage installations are adequately secured | MTEF Project | Yes | OS2425015 | Fencing at sewerage installations | R1 200 | No | Yes | Yes |
| 3.14 | Inadequate pump and bulk rising mains capacity | Upgrade capcity of sewer pump stations and rising mains | MTEF Project | Yes | OS2425016 | Upgrading of pump stations and rising mains | R39 550 | No | Yes | Yes |
| 3.15 | Capacity of existing WWTW is inadequate | Ensure adequate treatment capacity | MTEF Project | Yes | OS2425017 | Hawston WWTW refurbishment and upgrade. | R37 537 | Yes | Yes | Yes |
| 3.16 | Capacity of existing WWTW is inadequate | Ensure adequate treatment capacity | MTEF Project | Yes | OS2425018 | Hermanus WWTW upgrade Screens, RAS and Sludge Dewatering | R4 700 | Yes | Yes | Yes |
| **Topic 4: Water Services Operation and Maintenance** | | | | | | | | | | |
| 4.1 | Some of the bulk water pipelines are in a poor or very poor condition and needs to be replaced. | Refurbish all bulk water pipelines that are in a poor or very poor condition, with regular pipeline failures. | MTEF Project | Yes | OS2425019 | Refurbishment of bulk water infrastructure | R5 000 | No | Yes | Yes |
| 4.2 | Old sections of the water reticulation network need to be replaced. | Implementation of Pipeline Replacement Programme | MTEF Project | Yes | OS2425020 | Replacement of water pipes Proteadorp | R2 010 | No | Yes | Yes |
| 4.3 | Recommendations from WTW Process Audit need to be implemented. | Ensure water quality compliance | MTEF Project | Yes | OS2425021 | Pearly Beach WTW Process Upgrade | R5 000 | Yes | Yes | Yes |
| 4.4 | Some of the components of the Buffels River WTW need to be refurbish (WTW Process Audits) | Refurbish existing WTW | MTEF Project | Yes | OS2425022 | Refurbishment of the Buffels River WTW | R42 000 | Yes | Yes | Yes |
| 4.5 | Recommendations from WTW Process Audit need to be implemented. | Ensure water quality compliance | MTEF Project | Yes | OS2425023 | New disinfection system at Preekstoel WTW | R9 000 | Yes | Yes | Yes |
| 4.6 | RO Membranes need to be replaced | Ensure regular replacement of RO membranes | MTEF Project | Yes | OS2425024 | De Kelders WTW Membrane Replacement | R800 | Yes | Yes | Yes |
| 4.7 | Pearly Beach Water Tower needs to be refurbished | Refurbish existing Water Tower | MTEF Project | Yes | OS2425025 | Pearly Beach Water Tower Refurbishment | R1 000 | Yes | Yes | Yes |
| 4.8 | The Telemetry system needs to be upgraded. | Ensure adequate operation of the water infrastructure | MTEF Project | Yes | OS2425026 | Telemetry system upgrade | R600 | No | Yes | Yes |
| 4.9 | The Telemetry system needs to be upgraded. | Ensure adequate operation of the sewerage infrastructure | MTEF Project | Yes | OS2425027 | Telemetry system upgrade | R900 | No | Yes | Yes |
| 4.10 | Recommendations from WWTW Process Audit need to be implemented. | Ensure final effluent compliance | MTEF Project | Yes | OS2425028 | New disinfection systems at WWTWs | R9 000 | Yes | Yes | Yes |
| 4.11 | WTW Process Audits need to be done annually | Sustainable operation of WTW | WSDP | Yes | OS2425029 | Annual WTW Process Audits | R150 | Yes | Yes | O&M |
| 4.12 | WWTW Process Audits need to be done annually | Sustainable operation of WWTW | WSDP | Yes | OS2425030 | Annual WWTW Process Audits | R150 | Yes | Yes | O&M |
| **Topic 5: Conservation and Demand Management (Topic 5.1 Water Resources)** | | | | | | | | | | |
| 5.1 | Done internally through O&M Budget | | | | | | | | | |
| **Topic 5: Conservation and Demand Management (Topic 5.2 Water Balance)** | | | | | | | | | | |
| 5.2 | Sections of the existing water reticulation networks are in a poor or very poor condition and need to be replaced. | Refurbish all water reticulation pipelines that are in a poor or very poor condition, with regular pipeline failures. | MTEF Project | Yes | OS2425031 | Replacement of Overstrand water pipelines | R44 160 | No | Yes | Yes |
| 5.3 | Meter Replacement Programme | Replace old / broken / leaking meters | WSDP | Yes | OS2425032 | Replacement of Overstrand water meters (Part of O&M Budget) | R0 | No | Yes | O&M |
| 5.4 | WC/WDM programmes are required at schools to raise awareness | Schools Awareness Programme | WSDP | Yes | OS2425033 | WC/WDM Awareness Raising Programmes for Schools (Part of O&M Budget) | R0 | No | Yes | O&M |
| **Topic 6: Water Resources** | | | | | | | | | | |
| 6.1 | Capacity of existing water resources is inadequate to meet projected future water requirements | Ensure yields of existing sources are adequate to meet future water requirements | MTEF Project | Yes | OS2425034 | Upgrade Hermanus Wellfields Phase 2 | R10 725 | Yes | Yes | Yes |
| 6.2 | Capacity of existing water resources is inadequate to meet projected future water requirements | Ensure yields of existing sources are adequate to meet future water requirements | MTEF Project | Yes | OS2425035 | Sea Water Desalination Plant | R150 000 | No | Yes | Yes |
| **Topic 7: Financial** | | | | | | | | | | |
| | Done by other Department | | | | | | | | | |
| **Topic 8: Institutional Arrangements and Customer Care** | | | | | | | | | | |
| | | | | | | | | | | |
| **TOTAL: CURRENT NEEDS** | | | | | | | **R435 706** | | | |
| | Funded | | | | | | R205 912 | | | |
| | % funded | | | | | | 47% | | | |

**Table F.1: WSDP FY2024/25: LIST OF CONCEPTUAL PROJECTS**

| Nr | Situation Assessment (Problem Definition) | Solution description as defined by topic situation assessment (Strategy) | Conceptual project | Is there an existing project addressing this problem? | Existing Projects Information | | | Does this current listed project address the problem totally? | Approved by Council, in project database and part of 5 year IDP cycle projects? | Project listed in 3yr MTEF - cycle? |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Project Number (Dept) | Project Title | Project Cost R'000 | | | |
| **FUTURE NEEDS** | | | | | | | | | | |
| **Infrastructure** | | | | | | | | | | |
| F.1 | Inadequate capacity of existing internal water reticulation networks | Ensure adequate internal water reticulation capacity | Water Master Plan | No | OS2425036 | Future internal reticulation network items for Buffels River | R14 320 | Yes | No | No |
| F.2 | | | Water Master Plan | No | OS2425037 | Future internal reticulation network items for Kleinmond | R5 573 | Yes | No | No |
| F.3 | | | Water Master Plan | No | OS2425038 | Future internal reticulation network items for Greater Hermanus | R48 403 | Yes | No | No |
| F.4 | | | Water Master Plan | No | OS2425039 | Future internal reticulation network items for Stanford | R5 716 | Yes | No | No |
| F.5 | | | Water Master Plan | No | OS2425040 | Future internal reticulation network items for Greater Gansbaai | R65 683 | Yes | No | No |
| F.6 | | | Water Master Plan | No | OS2425041 | Future internal reticulation network items for Pearly Beach | R2 305 | Yes | No | No |
| F.7 | | | Water Master Plan | No | OS2425042 | Future internal reticulation network items for Baardskeerdersbos | R102 | Yes | No | No |
| F.8 | Inadequate bulk water pipeline distribution capacity | Ensure adequate bulk water pipeline distribution capacity | Water Master Plan | No | OS2425043 | Future bulk water pipeline items for Buffels River | R10 012 | Yes | No | No |
| F.9 | | | Water Master Plan | No | OS2425044 | Future bulk water pipeline items for Greater Hermanus | R44 968 | Yes | No | No |
| F.10 | | | Water Master Plan | No | OS2425045 | Future bulk water pipeline items for Greater Gansbaai | R12 739 | Yes | No | No |
| F.11 | | | Water Master Plan | No | OS2425046 | Future bulk water pipeline items for Baardskeerdersbos | R987 | Yes | No | No |
| F.12 | Inadequate reservoir storage capacity to meet future requirements | Ensure adequate reservoir storage capacity | Water Master Plan | No | OS2425047 | Future reservoirs for Buffels River | R23 070 | Yes | No | No |
| F.13 | | | Water Master Plan | No | OS2425048 | Future reservoirs for Greater Hermanus | R93 343 | Yes | No | No |
| F.14 | | | Water Master Plan | No | OS2425049 | Future reservoirs for for Stanford | R10 962 | Yes | No | No |
| F.15 | | | Water Master Plan | No | OS2425050 | Future reservoirs for Greater Gansbaai | R78 073 | Yes | No | No |
| F.16 | | | Water Master Plan | No | OS2425051 | Future reservoirs for Pearly Beach | R6 888 | Yes | No | No |
| F.17 | | | Water Master Plan | No | OS2425052 | Future reservoirs for Baardskeerdersbos | R1 201 | Yes | No | No |
| F.18 | Inadequate water pump station capacity to meet future requirements | Ensure adequate water pump station capacity | Water Master Plan | No | OS2425053 | Future pump stations for Buffels River | R4 510 | Yes | No | No |
| F.19 | | | Water Master Plan | No | OS2425054 | Future pump stations for Greater Hermanus | R3 663 | Yes | No | No |
| F.20 | | | Water Master Plan | No | OS2425055 | Future pump stations for Greater Gansbaai | R16 437 | Yes | No | No |
| F.21 | | | Water Master Plan | No | OS2425056 | Future pump stations for Pearly Beach | R693 | Yes | No | No |
| F.22 | | | Water Master Plan | No | OS2425057 | Future pump stations for Baardskeerdersbos | R1 765 | Yes | No | No |
| F.23 | Water losses and NRW need to be reduced further | Implement WDM infrastructure on internal water reticulation networks | Water Master Plan | No | OS2425058 | Future WDM items for Buffels Rivier | R200 | Yes | No | No |
| F.24 | | | Water Master Plan | No | OS2425059 | Future WDM items for Kleinmond | R50 | Yes | No | No |
| F.25 | | | Water Master Plan | No | OS2425060 | Future WDM items for Greater Hermanus | R700 | Yes | No | No |
| F.26 | | | Water Master Plan | No | OS2425061 | Future WDM items for Stanford | R100 | Yes | No | No |
| F.27 | | | Water Master Plan | No | OS2425062 | Future WDM items for Greater Gansbaai | R5 985 | Yes | No | No |
| F.28 | | | Water Master Plan | No | OS2425063 | Future WDM items for Pearly Beach | R100 | Yes | No | No |
| F.29 | | | Water Master Plan | No | OS2425064 | Future WDM items for Baardskeerdersbos | R100 | Yes | No | No |
| F.30 | | | Water Master Plan | No | OS2425065 | Future WDM items for Buffeljags Bay | R50 | Yes | No | No |
| F.31 | Inadequate capacity of existing bulk and internal sewer drainage network | Ensure adequate bulk and internal sewer drainage capacity | Sewer Master Plan | No | OS2425066 | Future bulk and internal sewer drainage network items for Buffels River | R319 062 | Yes | No | No |
| F.32 | | | Sewer Master Plan | No | OS2425067 | Future bulk and internal sewer drainage network items for Kleinmond | R64 363 | Yes | No | No |
| F.33 | | | Sewer Master Plan | No | OS2425068 | Future bulk and internal sewer drainage network items for Greater Hermanus | R171 151 | Yes | No | No |
| F.34 | | | Sewer Master Plan | No | OS2425069 | Future bulk and internal sewer drainage network items for Stanford | R11 432 | Yes | No | No |
| F.35 | | | Sewer Master Plan | No | OS2425070 | Future bulk and internal sewer drainage network items for Greater Gansbaai | R259 376 | Yes | No | No |
| F.36 | | | Sewer Master Plan | No | OS2425071 | Future bulk and internal sewer drainage network items for Pearly Beach | R47 402 | Yes | No | No |
| F.37 | | | Sewer Master Plan | No | OS2425072 | Future bulk and internal sewer drainage network items for | R5 424 | Yes | No | No |
| F.38 | | | Sewer Master Plan | No | OS2425073 | Future bulk and internal sewer drainage network items for Buffeljags Bay | R537 | Yes | No | No |
| F.39 | Inadequate capacity of existing sewer pump stations | Ensure adequate pump station capacity | Sewer Master Plan | No | OS2425074 | Future sewer pump stations for Buffels River | R43 892 | Yes | No | No |
| F.40 | | | Sewer Master Plan | No | OS2425075 | Future sewer pump stations for Kleinmond | R1 097 | Yes | No | No |
| F.41 | | | Sewer Master Plan | No | OS2425076 | Future sewer pump stations for Greater Hermanus | R15 083 | Yes | No | No |
| F.42 | | | Sewer Master Plan | No | OS2425077 | Future sewer pump stations for Stanford | R2 026 | Yes | No | No |
| F.43 | | | Sewer Master Plan | No | OS2425078 | Future sewer pump stations for Greater Gansbaai | R55 148 | Yes | No | No |
| F.44 | | | Sewer Master Plan | No | OS2425079 | Future sewer pump stations for Pearly Beach | R7 431 | Yes | No | No |
| - | Existing WTW needs to be refurbished | Ensure adequate treatment capacity | WSDP | Yes | - | Refurbish Buffels River WTW Option 1 (Included under Current Needs ) | - | Yes | Yes | Yes |
| F.45 | Existing WTW needs to be refurbished | Ensure adequate treatment capacity | WSDP | Yes | OS2425080 | Refurbish Kleinmond WTW | R9 780 | Yes | Yes | Yes |
| F.46 | Water is currently only disinfected, no WTW | Ensure adequate treatment capacity | WSDP | No | OS2425081 | New Buffeljags Bay WTW | R3 000 | Yes | No | No |
| - | Capacity of existing WWTW is inadequate | Ensure adequate treatment capacity | WSDP | Yes | - | Upgraded Kleinmond WWTW Option 1 (Included under Current Needs ) | - | Yes | Yes | Yes |
| - | Existing WWTW needs to be refurbished | Ensure adequate treatment capacity | WSDP | Yes | - | Refurbishment of Kleinmond WWTW (Important and Semi-important priority items)(Included under Current Needs ) | - | Yes | Yes | Yes |
| - | Some components of the WWTW are inadequate | Ensure adequate treatment capacity | WSDP | Yes | - | High priority interventions recommended for the Hermanus WWTW (Included under Current Needs ) | - | Yes | Yes | Yes |
| - | Existing WWTW needs to be refurbished | Ensure adequate treatment capacity | WSDP | Yes | - | Refurbishment interventions for the Hawston WWTW (Priority 1, 2 and 3) (Included under Current Needs ) | - | Yes | Yes | Yes |
| F.47 | No sewer dainage network or plant | Ensure adequate treatment capacity | Sewer Master Plan | No | OS2425082 | New conservancy tank or package plant for existing erven | R3 500 | Yes | No | No |
| F.48 | No sewer dainage network or plant | Ensure adequate treatment capacity | Sewer Master Plan | No | OS2425083 | New conservancy tank or package plant for existing erven | R1 500 | Yes | No | No |
| F.49 | Capacity of existing WWTW is inadequate | Ensure adequate treatment capacity | WSDP | No | OS2425084 | Upgrade Kleinmond WWTW to 3.5 Ml/d | R50 000 | Yes | No | No |
| F.50 | Capacity of existing WWTW is inadequate | Ensure adequate treatment capacity | WSDP | No | OS2425085 | Upgrade Hawston WWTW to 2.0 Ml/d | R30 000 | Yes | No | No |
| F.51 | Capacity of existing WWTW is inadequate | Ensure adequate treatment capacity | WSDP | No | OS2425086 | Upgrade Stanford WWTW to 2.0 Ml/d | R20 000 | Yes | No | No |

| Table F.1: WSDP FY2024/25 LIST OF CONCEPTUAL PROJECTS | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Nr | Situation Assessment (Problem Definition) | Solution description as defined by topic situation assessment (Strategy) | Conceptual project | Is there an existing project addressing this problem? | Existing Projects Information | | | Does this current listed project address the problem totally? | Approved by Council, in project database and part of 5 year IDP cycle projects? | Project listed in 3yr MTEF - cycle? |
| | | | | | Project Number (Dept) | Project Title | Project Cost R'000 | | | |
| **FUTURE NEEDS** | | | | | | | | | | |
| **Resources** | | | | | | | | | | |
| F.52 | Capacity of existing water resources is inadequate to meet projected future water requirements | Ensure yields of existing sources are adequate to meet future water requirements | WSDP | No | OS2425087 | Augmentation of Greater Gansbaai existing sources | R30 000 | Yes | No | No |
| F.53 | Capacity of existing water resources is inadequate to meet projected future water requirements | Ensure yields of existing sources are adequate to meet future water requirements | WSDP | No | OS2425088 | Augmentation of Pearly Beach existing sources | R15 000 | Yes | No | No |
| F.54 | Capacity of existing water resources is inadequate to meet projected future water requirements | Ensure yields of existing sources are adequate to meet future water requirements | WSDP | Yes | - | 3Ml/day Seawater desalination plant (Phase 1) | - | Yes | Yes | Yes |
| F.55 | Capacity of existing water resources is inadequate to meet projected future water requirements | Ensure yields of existing sources are adequate to meet future water requirements | WSDP | No | OS2425089 | 3Ml/day Seawater desalination plant (Phase 2) | R90 000 | Yes | No | No |
| F.56 | Capacity of existing water resources is inadequate to meet projected future water requirements | Ensure yields of existing sources are adequate to meet future water requirements | WSDP | No | OS2425090 | 4Ml/day Seawater desalination plant (Phase 3) | R120 000 | Yes | No | No |
| F.57 | Capacity of existing water resources is inadequate to meet projected future water requirements | Ensure yields of existing sources are adequate to meet future water requirements | WSDP | No | Not part of Overstrand Projects | Bulk provision to Hermanus by Overberg Water (Theewaterskloof Dam) | Not part of Overstrand Budget | Yes | No | No |
| **TOTAL: FUTURE NEEDS** | | | | | | | **R1 834 902** | | | |