OVERSTRAND MUNICIPALITY

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PROJECT 301928 - OVERSTRAND MUNICIPALITY'S WSDP-IDP SECTOR INPUT REPORT FOR 2021/2022

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OVERSTRAND MUNICIPALITY

WSDP – IDP WATER SECTOR INPUT REPORT (EXECUTIVE SUMMARY)

ITEM **DESCRIPTION** **PAGE**

LIST OF TABLES

Section A: Status Quo Overview

LIST OF TABLES

Section B: State of Water Services Planning

Section C: Water Services Existing Needs Perspective

Section D: Water Services Strategies

Section E: Water Services MTEF Projects

Section F: WSDP Projects

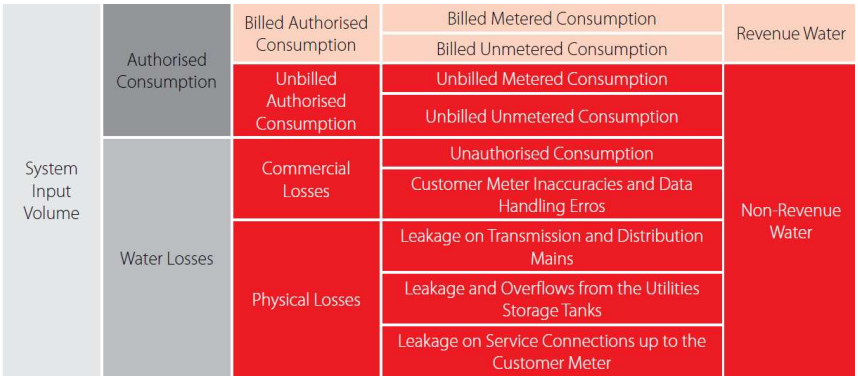
Figures

ABBREVIATIONS AND DEFINITIONS

AADD	Average Annual Daily Demand
ADWF	Average Dry Weather Flow
AIDS	Acquired Immune Deficiency Syndrome
AMP	Asset Management Plan
BDS	Blue Drop System
BGCMA	Breede-Gouritz Catchment Management Agency
BOCMA	Breede-Overberg Catchment Management Agency
CBD	Central Business District
COD	Chemical Oxygen Demand
CRC	Current Replacement Cost
CRR	Cumulative Risk Ratio
CRU	Community Residential Units
CV	Carrying Value
DAFF	Dissolved Air Flotation and Filtration
DBSA	Development Bank of South Africa
DEA&DP	Department of Environmental Affairs and Development Planning
DWQ	Drinking Water Quality
DWS	Department of Water and Sanitation
EHP	Environmental Health Practitioner
EIA	Environmental Impact Assessment
EMIS	Education Management Information Systems
EPHP	Enhanced People's Housing Process
GAMAP	General Accepted Municipal Accounting Practice
GDIP	Green Drop Improvement Plan
GRAP	Generally Recognized Accounting Practice
HH	Households
HIV	Human Immunodeficiency Virus
HL	High Level
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
KPI	Key Performance Indicator
LGTAS	Local Government Turn Around Strategy
LL	Low Level
LM	Local Municipality
l/p/d	Litre Per Person Per Day
m	Metre
MFMA	Municipal Finance Management Act
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
MTEF	Medium-Term Expenditure Framework

MuSSA	Municipal Strategic Self-Assessment
NGO	Non-Governmental Organisation
NRW	Non-Revenue Water
NWRS	National Water Resource Strategy
O&M	Operation and Maintenance
PAT	Progress Assessment Tool
PDA	Previously Disadvantage Area
PDD	Peak Daily Demand
PRP	Pipeline Replacement Programme
PRV	Pressure Reducing Valve
PS	Pump Station
RDP	Reconstruction and Development Programme
RO	Reverse Osmosis
RUL	Remaining Useful Life
SAMRAS	South African Municipal Resource Administration System
SANS	South African National Standard
SCADA	Supervisory Control and Data Acquisition
SDBIP	Service Delivery and Budget Implementation Plan
SDF	Spatial Development Framework
SWRO	Sea Water Reverse Osmosis
TMG	Table Mountain Group
TSS	Total Suspended Solids
TWL	Top Water Level
VIP	Ventilated Improved Pit
WC/WDM	Water Conservation / Water Demand Management
WCNCB	Western Cape Nature Conservation Board (South Africa)
WDM	Water Demand Management
WSA	Water Services Authority
WSDP	Water Services Development Plan
WSIG	Water Services infrastructure Grant
WSP	Water Services Provider
WTP	Water Treatment Plant
WTW	Water Treatment Works
W_2RAP	Wastewater Risk Abatement Plan
WWTW	Waste Water Treatment Works

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- • a national or provincial department, the year ending 31 March; or • 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: • Water supports development and the elimination of poverty and inequality. • Water contributes to the economy and job creation, and • 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. 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). 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.

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.

SECTION A: STATUS QUO OVERVIEW

Overstrand Municipality is situated within the Breede-Gouritz 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 is 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 and the "Dorpsfontein". A borehole (1998), located 300m to the east of the fountain, is available as additional source 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, 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.

- 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 also drilled in the so-called "Kouevlakte" area 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 quality is "Excellent", but the total hardness exceeds desired levels, and therefore

a reverse osmosis treatment plant was recently commissioned to address this aspect, before water 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 at a sports complex.

- 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, from a Water Services perspective are the augmentation of the existing water sources for Hermanus, the replacement and upgrading of the old water and sewerage infrastructure to accommodate development, the provision of sustainable basic services to informal settlements and to ensure the provision of basic services to households located on privately owned farms. Strategies and action plans will need to be developed and implemented, in collaboration with farm owners, in order for the Municipality to fulfil its legal obligations and responsibilities as WSA, with regard to the provision of basic services, once clear and practical policy guidelines are made available from the DWS and funding is made available.

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 population and households in Overstrand Municipality's Management Area.

Table A.1.1: Settlement Summary

Section	Value	Assessment Score
1.1 Total Population	110 596	80%
1.2 Total Number of Households (Permanent)	38 402	80%
1.3 Average Household Size	2.88	80%
1.4 Total Number of Settlements	36	80%

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

Settlement Type	Settlements	Population	Households	Assessment Score
Rural	3	5 350	2 031	80%
Urban	33	105 246	36 371	80%

Table A.1.3 Assessment Score by Settlement Type						
Main Type	**Settlement Type**	**Settlements**	**Population**	**Households**	**Avg. Household Size**	**Assessment Score**
Rural	Farming	3	5 350	2 031	2.63	80%
Urban	Urban - Informal Settlements (Squatter Camp)	7	14 700	3 675	4.00	80%
Urban	Urban - Formal Town	26	90 546	32 697	2.77	80%

Table.A.1.4 Amenities Summary (Health & Educational Facilities)		
Amenity Type	**Number of Amenities**	**Assessment Score**
Health Facilities	11	80%
Educational facilities	17	80%

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 Department of Social Development's 2019 projections indicated the current population of Overstrand Municipality at 104 985 persons, as also included in the Municipality's Final IDP of 27 May 2020 (3rd Review and Amendment of 5 Year IDP, 2020/2021). This total is estimated to increase to 117 290 by 2023, which equates to a 2.8% average annual growth rate. The IDP estimated the permanent households for the 2018/2019 financial year at 34 785.

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 2019/2020 populations for the various water distribution systems were estimated by applying the annual growth rates as indicated in the table below. The current population figures and the annual population growth percentages used in the WSDP 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 2019/2020 Persons**	**Projected 2019/2020 Households**
Buffels River	4.15%	3 180	1 603
Kleinmond	2.50%	8 077	3 330
Greater Hermanus	4.45%	67 054	22 125
Stanford	2.65%	5 894	1 840
Greater Gansbaai	4.89%	19 524	6 825
Pearly Beach	2.11%	1 237	573
Baardskeerdersbos	0.50%	127	41
Buffeljags Bay	0.50%	153	34
Farms	1.56%	5 350	2 031
Total	**4.04%**	**110 596**	**38 402**

The above 2019/2020 population and households compare well with the population figures included in Overstrand Municipality's SDF and 2020/2021 IDP.

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

Table A.1.6: Water Services Overview (Water)

Settlement Type	2011/2012		2019/2020		Water category									
	Households	Population	Households	Population	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	
Sub-Total	**0**	**0**	**0**	**0**										
Formal Town					Adequate			Below RDP					None	
Buffels River	1,158	2,297	1,603	3,180	P		P							
Kleinmond	2,351	5,101	2,916	6,421	P		P							
Greater Hermanus	14,256	41,884	20,736	61,498	P		P							
Stanford	1,379	4,325	1506	4,558	P		P							
Greater Gansbaai	3,251	7,698	5388	13,776	P		P							
Pearly Beach	314	363	472	833	P		P							
Baardskeerdersbos	39	122	41	127	P		P							
Buffeljagsbaai	33	147	34	153	P		P							
Sub-Total	**22,781**	**61,937**	**32,697**	**90,546**										
Townships					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Informal Settlements					Adequate			Below RDP					None	
Greater Gansbaai	1,407	5,628	1,437	5,748		P								
Greater Hermanus	1,362	5,448	1,389	5,556		P								
Kleinmond	382	1,528	414	1,656		P								
Stanford	114	456	334	1,336		P								
Pearly Beach	171	684	101	404		P								
Sub-Total	**3,436**	**13,744**	**3,675**	**14,700**										
Working towns & service centres					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Sub-Total: (Urban)	**26,217**	**75,681**	**36,372**	**105,246**										
RURAL														
Rural / Farming					Adequate			Below RDP					None	
Overstrand Rural	1,794	4,727	2,031	5,350	P		P							P
Sub-Total	**1,794**	**4,727**	**2,031**	**5,350**										
Informal Settlements					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Sub-Total (Rural)	**1,794**	**4,727**	**2,031**	**5,350**										
TOTAL	**28,011**	**80,408**	**38,402**	**110,596**										

Note: P - Partially (More than one type of service)

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 or at the erf boundary. 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:

- 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	
		FY2019/20		FY2018/19		FY2017/18	
		Nr	%	Nr	%	Nr	%
	WATER (ABOVE MIN LEVEL)						
Piped (tap) water inside dwelling/institution	House connections	37,903	81%	37,349	81%	36,319	81%
Piped (tap) water inside yard	Yard connections	5,300	11%	5,300	11%	5,300	12%
Piped (tap) water on community stand: distance less than 200m from dwelling/institution	Standpipe connection < 200 m	3,706	8%	3,651	8%	3,083	7%
	Sub-Total: Minimum Serivce Level and Above	**46,909**	**100%**	**46,300**	**100%**	**44,702**	**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	**46,992**	**100%**	**46,383**	**100%**	**44,785**	**100%**

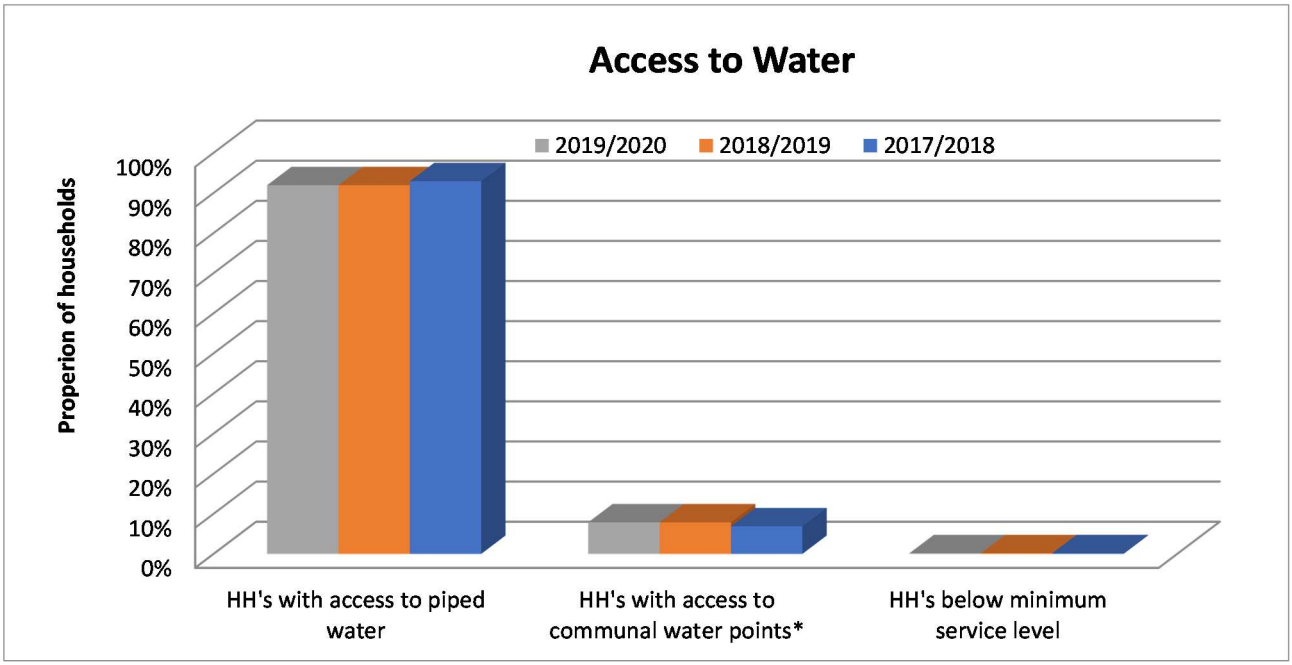


Figure A.2.1: Access to Water Services.

The existing residential water service levels in Overstrand Municipality's Management Area are estimated as follows:

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	414	1 389	334	1 437	101	0	0	0	3 675
Total Housing Need	**0**	**414**	**1 389**	**334**	**1 437**	**101**	**0**	**0**	**0**	**3 675**
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)]	3 558	3 633	20 099	1 268	5 918	1 658	65	30	1 674	37 903
Total Adequate	**3 564**	**3 915**	**23 722**	**1 750**	**6 543**	**1 697**	**65**	**30**	**1 948**	**43 234**
Total Residential Consumer Units for the Municipality	**3 564**	**4 329**	**25 111**	**2 084**	**7 980**	**1 798**	**65**	**30**	**2 031**	**46 992**

Notes:

1) Number of residential consumer units for urban areas for 2019/2020, as taken 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 2020).
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	2019/20		2018/19 (-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

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	37 903	80%
Piped water inside yard-Households	5 300	80%
Piped water distance <200m - Households	3 706	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%

Table A.2.7: Water Reliability Profile

Section: Water Reliability Profile	Totals	Assessment Score
Total Number of Households having Reliable Service	**46 909**	**80%**
Total Number of Households NOT having Reliable Service	**83**	**60%**

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	
		FY2019/20		FY2018/19		FY2017/18	
		Nr	%	Nr	%	Nr	%
	SANITATION (ABOVE MIN LEVEL)						
Flush toilet (connected to sewerage system)	Waterborne	27,645	59%	27,181	59%	26,123	58%
	Waterborne: Low Flush	4,100	9%	4,100	9%	4,100	9%
Flush toilet (with septic tank)	Septic tanks / Conservancy	11,275	24%	11,185	24%	11,213	25%
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)	3,675	8%	3,620	8%	3,052	7%
	Sub-Total: Minimum Serivce Level and Above	**46,727**	**99%**	**46,118**	**99%**	**44,520**	**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**	**1%**	**265**	**1%**	**265**	**1%**
	Total number of households	**46,992**	**100%**	**46,383**	**100%**	**44,785**	**100%**

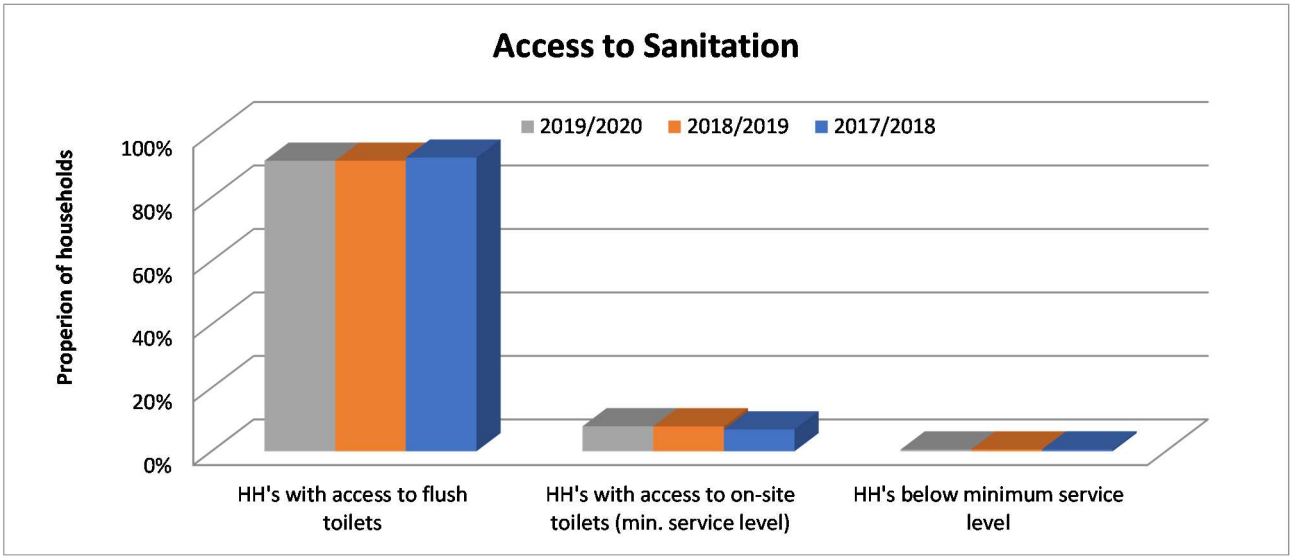


Figure A.2.2: Access to Sanitation Services.

The existing residential sanitation service levels in Overstrand Municipality's Management Area are estimated as follows:

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	414	1 389	334	1 437	101	0	0	0	3 675
Total Housing Need	**0**	**414**	**1 389**	**334**	**1 437**	**101**	**0**	**0**	**0**	**3 675**
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	3 564	1 047	1 356	81	2 786	612	65	30	1 734	11 275
Waterborne	0	2 868	18 266	1 669	3 757	1 085	0	0	0	27 645
Total Adequate [2)]	**3 564**	**3 915**	**23 722**	**1 750**	**6 543**	**1 697**	**65**	**30**	**1 761**	**43 047**
Total Residential Consumer Units for the Municipality	**3 564**	**4 329**	**25 111**	**2 084**	**7 980**	**1 798**	**65**	**30**	**2 031**	**46 992**

1) Total for Septic Tanks and Conservancy tanks in Urban Areas according to Municipal information for June 2020 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 2020).

Table A.2.10: Improvement in Eradicating the Sanitation Backlog

Settlement	Urban / Rural	2019/20		2018/19 (-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		
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	11 275	80%
Flush toilet (connected to sewerage system) - Households	35 420	80%
None - Households	185	60%

Table A.2.12: Sanitation Reliability Profile		
Section: Sanitation Reliability Profile	**Totals**	**Assessment Score**
Total number of households having reliable service	**46 722**	**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%

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:

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. • The water provided shall comply with the SANS241 quality standards. • 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. • In the case of a communal standpipe, it shall be within a reasonable walking distance of no more than 100m from the farthest household. • 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. • The water shall be made available for 52 weeks per year. • All water use and/or supply shall be metered, but not tariffed. • Maintenance of the infrastructure for this level of service is the responsibility of the WSA. • Point-of-use water treatment systems and methods shall be advocated. • Efforts shall be made to ensure user acceptance and understanding for this level of service. • Users shall be educated in effective water use and hygiene. • 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.

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

• 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.
• 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.
• 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.
• 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.
• Sufficient sanitation facilities shall be provided for the number of users
  ➢ Communal toilet: Toilet seats – 1 seat per 50 users; Urinal units – 1 unit per 100 users; Hand washing – 1 basin per 10 toilet seats.
  ➢ 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.
• 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 3 675. 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 2020).

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	16	11.3	6	30.0
Kleinmond	Overhills	414	120	3.5	29	14.3
Gansbaai	Mashakhane	1 181	269	4.4	39	30.3
	Beverly Hills	91	24	3.8	13	7.0
	Buffeljags Bay	15	10	1.5	4	3.8
Hawston	Erf 170	10	4	2.5	2	5.0
Zwelihle	Tsepe-Tsepe	93	40	2.3	7	13.3
	Serviced Sites	80	25	3.2	5	16.0
	Thambo Square	351	21	16.7	6	58.5
	Asazani	89	12	7.4	5	17.8
	Temporary Relocation Area	250	125	2.0	125	2.0
	New Camp	52	12	4.3	8	6.5
	Transit Camp	208	56	3.7	14	14.9
Sub-Total		**3 014**	**734**	**4.1**	**263**	**11.5**
Communal Service Levels – Emergency Housing						
Stanford	Stanford	154	30	5.1	6	25.7
Hermanus	Mount Pleasant	26	8	3.3	4	6.5
	Zwelihle	230	42	5.5	13	17.7
Gansbaai	Masakhane	150	41	3.7	20	7.5
	Eluxolweni	101	30	3.4	11	9.2
Sub-Total		**661**	**151**	**4.4**	**54**	**12.2**
Total		**3 675**	**885**	**4.2**	**317**	**11.6**

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**	**Number of Toilets**	**Number of Taps**
Hermanus	Marikana (Area of church)	10	10
	Marikana (Next to swimming pool)	20	16
	Marikana (Next to recycling site)	20	16
	Marikana (Next to parking area)	10	10
	Dubai (Schulphoek)	30	24
	Back of sportground, Zwelihle	20	16
Kleinmond	Overhills	17	4
Gansbaai	Masakhane (Next to primary school)	10	8
Sub-Total		**137**	**104**

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 Last Seven Financial Years					
Distribution System	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
2013/2014 (Average over period December 2013 – June 2014)					
Buffels River	3 226	109	0	37	**3 372**
Kleinmond	3 523	265	0	64	**3 852**
Greater Hermanus	17 647	833	32	324	**18 836**
Stanford	1 137	49	2	14	**1 202**
Greater Gansbaai	4 950	225	4	220	**5 399**
Pearly Beach	1 076	5	0	10	**1 091**
Baardskeerdersbos	63	0	0	3	**66**
Buffeljags Bay	29	0	0	3	**32**
TOTALS	**31 651**	**1 486**	**38**	**675**	**33 850**
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**

Table A.2.17: Number of Consumer Units for Water Services for each User Category for the Last Seven Financial Years					
Distribution System	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
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**
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**

Table A.2.18: Total Number of Consumer Units per Town and Percentage Growth from 2013/2014 to 2019/2020								
Distribution System	**Annual Growth % 13/14 – 19/20**	**19/20**	**18/19**	**17/18**	**16/17**	**15/16**	**14/15**	**13/14**
Buffels River	1.59%	3 707	3 650	3 564	3 510	3 457	3 406	3 372
Kleinmond	0.68%	4 012	3 993	3 971	3 943	3 880	3 862	3 852
Greater Hermanus	2.53%	21 887	21 550	21 036	20 175	19 644	19 428	18 836
Stanford	2.15%	1 366	1 348	1 304	1 262	1 229	1 216	1 202
Greater Gansbaai	3.14%	6 499	6 312	5 701	5 530	5 464	5 378	5 399
Pearly Beach	7.40%	1 674	1 663	1 704	1 510	1 265	1 234	1 091
Baardskeerdersbos	0.99%	70	68	67	67	67	66	66
Buffeljags Bay	1.98%	36	36	36	36	36	34	32
TOTALS	**2.50%**	**39 251**	**38 620**	**37 383**	**36 033**	**35 042**	**34 624**	**33 850**

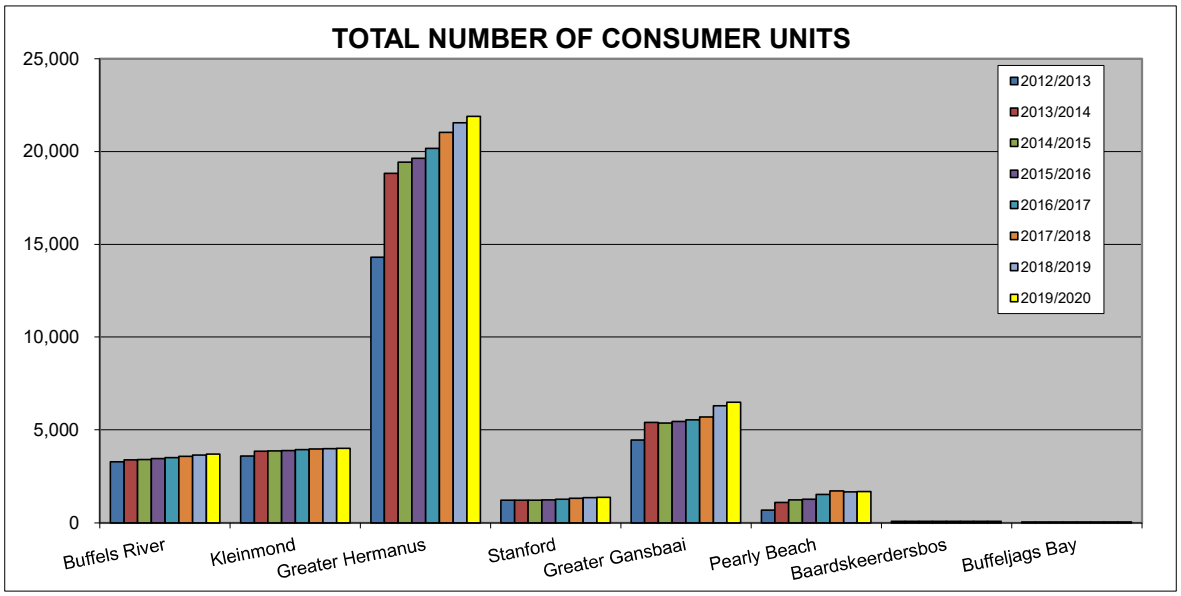


Figure A.2.3: Number of Billed Metered Consumption Units per System for the Last Eight Financial Years

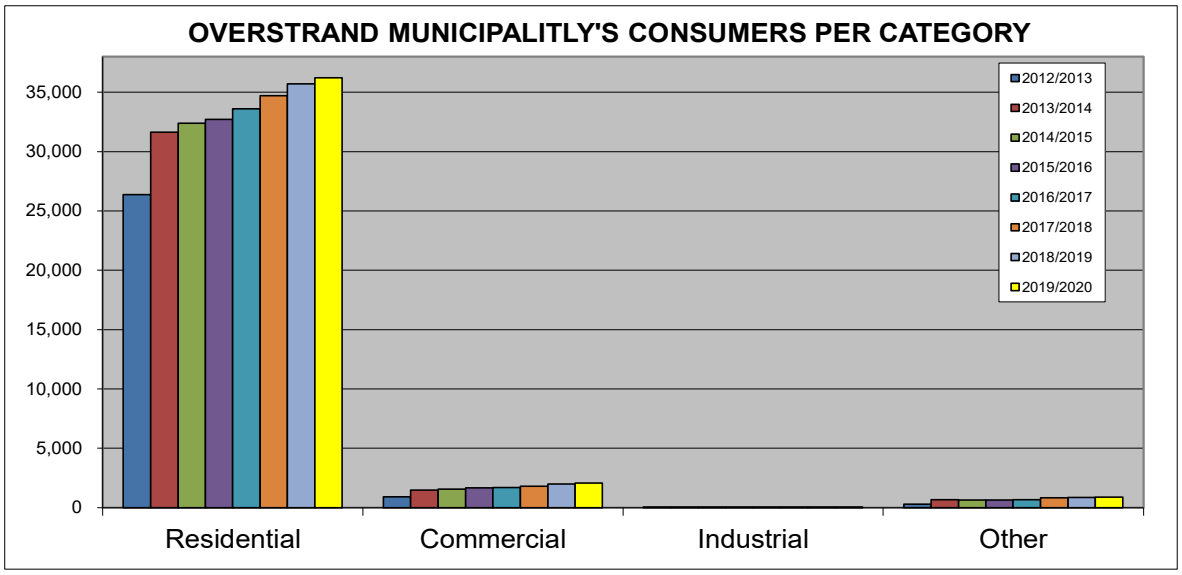


Figure A.2.4: Overstrand Municipality's Consumers per Category Type

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, Secondary and Combined Schools	17	0	0	R0
Tertiary	-	-	-	-
Special Needs	-	-	-	-
Other	-	-	-	-
Total	**17**	**0**	**0**	**R0**
Health Plan				

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)**
Hospitals	2	0	0	R0
Community Day Centres	1	0	0	R0
Clinics	4	0	0	R0
Satellite Clinics	4	0	0	R0
Total	**11**	**0**	**0**	**R0**

Source: Number of health and school facilities - 2019 Socio Economic Profile of Overstrand Municipality, Western Cape Government

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, Secondary and Combined Schools	17	0	0	R0
Tertiary	-	-	-	-
Special Needs	-	-	-	-
Other	-	-	-	-
Total	**17**	**0**	**0**	**R0**
Health Plan				
Hospitals	2	0	0	R0
Community Day Centres	1	0	0	R0
Clinics	4	0	0	R0
Satellite Clinics	4	0	0	R0
Total	**11**	**0**	**0**	**R0**

Source: Number of health and school facilities - 2019 Socio Economic Profile of Overstrand Municipality, Western Cape Government

TOPIC 3: WATER SERVICES ASSET MANAGEMENT

A new Water and Waste Water Bulk Works Contract was signed during the 2018/2019 financial year between Overstrand Municipality and an External Service Provider to operate the bulk 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	15	9	8	24	51	98.7 km	45.2 km	45	6	80%

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

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 Sulphate and Soda Ash), 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 Sulphate 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 (28.000)	Chemical dosing (Aluminium Sulphate, Sodium Aluminate, Poly-electrolyte and Lime), flocculation, sedimentation, filtration (Rapid gravity sand filters), stabilization (Lime) and Disinfection (Chlorine Gas)
		Groundwater (10.000)	Biological WTW for iron and manganese removal from Camphill and Volmoed well field water by contact filtration, Caustic Soda dosing and Aeration; Chemical oxidation WTW for the Gateway well field water by dosing Potassium Permanganate
Stanford	Stanford Spring and two Kouevlakte Boreholes	-	Ultrafiltration plus Reverse Osmosis Plant and disinfection (Sodium Hypochlorite)
Greater Gansbaai	Franskraal and Kraaibosch Dams	Franskraal (6.500)	Chemical dosing (Aluminium Sulphate, Caustic Sodium Aluminate, Soda Ash), 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), Carbon filters and disinfection (Sodium Hypochlorite)
Baardskeerdersbos	Two Boreholes	Baardskeerdersbos (0.185)	pH adjustment, oxidation, settling, ultrafiltration and disinfection (Sodium Hypochlorite).
Buffeljags Bay	Borehole	-	Disinfection (Chlorine Tablets)

A.3.3: Existing Main 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 & Water Towers**	**Total Storage in Ml**
	km	**km**	**Number of PS**	**Number of PS**		
Buffels River	14.255	124.610	-	4	5	4.767
Kleinmond	5.400	75.130	3	1	3	8.100
Greater Hermanus	38.295	324.795	-	5	22	39.386
Stanford	5.565	27.910	-	2	2	2.750
Greater Gansbaai	19.200	127.980	4	2	9	10.050
Pearly Beach	12.420	30.205	-	2	2	2.295
Baardskeerdersbos	0.525	5.315	-	1	1	0.150
Buffeljags Bay	3.113	0.475	-	-	1	0.096
Total Overstrand	**98.773**	**716.420**	**7**	**17**	**45**	**67.594**

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

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	
	Ml/d	kg COD/d		km	km	
Buffels River	-	-	-	-	-	-
Kleinmond	2.000	1 400	Kleinmond Activated Sludge System	7.100	28.700	5
Greater Hermanus	1.000	800	Hawston Activated Sludge System	32.500	252.800	35
	12.000	9 000	Hermanus Activated Sludge System			
Stanford	1.200	1 200	Stanford Activated Sludge System	1.600	20.800	6
Greater Gansbaai	2.000	3 600	Gansbaai Nereda System	3.100	15.400	5
Pearly Beach	0.259	198	Eluxolweni Oxidation Pond System	0.900	5.200	2
Baardskeerdersbos	-	-	-	-	-	-
Buffeljags Bay	-	-	-	-	-	-
Total Overstrand				**45.200**	**322.900**	**53**

Rooi Els, Pringle Bay, Betty's Bay, De Kelders, Kleinbaai, Franskraal, Baardskeerdersbos, Buffeljags Bay and Pearly Beach are not currently serviced by a sewer reticulation system. The towns of Kleinmond, Fisherhaven, Hawston, Hermanus, Stanford and Gansbaai 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	0	3	13	2	18	0	0	0	0	3	15	0
Abstraction points	0	4	0	9	11	0	1	1	1	5	7	0
Bulk water pipelines	0	2	6	0	8	0	0	0	0	8	0	0
Reservoirs	0	1	28	15	44	0	0	0	0	42	2	0
Water pump stations	1	12	8	4	25	0	0	0	0	21	4	0
WTW	1	1	5	1	8	0	0	0	0	4	4	0
Bulk sewer pipelines	0	0	5	0	5	0	0	0	0	5	0	0
Sewer pump stations	2	2	35	12	51	0	0	0	1	48	2	0
WWTW	1	3	1	1	0	0	6	0	0	5	1	0

Asset Management: An Asset Management Policy, with the following key elements, is in place:

- Statutory and Regulatory Framework / Responsibilities and Accountabilities
- Financial Management / Internal Controls / Management of Control Items
- Management and Operation of Assets / Classification and Components
- Accounting for Assets / Financial Disclosure

The Asset Management Section consists of three staff members and forms part of the Expenditure and Asset Management Division within the Finance Directorate. The costing module on the SAMRAS Management Information System is utilized to cost all new asset components up to completion there-of. Regular Asset counts are conducted in accordance with the prescriptions of the Asset Management Policy. Information regarding Asset Register updates in respect of disposals, adjustments, review of useful life etc. is based on submissions by user departments in accordance with the procedures in place. Management envisages that the Asset Register will be hosted on software specifically developed for this purpose (currently on Excel) and more to full adherence to GRAP requirements.

The tables and graphs below give an overview of the water and sewerage infrastructure included in Overstrand Municipality's Asset Register at the end of June 2020.

Water Infrastructure: The current replacement cost and carrying value of the water infrastructure of Overstrand Municipality is summarised in the table below (June 2020):

Table A.3.6: Current Replacement Cost and Carrying Value of the Water Infrastructure - June 2020

Asset Type	CRC	CV	% CV / CRC
Dams	R14 705 474	R5 040 146	34.3%
Boreholes	R11 619 334	R6 260 276	53.9%
Bulk Water Pipelines	R127 451 002	R41 917 430	32.9%
Pump Stations	R49 260 105	R13 760 975	27.9%
Reservoirs	R121 154 025	R48 094 289	39.7%
Water Reticulation Pipelines	R681 501 128	R207 428 914	30.4%
Buffels River WTW	R13 813 820	R3 803 093	27.5%
Kleinmond WTW	R27 568 183	R8 989 070	32.6%
Preekstoel WTW	R78 510 492	R67 482 784	86.0%
Franskraal New WTW	R36 743 472	R20 902 456	56.9%
Franskraal Old WTW	R20 036 738	R4 077 662	20.4%
Baardskeerdersbos WTW	R6 724 089	R4 085 953	60.8%
Pearly Beach WTW	R8 154 514	R4 603 314	56.5%
De Kelders WTW	R18 982 042	R7 482 087	39.4%
Totals	**R1 216 224 418**	**R443 928 449**	**36.5%**

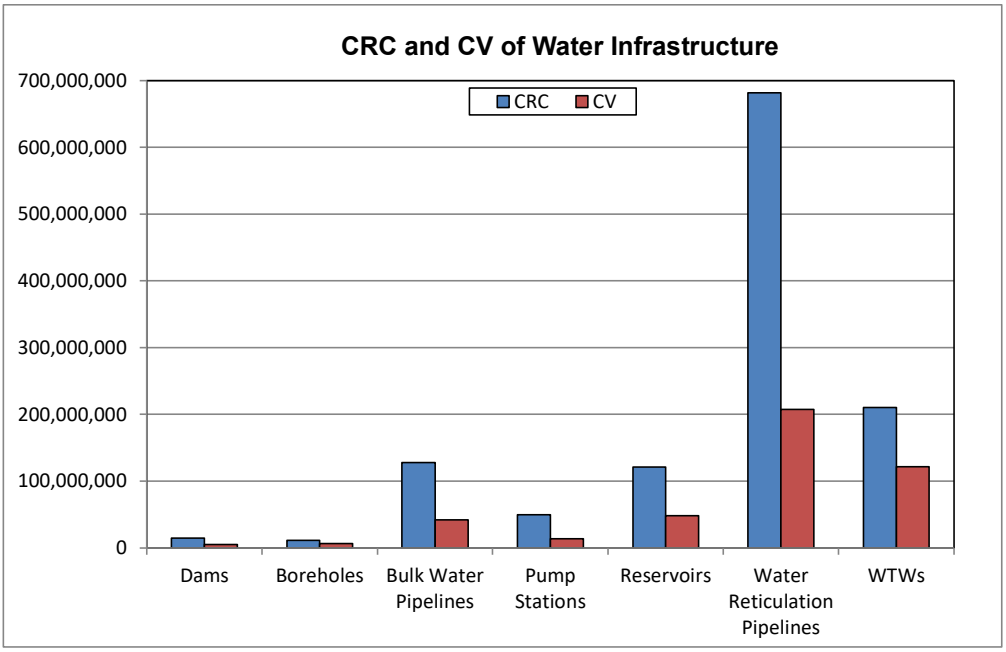


Figure A.3.1: CRC and CV of the Water Infrastructure

The previous table indicates that 63.5% of the value of the water supply infrastructure has been consumed.

The tables and graphs that follow give an overview of the remaining useful life, the age distribution and the condition grading 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 2020 (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Remaining Useful Life					
Dams	R134 772	R4 129 794	R0	R9 360 831	R1 080 077
Boreholes	R5 763 659	R959 056	R16 106	R483 719	R4 396 794
Bulk Water Pipelines	R66 198 631	R0	R1 975 841	R0	R59 276 530
Pump Stations	R22 394 089	R7 875 007	R376 639	R10 084 009	R8 530 361
Reservoirs	R11 689 687	R6 281 266	R414 640	R74 522 769	R28 245 663
Water Reticulation Pipelines	R438 576 815	R0	R21 947 656	R0	R220 976 657
Buffels River WTW	R4 083 118	R1 735 086	R0	R7 990 365	R5 251
Kleinmond WTW	R3 523 735	R422 128	R18 819	R16 563 102	R7 040 399
Preekstoel WTW	R2 499 666	R13 107 243	R976 366	R1 210 941	R60 716 276
Franskraal New WTW	R14 517 295	R354 761	R63 424	R446 210	R21 361 782
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	R584 561	R2 176 250	R2 652 030	R279 874	R2 461 799
De Kelders WTW	R86 730	R12 488 801	R0	R242 892	R6 163 619
Totals	**R575 383 799**	**R56 988 580**	**R28 513 906**	**R133 633 144**	**R421 704 989**

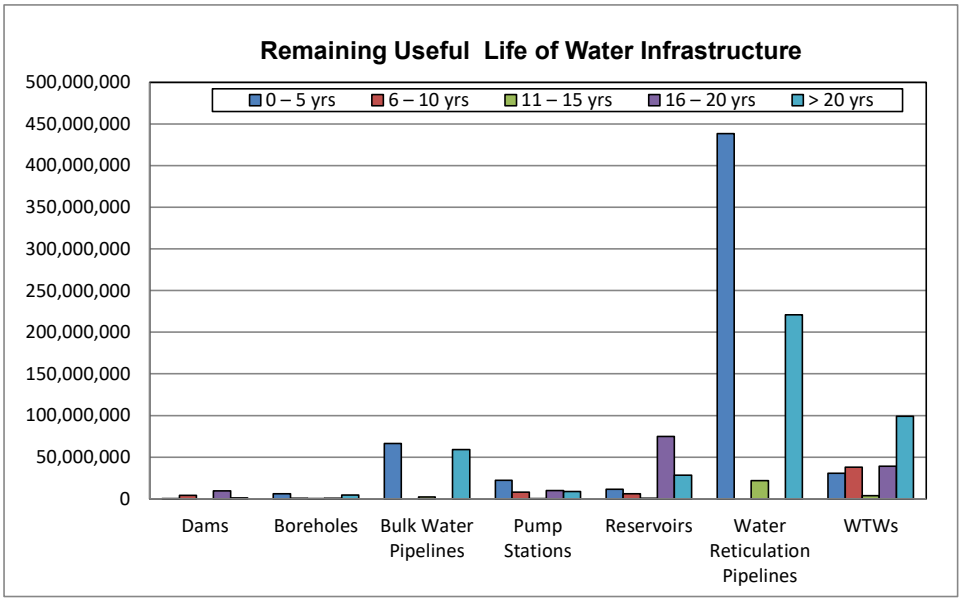


Figure A.3.2: Remaining Useful Life of the Water Infrastructure

Table A.3.8: Overview of the Age Distribution by Facility Type for the Water Infrastructure – June 2020 (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Age distribution by Facility Type					
Dams	R549 065	R0	R142 825	R0	R14 013 584
Boreholes	R139 815	R3 166 254	R7 602 886	R146 652	R563 727
Bulk Water Pipelines	R0	R7 916 008	R17 231 912	R0	R102 303 082
Pump Stations	R8 053	R5 413 056	R20 085 846	R10 333 594	R13 419 556
Reservoirs	R1 199 883	R1 914 833	R14 436 244	R20 563 450	R83 039 615
Water Reticulation Pipelines	R16 367 188	R37 215 991	R226 755 548	R0	R401 162 401
Buffels River WTW	R364 073	R4 099 423	R0	R80 770	R9 269 554
Kleinmond WTW	R0	R0	R5 138 930	R5 649 745	R16 779 508
Preekstoel WTW	R0	R76 023 040	R1 955 146	R532 306	R0
Franskraal New WTW	R0	R31 823	R36 711 649	R0	R0
Franskraal Old WTW	R0	R0	R562 970	R4 570 227	R14 903 541
Baardskeerdersbos WTW	R0	R6 724 089	R0	R0	R0

Table A.3.8: Overview of the Age Distribution by Facility Type for the Water Infrastructure – June 2020 (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Age distribution by Facility Type					
Pearly Beach WTW	R0	R6 851 773	R934 953	R0	R367 788
De Kelders WTW	R0	R18 982 042	R0	R0	R0
Totals	**R18 628 077**	**R168 338 332**	**R331 558 909**	**R41 876 744**	**R655 822 356**

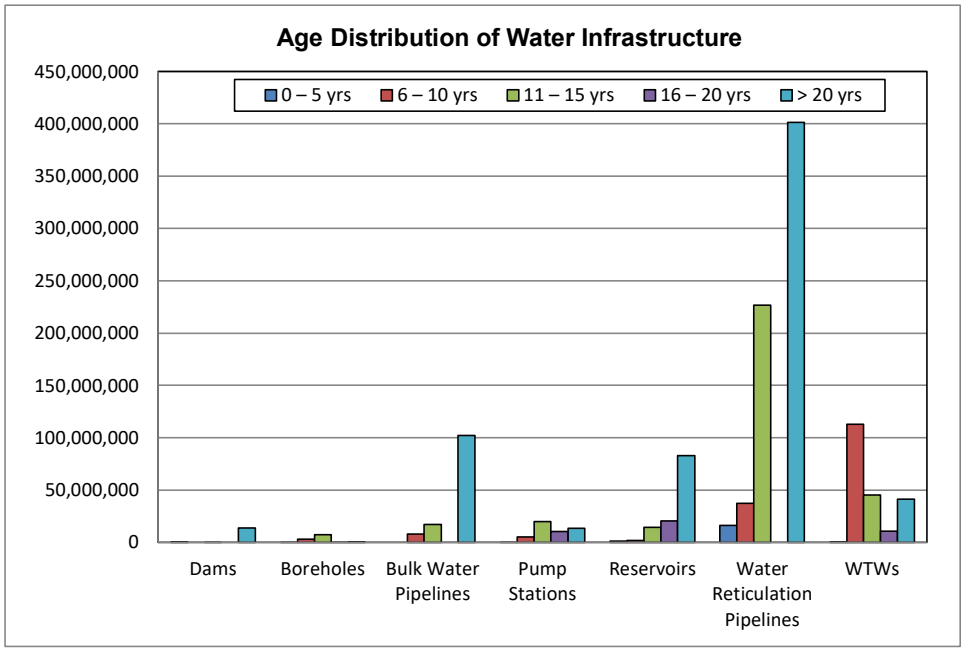


Figure A.3.3: Age Distribution of the Water Infrastructure

Table A.3.9: Overview of the Condition Grading by Facility Type for the Water Infrastructure – June 2020 (CRC)					
Asset Type	**Very Poor**	**Poor**	**Fair**	**Good**	**Very Good**
Condition grading by Facility Type					
Dams	R0	R3 572 676	R10 575 680	R8 053	R549 065
Boreholes	R338 902	R78 365	R8 652 138	R2 533 634	R16 295
Bulk Water Pipelines	R66 198 631	R1 975 841	R26 320 613	R9 505 682	R23 450 235
Pump Stations	R930 004	R6 103 315	R31 217 742	R10 752 696	R256 348
Reservoirs	R6 020 645	R3 691 538	R80 410 361	R30 246 276	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 688 050	R18 219 366	R836 056
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	**R381 667 000**	**R44 474 651**	**R427 814 999**	**R160 049 201**	**R202 218 567**

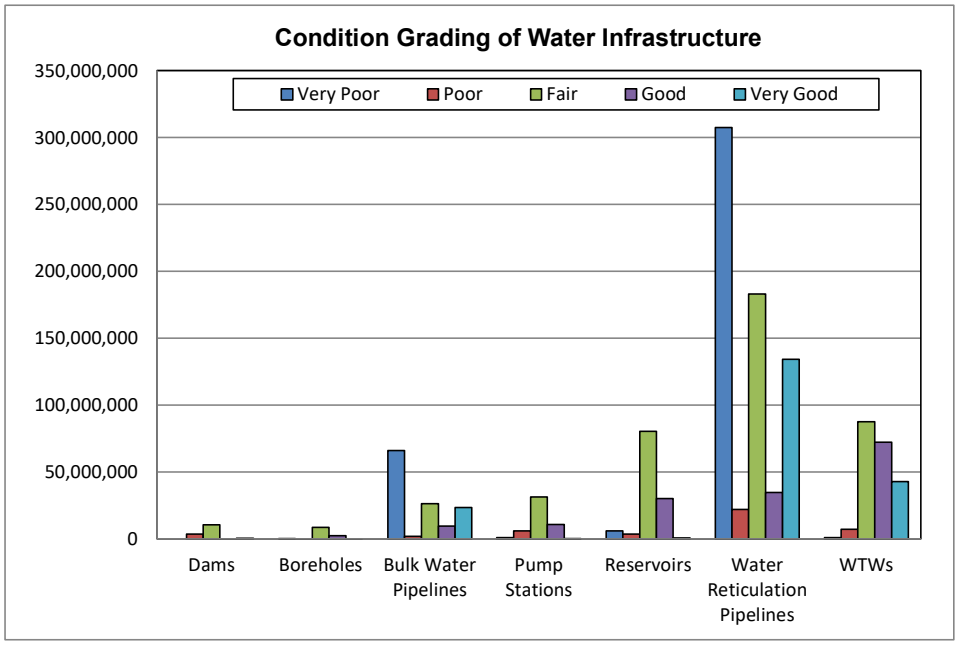


Figure A.3.4: Condition Grading of the Water Infrastructure

Sewerage Infrastructure: The current replacement cost and carrying value of the sewerage infrastructure of Overstrand Municipality is summarised in the table below (June 2020):

Table A.3.10: Current Replacement Cost and Carrying Value of the Sewerage Infrastructure – June 2020

Asset Type	CRC	CV	% CV / CRC
Sanitation Pump Stations	R40 643 856	R31 767 226	78.2%
Sewer Reticulation Pipelines	R419 511 626	R262 587 281	62.6%
Stanford WWTW	R18 563 529	R23 822 675	128.3%
Hermanus WWTW	R75 886 941	R38 219 215	50.4%
Hawston WWTW	R13 438 372	R5 295 314	39.4%
Kleinmond WWTW	R13 448 933	R5 606 854	41.7%
Gansbaai WWTW	R34 154 633	R12 488 337	36.6%
Pearly Beach WWTW	R11 060 449	R6 612 639	59.8%
Totals	**R626 708 339**	**R386 399 541**	**61.7%**

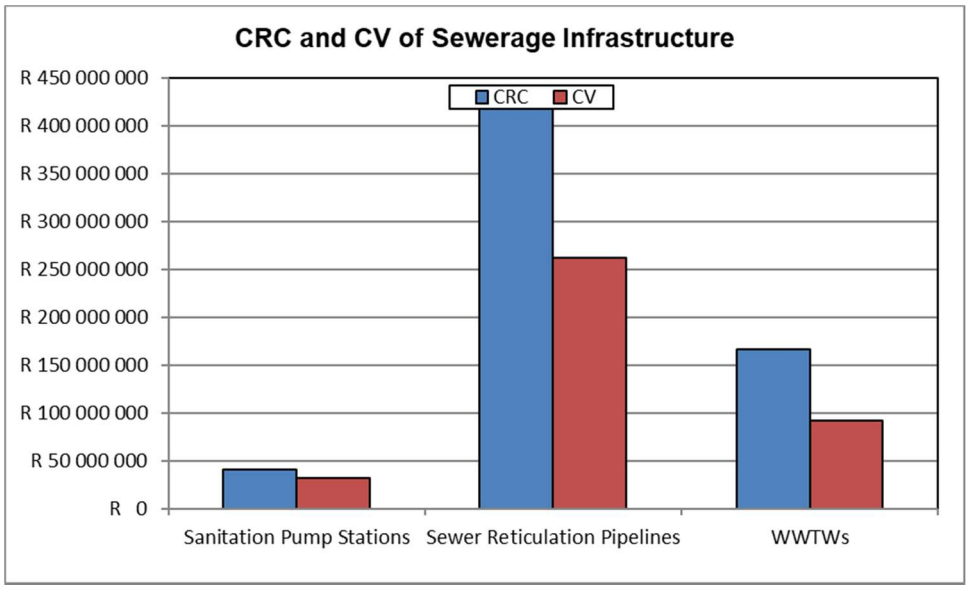


Figure A.3.5: CRC and CV of the Sewerage Infrastructure

The previous table indicates that 38.3% of the value of the sewerage infrastructure has been consumed.

The tables and graphs that follow give an overview of the remaining useful life, the age distribution and the condition grading 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 2020 (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Remaining Useful Life					
Sanitation Pump Stations	R16 614 584	R7 500 287	R192 171	R12 699 899	R3 636 915
Sewer Reticulation Pipelines	R4 663 675	R10 033 079	R47 237 847	R20 256 059	R337 320 966
Stanford WWTW	R4 425 661	R6 810 330	R2 561	R5 819 686	R1 505 291
Hermanus WWTW	R9 470 125	R41 268 491	R943 018	R10 359 410	R13 845 897
Hawston WWTW	R3 278 524	R4 019 207	R923 731	R2 322 681	R2 894 229
Kleinmond WWTW	R5 162 580	R3 038 245	R9 275	R2 308 627	R2 930 206
Gansbaai WWTW	R18 083 638	R5 952 621	R68 782	R3 941 562	R6 108 030
Pearly Beach WWTW	R85 365	R409 067	R292 620	R0	R10 273 397
Totals	**R61 784 152**	**R79 031 327**	**R49 670 005**	**R57 707 924**	**R378 514 931**

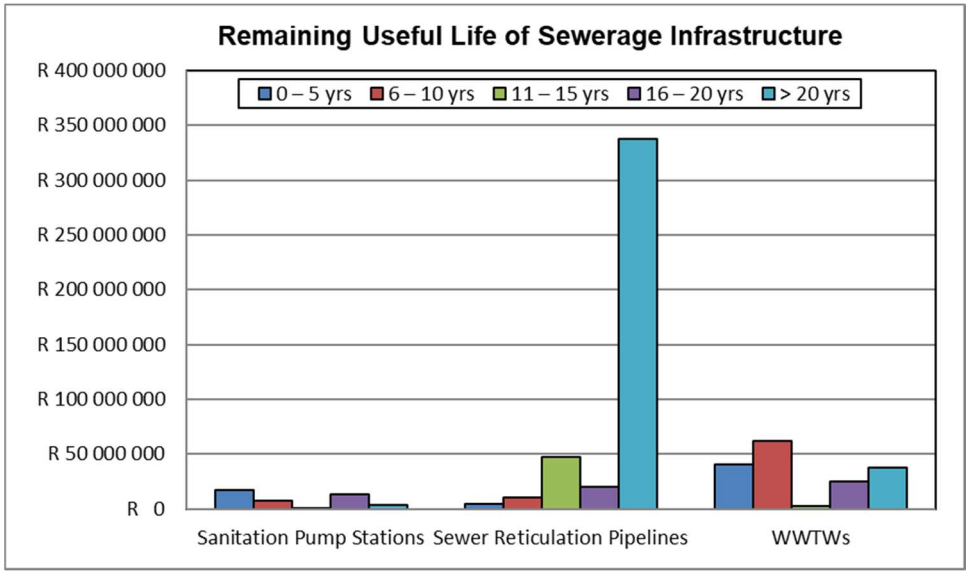


Figure A.3.6: Remaining Useful Life of the Sewerage Infrastructure

The following table gives 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 2020 (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Age distribution by Facility Type					
Sanitation Pump Stations	R710 427	R8 841 987	R17 544 786	R822 397	R12 724 259
Sewer Reticulation Pipelines	R8 339 632	R21 684 545	R42 955 683	R16 795 649	R329 736 117
Stanford WWTW	R0	R1 039 451	R9 639 650	R892 968	R6 991 460
Hermanus WWTW	R256 225	R50 033 091	R5 003 820	R1 804 650	R18 789 155
Hawston WWTW	R0	R1 634 987	R7 057 145	R2 020 518	R2 725 722
Kleinmond WWTW	R0	R2 290 287	R5 817 276	R2 930 207	R2 411 163
Gansbaai WWTW	R0	R5 892 037	R14 568 194	R8 009 171	R5 685 231
Pearly Beach WWTW	R0	R11 060 449	R0	R0	R0
Totals	**R9 306 284**	**R102 476 834**	**R102 586 554**	**R33 275 560**	**R379 063 107**

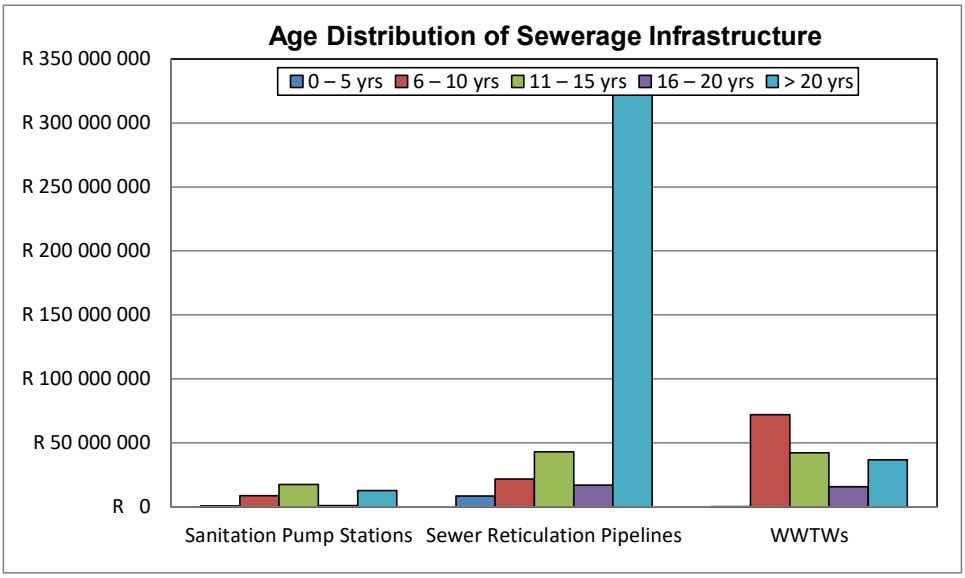


Figure A.3.7: Age distribution of the Sewerage Infrastructure

Table A.3.13: Overview of the Condition Grading by Facility Type for the Sewerage Infrastructure – June 2020 (CRC)					
Asset Type	**Very Poor**	**Poor**	**Fair**	**Good**	**Very Good**
Condition grading by Facility Type					
Sanitation Pump Stations	R17 965	R38 148	R32 716 304	R3 316 271	R4 555 168
Sewer Reticulation Pipelines	R4 663 675	R60 105 949	R165 685 405	R144 250 219	R44 806 378
Stanford WWTW	R0	R1 063 582	R11 149 555	R6 350 392	R0
Hermanus WWTW	R8 869 373	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 501 460	R0
Gansbaai WWTW	R4 768 779	R722 846	R20 519 979	R6 057 553	R2 085 476
Pearly Beach WWTW	R0	R58 022	R0	R162 383	R10 840 044
Totals	**R18 345 705**	**R64 005 400**	**R282 146 180**	**R189 498 971**	**R72 712 083**

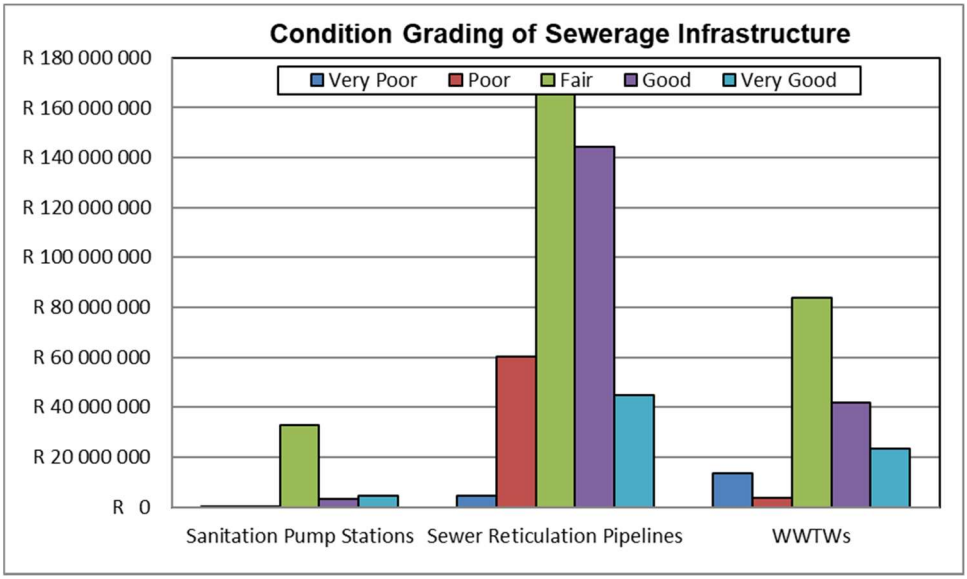


Figure A.3.8: Condition Grading of the Sewerage Infrastructure

The CRC of the water and sewerage infrastructure that will need to be replaced over the next five years (RUL <5 yrs) is R637.168 million. The asset renewal needs for the **water infrastructure assets** over the next 10 years is R63.237 million per year. The reinvestment required is R575.384 million in the first 5 years and R56.989 million in the second 5-year period. The age of 53.9% of the water infrastructure assets is greater than 20 years. The CRC of the water infrastructure with a condition grading of "Very Poor" is R381.667 million. The asset renewal needs for the **sewerage infrastructure assets** over the next 10 years is R14.082 million per year. The reinvestment required is R61.784 million in the first 5 years and R79.031 million in the second 5-year period. The age of 60.5% of the sewerage infrastructure assets is greater than 20 years. The CRC of the sewerage infrastructure with a condition grading of "Very Poor" is R18.346 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 Waste Water Bulk Works Contract ensures that the new technology installed is adequately maintained and operated in order to prevent a massive increase in bulk system maintenance in the future due to backlogs being created (Objective is asset preservation). This Bulk Works Contract addresses the capacity constraints, the Municipality previously experienced, with regard to the operation of the WTWs and WWTWs (Objectives are skills development and retention and long term improvement of efficiency of operations).

It is very 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 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 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. W_2RAPs are 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 Waste Water Bulk Works Contract assist with the efficient operation and maintenance of all the bulk water and sewerage infrastructure in Overstrand Municipality's Management Area.

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.

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.

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 table below gives a summary of the treatment losses, NRW, water losses and ILIs for the various distribution systems in Overstrand Municipality's Management Area.

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

Description	Component	Unit	19/20	Record: Prior (Ml/a)				
				18/19	17/18	16/17	15/16	14/15
Buffels River	Treatment Losses	Volume	79.606	60.724	64.571	61.541	54.157	43.886
		Percentage	10.37%	7.58%	9.94%	6.97%	7.10%	5.27%
	NRW	Volume	335.271	407.056	265.104	455.126	327.463	400.622
		Percentage	48.70%	54.98%	45.31%	55.42%	46.22%	50.83%
	Water Losses	Volume	302.971	345.276	263.934	453.483	326.046	399.046
		Percentage	44.01%	46.63%	45.11%	55.22%	46.02%	50.63%
	ILI		3.00	3.45	2.67	4.63	3.36	4.34
Kleinmond	Treatment Losses	Volume	73.584	67.349	16.091	68.368	51.584	33.890
		Percentage	8.19%	8.64%	2.25%	8.33%	6.68%	4.40%
	NRW	Volume	276.922	183.409	188.379	203.625	202.304	227.374
		Percentage	33.57%	25.75%	26.90%	27.06%	28.07%	30.88%
	Water Losses	Volume	273.090	178.280	186.978	202.120	200.863	225.901
		Percentage	33.11%	25.03%	26.70%	26.86%	27.87%	30.68%
	ILI		3.30	2.17	2.28	2.48	2.49	2.16
Greater Hermanus	Treatment Losses	Volume	445.591	487.283	539.107	654.274	572.544	672.217
		Percentage	10.79%	11.77%	12.89%	13.73%	12.35%	14.58%
	NRW	Volume	430.532	332.685	262.270	317.045	474.020	359.729
		Percentage	11.69%	9.10%	7.20%	7.71%	11.66%	9.13%
	Water Losses	Volume	416.581	316.318	254.983	308.822	465.893	351.849
		Percentage	11.31%	8.66%	7.0%	7.51%	11.46%	8.93%
	ILI		0.98	0.75	0.62	0.77	1.19	0.88
Stanford	Treatment Losses	Volume	40.381	53.133	20.993	9.125	85.643	12.841
		Percentage	11.05%	14.18%	6.53%	2.91%	22.01%	4.13%
	NRW	Volume	93.141	90.868	78.723	76.937	73.438	80.356
		Percentage	28.65%	28.25%	26.20%	25.29%	24.19%	26.97%
	Water Losses	Volume	91.463	87.478	78.122	76.329	72.831	79.760
		Percentage	28.14%	27.19%	26.00%	25.09%	23.99%	26.77%
	ILI		4.31	4.16	3.81	3.80	3.69	2.81
Greater Gansbaai	Treatment Losses	Volume	64.025	66.610	55.750	67.191	74.357	111.472
		Percentage	5.45%	5.56%	5.02%	6.41%	7.41%	11.23%
		Volume	69.012	71.221	68.287	95.258	85.837	90.727

Table A.5.1: Treatment Losses, NRW, Water Losses and ILIs for the Various Water Distribution Systems								
Description	**Component**	**Unit**	**19/20**	**Record: Prior (Ml/a)**				
				18/19	**17/18**	**16/17**	**15/16**	**14/15**
		Percentage	19.68%	19.71%	16.30%	17.93%	16.90%	17.84%
	NRW	Volume	390.657	450.328	449.900	529.125	384.841	363.302
		Percentage	28.07%	31.67%	32.01%	37.33%	28.49%	27.96%
	Water Losses	Volume	384.859	445.817	447.089	526.290	382.139	360.704
		Percentage	27.66%	31.35%	31.81%	37.13%	28.29%	27.76%
	ILI		**3.03**	**3.58**	**3.84**	**4.58**	**3.35**	**2.93**
Pearly Beach	Treatment Losses	Volume	4.891	29.603	5.860	10.044	5.489	6.461
		Percentage	3.15%	16.98%	4.64%	7.04%	3.64%	3.97%
	NRW	Volume	46.005	38.499	23.495	21.928	36.951	52.640
		Percentage	30.57%	26.60%	19.52%	16.54%	25.41%	33.68%
	Water Losses	Volume	45.166	37.760	23.254	21.663	36.660	52.327
		Percentage	30.02%	26.09%	19.32%	16.34%	25.21%	33.48%
	ILI		**2.81**	**2.35**	**1.43**	**1.43**	**1.00**	**2.86**
Baardskeerdersbos	Treatment Losses	Volume	2.637	3.101	2.446	2.967	3.736	3.953
		Percentage	14.40%	17.15%	14.26%	18.52%	20.33%	22.63%
	NRW	Volume	6.941	7.509	6.752	5.047	6.654	6.251
		Percentage	44.28%	50.14%	45.91%	38.67%	45.44%	46.26%
	Water Losses	Volume	6.834	7.313	6.723	5.021	6.625	6.224
		Percentage	43.60%	48.83%	45.71%	38.47%	45.24%	46.06%
	ILI		**2.12**	**2.29**	**2.12**	**1.58**	**1.30**	**1.28**
Buffeljags Bay	Treatment Losses	Volume	-0.139	0.048	0.523	0.606	0.979	-
		Percentage	-2.77%	0.98%	10.53%	13.37%	18.04%	-
	NRW	Volume	0.930	0.770	0.373	0.200	0.705	0.612
		Percentage	18.03%	15.83%	8.40%	5.09%	15.85%	15.45%
	Water Losses	Volume	0.901	0.741	0.364	0.192	0.696	0.604
		Percentage	17.46%	15.24%	8.20%	4.89%	15.65%	15.25%
	ILI		**4.95**	**4.05**	**2.0**	**1.06**	**3.83**	**3.80**
TOTAL	**NRW**	**Volume**	**1 580.399**	**1 511.124**	**1 274.996**	**1 609.033**	**1 506.376**	**1 490.886**
		Percentage	**22.31%**	**21.54%**	**18.82%**	**21.29%**	**20.60%**	**20.61%**
	Water Losses	**Volume**	**1 521.865**	**1 418.983**	**1 261.447**	**1 593.920**	**1 491.753**	**1 476.416**
		Percentage	**21.48%**	**21.23%**	**18.62%**	**21.09%**	**20.40%**	**20.41%**
	ILI		**1.83**	**1.73**	**1.57**	**2.03**	**1.74**	**1.78**

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 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.

Table A.5.2: Reducing Unaccounted Water		
Reducing unaccounted water and water inefficiencies		**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%

Progress made with the installation of water efficient devices:

All Municipal buildings were equipped with water saving devices. Flow limiters have been installed at indigent households with consumption above the basic volume and where the consumer was not paying for the water and where leaks have been repaired by the municipality.

A detail WC/WDM investigation into the highest water consumers (Top 80 water consumers) in the Overstrand Municipality's Management Area was completed in August 2018. The investigation provided great insight into the higher water consumers and it was encouraging that there is a high level of awareness of the water crises and that many consumers are already taking steps towards increased water savings. One of the greatest benefits of the investigation was from a public relations standpoint; for the general public to see an active and engaging Municipality wanting to work together to avert a further crises.

Pressure Reduction: PRVs were previously installed in Kleinmond, Stanford and Betty's Bay. No further PRVs were installed during the last four financial years.

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. The Scorecard entails 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 86 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, 2019 and 2020 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 WC/WDM measures to lower the current and future water requirements and with investigations of augmentation options for the existing water resources.

Table A.6.1: Current Water Resources and Volumes							
Number of sources	Schemes	Number of Sources	Current 19/20 Abstraction or Returns (Mm^3/a)	License Volumes (Mm^3/a)	Community water supply		Assessment Score
					Rural	Urban	
Boreholes	Baardskeerdersbos	2	0.018	-	0%	100%	40%
	Buffeljags Bay	1	0.005	-	0%	100%	40%
Surface Water Abstraction	Buffels River	1	0.768	0.914 *	0%	100%	60%
Conjunctive Use	Kleinmond	2	0.898	1.059 *	0%	100%	60%
	Greater Hermanus	13	4.129	5.600	0%	100%	80%
	Stanford	3	0.365	1.600	0%	100%	80%
	Greater Gansbaai	4	1.525	-	0%	100%	40%
	Pearly Beach	2	0.155	0.352 *	0%	100%	60%
External Sources (Bulk Purchase)	-	-		-	-	-	80%
Water returned to source	Kleinmond	1 WWTW	0.275	0.730 (GA)	N/A	N/A	80%
	Hawston	1 WWTW	0.135	0.365 (GA)	N/A	N/A	80%
	Hermanus	1 WWTW	1.982	4.380 (Licence)	N/A	N/A	80%
	Stanford	1 WWTW	0.147	0.730 (GA)	N/A	N/A	80%
	Gansbaai	1 WWTW	0.032	0.730 (GA)	N/A	N/A	80%
	Pearl Beach	1 WWTW	0.008	0.250 (GA)	N/A	N/A	80%

Note: * WARMS Registration volumes

Table A.6.2: Additional Water Sources and Volumes				
Source Type	Schemes	Number of sources	Potential Volume (Mm^3/a)	Licensed abstraction (Mm^3/a)
Ground Water	Hermanus	3	0.400	0.400
Surface Water	-	-	-	-
External Sources (Bulk Purchase)	-	-	-	-

Table A.6.3: Monitoring		
Monitoring	Assessment Score	
% of water abstracted monitored: Surface water	100%	
% of water abstracted monitored: Ground water	100%	
Monitoring	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%

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

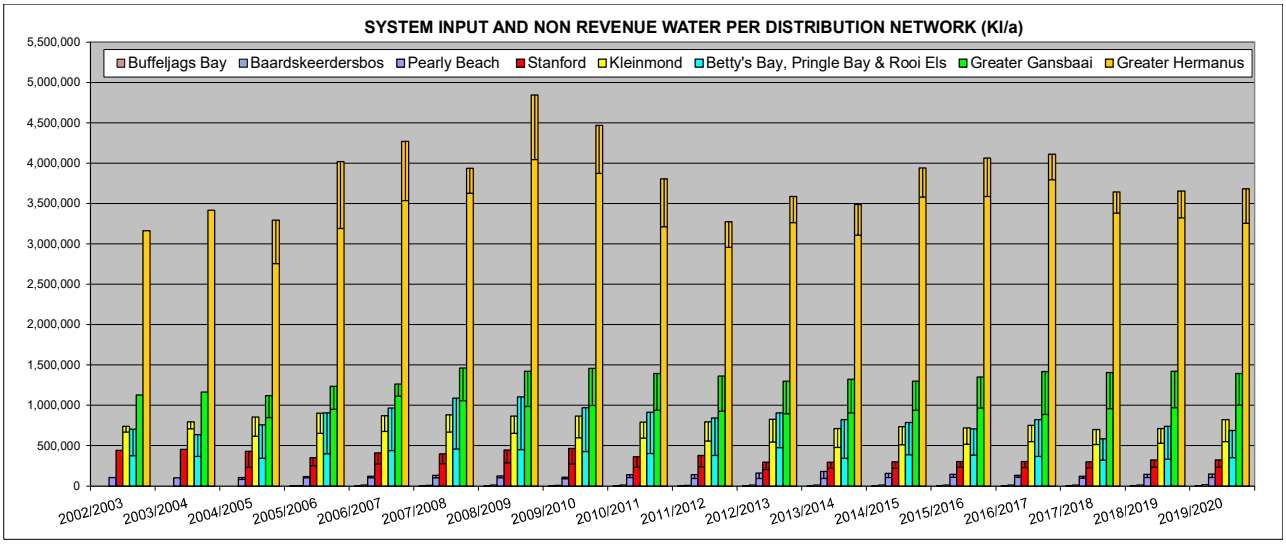


Figure A.6.1: System Input Volume and NRW per Distribution System

The table below gives a summary of the total bulk raw water supply 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	19/20	Record : Prior (Ml/a)				
			18/19	17/18	16/17	15/16	14/15
Buffels River	Buffels River Dam	767.993	801.120	649.669	882.833	762.669	832.082
Kleinmond	Palmiet River and Dorpsfontein spring	898.489	779.610	716.358	820.956	772.220	770.268
Greater Hermanus	De Bos Dam and Groundwater	4 128.705	4 141.553	4 182.703	4 765.620	4 636.164	4 611.987
Stanford	Stanford spring and two Boreholes	365.453	374.810	321.479	313.302	387.777	310.787
Greater Gansbaai	Kraaibosch and Franskraal Dam, Klipgat, De Kelders Grotte	1 524.604	1 559.727	1 529.544	1 579.802	1 511.060	1 501.361
Pearly Beach	Pearly Beach Springs and Koekemoer Dam	155.368	174.354	126.233	142.581	150.919	162.746
Baardskeerdersbos	Two Boreholes	18.311	18.077	17.154	16.019	18.380	17.466
Buffeljags Bay	Borehole	5.019	4.912	4.966	4.533	5.427	3.962
Total Supply to all towns		**7 863.942**	**7 854.163**	**7 548.106**	**8 525.646**	**8 244.616**	**8 210.659**

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.

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	60%	60%
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	-	-	-
The abstraction IS recorded	Yes	100%	100%
The abstraction IS NOT recorded	-	-	-

The water quality of most of the water distribution systems in Overstrand Municipality is "Excellent". 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)**	
	19/20	**18/19**	**19/20**	**18/19**	**19/20**	**18/19**
Buffels River						
Acute Health Microbiological	No (Excellent)	No (Good)	98.4%	96.3%	-	-
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)	99.0%	99.7%	-	-
Operational Efficiency	Yes (Unacceptable)	Yes (Unacceptable)	83.5%	79.4%	Monthly	Monthly
Kleinmond						
Acute Health Microbiological	No (Excellent)	No (Excellent)	100.0%	98.9%	-	-
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)	94.7%	96.5%	-	-
Greater Hermanus						
Acute Health Microbiological	No (Excellent)	No (Excellent)	99.1%	98.2%	-	-
Acute Health Chemical	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Chronic Health	No (Excellent)	No (Excellent)	99.7%	100.0%	-	-
Aesthetic	No (Excellent)	No (Excellent)	98.5%	97.7%	-	-
Operational Efficiency	No (Excellent)	No (Excellent)	98.7%	98.3%	-	-
Stanford						
Acute Health Microbiological	No (Excellent)	No (Excellent)	98.9%	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)	98.7%	98.6%	-	-
Greater Gansbaai						
Acute Health Microbiological	Yes (Unacceptable)	No (Excellent)	94.5%	98.7%	Monthly	-
Acute Health Chemical	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-

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)	
	19/20	18/19	19/20	18/19	19/20	18/19
Chronic Health	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Aesthetic	No (Excellent)	No (Excellent)	99.0%	100.0%	-	-
Operational Efficiency	Yes (Unacceptable)	No (Good)	89.7%	92.4%	Monthly	-
Pearly Beach						
Acute Health Microbiological	No (Excellent)	No (Excellent)	100.0%	98.9%	-	-
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%	99.6%	-	-
Operational Efficiency	No (Excellent)	No (Excellent)	100.0%	99.7%	-	-
Baardskeerdersbos						
Acute Health Microbiological	No (Excellent)	No (Excellent)	98.8%	100.0%	-	-
Acute Health Chemical	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Chronic Health	No (Excellent)	No (Excellent)	99.2%	97.7%	-	-
Aesthetic	No (Excellent)	Yes (Unacceptable)	93.2%	87.1%	-	Quarterly
Operational Efficiency	No (Good)	Yes (Unacceptable)	91.1%	84.6%	-	Monthly
Buffeljags Bay						
Acute Health Microbiological	No (Excellent)	No (Excellent)	98.6%	98.6%	-	-
Acute Health Chemical	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Chronic Health	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Aesthetic	Yes (Unacceptable)	Yes (Unacceptable)	82.9%	79.6%	Quarterly	Quarterly
Operational Efficiency	No (Excellent)	No (Excellent)	97.3%	97.1%	-	-

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 2019 to June 2020.

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)**	**Number of monthly E.Coli samples taken by Municipality during 2019/2020**
Buffels River	3 180	2	10.42
Kleinmond	8 077	2	6.67
Greater Hermanus	67 054	13.4	18.08
Stanford	5 894	2	6.92
Greater Gansbaai	19 524	3.9	20.58
Pearly Beach	1 237	2	6.83
Baardskeerdersbos	127	2	6.58
Buffeljags Bay	153	2	5.42

It can be noted from the previous table that the number of monthly E.Coli samples taken by the Municipality during the 2019/2020 financial year was far more than the required number of samples for all the water distribution systems.

Effluent quality: 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	2019/2020	2018/2019	2017/2018
Kleinmond	100.0%	83.3%	100.0%
Hawston	100.0%	100.0%	100.0%
Hermanus	100.0%	100.0%	100.0%
Stanford	91.7%	91.7%	91.7%
Gansbaai	91.7%	100.0%	91.7%
Pearly Beach	81.8%	-	-
Total	**95.7%**	**95.0%**	**96.7%**

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

WWTW	2019/2020					2018/2019					2017/2018				
	Ammonia	Nitrites & Nitrates	COD	Ortho Phosphate	Overall	Ammonia	Nitrites & Nitrates	COD	Ortho Phosphate	Overall	Ammonia	Nitrites & Nitrates	COD	Ortho Phosphate	Overall
Kleinmond	25.0%	100.0%	66.7%	100.0%	**72.9%**	50.0%	100.0%	91.7%	100.0%	**85.4%**	41.7%	91.7%	100.0%	100.0%	**83.3%**
Hawston	83.3%	100.0%	91.7%	100.0%	**93.8%**	83.3%	100.0%	100.0%	100.0%	**95.8%**	83.3%	100.0%	83.3%	100.0%	**91.7%**
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%	100.0%	100.0%	**100.0%**
Stanford	83.3%	100.0%	83.3%	83.3%	**87.5%**	91.7%	100.0%	100.0%	100.0%	**97.9%**	91.7%	41.7%	91.7%	91.7%	**79.2%**
Gansbaai	100.0%	100.0%	100.0%	100.0%	**100.0%**	100.0%	91.7%	100.0%	100.0%	**97.9%**	91.7%	100.0%	100.0%	100.0%	**97.9%**
Pearly Beach	90.9%	100.0%	0.0%	100.0%	**72.7%**	-	-	-	-	-	-	-	-	-	-
All WWTWs	**80.3%**	**100.0%**	**74.6%**	**97.2%**	**88.0%**	**85.0%**	**98.3%**	**98.3%**	**100.0%**	**95.4%**	**81.7%**	**86.7%**	**95.0%**	**98.3%**	**90.4%**

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

WWTW	2019/2020				2018/2019				2017/2018			
	pH	Electrical Conductivity	Total Suspended Solids	Overall	pH	Electrical Conductivity	Total Suspended Solids	Overall	pH	Electrical Conductivity	Total Suspended Solids	Overall
Kleinmond	100.0%	100.0%	58.3%	**86.1%**	100.0%	100.0%	100.0%	**100.0%**	100.0%	100.0%	91.7%	**97.2%**
Hawston	100.0%	25.0%	83.3%	**69.4%**	100.0%	50.0%	100.0%	**83.3%**	100.0%	58.3%	91.7%	**83.3%**
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%	83.3%	75.0%	**86.1%**	100.0%	100.0%	100.0%	**100.0%**	100.0%	100.0%	91.7%	**97.2%**
Gansbaai	100.0%	58.3%	100.0%	**86.1%**	100.0%	83.3%	100.0%	**94.4%**	100.0%	91.7%	100.0%	**97.2%**
Pearly Beach	63.6%	0.0%	18.2%	**27.3%**	-	-	-	-	-	-	-	-
All WWTWs	**95.2%**	**62.0%**	**73.2%**	**76.5%**	**100.0%**	**86.7%**	**100.0%**	**95.6%**	**100.0%**	**90.0%**	**95.0%**	**95.0%**

Industrial Consumers: The Municipality is currently busy with the updating of their Water Supply and Sanitation Services By-law. The updating include 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 regularly liaise with the industrial consumers with regard to the quality of final effluent discharged by them. Industrial effluent quality sample results are received by the Municipality for the abalone farm and the wine cellars that discharge effluent in the Municipality's sewer system.

TOPIC 7: FINANCIAL

Capital Budget: The table below gives an overview of Overstrand Municipality's historical water and sewerage capital expenditure over the last nine 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
2011/2012	R71 859 060	R57 332 947	79.79%	R29 101 193	R26 040 258	89.48%
2012/2013	R56 878 743	R48 633 690	85.50%	R17 877 374	R16 342 067	91.41%
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%

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.

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

Service	Expenditure / Income	Actual 19/20	Actual 18/19	Actual 17/18	Actual 16/17	Actual 15/16
Water	Expenditure	R128 656 376	R117 615 148	R115 139 624	R103 668 318-50	R105 388 386-73
	Income	R153 663 169	R145 980 226	R123 749 823	R121 632 409-97	R117 279 277-35
	Surplus / (Deficit)	**R25 006 793**	**R28 365 078**	**R8 610 199**	**R17 964 091-47**	**R11 890 890-62**
Sanitation	Expenditure	R94 725 991	R86 438 364	R79 310 459	R67 828 646-82	R64 371 024-75
	Income	R98 447 712	R104 583 319	R83 627 554	R82 291 447-63	R77 211 013-42
	Surplus / (Deficit)	**R3 721 721**	**R18 144 955**	**R4 317 095**	**R14 462 800-81**	**R12 839 988-67**

Tariff and Charges: The first six (6) kl of water is provided free to all indigent consumers. 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 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 consumers who use up to six (6) 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 graph A.7.1 (Normal residential water tariffs).

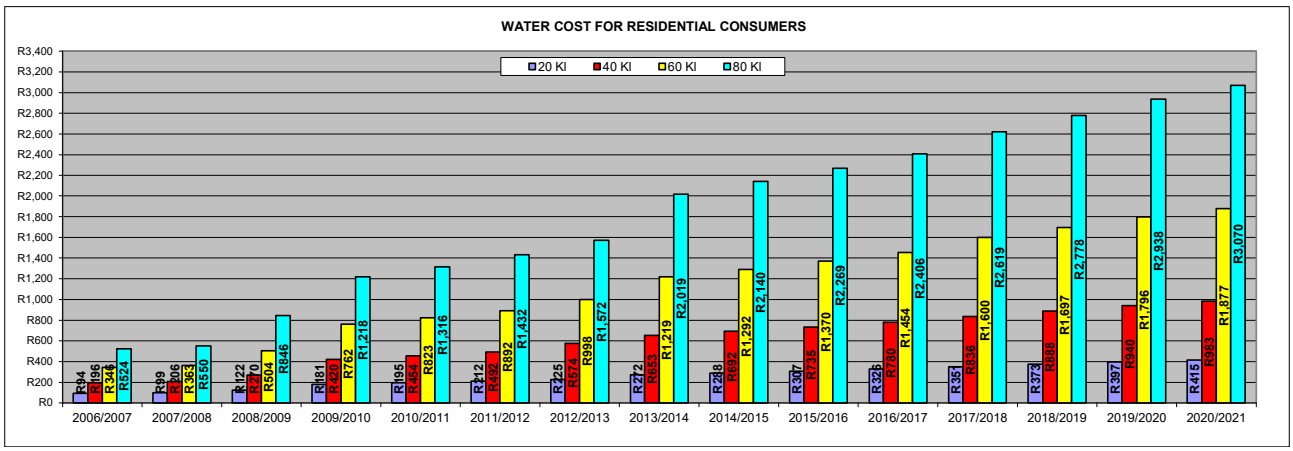


Figure A.7.1: Water Cost for Residential Consumers

The water tariff structures for Overstrand Municipality for the 2020/2021 financial year and the previous four financial years are summarised in the table below (Subject to 15% VAT).

Table A.7.3: Water Tariffs

Consumer / Description	Tariff Code	Category		20/21	19/20	18/19	17/18	16/17
Consumer Deposits	WD1	Domestic Water		R620-76	R594-03	R562-00	R530-00	R500-00
	WD2	Commercial Water Cons. < 40 kl		R2 483-07	R2 376-14	R2 248-00	R2 120-00	R2 000-00
	WD3	Commercial Water Cons 40 – 100 kl		R8 688-51	R8 314-36	R7 866-00	R7 420-00	R7 000-00
	WD4	Commercial Water Cons. 100 kl +		R14 893-96	R14 252-59	R13 484-00	R12 720-00	R12 000-00
	WD5	Domestic – Water RUEs		Applicable RUE's x WD1A				
	WD6	Indigent Registered		R198-82	R190-26	R180-00	R169-60	R160-00
Basic Charge	W1A1	Basic Monthly Charge per erf/unit per month		R142-64	R136-50	R129-14	R121-83	R114-04
	W1A2A	Basic Monthly Charge: Residential Indigent as per paragraph A of the Indigent Policy erf/unit per month		R142-64	R136-50	-	-	-
	W1A2B	Basic Monthly Charge: Residential Indigent as per paragraph B, C & D of the Indigent Policy erf/unit per month		R129-14	R129-14	-	-	-
	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	-	-
	W1A3C	Subsidised Fixed Infrastructure Basic Charge per erf/unit per month – Registered Indigent Households		R8-41	R8-41	-	-	-
Consumption Households and Registered Indigent Households (0 - 6 kl subsidised for indigent households)	W1B1	Normal Tariff & Level 1 restrictions	0 – 6 kl per kl	R5-85	R5-60	R5-02	R4-50	R4-04
	W1B2		7 - 18 kl per kl	R11-99	R11-47	R10-85	R10-24	R9-66
	W1B3		19 – 30 kl per kl	R19-45	R18-61	R17-61	R16-61	R15-67
	W1B4		31 – 45 kl per kl	R29-95	R28-66	R27-11	R25-57	R24-13
	W1B5		46 - 60 kl per kl	R38-89	R37-22	R35-21	R33-22	R31-35
	W1B6		> 60 kl per kl	R51-87	R49-64	R46-96	R44-30	R41-79
	W1B7	Restriction Tariff 1 (level 2 & 3 restrictions)	0 – 6 kl per kl	R5-85	R5-60	R5-02	R4-50	R4-04
	W1B8		7 – 18 kl per kl	R15-58	R14-91	R14-11	R13-31	R12-56
	W1B9		19 - 30 kl per kl	R25-28	R24-19	R22-89	R21-59	R20-38
	W1B10		31 - 45 kl per kl	R38-93	R37-25	R35-24	R33-25	R31-37
	W1B11		46 - 60 kl per kl	R53-43	R51-13	R48-37	R43-19	R40-75
	W1B12		> 60 kl	R71-25	R68-18	R64-50	R57-59	R54-33
	W1B13	Restriction Tariff 2 (level 4 & 5 restrictions)	0 – 6 kl per kl	R5-85	R5-60	R5-02	R4-50	R4-04
	W1B14		7 – 18 kl per	R19-20	R18-37	R17-38	R16-39	R15-46
	W1B15		19 - 30 kl per kl	R31-13	R29-79	R28-18	R26-58	R25-08
	W1B16		31 - 45 kl per kl	R47-91	R45-85	R43-38	R40-92	R38-61
	W1B17		46 - 60 kl per kl	R65-77	R62-94	R59-55	R53-17	R50-16
	W1B18		> 60 kl	R87-68	R83-90	R79-38	R70-88	R66-87
	W1B19	Restriction Tariff 3 (level 6 restrictions)	0 – 6 kl per kl	R5-85	R5-60	R5-02	R4-50	R4-04
	W1B20		7 – 18 kl per kl	R25-34	R24-25	R22-94	R20-48	R19-33
	W1B21		> 18 kl per kl	R109-61	R104-89	R99-23	R88-59	R83-58
Consumption – All other	W1C1	Normal Tariff & Level 1 restrictions	0 – 18 kl per kl	R13-26	R12-69	R12-01	R11-33	R10-69
	W1C2		19 -30 kl per kl	R19-45	R18-61	R17-61	R16-61	R15-67
	W1C3		31 – 45 kl per kl	R29-95	R28-66	R27-11	R25-57	R24-13
	W1C4		46 – 60 kl per kl	R38-89	R37-22	R35-21	R33-22	R31-35
	W1C5		> 60 kl per kl	R51-87	R49-64	R46-96	R44-30	R41-79
	W1C6	Restriction Tariff 1 (level 2 & 3 restrictions)	0 – 18 kl per kl	R17-24	R16-50	R15-61	R14-73	R13-90
	W1C7		19 – 30 kl per kl	R25-28	R24-19	R22-89	R21-59	R20-38
	W1C8		31 - 45 kl per kl	R38-93	R37-25	R35-24	R33-25	R31-37
	W1C9		46 - 60 kl per kl	R53-44	R51-14	R48-38	R43-20	R40-75
	W1C10		> 60 kl	R71-24	R68-17	R64-49	R57-58	R54-33

Table A.7.3: Water Tariffs								
Consumer / Description	**Tariff Code**	**Category**		**20/21**	**19/20**	**18/19**	**17/18**	**16/17**
	W1C11	Restriction Tariff 2 (level 4 & 5 restrictions)	0 – 18 kl per kl	R21-23	R20-32	R19-22	R18-13	R17-11
	W1C12		19 - 30 kl per kl	R31-13	R29-79	R28-18	R26-58	R25-08
	W1C13		31 - 45 kl per kl	R47-91	R45-85	R43-38	R40-92	R38-61
	W1C14		46 - 60 kl per kl	R65-77	R62-94	R59-55	R53-17	R50-16
	W1C15		> 60 kl	R87-68	R83-90	R79-38	R70-88	R66-87
	W1C16	Restriction Tariff 3 (level 6 restrictions)	0 – 10 kl per kl	R26-53	R25-39	R24-02	R22-66	R21-38
	W1C17		> 10 kl per kl	R109-61	R104-89	R99-23	R88-59	R83-58
Other Consumers	W1D1	Departmental per kl		R24-86	R23-39	R21-63	R18-42	R18-42
	W1D2	Fire Hoses: Basic per month		R181-53	R173-71	R164-34	R155-04	R145-61
	W1D3	Bulk usage (Unconnected to networks) per kl		R14-68	R14-05	R13-29	R12-54	R11-75
	W1D3A	Restriction Tariff 1 (level 2 & 3 water restrictions)		R19-09	R18-27	-	-	-
	W1D3B	Restriction Tariff 2 (level 4 & 5 water restrictions)		R23-28	R22-28	-	-	-
	W1D3C	Restriction Tariff 3 (level 6 water restrictions)		R29-39	R28-10	-	-	-
	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)		R1-11	R1-11	R1-05	R1-05	R1-05
	W1D7	Contractors water consumption – temporary connection		R24-86	R23-39	R21-63	R18-42	R18-42
	W1D8	Bulk usage (Unconnected to networks) per Kl - People residing outside the Overstrand municipal area		R54-45	R52-11	R49-30	-	-
	W1D8A	Restriction Tariff 1 (level 2 & 3 restrictions)		R70-79	R67-74	R64-09	-	-
	W1D8B	Restriction Tariff 2 (level 4 & 5 restrictions)		R87-13	R83-38	R78-88	-	-
	W1D8C	Restriction Tariff 3 (level 6 restrictions)		R108-91	R104-22	R98-60	-	-
Wet Commercial, Sport, Parks etc. (must apply for this tariff)	W1E1	Normal Tariff & Level 1 restrictions	0 – 500 kl per kl	R19-30	R18-47	R17-47	R16-48	R15-53
	W1E2		501 – 1 000 kl per kl	R29-18	R27-92	R26-41	R24-92	R23-51
	W1E3		> 1 000 kl per kl	R38-91	R37-23	R35-22	R33-23	R31-35
	W1E4	Restriction Tariff 1 (level 2 & 3 restrictions)	0 – 300 kl per kl	R25-10	R24-02	R22-72	R21-44	R20-19
	W1E5		301 – 700 kl per kl	R37-92	R36-29	R34-33	R32-39	R30-56
	W1E6		> 700 kl per kl	R50-58	R48-40	R45-79	R43-20	R40-75
	W1E7	Restriction Tariff 2 (level 4 & 5 restrictions)	0 – 250 kl per kl	R30-88	R29-55	R27-96	R26-38	R24-85
	W1E8		251 – 500 kl per kl	R46-68	R44-67	R42-26	R39-87	R37-61
	W1E9		> 500 kl per kl	R62-24	R59-56	R56-35	R53-16	R50-16
	W1E10	Restriction Tariff 3 (level 6 restrictions)	0 – 100 kl per kl	R38-60	R36-94	R34-95	R32-97	R31-06
	W1E11		>100 kl per kl	R77-81	R74-46	R70-44	R66-46	R62-70
Wet Industry (Marine etc, must apply for this tariff) (Average of 100kl per day over prev. 365 days)	W1F1	Normal Tariff & Level 1 restrictions	1 – 5 800 kl per kl	R20-11	R19-24	R18-20	R17-17	R16-20
	W1F2		> 5 800 kl per kl	R38-91	R37-23	R35-22	R33-23	R31-35
	W1F3	Restriction Tariff 1 (level 2 & 3 restrictions)	1 – 5 800 kl per kl	R26-14	R25-01	R23-66	R22-32	R21-06
	W1F4		> 5 800 kl per kl	R50-58	R48-40	R45-79	R43-20	R40-75
	W1F5	Restriction Tariff 2 (level 4 & 5 restrictions)	1 – 5 800 kl per kl	R32-17	R30-78	R29-12	R27-48	R25-92
	W1F6		> 5 800 kl per kl	R62-24	R59-56	R56-35	R53-16	R50-16

Table A.7.3: Water Tariffs								
Consumer / Description	**Tariff Code**	**Category**		**20/21**	**19/20**	**18/19**	**17/18**	**16/17**
	W1F7	Restriction Tariff 3 (level 6 restrictions	1 – 5 800 kl per kl	R40-20	R38-47	R36-40	R34-34	R32-40
	W1F8		> 5 800 kl per kl	R77-81	R74-46	R70-44	R66-46	R62-70
Availability Charges	W2A1	Overstrand per month		R142-64	R136-50	R129-14	R121-83	R114-04
	W2A2	Farms connected to water pipeline		R142-64	R136-50	R129-14	R121-83	R114-04
Rebates (Granted by Municipal Manager after application)	W2J1	Kl above average – per kl		R24-86	R23-39	R21-63	R18-42	R18-42
Irrigation Water (Leiwater) & Raw Water	W3A1	Use and pump water (80-90min) per month Stanford		R43-60	R41-72	R39-47	R37-20	R35-09
	W3A2	Pearly Beach Small Holdings: Basic		R53-20	R50-91	R48-16	R45-39	R42-98
	W3A3	Pearly Beach Small Holdings: Consumption 0 – 70 kl per kl		R4-16	R3-98	R3-77	R3-55	R3-35
	W3A4	Pearly Beach Small Holdings: Consumption > 70 kl per kl		R9-74	R9-32	R8-82	R8-30	R7-81
	W3A5	Others		R4-16	R3-98	R3-77	R3-55	R3-35
	W3A6	Farm 1/722 Stanford as per agreement 1.75% of raw water abstraction from municipal boreholes, max 8760 kl/a		R0-00	R0-00	R0-00	R0-00	R0-00
	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		R3-92	R3-75	R3-55	R3-55	R3-33
Irrigation Water (Treated Effluent)	W3B2	Hermanus Golf Club per month		R47 325-57	R45 289-63	R42 847-33	R40 422-01	R37 954-39
	W3B3	All other per kl		R2-66	R2-55	R2-41	R2-27	R2-19
	W3B4	Schools, municipal sports grounds & 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		R2-66	R2-55	R2-41	R2-27	R2-19
Sundry Charges	W4A1	Testing of a meter (Call-out fee incl.)		R953-04	R912-17	R862-61	R813-59	R767-54
	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		R432-17	R413-91	R391-30	R369-14	R348-25
	W4A4	Reconnection		R432-17	R413-91	R391-30	R369-14	R348-25
	W4A5	Reconnection after normal working hrs		R864-35	R826-96	R782-61	R737-35	R695-61
	W4A6	Administration fee – recalculation due to no meter access		R168-70	R161-74	R153-04	R144-12	R135-97
	W4A7	Verification of a meter reading		R236-52	R226-09	R213-91	R201-77	R190-35
	W4A8	Final and special readings		R216-52	R206-96	R195-65	R184-10	R173-68
	W4A9	Call-out fee – Normal working hrs		R431-30	R413-04	R390-44	R368-21	R347-37
	W4A10	Call-out fee – After hrs		R863-48	R826-09	R781-74	R737-35	R695-61
	W4A11	Replacement of damage meter		R1 159-13	R1 109-57	R1 049-57	R990-00	-
	W4A12	Removal of Meter (based on call out fee)		R953-04	R912-17	R862-61	-	-
	W4A13	Registration of Borehole		R323-48	R309-57	R293-04	R276-16	R260-53
	W4A14	Repositioning of Meter (Excl. pipe)		R948-70	R907-83	R859-13	R809-88	R764-04
	W4A15	Convert to water flow restrictor meter		R3 089-57	R2 956-52	R2 797-39	R2 638-84	R2 489-47
	W4A16	Temporary connections – deposit		R8 130-00	R7 780-00	R7 360-00	R6 944-06	R6 551-00
	W4A17	Temporary connection – usage per kl		R24-35	R23-39	R18-96	R13-02	R12-28

Table A.7.3: Water Tariffs							
Consumer / Description	**Tariff Code**	**Category**	**20/21**	**19/20**	**18/19**	**17/18**	**16/17**
	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 R3 268-00	Actual cost plus R3 127-07	Actual cost plus R2 958-44	Actual cost plus R2 790-98	Actual cost plus R2 633-00
	W4A20	Damage of Service Connection (including water meter)	Actual cost plus R859-00	Actual cost plus R822-02	Actual cost plus R777-69	Actual cost plus R697-48	Actual cost plus R658-00
Illegal Connection / Tampering Fee	W5A1	1st Offence	R7 212-00	R6 901-00	R6 529-00	R6 158-60	R5 810-00
	W5A2	2nd Offence – Must convert to a flow-restriction water meter at applicable tariff	R8 462-00	R8 098-00	R7 661-00	R7 227-08	Restricted Access
	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	-
Connection Fee	W6A1	20mm Connection Conventional Meter	R5 283-48	R5 055-65	R4 782-61	R4 511-51	R4 256-14
	W6A2	20 mm Connection Water Flow Restrictor Meter	R6 273-91	R6 003-48	R5 680-00	R5 357-65	R5 054-39
	W6A3	Other Connections	Actual cost plus + 15%	Actual Cost + 15%	Actual Cost + 15%	Actual Cost + 15%	Actual Cost + 15%
	W6A4	Connections (Erf Boundary – by Dev.)	R1 373-91	R1 314-78	R1 243-48	R1 172-51	R1 106-14
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 2020/2021 financial year and the previous four financial years are summarised in the table below (Subject to 15% VAT).

Table A.7.4: Sewerage Tariffs							
Consumer / Description	**Tariff Code**	**Category**	**20/21**	**19/20**	**18/19**	**17/18**	**16/17**
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.	R14-32	R13-70	R12-96	R12-22	R11-54
	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	-	-	-	-
Sewerage – registered indigent households	SE7A4	0 – 4.2 kl – subsidised	R14-32	R13-70	R12-96	R12-22	R11-54
	SE7A5	4.3 – 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.	R14-32	R13-70	R12-96	R12-22	R11-54
Sewerage – General residential (Blocks of flats and residential buildings)	SE7B1	0 – 45kl per kl (based on 90% of 50 kl water usage) per unit per month.	R14-32	R13-70	R12-96	R12-22	R11-54
Sewerage – Guest house, bed & breakfast establishments	SE7C1	Per kl (based on 70% of water usage) per unit per month	R14-32	R13-70	R12-96	R12-22	R11-54
Consumption – All other (Including Commercial, Industrial, School, Sport, etc.)	SE7D1	Per kl (based on 90% of water usage) per unit per month – this percentage may be adjusted according to the Tariff Policy after investigation	R14-32	R13-70	R12-96	R12-22	R11-54

Table A.7.4: Sewerage Tariffs								
Consumer / Description	**Tariff Code**	**Category**		**20/21**	**19/20**	**18/19**	**17/18**	**16/17**
Consumption - Departmental	SE7E1	0 – 35 kl per kl (based on 70% of 50 kl water usage) per unit per month.		R14-32	R13-70	R12-96	R12-22	R11-54
Basic Charge	SE8A	Basic Monthly Charge Developed sites per erf/unit per month.		R127-12	R121-65	R115-09	R108-54	R102-63
	SE8A1	Basic Monthly Charge: Residential Indigent as per paragraph A of the Indigent Policy per month		R127-12	R121-65	-	-	-
	SE8A2	Basic Monthly Charge: Residential Indigent as per paragraph B, C & D of the Indigent Policy per month		R115-09	R115-09	-	-	-
	SE8B	Basic Monthly Charge Undeveloped sites – cannot connect to the network per erf/unit per month.		R85-65	R81-96	R77-54	R73-13	R69-30
	SE8C	Basic Monthly Charge Undeveloped sites – can connect to the network per erf/unit per month		R127-12	R121-65	R115-09	R108-54	R122-81
	SE8D	Basic Monthly Charge Developed sites – with a septic Tank per erf/unit per month		R85-65	R81-96	R77-54	R73-13	R69-30
	SE8E	Basic Monthly Charge – Low Cost Housing & Single Quarters per erf/unit per month		R85-65	R81-96	R77-54	R73-13	R69-30
	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	-	-
	SE8F3	Subsidised Fixed Infrastructure Basic Charge per erf/unit per month – Registered Indigent		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)	R584-75	R559-57	R529-39	R499-40	R471-05
	SE9A2		Vacuum Tanker service provided on request <5kl (per 5kl or part thereof)	R584-75	R559-57	R529-39	R499-40	R471-05
	SE9A4		Vacuum Tanker service provided on request >6kl (per 6kl or part thereof)	R584-75	R559-57	R529-39	R499-40	R471-05
	SE9A5		Call out fee for Tank Service request but no service due to another defect	R584-75	R559-57	R529-39	R499-40	R471-05
	SE9A6		More than 3 pipes an additional fee per pipe for users not paying tariff SE7 above	R85-65	R81-96	R77-54	R73-13	R69-30
	SE9B1	After Hours Vacuum Tanker Service – Provided on request	After hours per request < 6kl (per 6kl or part thereof)	R1 169-49	R1 119-13	R1 058-78	R998-80	R942-11
	SE9B2		After hours per request > 6kl (per 6kl or part thereof)	R1 169-49	R1 119-13	R1 058-78	R998-80	R942-11
	SE9B3		After hours per request < 5kl (per 5 kl or part thereof)	R1 169-49	R1 119-13	R1 058-78	R998-80	R942-11
	SE9B2		After hours businesses with Public Toilets per removal	R351-15	R336-03	R317-91	R299-83	R283-33
	SE9C1	Vacuum Tanker Service outside urban areas	Normal applicable Tariff (SE9A1 or SE9A2 or SE9A4) plus additional per hour plus SE9C2	R351-16	R336-03	R317-91	R299-83	R283-33

Table A.7.4: Sewerage Tariffs								
Consumer / Description	**Tariff Code**	**Category**		**20/21**	**19/20**	**18/19**	**17/18**	**16/17**
	SE9C2	– Provided on request	Normal applicable Tariff (SE9A1 or SE9A2 or SE9A4) plus additional per km	R17-14	R16-40	R15-52	R14-63	R13-82
	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	R351-15	R336-03	R317-91	R299-83	R283-33
	SE9C7		After hours applicable Tariff (SE9B1 or SE9B2 or SE9B3) plus additional per km	R17-14	R16-40	R15-52	R14-63	R13-82
	SE9D1	Testing and Connection Fees	Testing of septic and conservancy tanks per test	R1 521-74	R1 456-52	R1 377-39	R1 229-04	R1 225-44
	SE9D2		Small bore sewerage connection fee + tank test	R6 981-74	R6 680-87	R6 320-87	R5 962-97	R5 625-44
	SE9D3		Sewer connection	R5 231-30	R5 006-09	R4 736-52	R4 467-80	R4 214-91
	SE9E1	Disposal	Charge per kl or part thereof	R76-52	R73-04	R68-96	R65-05	R61-40
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		R7 175-00	R6 866-00	R6 495-00	R6 126-80	R5 780-00
	SE11B	2nd Offence (SE11A x 2)		R14 348-00	R13 730-00	R12 990-00	R12 253-60	R11 560-0

TOPIC 8: WATER SERVICES INSTITUTIONAL ARRANGEMENTS AND CUSTOMER SERVICES

Overstrand Municipality is the official WSA for the entire Municipal Management Area and also acts as the WSP for the whole area. Current water services are delivered by way of an internally operated and managed mechanism. A Water and Waste Water Bulk Works Contract commenced on the 8th of December 2018 between Overstrand Municipality and Veolia Water Solutions & Technologies South Africa (Pty) Ltd to operate and maintain the bulk water services 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 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 SDBIP is the process plan and performance indicator / evaluation for the execution of the budget. The SDBIP is being used as a management, implementation and monitoring tool that assists and guide the Executive Mayor, Councillors, Municipal Manager, Senior Managers and the community. The plan serves as an input to the performance agreements of the Municipal Manager and Directors. It also forms the basis for the monthly, quarterly, mid-year and the annual assessment report and performance assessments of the Municipal Manager and Directors.

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.

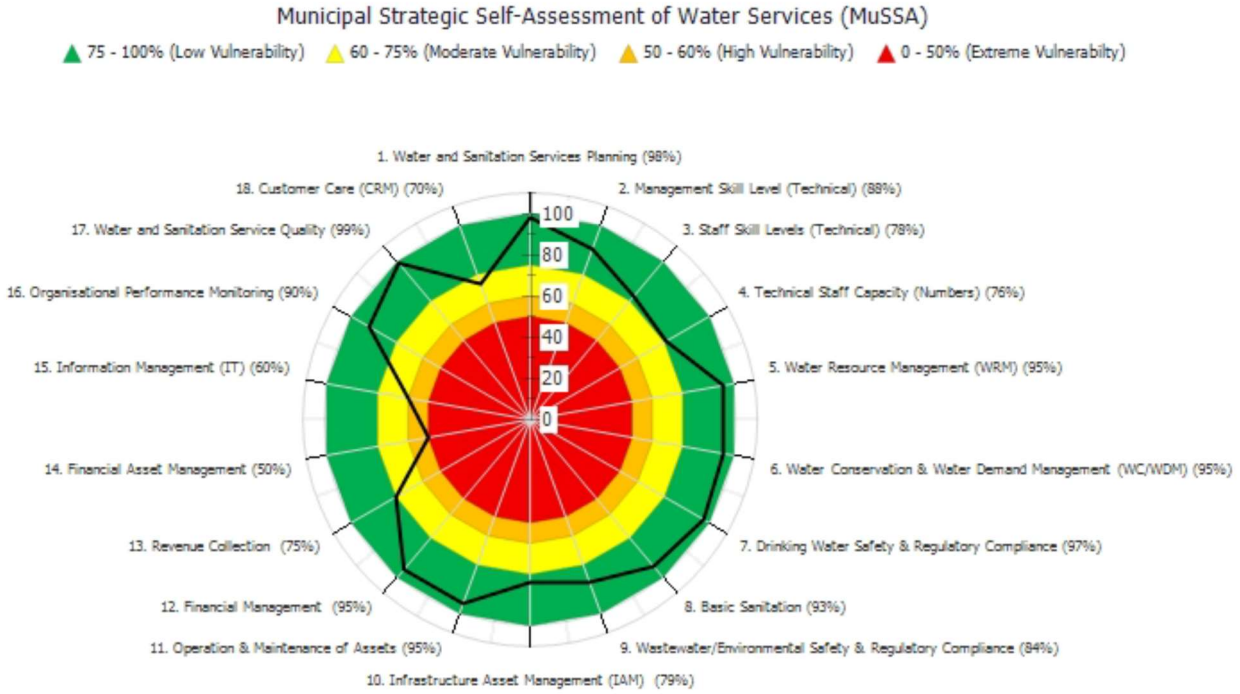


Figure A.8.1: Spider Diagram of the Vulnerability Levels of Overstrand Municipality for 2020

Overstrand Municipality's Vulnerability Index for 2020 was indicated as 0.23 "Low Vulnerability". The only area of concern evident from the 2020 assessment is Financial Asset Management (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.

The consumer services charter for water and sanitation include 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 resources.
- 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 waste water systems when the National Department continues with these programs.

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 or receiving the application and all prescribed requirements have been met;
- Clean up sewer overflows due to blockages in our 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; and
- Monitor and investigate abnormal high or low water consumption of consumers.

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.

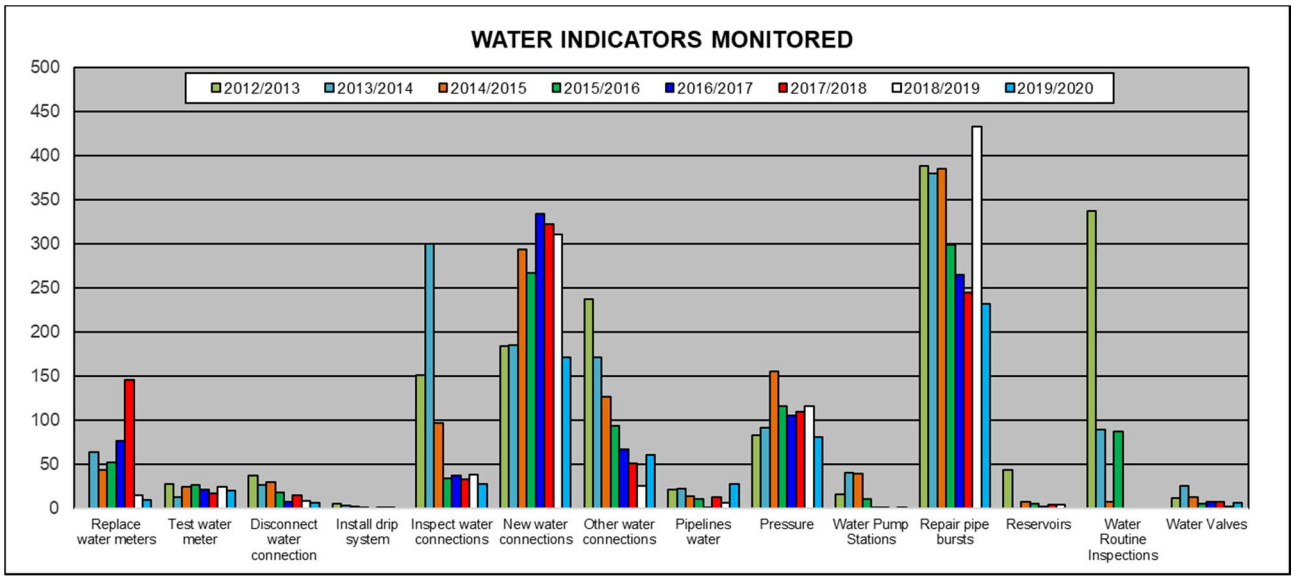


Figure A.8.2: Water Indicators Monitored by Overstrand Municipality

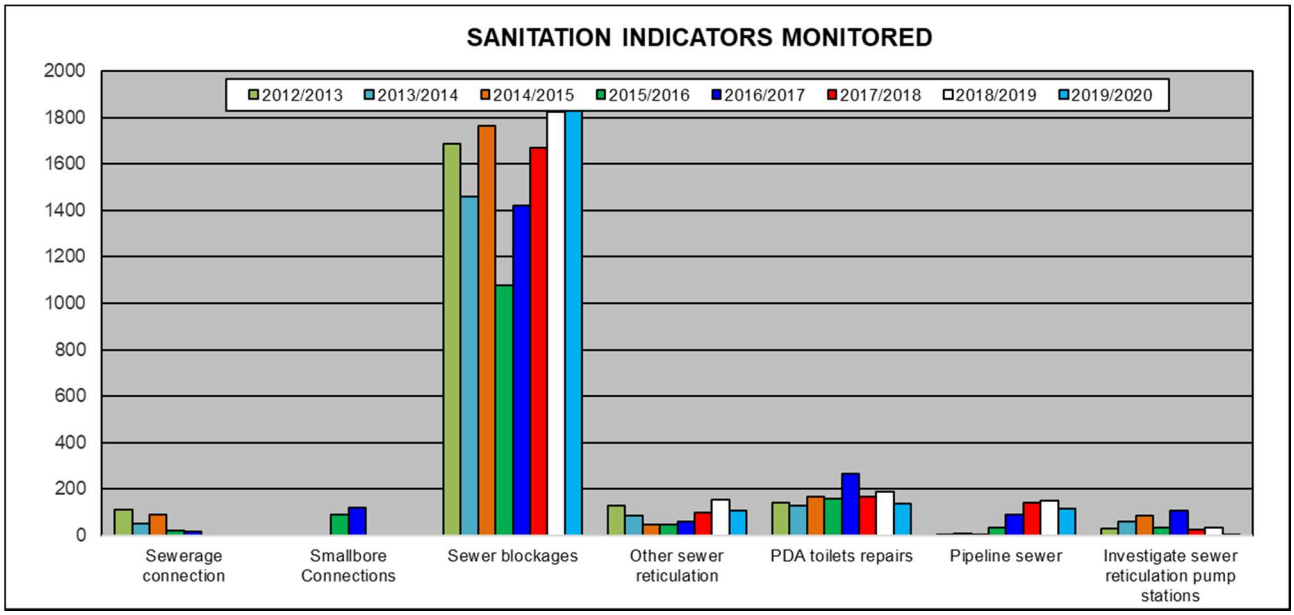


Figure A.8.3: Sanitation Indicators Monitored by Overstrand Municipality

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.

Table A.8.1: Water and Sanitation Indicators Monitored by Overstrand Municipality with regard to Customer Services and Maintenance Work

Service	Definition	All Areas				
		19/20	18/19	17/18	16/17	15/16
Sewerage connection	Provision of connection or inspection of existing connections	-	-	-	15	19
Smallbore Connections	Test new tanks smallbore	-	-	-	121	87
Sewer blockages	Repair blockages on main sewer pipelines up to connection points	1 828	1 823	1 668	1 421	1 078
Other sewer reticulation	Any other sewer reticulation inspections	106	152	99	58	47
PDA toilets repairs	Previously disadvantaged toilets repaired	137	188	165	263	159
Pipeline sewer	Installation of sewer pipelines or repair of pipelines	114	148	142	89	33
Investigate sewer reticulation pump stations	Work carried out at sewer pump stations	1	34	24	106	34

Table A.8.1: Water and Sanitation Indicators Monitored by Overstrand Municipality with regard to Customer Services and Maintenance Work						
Service	**Definition**	**All Areas**				
		19/20	**18/19**	**17/18**	**16/17**	**15/16**
Replace water meters	Replace water meters	9	15	146	77	52
Test water meter	Testing of water meter for accuracy	20	24	17	21	26
Disconnect water connection	Disconnect supply	6	8	15	7	18
Install drip system	Installation and inspection of drip systems	-	1	1	-	1
Inspect water connections	Inspect connections	28	38	33	37	34
New water connections	New water connections	171	311	322	334	267
Other water connections	Inspections and work carried out at water connections	61	25	51	67	94
Pipelines water	Installation or repair of water pipelines	28	6	13	1	10
Pressure	Complaints with regard to pressure in the system	81	116	110	105	116
Water Pump Stations	Inspections and work carried out at water pump stations.	1	-	1	1	10
Repair pipe bursts	Repair of burst water pipelines	232	433	245	265	299
Reservoirs	Inspection of reservoirs and work carried out at reservoirs	-	4	4	2	5
Water Routine Inspections	Any water related inspections	-	-	-	-	87
Water Valves	Inspection of valves and work carried out on valves	6	2	7	7	5

DWS's Blue Drop Process

The DWS launched the blue and green drop certification, with regard to drinking water quality and wastewater quality management, at the Municipal Indaba during September 2008. Blue drop status is awarded to those towns that comply with 95% criteria on drinking water quality management. The Blue Drop Certification programme is in its eleventh year of existence and promised to be the catalyst for sustainable improvement of South African drinking water quality management in its entirety. The blue drop performance of Overstrand Municipality is summarised as follows in the DWS's 2014 Blue Drop Report (last assessment):

Table A.8.2: Blue Drop Performance of the Municipality (DWS's 2014 Blue Drop Report)

Municipal Blue Drop Score	2011 – 90.56%, 2012 – 96.82% and 2014 - 90.79%

Regulatory Impression: The Overstrand Local Municipality team was well prepared and demonstrated their commitment to the Blue Drop assessment and water quality excellence. The Municipality is to be congratulated for obtaining Blue Drop status for the Greater Hermanus system. A decreased municipal score was however achieved during this assessment. The reason for the observed decrease in compliance includes:

- Full compliance with the requirements of SANS 241 with regard to monitoring and analysis could not be demonstrated. No chemical determinants have been analysed in the reticulation network to monitor the chemical quality of water provided to the consumer and identify any potential health impacts. In addition, the frequency of analysis does not comply with the requirements for the final water produced at treatment facilities receiving surface water or within the reticulation network. The Municipality however confirmed that subsequent to the assessment that a service provider has been appointed to implement a risk based monitoring programme that fully complies with the requirements of SANS 241, sampler training and uploading of analytical data to the BDS.
- Detailed annual process audits could not be demonstrated that assessed the performance of the treatment systems and each process unit with the design capacity of the plant. Recommendations should be incorporated into the review process of water safety plan.
- Poor microbiological compliance was observed in the Baardskeerdersbos system. This should be mitigated when the new plant to treat borehole water is commissioned in August 2014.

Significant progress has been made by the municipality with regard to WC/WDM and projects have been ongoing for the last three years. Good baseline information and a formal strategy are available that enables the municipality to make informed decisions regarding ongoing planning to minimise non-revenue water.

It is anticipated that the identified gaps will be addressed by the Overstrand Local Municipality and that an upward trend towards Blue Drop compliance will once again be achieved in the next assessment.

Based on the Audit results, the DWS has serious concerns on the poor microbiological drinking water quality and the resultant risk to consumers of the Baardskeerdersbos water supply system. These concerns have to be addressed as a matter of urgency and drinking water quality results and appropriate actions must be communicated to consumers should the water be found to be unfit for human consumption.

Site Inspection (Preekstoel WTW (88%) and Buffels River WTW (90%)): The site inspection impression at the **Preekstoel WTW** was considered to be good. A number of drinking water quality management practices still require attention, including:

1. A flow chart was displayed of the incident management protocol that indicates roles and responsibilities but alert levels were not included.
2. Records of the results of the jar tests that are routinely undertaken could not be provided.
3. Emergency shower and eye wash facilities were not located at the chemical dosing room.
4. Manual post dosing of lime was being undertaken at the time of the assessment due to equipment failure. This was to be repaired as part of the maintenance contract with an external service provider. Standby equipment was not installed.
5. Standby chlorine dosing equipment is not installed.

The site inspection impression at the **Buffels River WTW** was considered to be good. A number of drinking water quality management practices still require attention, including:

1. A flow chart was displayed of the incident management protocol that indicates roles and responsibilities but alert levels were not included.
2. The original O&M manual for the WTW is not available. Standard operating procedures have been compiled.
3. Records of jar tests undertaken by the service provider could not be provided.
4. Chemical tanks are not contained within a bounded area.
5. Standby chlorine dosing equipment is not installed.
6. Standby air compressor is not installed.

Table A.8.2: Blue Drop Performance of the Municipality (DWS's 2014 Blue Drop Report)								
Performance Area	**Baardskeerdersbos**	**Buffeljags Bay**	**Buffels River**	**Greater Gansbaai**	**Greater Hermanus**	**Kleinmond**	**Pearly Beach**	**Stanford**
Water Services Provider(s)	Overstrand LM	Overstrand LM	Overstrand LM	Overstrand LM	Overstrand LM	Overstrand LM	Overstrand LM	Overstrand LM
Water Safety Planning	29.75	23.54	33.43	31.50	33.43	31.15	24.59	29.75
Treatment Process Management	4.28	5.60	4.00	6.80	8.00	6.40	6.80	4.70
DWQ Compliance	0.00	15.75	23.25	23.25	29.60	23.25	29.60	30.00
Management Accountability	8.95	8.20	9.25	9.25	9.25	9.25	9.25	9.25
Asset Management	8.72	9.24	11.03	10.50	11.90	10.29	10.29	11.38
Use Efficiency, Loss Management	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Bonus Scores	9.17	6.50	3.25	4.00	1.27	3.25	3.83	2.86
Penalties	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue Drop Score (2014)	**63.87%**	**71.83%**	**87.20%**	**88.30%**	**96.44%**	**86.59%**	**87.35%**	**90.94%**
Blue Drop Score (2012)	91.6%	93.8%	95.0%	97.1%	97.9%	95.0%	95.2%	92.7%
Blue Drop Score (2011)	93.7%	75.4%	95.1%	95.1%	87.2%	93.1%	94.3%	95.2%
Blue Drop Score (2010)	Not Assessed	Not Assessed	63.83%	63.81%	75.31%	60.06%	Not Assessed	Not Assessed
System Design Capacity (Ml/d)	0.150	0.100	5.500	7.100	28.000	5.800	1.400	1.500
Operational Capacity (% i.t.o. Design)	100%	105%	44%	100%	29%	39%	100%	57%
Average daily consumption (l/p/d)	655.0	310.3	803.4	445.9	192.4	230.1	1605.4	159.9
Microbiological Compliance (%)	**90.0%**	**95.5%**	**99.9%**	**99.9%**	**98.9%**	**99.9%**	**99.9%**	**99.9%**
Chemical Compliance (%)	**92.0%**	**99.9%**	**96.4%**	**96.1%**	**96.4%**	**96.4%**	**99.9%**	**96.4%**

Overstrand Municipality achieved overall 3rd position from the twenty five (25) municipalities in the Western Cape in the 2014 Blue Drop Report and the Greater Hermanus system obtained the highest Blue Drop score (96.44%) of all 122 water systems in the Western Cape.

Table A.8.3: DWS's 2014 Blue Drop Risk Ratings for the Various Towns								
Municipal Blue Drop Risk Rating								**41%**
The overall 2014 Risk Rating for Overstrand LM is 41% which translates into the 10th best performance in the Western Cape. Note that this value is based on the 3 specific areas indicated below and shows concerns (medium to critical risks) for Process Control (which risks reflect compliance in terms of draft Regulation 813) in 6 of the 8 systems; Drinking Water Quality in 2 out of the 8 systems; and Risk Management in none of 8 systems.								
Assessment Area	**Baardskeerdersbos**	**Buffeljags Bay**	**Buffels River**	**Greater Gansbaai**	**Greater Hermanus**	**Kleinmond**	**Pearly Beach**	**Stanford**
2014								
Blue Drop Risk Rating (2014)	**47.2%**	**60.1%**	**57.3%**	**57.6%**	**17.2%**	**57.3%**	**56.1%**	**27.1%**
Process Control RR	55.6%	71.1%	64.1%	74.4%	34.1%	64.1%	71.1%	40.5%
Drinking Water Quality RR	70.4%	55.6%	40.7%	40.7%	25.9%	40.7%	11.1%	11.1%
Risk Management RR	17.4%	26.1%	13.0%	26.1%	17.4%	13.0%	26.1%	13.0%

Table A.8.3: DWS's 2014 Blue Drop Risk Ratings for the Various Towns								
Municipal Blue Drop Risk Rating								41%
2013								
Blue Drop Risk Rating (2013)	**20.6%**	**12.2%**	**12.5%**	**12.7%**	**13.5%**	**12.5%**	**12.7%**	**15.6%**
Process Control RR	22.2%	17.6%	28.2%	34.9%	31.7%	28.2%	26.3%	29.7%
Drinking Water Quality RR	55.6%	11.1%	11.1%	11.1%	14.8%	11.1%	11.1%	11.1%
Risk Management RR	13.0%	13.0%	13.0%	13.0%	17.4%	13.0%	13.0%	13.0%
2012								
Blue Drop Risk Rating (2012)	**75.5%**	**52.7%**	**72.1%**	**76.7%**	**78.1%**	**72.1%**	**83.5%**	**64.9%**
Process Control RR	77.8%	76.5%	79.5%	79.5%	80.5%	79.5%	78.9%	83.8%
Drinking Water Quality RR	11.1%	11.1%	11.1%	40.7%	11.1%	11.1%	11.1%	11.1%
Risk Management RR	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%

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

Table A.8.4: Average Residential Daily Consumption (l/p/d) for the Last Four Financial Years.												
Distribution System	**2016/2017**			**2017/2018**			**2018/2019**			**2019/2020**		
	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)**	**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 consump-tion (l/p/d)**
Buffels River	2 815	805	**286**	2 932	724	**247**	3 053	743	**243**	3 180	797	**251**
Kleinmond	7 500	1 074	**143**	7 688	1 001	**130**	7 880	1 037	**132**	8 077	1 063	**132**
Greater Hermanus	58 843	7 141	**121**	61 462	6 566	**107**	64 197	6 189	**96**	67 054	6 376	**95**
Stanford	5 449	429	**79**	5 593	428	**77**	5 742	418	**73**	5 894	459	**78**
Greater Gansbaai	16 919	1 418	**84**	17 746	1 538	**87**	18 614	1 628	**87**	19 524	1 720	**88**
Pearly Beach	1 162	255	**219**	1 187	225	**190**	1 212	247	**204**	1 237	239	**193**
Baardskeerdersbos	125	18	**144**	126	18	**143**	126	17	**135**	127	20	**157**
Buffeljags Bay	151	7	**46**	151	7	**46**	152	8	**53**	153	8	**52**
All Systems	**92 964**	**11 147**	**120**	**96 885**	**10 508**	**108**	**100 976**	**10 288**	**102**	**105 246**	**10 682**	**101**

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 last Assessment of Municipal Waste Water Treatment Plants by DWS was published in DWS's Green Drop Report for 2013, which provided a scientific and verifiable status of municipal wastewater treatment. 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 2013 Green Drop Report.

Table A.8.5: Green Drop Performance of the Municipality (DWS's 2013 Green Drop Report)

Average Green Drop Score	2009 – 63.00%, 2011 – 88.80%, 2013 - 89.14%

Regulatory Impression: The Overstrand Local Municipality is to be congratulated with an outstanding performance and able presentation of their Portfolio of Evidence. The Inspection team were impressed with "*... the team's enthusiasm, expertise and knowledge of the wastewater business*." As result, Overstrand is awarded with four Green Drop Certificates. The overall management of all five systems is consistent and indicative of the personnel's dedication and discipline to wastewater management. Regrettable, the Kleinmond system did not perform on par with the other four systems, which weakened the municipal Green Drop score to 89.14%, just short of overall Green Drop award.

The points of strength include the high overall compliance of effluent quality, prominent risk abatement, and technical skilled staff with strong management support and involvement. The presence of the Finance department contributed to the positive score received for asset management and ring-fenced costing. The Hermanus WWTW is currently in the process of upgrading the works to 12 Ml/d. Monitoring programs should be revised to include sludge monitoring at all systems and to ensure sufficient sampling frequency where process upgrades have occurred.

Overall, Overstrand has managed to produce a polished Green Drop Performance. Overstrand is also one of very few municipalities that were using the opportunity to score against all the bonus criteria. Well done. The absolute consistency displayed in keeping all systems in low risk zones using the W_2RAP process, is commendable. Overstrand is an accomplished service provider in wastewater management, and deserves to be mentioned amongst the top performers in the Province.

Green Drop Findings:

1. Regulation 17 compliance need to receive attention.
2. Sea outfall monitoring frequency need to be revised for Hermanus.
3. Sludge monitoring and handling could improve going forward.
4. Some shortcomings are evident on process assessment which might possibly resolve some of the lower compliance to ammonia, EC, O-PO4, SS/COD at some plants, given that ample capacity exist at all plants.

GREEN DROP REPORT CARD

Key Performance Area	Hermanus	Hawston	Stanford	Gansbaai	Kleinmond
Process Control, Maintenance & Management Skill	**84**	**100**	**100**	**100**	**80**
Monitoring Programme	**93**	**95**	**95**	**100**	**95**
Submission of Results	**100**	**100**	**100**	**100**	**100**
Effluent Quality Compliance	**68**	**69**	**85**	**77**	**29**
Risk Management	**96**	**73**	**73**	**73**	**73**
Local Regulation	**100**	**100**	**100**	**100**	**100**
Treatment Capacity	**100**	**100**	**100**	**96**	**56**
Asset Management	**96**	**93**	**96**	**93**	**100**
Bonus Scores	4.86	5.48	3.55	4.43	8.84
Penalties	0.20	0.23	0.30	0.37	0.91
Green Drop Score (2013)	**91.17%**	**90.03%**	**93.39%**	**91.76%**	**77.61%**
Green Drop Score (2011)	**92.10%**	**87.90%**	**83.00%**	**75.80%**	**82.50%**
Green Drop Score (2009)	**66.00%**	**57.00%**	**61.00%**	**66.00%**	**66.00%**
System Design Capacity (Ml/d)	7.300	1.000	0.500	2.000	2.000
Capacity Utilisation (% ADWF i.t.o. Design Capacity)	56.89%	30.00%	79.20%	55.00%	44.90%
Resource Discharged into	Sea outfall (shallow)	Natural Wetland to Dunes	Kleinrivier	Lined wetlands, sports field irrigate	Wetland that drains to sea
Microbiological Compliance	91.67%	91.67%	91.67%	100.00%	83.33%
Chemical Compliance	87.50%	81.25%	90.00%	93.75%	77.08%
Physical Compliance	66.67%	91.67%	94.44%	80.56%	100.00%
Overall Compliance	80.21%	86.46%	91.67%	89.58%	86.46%
Wastewater Risk Rating (2012)	**34.70%**	**33.30%**	**44.40%**	**38.90%**	**44.40%**
Wastewater Risk Rating (2013)	**45.45%**	**29.41%**	**29.41%**	**35.29%**	**47.06%**
Site Inspection Score	**-**	**-**	**-**	**-**	**75%**

The 2014 Green Drop Progress Report of the DWS is further the product of a "gap" year, whereby progress is reported in terms of the improvement or decline in the risk position of the particular WWTW, as compared to the previous year's risk profile. This tool to collect, assess and report the risk profile is called the Green Drop Progress Assessment Tool (PAT). The PAT progress assessment period was done on compliance data and actions during 1 July 2012 – 30 June 2013, which represents the year immediately following the Green Drop 2013 assessment period. The results for Overstrand Municipality were summarized as follow in DWS's 2014 Green Drop Risk Profile Progress Report.

Table A.8.6: DWS's 2014 Green Drop Risk Profile Progress Report results for Overstrand Municipality					
Technology Description	**Hermanus**	**Hawston**	**Stanford**	**Gansbaai**	**Kleinmond**
Technology (Liquid)	Activated sludge	Activated sludge	Activated sludge	Nereda plant	Activated sludge
Technology (Sludge)	Belt press dewatering and Solar drying beds	Screw press dewatering and Solar drying beds	Screw press dewatering and Sludge pond	Belt press dewatering and Solar drying beds	Belt press dewatering and Sludge pond
Key Risk Areas					
ADWF Design Capacity (Ml/d)	12.000	1.000	0.500	2.000	2.000
Operational % i.t.o. Design Capacity	38%	33%	70%	67%	53%
Annual Average Effluent Quality Compliance (2012-2013)	79.2%	71.9%	90.6%	83.3%	87.5%
Microbiological Compliance	83.3%	83.3%	91.7%	91.7%	58.3%
Physical Compliance	69.4%	77.8%	100.0%	77.8%	100.0%
Chemical Compliance	85.4%	64.6%	83.3%	85.4%	85.4%
Technical skills (Reg 813)	Yes	Yes	Yes	Yes	Yes
2014 Wastewater Risk Rating (%CRR/CRR_{max})	**40.9%**	**52.9%**	**29.4%**	**41.2%**	**41.2%**
2013 Wastewater Risk Rating (%CRR/CRR_{max})	45.5%	29.4%	29.4%	35.3%	47.1%
Risk Abatement Planning					
Highest Risk Areas based on the CRR	Wastewater quality	Wastewater quality	Chemical compliance	Wastewater quality	Wastewater quality
WW Risk Abatement Status	Final document plus implementation	Final document plus implementation	Final document plus implementation	Final document plus implementation	Final document plus implementation
Capital & Refurbishment expenditure for Fin Year 2012-2013 (Rand)	R10,5m	R0,12m	R0,05m	R1,9m	R1,9m
Description of Projects' Expenditure 2012-2013	Refurbished & upgraded from 7.3 to 12 Ml/d started in 2010/11 and completed in Dec 2012	Aerators refurbished and new outlet meter installed	Constructed new outlet pipe from sludge screw press to skip	Belt press installed	Belt press installed and a new chlorination system for disinfection
W_2RAP Abatement Document and Status Commentary	Hermanus: Date of document could not be established. Action plan refers to 12/13. Quite a few references to Gansbaai in Hermanus W_2RAP, e.g. Gansbaai operational and compliance monitoring alert levels. Only 1 high risk identified. Non-compliance to Reg. 813 re PCs not identified as risk. Hawston: Date of document could not be established. Action points refer to 13/14. Quite a few references to Gansbaai in Hawston W_2RAP - to be rectified. No high risk identified. Non-compliance of effluent not identified as high risk. Stanford: Date of document could not be found. Action points refer to 12/13/ 14/15. 1 high risk identified - inadequate fencing around reed bed system. Non-compliance of effluent not identified as high risk. Gansbaai: Date of document could not be found. Action points refer to 12/13/ 14/15. 1 high risk identified - inadequate fencing around reed bed system. Non-compliance of effluent not identified as high risk. Kleinmond: Date of document could not be found. Action points refer to 13/14/15. 1 high risk identified: security fencing around plant. Non-compliance of effluent not identified as high risk.				

Regulatory Impression

Overstrand Municipality achieved Green Drop status for 4 of their 5 wastewater systems in the 2013 Green Drop audits. The municipal Green Drop score was 89.14% - a fraction away from achieving municipal Green Drop status. This is excellent and is part of a steady and significant improvement since 2009. The Municipality is sincerely congratulated with this accomplishment.

During the present 2013-14 Green Drop Progress Reporting the situation deteriorated marginally, with 2 systems showing an increased Risk Rating – more significantly in the case of the Hawston system. The Municipality should make a concerted effort to prevent further deterioration and should continue to improve their Green Drop status in 2015. The Municipality has the necessary supervisory excellence at all systems. There is however a concern with the non-compliant effluent quality at all works except at the Stanford works. The Municipality is encouraged to continue with implementation of the GDIP and thus to ensure that progress at the systems is achieved and maintained. The overall risk profile is still very good, with 4 of 5 plants residing in low risk space. Well done.

DWS's Western Cape Provincial Office also completed their own unofficial 2016 Green Drop Review of the WWTWs and drainage systems in Overstrand Municipality's Management Area during the 2017/2018 financial year. The table below gives an overview of the 2016 Green Drop Scores.

Table A.8.7 Green Drop Performance of the Municipality (DWS's Provincial 2016 Green Drop Report)

2015/2016 Green Drop Score	**B+**				
Legend: A (90% – 100%), B (80% - 90%), C (50% - 80%), D (31% - 50%) and E (0% - 31%)					
GREEN DROP REPORT CARD					
Key Performance Area	**Hermanus**	**Hawston**	**Stanford**	**Gansbaai**	**Kleinmond**
Process Control, Maintenance & Management Skill	C-	D+	C-	A+	A+
Monitoring Programme	A+	A+	A+	A+	A+
Submission of Wastewater Quality Results	A+	A+	A+	A+	A+
Effluent Quality Compliance	A+	C-	A+	E-	C-
Wastewater Quality Risk Management	B+	B-	B+	C+	A-
Bylaws: Local Regulation	A-	A-	A-	A-	C-
Wastewater Treatment Capacity	A+	C+	A+	A+	A-
Wastewater Asset Management	B+	B+	B+	B+	B+
Green Drop Score (2016)	**A-**	**C-**	**A-**	**C+**	**B+**
Green Drop Score (2013)	91.17%	90.03%	93.39%	91.76%	77.61%
Green Drop Score (2011)	92.10%	87.90%	83.00%	75.80%	82.50%
Green Drop Score (2009)	66.00%	57.00%	61.00%	66.00%	66.00%
System Design Capacity (Ml/d)	12	1	0.5	2	2
Capacity Exceedance (% ADWF i.t.o. Design)	45.83%	35.00%	110.00%	40.00%	55.00%
Resource Discharged into	Coastal Discharge	-	Tributary of the Klein River	Not Applicable	-
Resource Status	Not Applicable	-	Not a listed water resource	Not a listed water resource	Not a listed water resource
DWS Authorisation Status	Permit	None but in progress	GA	None but in progress	None but in progress
DWS Authorisation Standards / Limits	Irrigation Limits	General Limits	General Limits	General Limits	General Limits
Microbiological Compliance (%)	100.00%	91.70%	91.67%	83.33%	100.00%
Chemical Compliance (%)	100.00%	79.20%	100.00%	89.58%	72.22%
Physical Compliance (%)	97.20%	77.80%	97.22%	77.78%	91.67%
Overall Compliance (%)	98.80%	80.20%	97.62%	84.38%	84.52%
Wastewater Risk Rating (2012)	**34.70%**	**33.30%**	**44.40%**	**38.90%**	**44.40%**
Wastewater Risk Rating (2013)	**45.50%**	**29.41%**	**29.40%**	**35.30%**	**47.06%**
Wastewater Risk Rating (2014)	**40.90%**	**52.90%**	**29.40%**	**41.20%**	**41.20%**
Wastewater Risk Rating (2016)	**31.82%**	**47.06%**	**41.18%**	**47.06%**	**41.18%**

SECTION B: STATE OF WATER SERVICES PLANNING

DWS's new WSDP website was rolled-out to all the WSAs in the Overberg District on the 17th of October 2017. Overstrand Municipality populated the new WSDP website early in 2018, as requested by the DWS. The Municipality is further busy with the updating of their Water Supply and Sanitation Services By-law, which cover the provision of services for water supply, sanitation and industrial effluent.

The Municipality also 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 2019/2020 WSDP Performance- and Water Services Audit Report was 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_2RAPs 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_2RAP 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_2RAP is used by Overstrand Municipality to manage the identified risks according to its potential impacts on the receiving environment / community / resources.

Overstrand Municipality is currently busy with the updating of their Water and Sewer Master Plans. 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.

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 2016, GLS Consulting
- Sewer Master Plan, Overstrand Municipality, June 2016, GLS Consulting

The following water and sanitation related investigations were successfully completed during the last financial year.

- The Water Services Audit Report for 2018/2019 was finalised and 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 2019) 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 on a monthly basis 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 on a monthly basis.
- 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 2019/2020 financial year.
- Detail Process Audits were completed for all the Water- and Waste Water Treatment Plants.

- The following Technical investigations were completed during the 2019/2020 financial year:
  - Buffels River WTW Conditional Assessment (Structural, process units and mechanical and electrical aspects) and Refurbishment Investigation (Immediate and short-term, medium to long-term and Replacement options).
  - A high-level assessment was done of potential options available to Overstrand Municipality for energy recovery from organic wastes. The investigation was done in support of potential energy sources for a possible sea water desalination plant for Hermanus.
  - Augmentation of Potable Water Supplies to Hermanus - Additional work was undertaken into sea water desalination.
  - Dam Safety Inspections were done for the Franskraal dam and the De Bos dam.
  - GLS Consulting has commenced with the updating of the Water and Sewer Master Plans.
  - Technical Report on the planned new Inlet Pump Station at the Hermanus WWTW.

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
- 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.

The Vision and Mission statements of Overstrand Municipality are as follows:

Vision: "To be a centre of excellence for the community"

Mission: "Creation of sustainable communities by delivering optimal services to support economic, social and environmental goals in a politically stable environment"

The Strategic Goals of Overstrand Municipality are as follows:

- 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; and
- The promotion of tourism, economic and social development.

Overstrand Municipality's IDP, 3rd Review of 5 Year IDP (2020/21), list the following major water services projects which are planned for the short to medium term.

- Expansion of the Gateway well field in Hermanus.
- New reservoirs at Sandbaai, Pringle Bay and Gansbaai.
- Phased replacement and upgrade of the bulk and reticulation water systems in all areas.
- Refurbishment of De Bos and Buffels River Dam inlet structures and equipment.
- Refurbishment of the Kleinmond and Buffels River Water Treatment Plants.
- Water Treatment Plant (Stabilization) at Stanford.
- Water Treatment Plant for Buffeljags Bay.
- Direct waste water re-use scheme for Hermanus, and Seawater Desalination scheme.
- Possible transfer scheme from Theewaterskloof Dam for Hermanus and Kleinmond.

The following major sanitation services projects are planned for the short to medium term.

- Upgrade of the Stanford Waste Water Treatment Works (WWTW).
- Upgrade of sewerage pump stations.
- Upgrade of the Zwelihle sewer network.
- Upgrade of the Kidbrooke sewer.
- Extension of sewer networks in Kleinmond, Stanford and Gansbaai.
- Replacement of sewer rising main pipelines in Kleinmond and Greater Hermanus.

- Refurbishment of components/processes at the Hawston and Kleinmond WWTWs.

The Breede-Gouritz Catchment Management Agency (BGCMA) was established in 2014 (Government Notice 412, 23 May 2014) by extending the boundary and area of operation of the Breede-Overberg Catchment Management Agency (BOCMA) in terms of Section 80 of the National Water Act, 1998 (Act No.36 of 1998)

The Catchment Management Strategy for the Breede-Gouritz Water Management Area (BGWMA), July 2017, include the following Vision and three Strategic Focus Areas.

"Healthy water resources, for all, forever,"

- **Strategic Area 1: Protecting for People and Nature:** Focussing 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:** Focussing 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:** Focussing 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**	**%**	**Solution description as identified by Master Plan**	**%**	**Is there an Existing project/activity addressing this problem?**	**Current Demand Overall Scoring %**
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

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, 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.

Table C.1.2: Seven Key Strategies that should Underpin all Spatially Related Decision Making (SDF)	
Spatial Development Strategy	**Strategy**
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 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 longer 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 achieving 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.

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. • Increasing densities of new human settlement developments on well-located land. • Reduce bulk infrastructure as a constraint to human settlement development. • Acquiring well-located land for well-planned integrated Human Settlements. • Provide a fair allocation of housing opportunities. • Increase beneficiary involvement in the development of housing opportunities. • Enhancing supply of new rental housing opportunities and encourage improved property management and rental stock. • Increase sustainable resource use by exploring alternative technologies and building methodologies. • Implement Overstrand Municipal Growth Management Strategy.	• Integrated residential Development Programme (IRDP) • Upgrading of Informal Settlements • Provision of Economic & Social Facilities • Institutional Subsidies • Enhanced People's Housing Process (EPHP) • Emergency Housing Programme (EHP) • Social Housing Programme • Community Residential Units (CRU)

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?**	**%**	**Solution description as defined by topic situation assessment**	**%**	**Is there an Existing project/activity addressing this problem?**	**Current Demand Overall Scoring %**
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. 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
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. 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

Overstrand Municipality's water and sanitation service delivery challenges are summarised in the table below (2020/2021 IDP, 3rd Review and Amendment of 5 year IDP):

Table C.2.2: Water and Sanitation Service Delivery Challenges			
Service Area	**Challenge**	**Actions to address**	**Progress made in 2018/2019 to address challenge**
Water and Sewerage	Aging infrastructure	Increased maintenance and replacement of network and water meters.	An amount of R3.969 million was spent on the replacement of domestic water meters. 1624 meters were replaced.
All basic services	Vandalism	Educational programmes, increased security measures.	Brass water meters and taps are replaced with plastic ones.
Sewerage systems	High number of blockages	Repair / replace sections of pipelines. Preventative maintenance.	Camera inspections in Hermanus CBD and cleaning of pipelines in Zwelihle.
Water	High water losses / Aging infrastructure	Pressure management, awareness programmes, water meter replacement, leak detection.	1624 domestic water meters replaced. Audit of municipal consumers completed. Municipal consumption monitored monthly. Leak detection on bulk pipelines in Hangklip area completed. Water distribution zones in Hermanus verified.

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 Municipality's Water Services By-laws. 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 takes note of the fact that communal standpipes represent probably the weakest part of a network's water supply services. Standpipes are often constructed in ways that cannot withstand excessive use (and abuse) and often neglected in terms of operation and maintenance adversely affecting 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 most need it.

Free basic sanitation policy:

- Provision of the most appropriate sanitation facility to the poor household.
- 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 land owner) 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 support the schools with a WDM programme.

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 Environmental Health on water quality. The quality of life of the people within a Municipality is influenced by the available health care. Various things 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 than previously 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?**	**%**	**Solution description as defined by topic situation assessment**	**%**	**Is there an Existing project/activity addressing this problem?**	**Current Demand Overall Scoring %**
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_2RAPs 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. 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.	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

The Annual Report, Final Audited 25 March 2020, highlights the following water services and waste water (sanitation) provision challenges.

Table C.3.2: Water Services and Waste Water (Sanitation) Provision Challenges	
Description	**Actions to address**
Water Services	
Drought Situation	Hermanus is still the worst affected of the Overstrand towns by the drought, following 3 consecutive winter seasons with below average rainfall. Level 2 water restrictions are still in place.
Ageing Infrastructure	Increase the maintenance budget and enhance the asset replacement programmes through the capital budget.
Development of water sources	A feasibility study was commenced for the development of additional water sources for Hermanus, including possible water re-use and seawater desalination.
Waste water (sanitation)	
Provision of adequate treatment capacity in all areas.	Upgrade of waste water treatment works when required (Stanford WWTW completed in 2018/19).

Table C.3.2: Water Services and Waste Water (Sanitation) Provision Challenges	
Description	**Actions to address**
Water Services	
Extension of waterborne sewer networks.	Elimination of septic tanks by laying new sewer pipe networks and connecting properties to it. Ensure provision of sewer networks for new developments.
Sludge handling according to legislation.	Disposal of dried waste sludge in the most efficient way remains a challenge.
Extension of basic services.	Improvement of ratio of sanitation facilities to households in informal settlements and provision of basic services at new informal settlements.
Lack of suitably qualified personnel.	Training of staff. The training of process controllers is being addressed through the bulk water services support contract.
Lack of knowledge of sewer systems by consumers.	Public awareness and training.
Ageing infrastructure / lack of maintenance funds.	Increased maintenance budget as well as capital for replacement of old infrastructure.
Stormwater infiltration into sewer networks.	Public awareness and law enforcement.
Sewer blockages.	Repair / replace sections of pipelines and increase public awareness / education on sewerage systems.
Conservancy tank service (Tanker Trucks).	Network extension, additional tankers and the replacement of ageing tankers required.

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 had the skills to operate the infrastructure optimally. The Water and Waste Water 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. Overstrand 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. The purpose of the AMP is to:

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

An AMP 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. 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.

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.

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.

It is essential for Overstrand Municipality to protect their assets by ensuring that an appropriate maintenance and rehabilitation plan (AMP) is developed and implemented. 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. 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.

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. 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.

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

The main hazards in Overstrand Municipality have been classified as drought, wildfires, social conflict, tsunami, structural fires, coastal erosion and Hazmat ocean spill.

The High risks in Overstrand Municipality are Ageing and deterioration of fleet and small plant; Theft and vandalism to municipal infrastructure/assets; Slow growth in important/major sectors i.e. Tourism, Agriculture/Aquaculture and Services Sector; Safety of children accommodated in partial care facilities belonging to the municipality; Vendor's inability to achieve an mSCOA compliant system; Insufficient electricity and / or energy supply from Eskom; Increase in invasion of alien vegetation; Effects of climate change on the natural environment and infrastructure; Theft and vandalism (Infrastructure and Planning); Electricity distribution losses; Inadequate maintenance electrical infrastructure; Armed robbery; Possibility of injuries on duty; Illegal land invasion and land grabbing; Failure to provide/render effective fire and rescue services to the public, to fulfil constitutional mandate; Failure to provide/render effective Disaster Management Function; Inability to perform on mandated fire and rescue functions; Protest action/ civil unrest; Procurement Process (Medical emergencies); Regression trend in the debt collection rate; Lack of basic services to households on invaded land; Transmission/Spread of infectious diseases, i.e. Covid-19, N1H1 influenza, Ebola epidemics, etc. and Transmission/Spread of infectious diseases in the workplace, i.e. Covid-19, N1H1 influenza, Ebola epidemics, etc.

Untreated Effluent Management Plan: There are no known untreated effluent discharges to the environment. The W_2RAPs 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 2016) for the various distribution and drainage systems in Overstrand Municipality's Management Area recommends upgrades of the water and sewer reticulation networks to the values indicated in the tables 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 2016 Water and Sewer Master Plans

Zone / Area	Water Infrastructure	Sewerage Infrastructure	Total
Buffels River	R33 130 800	R195 597 800	R228 728 600
Kleinmond	R10 668 440	R48 037 700	R58 706 140
Greater Hermanus	R121 913 960	R112 497 700	R234 411 660
Stanford	R8 628 240	R13 479 600	R22 107 840
Greater Gansbaai	R138 933 820	R166 975 000	R305 908 820
Pearly Beach	R6 876 420	R28 624 800	R35 501 220
Baardskeerdersbos	R0	R3 687 900	R3 687 900
Buffeljags Bay	R0	R1 031 600	R1 031 600
Total	**R320 151 680**	**R569 932 100**	**R890 083 780**

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

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 an experienced hydrogeologist 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. It is important for Overstrand Municipality to continue to focus on aquifer protection, groundwater monitoring and wellfield management, in order to meet the area'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, log book, pen.	Done as part of operators' regular O&M activities.
Measuring and recording abstraction	Pump operator	Literacy, numeracy, trained in reading water meters.	Log book, 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.	Including 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.

Table C.3.4: Key Groundwater Management Functions (Best Practice)				
Activity	**Responsible Person**	**Skills and qualifications required**	**Resources, tools and equipment**	**Remarks**
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 table below gives a summary of the existing capacities and current flows at each of the WTWs (Ml/d).

Table C.3.5: Existing Capacities and Flows at each of the WTWs (Ml/d)						
WTW	**Existing Hydraulic Design Capacity**	**Peak Daily Flow (Dec 2019 / Jan 2020)**	**Peak Month Average Daily Flow**	**Average Daily Flow (Jul 2019 – Jun 2020)**	**Average Daily Flow as a % of Design Capacity**	**Required Treatment Capacity (1.5 x AADD10yr)**
Buffels River	5.500	3.756	2.511 (Jan 2020)	2.104	38.3%	4.040
Kleinmond	5.800	4.590	3.074 (Dec 2019)	2.462	42.4%	4.727
Preekstoel and Bio-filtration	38.000	15.530	13.736 (Dec 2019)	11.312	29.8%	22.803
Franskraal	6.500	5.885	4.120 (Dec 2019)	3.216	49.5%	6.483
De Kelders	1.600	1.393	1.143 (Feb 2020)	0.961	60.1%	1.600
Pearly Beach	1.440	1.105	0.666 (Dec 2019)	0.426	29.6%	0.817
Baardskeerdersbos	0.185	0.206	0.066 (Dec 2019)	0.050	27.0%	0.096

Buffels River WTW: 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 WTW received two consecutive Blue Drops in 2011 and 2012 and a Blue Drop score of 87.2% in 2014. The 2014 Risk Rating for only Process Control was above 50% (64.1%). The recommendations from the detail WTW Process Audit (January 2019 to December 2019) were as follows:

- Copies of the calibration certificates of flow meters should be kept on site.
- The pH in the mixing race must be kept at 6.00 – 6.20 at all times to ensure complete metal precipitation.
- Sludge should be analysed annually according to the Sludge Guidelines. No dry sludge was available on site during this audit period and could therefore not be analysed.

- Include Total Alkalinity test in the monthly analysis in order to determine stability of treated water.
- Determine the Langelier Index monthly as this is an important parameter to determine the stability.
- Maintain at least 0.40 mg/l free chlorine at all times.
- A Class III Process Controller should be available during working hours.
- Life jackets should be made available.
- Fence should be fixed.
- Gates at fence should be fixed and should be locked, as only the doors at the premises can be locked.

Kleinmond WTW: The plant operates well within its design capacity. The Kleinmond WTW is generally operated and maintained satisfactorily. The distribution system received a Blue Drop award in 2012 and a Blue Drop score of 86.59% in 2014. The 2014 Risk Rating for only Process Control was above 50% (64.1%). The recommendations from the detail WTW Process Audit (January 2019 to December 2019) were as follows:

- The inflow meter should be installed in a kiosk or should be protected from inclement weather.
- Copies of Calibration Certificates should be kept on site.
- Continue the pre-chlorination at the inlet to oxidize the metals.
- The pH in the mixing race must be kept at 6.00-6.20 at all times to ensure complete metal precipitation.
- Include Total Alkalinity analysis in order to obtain the stability of the water.
- Maintain at least 0.40 mg/l Free Chlorine at all times.
- A schedule for cleaning of reservoirs should be implemented.
- Process Controllers and Supervisors at each water treatment works is required to undergo annual process training and water services. Institution management must also be trained to ensure that they can undergo their duties with competence.
- A Maintenance Log book must be kept on site and must reflect regular maintenance carried out by the Municipality's own maintenance team and also when the external contractors are used.
- An Operation and Maintenance Manual must be compiled by a competent person and must be kept on site.
- An Incident Management Procedure must be defined.
- Life jackets should be available when working with open water dams.

Preekstoel WTWs: The 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 Blue Drop awards in 2012 and 2014. The 2014 Risk Ratings for Process Control, Drinking Water Quality and Risk Management were all below 50%. The recommendations from the detail WTW Process Audit (January 2019 to December 2019) were as follows:

Hermanus Biological WTW:

- Maintain the pH of the Iron filters at 5.90 and the Dissolved Oxygen in the range 0 – 10 mg/l O_2.
- The quantity of sludge wastage should be recorded.
- Make life jackets available to ensure staff safety.
- Access to site not controlled. Visitors Log book should be implemented.

Preekstoel WTW:

- Continue with dosing Sodium Aluminate as an adjunct to Alum.
- The pH in the mixing race must be controlled at the optimum pH at all times to ensure complete metal precipitation.
- Ensure even division of flow and distribution of flocculated water to A and B sides.

- The overflow weirs must be kept free from algal and other growths by regular brushing and cleaning.
- The Turbidity and pH of the overflow must be recorded regularly, as at present.
- In case of poor settling tank performance, check :
  - inflow volume
  - calculate up-flow velocity
  - check inflow distribution
  - check coagulation chemical dosing rates and correct where necessary
- Ensure that the filter media depth is correct.
- Inspect filter media regularly – ensure even float surface and no mudballs and cracks.
- Ensure even distribution of air-scour and backwash water during backwash cycles.
- Ensure adequate backwash cycles.
- Install a sludge wastage meter and record sludge wastage.
- Stabilization of treated water should be improved.
- Maintain the treated water pH in the range 9.00-9.40 at all times to ensure complete stabilization.
- Maintain at least 0.40 mg/l Free Chlorine at all times.

Stanford WTW: The raw water complies with SANS 0241:2015 standards. The distribution system received a Blue Drop score of 90.94% in 2014. The 2014 Risk Ratings for Process Control, Drinking Water Quality and Risk Management were all below 50%. A new ultrafiltration plus Reverse Osmosis Plant was recently constructed. The recommendations from the detail WTW Process Audit (January 2019 to December 2019) were as follows:

- Flow meters should be calibrated annually. Calibration certificates should be kept on site.
- Repair the Sodium Hypochlorite dosing stations.
- The dosing rate should be monitored and recorded daily.
- Maintain at least 0.40 mg/l Free Chlorine at all times.
- A Maintenance Plan with a Standard Operating Procedure should be available to clean reservoirs.
- Initiate cleaning of the reservoirs.
- Chlorine dosing rate should be recorded daily.
- An emergency shower should be installed at the chlorine dosing point.
- Clear signage should be installed.
- First Aid kit should be available.
- Fire extinguisher should be available.
- Implement signage at the gate.

Franskraal WTW: The WTW was completely rebuilt a number of years ago and is currently well equipped and well-operated. The plant operates well within its design capacity under normal conditions. It received two consecutive Blue Drop awards in 2011 and 2012. The distribution system received a Blue Drop score of 88.30% in 2014. The 2014 Risk Rating for only Process Control was above 50% (74.4%). The recommendations from the detail WTW Process Audit (January 2019 to December 2019) were as follows:

- The inflow and outflow meter should be calibrated annually and a Calibration certificate should be kept on site.
- The pH in the mixing race must be kept at 6.00-6.20 at all times to ensure complete metal precipitation.
- Include Total Alkalinity test and Langelier Index in order to obtain the stability of the treated water.
- Maintain at least 0.40 mg/l free chlorine at all times.

- Sludge levels should be checked regularly in all reservoirs.
- A Standard Operating Procedure for cleaning of reservoirs should be available.
- Records of regular cleaning of reservoirs should be kept.
- An additional Class III Process Controller is required on site.
- All staff should be registered as Process Controllers with DWS.
- Chlorine room must be ventilated.

De Kelders WTW: This Reverse Osmosis WTW was constructed during 2011 at De Kelders. The recommendations from the detail WTW Process Audit (January 2019 to December 2019) were as follows:

- Daily integrated flow meter readings should be readily available on site in a file dedicated for this purpose.
- The inlet and outlet flow meters should be calibrated annually and Calibration certificates should also be kept on site.
- Maintain at least 0.40 mg/l free chlorine at all times.
- Initiate cleaning of reservoirs.
- A Standard Operating Procedure for cleaning of reservoirs should be available.
- All records should be readily available on site.

Pearly Beach WTW: The Pearly Beach WTW is a new treatment plant and 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 distribution system obtained Blue Drop status in 2012 and a Blue Drop score of 87.35% in 2014. The 2014 Risk Rating for only Process Control was above 50% (71.1%). The recommendations from the detail WTW Process Audit (January 2019 to December 2019) were as follows:

- Outflow and inflow meters should be calibrated annually. Calibration Certificates should be kept on site.
- The Total Alkalinity should be tested monthly and the Langelier Saturation Index should be calculated in order to establish the stabilization treatment rate.
- Maintain at least 0.40 mg/l Free Chlorine at all times.
- Initiate cleaning of the reservoirs.
- A Maintenance Plan with a Standard Operating Procedure should be available to clean the reservoir.
- An emergency eye wash and shower should be installed.
- A Visitors Log book should be implemented.

Baardskeerdersbos WTW: The plant operates well within its design capacity. The distribution system obtained a Blue Drop score of 63.87% in 2014. The 2014 Risk Ratings for Process Control (55.6%) and Drinking Water Quality (70.4%) were above 50%. The recommendations from the detail WTW Process Audit (January 2019 to December 2019) were as follows:

- Flow meters should be calibrated annually and Calibration Certificates should be kept on site.
- Volumes of sludge being disposed should be recorded.
- Maintain 0.40 mg/l Free Chlorine at all times.
- All stock should be recorded on a Stock List.
- All staff should be registered as Process Controllers with DWS.
- A Class II Process Controller should be available on each shift.
- Install an emergency shower and eye wash facility.

Buffeljags Bay WTW: No water treatment is done, except for disinfection. The distribution system obtained a Blue Drop score of 71.83% in 2014. The 2014 Risk Ratings for Process Control (71.1%) and Drinking Water Quality (55.6%) were above 50%. The recommendations from the detail WTW Process Audit (January 2019 to December 2019) were as follows:

- All flow meters should be calibrated annually.
- Maintain at least 0.40 mg/l Free Chlorine in the treated water.
- A Visitors Register should be in place.
- Implement appropriate signage at gate.

BULK WATER INFRASTRUCTURE

The Water Master Plan (June 2016) 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: The existing bulk water supply system has insufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas.

- The 300mm dia. bulk pipeline requires upgrading from Buffels River WTP to where the pipe split into the 300mm dia. Betty's Bay Voorberg reservoir supply and the 300mm dia. Pringle Bay reservoir supply.

Kleinmond: The existing bulk water supply system has insufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas.

- A new 150mm dia. supply pipeline will be required in the future for the new booster 3 zone.

Greater Hermanus: The existing bulk water supply system has insufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas. The following upgrades to the existing Coastal bulk pipeline supply system will be required in future to augment bulk water supply through this system.

- 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.
- New 315 mm dia. parallel reinforcement of the existing 250 mm dia. pipeline when the existing 250 mm Ø bulk pipe reaches capacity.
- 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.
- New 250 mm dia. parallel reinforcement of the existing 200 mm dia. bulk supply pipeline to the Fisherhaven LL reservoir in order to augment supply to the reservoir.
- New 315 mm dia. parallel reinforcement of the existing 200 mm dia. bulk supply pipeline to the Fisherhaven HL reservoir in order to augment supply to the reservoir.

The following upgrades to the existing Hermanus bulk pipeline supply system will be required in future to augment bulk water supply through this system.

- Replace the existing 225mm dia. bulk pipeline with a 400mm dia. pipeline when the existing 225 and 300mm dia. bulk pipes reaches capacity.
- New 315mm dia. parallel reinforcement of the existing 400mm dia. bulk supply pipeline when the 400mm dia. pipeline reaches capacity.
- Replace the existing 100 mm dia. bulk supply pipeline to the Mount Pleasant reservoir with a 200 mm dia. pipeline

The following new feeder main will be required in future in order to augment the existing Greater Hermanus system with bulk water from the Theewaterskloof water source:

- New 315 mm Ø bulk supply pipeline from the Fisherhaven HL reservoir to the existing bulk water infrastructure at the Hawston reservoir.

Other future mains that will require upgrading are

- New 250mm dia. parallel reinforcement of the existing 150mm dia. bulk supply pipeline to the Sandbaai reservoir in order to augment supply to the reservoir.

- Replace the existing 225mm dia. bulk pipeline (from the Preekstoel WTW to the Coastal and Hermanus bulk pipelines) with a 500mm dia. pipeline when the existing 225, 400 and 600mm dia. bulk pipes from the Preekstoel WTW reaches capacity.

Stanford: No new future feeder mains are required.

Greater Gansbaai: The existing Greater Gansbaai bulk supply system was designed to supply water to De Kelders, Gansbaai, Kleinbaai and Franskraal from the Klipgat water source. During peak demand periods, zone valves before Gansbaai reservoirs are closed to ensure that Klipgat pump station provides water only to De Kelders and a portion of the Gansbaai consumers whereas the remaining consumers are temporarily provided with water from the Franskraal Pump System.

Since the De Kelders WTP has been constructed, the De Kelders zone is supplied with water from the De Kelders WTP. Water is pumped from the De Kelders WTP to the De Kelders reservoirs through the De Kelders zone.

The existing bulk water supply system has insufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas.

For the future scenario the Greater Gansbaai bulk system was designed to supply water from the Franskraal pump system to Franskraal, Kleinbaai and Gansbaai. De Kelders will be supplied with water from the Klipgat system and be supplemented by water from the Franskraal pump system. The following upgrades to the existing Greater Gansbaai bulk supply system will be required in the future:

- Replace the existing 200mm dia. bulk pipeline with a 400mm dia. pipeline when the existing 200mm and 355mm dia. bulk pipes reaches capacity.

- New 355mm dia. parallel reinforcement of the existing 250 mm dia. bulk supply pipeline in order to augment supply to the to the Gansbaai and De Kelders reservoirs (construction of this item is currently in progress).

- New 400mm dia. bulk supply pipeline to the Gansbaai reservoir. This item is required in order to utilize the existing bulk pipelines between Gansbaai and De Kelders so that bulk water supply to the De Kelders reservoirs can be augmented from Gansbaai.

- Dedicate the existing 250mm dia. pipeline between the Greater Gansbaai bulk system and the De Kelders reservoirs as ‘n bulk supply pipeline to the De Kelders reservoirs. These items are required to isolate the bulk and distribution systems from each other when the new supply pipeline from the reservoirs to the De Kelders network is implemented.

- New 600mm dia. bulk supply pipeline from the Franskraal WTP clearwell reservoir to the main Franskraal bulk PS.

- New 315mm dia. bulk supply pipeline from the main Franskraal bulk PS to the proposed Franskraal HL reservoir.

- New 500mm dia. bulk supply pipeline from the main Franskraal bulk PS to the existing 355mm dia. and future 400mm dia. pipeline bulk pipes to Kleinbaai, Gansbaai and De Kelders.

- New 355mm dia. dedicated bulk supply pipeline from the main Franskraal bulk PS to the existing Franskraal LL reservoirs.

Pearly Beach: No feeder mains require upgrading in the future.

Baardskeerdersbos: No feeder mains require upgrading in the future.

Buffeljags Bay: No feeder mains require upgrading in the future.

WATER PUMP STATIONS

The Water Master Plan (June 2016) has indicated that based on the most likely land-use development scenario, it will be necessary for the following water pump stations:

Table C.3.6: Future Water Pump Stations Required

Distribution System	Recommendations included in the Water Master Plan	Year	Capacity (l/s)	Head (m)	Cost (R Million)
Buffels River	To improve the residual pressures of the higher lying erven in the Voorberg reservoir zone.	2020	10	25	0.923
	Required to augment bulk supply to Voorberg reservoir	2020	75	12	1.356
	Required to sustain pressure in the Voorberg reservoir zone network	2016	15	150	0.178
Kleinmond	A new booster pump station for the higher lying areas in future development area KM4	2035	15	30	0.965
Greater Hermanus	Upgrading of the existing Fisherhaven HL pump station is proposed.	2018	45	55	0.375
	A new bulk pump station to augment bulk water supply from the Fisherhaven LL to the Fisherhaven HL reservoir for when bulk water supply to the Greater Hermanus area is augmented from the Theewaterskloof water source.	2018	105	55	1.828
	A new booster pump station to augment water supply through the Coastal bulk pipeline.	2017	90	20	1.505
Stanford	No future pump stations are required		-	-	-
Greater Gansbaai	New bulk pump station to supply bulk water to De Kelder reservoirs	2020	45	60	1.281
	New dedicated pump station from the Franskraal Clearwater reservoir to the proposed Franskraal HL reservoir	2030	65	60	1.475
	New dedicated bulk PS to Kleinbaai & Gansbaai when existing bulk supply reaches capacity	2025	220	35	2.668
	Dedicated PS to Franskraal reservoirs when existing bulk PS reaches capacity	2035	130	5	1.682
Pearly Beach	Upgrade booster PS when Pearly Beach AADD exceeds 1 000 kl/d	2030	75	45	0.279
Baardskeerders-bos	No upgrading of existing pump stations will be required in the future	-	-	-	-
Buffeljags Bay	No pump stations	-	-	-	-
Total					**14.515**

RESERVOIR INFRASTRUCTURE

Overstrand Municipality's overall storage factors of the reservoirs for the various towns for 2019/2020, based on 1 x PDD (24 hours storage capacity), were 1.22 for Buffels River, 1.94 for Kleinmond, 1.93 for Greater Hermanus, 1.52 for Stanford, 1.46 for Greater Gansbaai, 2.34 for Pearly Beach, 1.04 for Baardskeerdersbos and 3.10 for Buffeljags Bay.

Even though the Municipality's overall storage capacity might be adequate there might be some distribution zones within the Municipality's networks with inadequate storage capacity, as identified through the Water Master Plan (June 2016) and indicated in the table below:

Table C.3.7: Future Reservoirs Required

Distribution System	Recommendations included in the Water Master Plan	Year	Capacity (Ml)	Cost (R Million)
Buffels River	Required at the existing Sunny Seas reservoir site to increase reservoir storage for Betty's Bay (TWL = 89m).	2025	1.000	3.766
	Required at the existing Pringle Bay reservoir site to increase reservoir storage for Pringle Bay (TWL = 67m) **(Busy with implementation of 1.5Ml).**	2017	3.000	7.854
	Required at the Voorberg reservoir site to increase reservoir storage for Betty's Bay (TWL = 66m).	2018	3.500	8.844
Kleinmond	Proposed at the existing Kleinmond Protearand reservoir site when AADD exceeds 4000 kl/d (TWL = 91m).	2035	1.500	4.949
Greater Hermanus	Proposed at the existing Fisherhaven LL reservoir site to augment reservoir storage for the Fisherhaven LL reservoir zone (TWL = 60m).	2030	3.500	8.844
	Proposed at the existing Hawston LL reservoir site to augment reservoir storage for Hawston (TWL = 66m).	2030	3.000	7.854
	Proposed at the existing Vermont reservoir site to augment reservoir storage for the Vermont reservoir zone (TWL = 83m)	2025	1.000	3.766
	Proposed at the existing Onrus reservoir site to augment reservoir storage for Onrus (TWL = 78m).	2020	1.500	4.949
	Proposed at the existing Onrus Manor reservoir site to augment reservoir storage in the Onrus Manor reservoir zone (TWL = 144m)	2025	0.500	2.408
	Required to increase reservoir storage for Kidbrooke Place (Cost to developer) (TWL = 85m).	2020	0.300	0.000
	Proposed at the existing Sandbaai reservoir site to augment reservoir storage for Sandbaai (TWL = 65m).	2017	3.000	7.854
	Proposed at the existing Northcliff reservoir site to augment reservoir storage in the Northcliff reservoir zone (TWL = 75m).	2030	0.300	1.743
	Proposed at the existing Mount Pleasant reservoir site to augment reservoir storage in the Mount Pleasant reservoir zone **(Was implemented)** (TWL = 87m).	2016	1.000	0.000
	Proposed at the existing Fisherhaven HL reservoir site to augment reservoir storage for the Fisherhaven HL reservoir zone (TWL = 108m).	2018	6.000	12.852
	Proposed at the existing Hermanus 1 & 2 reservoir site to augment reservoir storage for the zone when AADD for Hermanus reservoir zone exceeds 5 000 kl/d (TWL = 61m).	2030	2.000	5.964
Stanford	Proposed at the existing Stanford reservoir site to augment reservoir storage for Stanford when the AADD for the town exceeds 1 350 kl/d (TWL = 85m)	2025	1.500	4.949
Greater Gansbaai	Proposed at the existing Franskraal reservoir site to augment reservoir storage for Franskraal (TWL = 59m).	2025	2.000	5.964
	Proposed at the existing Kleinbaai reservoir site to augment reservoir storage for Kleinbaai, Romans Bay and the Birkenhead area (TWL = 61m).	2025	3.000	7.854
	Proposed at the existing Gansbaai reservoir site to augment reservoir storage for Gansbaai - phase 1 **(Under construction)** (TWL = 63m).	2018	4.000	9.744
	Proposed at the existing Gansbaai reservoir site to augment reservoir storage for Gansbaai - phase 2 (TWL = 63m).	2030	4.000	9.744
	Proposed at the existing De Kelders reservoir site to augment reservoir storage for De Kelders (TWL = 98m).	2035	1.000	3.766
	Additional reservoir storage capacity for Franskraal LL zone when future areas GG31 & the lower lying erven of future development area GG33 develop (TWL = 69m).	2030	7.000	14.406
	New Franskraal HL reservoir when future areas GG32 and higher lying erven of GG33 develop (TWL = 120m).	2030	5.500	12.089
Pearly Beach	Proposed at the existing Pearly Beach reservoir site to augment reservoir storage when existing AADD reaches 1 000 kl/d (TWL = 19m).	2030	1.500	4.949
Baardskeerders-bos	No additional reservoir storage capacity is required.	-	-	-
Buffeljags Bay	No additional reservoir storage capacity is required.	-	-	-
Total				**155.112**

WATER AND SEWER RETICULATION INFRASTRUCTURE

The Water Master Plan (June 2016) has indicated that based on the most likely land-use development scenario, the following future water reticulation infrastructure components will be necessary.

Table C.3.8: Future Water Reticulation Infrastructure Required
BUFFELS RIVER
Proposed distribution zones • The only changes to the existing distribution zones are that the water network of the higher lying erven in the Betty's Bay Voorberg reservoir zone is rezoned and incorporated in a new Betty's Bay booster zone.
Proposed future system and required works The existing Buffels River water distribution system has insufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas. • A few distribution pipelines are required to reinforce water supply within the Pringle Bay reservoir, Voorberg reservoir and Sunny Seas reservoir distribution networks. • A few pipelines and valves are proposed in order to implement the Betty's Bay booster zone.
KLEINMOND
Proposed distribution zones • The Protearand reservoir zone is increased to accommodate future development areas within the zone. • A new booster pumping zones are proposed for higher lying future development area KM4. • Zone adjustments to the Overhills booster zone to improve pressures in low pressure areas.
Proposed future system and required works The existing Kleinmond water distribution system has insufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas. • A few distribution pipelines are required to reinforce water supply within the Kleinmond distribution networks. • New distribution pipelines are proposed for when future development areas KM2, KM3 and KM4 develop. • A new pipeline and valves are proposed in order to implement zone boundary changes to the Kleinmond Overhills booster zone
GREATER HERMANUS
Proposed distribution zones • The boundaries of the existing Fisherhaven HL reservoir zone are increased to accommodate future development areas GH1, GH5.1 and GH5.2 • A new Fisherhaven HL PRV zone (supplied from the existing Fisherhaven HL reservoir zone via a PRV is proposed to accommodate future development areas GH6.3 - 6.5. The setting of the PRV should be set at 63 m. • The boundaries of the Northcliff reservoir zone are increased to accommodate some of the higher lying erven of the Hermanus reservoir zone. • The boundaries of the existing reservoir zones are increased to accommodate future development areas in Greater Hermanus.
Proposed future system and required works The existing Greater Hermanus water distribution system has insufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas. • A few distribution pipelines are required to reinforce water supply within the Greater Hermanus distribution network. • New distribution pipelines are proposed to supply future development areas with water when they develop. • A new inter-connection pipeline between the Fisherhaven LL reservoir zone and the Hawston reservoir is proposed as an emergency connection when future development area GH3 develops. • A new PRV in the future Fisherhaven HL reservoir zone is proposed in order to manage static pressures in this future zone. • Rezoning between the Northcliff reservoir and Hermanus reservoir zones is proposed.
STANFORD
Proposed distribution zones • The existing Stanford PRV zone is increased to accommodate a larger portion of the existing Stanford reservoir zone. • The boundaries of the existing zones are increased to accommodate future development areas in Stanford.
Proposed future system and required works • A few distribution pipelines are required to reinforce water supply within the Stanford distribution network. • New distribution pipelines are proposed for when future development areas SF1 to SF3 and SF7 develop.
GREATER GANSBAAI
Proposed distribution zones • A new Gansbaai booster zone is proposed to accommodate the higher lying erven of future development area GG8.2. • A new Romansbaai booster zone is proposed to accommodate future development area GG30. • A new Franskraal HL reservoir zone is proposed to accommodate future development area GG32 and the higher lying erven of future development area GG33. • The boundaries of the existing reservoir zones are increased to accommodate future development areas in Greater Gansbaai.
Proposed future system and required works

Table C.3.8: Future Water Reticulation Infrastructure Required
The existing Greater Gansbaai water distribution system has insufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas. • A few distribution pipelines are required to reinforce water supply within the Greater Gansbaai distribution network. • New distribution pipelines are proposed to supply future development areas with water when they develop. • In De Kelders a dedicated supply pipeline from the reservoirs to the network is proposed. • It is proposed that when the Birkenhead area in Kleinbaai is serviced with a formal water network, a secondary pipeline between Birkenhead and the existing Kleinbaai network is constructed along the coastline in order to improve network redundancy and conveyance in the area.
PEARLY BEACH
Proposed distribution zones • The boundaries of the existing distribution zones are increased to accommodate future development areas in Pearly Beach.
Proposed future system and required works The existing Pearly Beach water distribution system has insufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas. • A few distribution pipelines are required to reinforce water supply within the Pearly Beach distribution network and new distribution pipelines are proposed to supply water to anticipated future development areas.

The Sewer Master Plan (June 2016) has indicated that based on the most likely land-use development scenario, the following future sewer reticulation infrastructure components will be necessary.

Table C.3.9: Future Sewer Reticulation Infrastructure Required
BUFFELS RIVER
• A new sewer reticulation system is proposed for the towns of Rooi Els, Pringle Bay and Betty's Bay in the Buffels River area, which are currently serviced by septic tanks. • In Rooi Els 4 x new future PS drainage areas are proposed that pumps the sewage of Rooi Els locally and eventually to a proposed Rooi Els Main bulk PS. • In Pringle Bay 3 x new future PS drainage areas are proposed that pumps the sewage of Pringle Bay locally and eventually to a proposed Pringle Bay Main bulk PS. • In Betty's Bay 8 x new future PS drainage areas are proposed that pumps the sewage of Betty's Bay locally and eventually to 3 x proposed Betty's Bay Main bulk PS's. A new bulk sewage pumping system is proposed for the Buffels River area where sewage from the proposed Rooi Els Main PS is pumped to the Pringle Bay Main PS. From the Pringle Bay Main PS to the Betty's Bay Main PS no. 1, from the Betty's Bay Main PS no. 1 to the Betty's Bay Main PS no. 2 and from the Betty's Bay Main PS no. 2 to the Betty's Bay Main PS no. 3. It is proposed that the sewage of the Buffels River area is then pumped from the Betty's Bay Main PS no. 3 directly to the existing Kleinmond WWTP.
KLEINMOND
• The boundaries of the existing drainage areas in Kleinmond are increased to accommodate proposed future developments and existing unserviced erven that fall within these drainage areas. • Upgrading of the Kleinmond PS no. 4 is proposed when the existing PS reaches capacity. • A few existing outfall sewers require upgrading by replacement with larger sized future sewers. • New outfall sewers are proposed to accommodate future development areas and to service the existing unserviced erven in Kleinmond.
GREATER HERMANUS
• The boundaries of the existing drainage areas in the Hermanus WWTP and Hawston WWTP sewer systems are increased to accommodate proposed future development areas and existing unserviced erven that fall within these drainage areas. • In Fisherhaven new future PS drainage areas GH1 & GH2 are proposed for the areas in Fisherhaven that cannot gravitate to the existing Fisherhaven PS. New PS's and rising mains should be constructed for these new drainage areas that discharge into the existing Fisherhaven PS drainage area. • New future PS GH3, GH4, GH5, GH6, GH7 and GH8 drainage areas are proposed for future development areas GH4, GH6.2 - GH6.6, GH19, GH24, GH49 and the existing unserviced erven in Hawston that cannot gravitate to the existing Hawston WWTP drainage area. New PSs and rising mains should be constructed for these new drainage areas. Future PSs GH7 & GH8 should discharge into the proposed future PS GH4 drainage area. Future PSs GH4 and GH5 should discharge into the existing Hawston WWTP drainage area. It is proposed that future PS GH3 pumps directly to the existing Meer-en-See PS 3 and that future PS GH6 should pump directly into the existing Hawston WWTP. • A new future PS GH11 drainage area is proposed for the lower lying erven of future development area GH1 that cannot gravitate to the existing Hawston WWTP drainage area. A new PS and rising main should be constructed for this new drainage area that discharges into the existing Hawston WWTP drainage area. • In Hermanus new future PS GH9 and GH10 drainage areas are proposed for the existing unserviced erven in Westcliff that cannot gravitate to the existing infrastructure of the Hermanus sewer reticulation system. New PSs and rising mains should be constructed for these 2 new drainage areas. Future PS GH10 should discharge into the proposed future PS GH9 drainage area and future PS GH9 should discharge into the existing Whale Rock PS drainage area. • New future PS GH12, GH13 & GH14 drainage areas are proposed for future development areas GH30, GH44 & GH45. New PSs and rising mains should be constructed for these 3 new drainage areas. Future PSs GH13 and GH14 should discharge into the proposed future PS GH12 drainage area and future PS GH12 should discharge into the existing WWTP Main PS drainage area.

Table C.3.9: Future Sewer Reticulation Infrastructure Required
• A new future PS GH15 drainage area is proposed for the lower lying erven of future development area GH6.1 that cannot gravitate to the existing Onrus Main PS drainage area. A new PS and rising main should be constructed for this new drainage area that discharges into the existing Onrus Main PS drainage area. • Upgrading of the Fisherhaven, Meer-en-See 3, Onrus Main, Sandbaai, Whale Rock and WWTP Main PSs are proposed when the existing PSs reaches capacity. • A few existing outfall sewers require upgrading by replacement with larger sized future sewers. • New outfall sewers are proposed to accommodate future development areas and to service the existing unserviced erven in the Greater Hermanus area.
STANFORD
• The boundaries of the existing drainage areas in Stanford are increased to accommodate proposed future development areas and existing unserviced erven that fall within these drainage areas. • New future PS S1, S2 and S4 drainage areas are proposed for the existing unserviced erven in Stanford that cannot gravitate to the existing infrastructure of the Stanford sewer reticulation system. New PSs and rising mains should be constructed for these 3 new drainage areas. Future PS S1 should discharge into the existing Stanford Gravity drainage area, future PS S4 should discharge into the proposed drainage future PS S2 drainage area and future PS S2 should discharge into the existing Stanford PS drainage area. • A new future PS S3 drainage area is proposed for future development area SF2 and a portion of future development area SF3. A new PS and rising main should be constructed for this new drainage area that discharges into the existing Stanford PS drainage area. • A few existing outfall sewers require upgrading by replacement with larger sized future sewers. • New outfall sewers are proposed to accommodate future development areas and to service the existing unserviced erven in Stanford.
GREATER GANSBAAI
• A new sewer reticulation system is proposed for the towns of De Kelders and Franskraal in the Greater Gansbaai area, which are currently serviced by septic tanks. In Gansbaai and Kleinbaai only a portion of the existing erven are serviced with a full waterborne sanitation system, and new infrastructure is proposed to service these areas in future. • In De Kelders 5 x new future PS drainage areas are proposed that pumps the sewage of De Kelders locally and eventually to a proposed De Kelders Main bulk PS. • In Gansbaai new future PS GB1 and GB4 drainage areas are proposed for the existing unserviced erven in Gansbaai that cannot gravitate to the existing infrastructure of the existing Gansbaai sewer reticulation system. New PSs and rising mains should be constructed for these 2 new drainage areas. Future PS GB1 should discharge into the existing Gansbaai Hawe PS drainage area and future PS GB4 should discharge into the existing Gansbaai WWTP Gravity drainage area. • A new future PS GB2 drainage area is proposed for future development area GG9. A new PS and rising main should be constructed for this new drainage area that discharges directly into the existing Kolgans no. 2 PS. • A new future PS GB3 drainage area is proposed for future development area GG10.1. A new PS and rising main should be constructed for this new drainage area that discharges into the existing Gansbaai WWTP Gravity drainage area. • In Kleinbaai new future PS KB1, KB2 and KB3 drainage areas are proposed. It is proposed that the existing conservancy tanks are decommissioned in future. Conservancy tank no. 1 should be accommodated in the future PS KB1 drainage area and conservancy tanks no. 2 & 3 in the future PS KB2 drainage area. New PSs and rising mains should be constructed for these new drainage areas. Future PSs KB1 and KB3 should discharge into the future PS KB2 drainage area and future PS KB2 should pump the sewage of Kleinbaai to a Kleinbaai Main bulk PS. • New future PS KB4 and KB5 drainage areas are proposed for future development area GG25 (Birkenhead area). New PSs and rising mains should be constructed for these new drainage areas. Future PS KB5 should discharge into the future PS KB4 drainage area and future PS KB4 should discharge into the future PS KB1 drainage area in Kleinbaai. • In Franskraal 3 x new future PS drainage areas are proposed that pumps the sewage of Franskraal locally and eventually to the proposed Kleinbaai Main bulk PS. • The boundaries of the existing drainage areas in Gansbaai and Kleinbaai are increased to accommodate proposed future development areas and existing unserviced erven that fall within these drainage areas. • Upgrading of the existing Kolgans no. 2 PS is proposed when the existing PS reaches capacity. • A few existing outfall sewers in Gansbaai require upgrading by replacement with larger sized future sewers. • New outfall sewers are proposed to accommodate future development areas and to service the existing unserviced erven in the Greater Gansbaai area. • A new bulk sewage pumping system is proposed for the Greater Gansbaai area where sewage from the proposed De Kelders Main PS is pumped to the existing Gansbaai Hawe PS and sewage from the proposed Kleinbaai Main PS is pumped directly to the Gansbaai WWTP. Upgrading of the Gansbaai Hawe PS is proposed when sewage is pumped from De Kelders to Gansbaai.
PEARLY BEACH
• The boundaries of the existing Pearly Beach PS1 drainage area are increased to accommodate future development area PB2. • New future PS P1, P2, P3 and P4 drainage areas are proposed for the existing unserviced erven in Pearly Beach and future development areas PB1.3, PB3 and PB4. New PSs and rising mains should be constructed for these new drainage areas. • It is proposed that Future PS P2 and Future PS P3 discharge into the future PS P1 drainage area, and that sewage from the future PS P1 drainage area is pumped directly to the existing Pearly Beach oxidation ponds. • It is proposed that the existing Pearly Beach PS1 (which currently pumps to an existing conservancy tank) pumps sewage in future directly to the proposed future PS P4 drainage area. Sewage should then be pumped from the proposed Future PS P4 to the proposed future PS P3 drainage area. • New outfall sewers are proposed to accommodate future development areas and to service the existing unserviced erven in Pearly Beach.

Table C.3.9: Future Sewer Reticulation Infrastructure Required
BAARDSKEERDERSBOS
• A new sewer reticulation system is proposed for the town of Baardskeerdersbos, which is currently serviced by septic tanks. • It is proposed that sewer pipes gravitate to a proposed package plant or conservancy tank. A more detailed investigation will be required to determine the position of the proposed package plant or conservancy tank.
BUFFELJAGS BAY
• A new sewer reticulation system is proposed for the town of Buffeljags Bay, which is currently serviced by septic tanks. • It is proposed that sewer pipes gravitate to a proposed conservancy tank for Buffeljags Bay. A more detailed investigation will be required to determine the position of the proposed conservancy tank.

SEWER PUMP STATIONS

The Sewer Master Plan (June 2016) has indicated that based on the most likely land-use development scenario, it will be necessary for the following new sewer pump stations, as well as upgrading of the existing sewer pump stations:

Table C.3.10: Future Sewer Pump Stations Required

Drainage System	Recommendations included in the Sewer Master Plan	Year	Cost (R Million)
Buffels River	New Future Rooi Els No.1 pump station	2030	0.480
	New Future Rooi Els No.2 pump station	2030	0.508
	New Future Rooi Els No.3 pump station	2030	0.545
	New Future Rooi Els No.4 pump station	2030	0.480
	New Future Pringle Bay No.1 pump station	2025	0.754
	New Future Pringle Bay No.2 pump station	2025	0.619
	New Future Pringle Bay No.3 pump station	2025	0.481
	New Future Betty's Bay No.1 pump station	2020	0.481
	New Future Betty's Bay No.2 pump station	2020	0.843
	New Future Betty's Bay No.3 pump station	2020	0.619
	New Future Betty's Bay No.4 pump station	2020	0.509
	New Future Betty's Bay No.5 pump station	2020	0.481
	New Future Betty's Bay No.6 pump station	2020	0.481
	New Future Betty's Bay No.7 pump station	2020	0.545
	New Future Betty's Bay No.8 pump station	2020	0.481
	New Rooi Els Main pump station (Pump from Rooi Els to Pringle Bay)	2030	0.573
	New Pringle Bay Main pump station (Pump from Pringle Bay to Betty's Bay)	2025	0.931
	New Betty's Bay Main pump station No.1 (Pump from Betty's Bay to Kleinmond WWTW)	2020	1.327
	New Betty's Bay Main pump station No.2 (Pump from Betty's Bay to Kleinmond WWTW)	2020	1.454
	New Betty's Bay Main pump station No.3 (Pump from Betty's Bay to Kleinmond WWTW)	2020	1.576
Kleinmond	Upgrade existing Harbour PS when it reaches capacity	2020	0.098
	Upgrade existing Harbour PS when it reaches capacity	2030	0.263
Greater Hermanus	Upgrade existing Fisherhaven PS when it reaches capacity	2030	0.159
	New PS for Fisherhaven	2020	0.481
	New PS for Fisherhaven	2020	0.518
	New PS when future area GH49 develops (Cost for Developer)	2020	-
	New PS when future area GH4 develops	2030	0.709
	New PS for Hawston	2025	0.709
	New PS for Hawston	2025	0.490
	New PS when future area GH6.2 develops	2020	0.385
	New PS when future areas GH6.1 and HG6.4 develop	2020	0.619
	Upgrade existing Onrus Main PS when it reaches capacity	2025	0.285
	Upgrade existing Sandbaai PS when it reaches capacity	2025	0.159
	New PS for Hermanus	2025	0.480
	New PS for Hermanus	2025	0.499
	Upgrade existing WWTP Main PS when it reaches capacity. Investigate existing capacity and operation of system from WWTW Main PS to Hermanus WWTW first **(Will be implemented 2021/2022)**.	2020	0.255
	New PS when lower lying erven of future area GH1 develops (Cost for Developer)	2035	-

Table C.3.10: Future Sewer Pump Stations Required			
Drainage System	**Recommendations included in the Sewer Master Plan**	**Year**	**Cost (R Million)**
	Upgrade existing Meerensee No.3 PS when it reaches capacity. Investigate existing capacity first.	2020	0.134
	Upgrade existing Whale Rock PS in order to reach scouring velocity through rising main.	2017	0.835
	New PS when future areas GH43 and GH44 develop	2030	0.573
	New PS when future area GH43 develop (Cost for Developer)	2030	-
	New PS when future areas GH43 and GH44 develop	2030	0.481
	New PS when future area GH6.1 develop (Cost for Developer)	2021	-
Stanford	New PS for Stanford South	2025	0.481
	New PS for Stanford North	2018	0.518
	New PS for Stanford North	2030	0.481
	New PS for Stanford North	2020	0.481
Greater Gansbaai	New PS for De Kelders	2025	0.385
	New PS for De Kelders	2025	0.527
	New PS for De Kelders	2020	0.664
	New PS for De Kelders	2020	0.799
	New PS for De Kelders	2025	0.481
	New PS for Gansbaai	2025	0.509
	New PS for Gansbaai	2025	0.385
	Upgrade existing Kolgans No.2 PS when it reaches capacity, verify existing pump capacity first.	2025	0.120
	New PS when future areas GG10 and GG11 develop	2018	0.573
	New PS for Gansbaai	2020	0.481
	New PS for Kleinbaai	2026	0.619
	New PS for Kleinbaai	2025	0.843
	New PS for Kleinbaai	2025	0.481
	New PS for Franskraal	2030	0.754
	New PS for Franskraal	2030	0.664
	New PS for Franskraal	2030	0.591
	New PS for Birkenhead drainage area	2030	0.499
	New PS for Birkenhead drainage area	2030	0.385
	New PS when lower lying erven of Perlemoenpunt develop	2030	0.527
	New PS when future areas GG10.2 and GG11.2 develop	2030	0.499
	New PS for Franskraal	2030	0.545
	New PS for Franskraal	2030	0.499
	New PS when future area GG31 develops	2035	0.619
	New PS when future area GG31 develops	2035	0.527
	New PS when future area GG32 and GG33 develop	2035	1.200
	New PS when future area GG33 develops	2035	1.156
	New PS required to pump sewage from Kleinbaai and Franskraal to Gansbaai WWTP	2025	1.658
	New PS required to pump sewage from De Kelders to Gansbaai Hawe PS	2020	0.888
	Upgrade existing PS when sewage from De Kelders is pumped to Gansbaai	2025	0.240
Pearly Beach	New PS for Pearly Beach	2025	0.709
	New PS for Pearly Beach	2025	0.481
	New PS for Pearly Beach	2030	0.619
	New PS for Pearly Beach	2030	0.545
Total			**44.733**

WASTE WATER TREATMENT INFRASTRUCTURE

The table below gives a summary of the existing hydraulic design capacities and current flows at each of the WWTWs (Ml/d).

Table C.3.11: Existing Hydraulic Design Capacities and Flows at the WWTWs (Ml/d)

WWTW	Existing Hydraulic Capacity	Peak Daily Flow (Dec 2019 / January 2020)	Peak Month Average Daily Flow	Average Daily Flow (July 2019 – June 2020)	Average Daily Flow as a % of Design Capacity	Average Wet Weather Flow (Jun'20, Jul'19, Aug'19)
Kleinmond	0.997	3.073	1.627 (Dec'19)	1.255	125.9%	1.297
Hawston	0.700	1.597	0.533 (Jul'19)	0.431	61.6%	0.490
Hermanus	12.000	13.270	6.750 (Nov '19)	5.911	49.3%	6.114
Stanford	1.200	1.047	0.954 (Jun'20)	0.787	65.6%	0.774
Gansbaai	2.000	1.435	0.946 (Dec'19)	0.874	43.7%	0.843
Eluxolweni	0.259	0.159	0.294 (Apr'20)	0.087	33.6%	0.087

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

Table C.3.12: Existing Organic Design Capacities and Historical Loadings at the WWTWs

WWTW	Organic Design Capacity (kg COD/d)	19/20		18/19		17/18	
		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	912	108.2%	1 021	121.1%	829	98.4%
Hawston	968	738	76.3%	689	71.2%	452	46.7%
Hermanus	9 000	4 926	54.7%	3 851	42.8%	3 904	43.4%
Stanford	1 200	1 003	83.6%	624	52.0%	659	54.9%
Gansbaai	3 600	875	24.3%	1 074	29.8%	938	26.0%
Eluxolweni	198	36	18.2%	-	-	-	-

The capacity of the Hermanus WWTW was upgraded from 7.3 Ml/d to 12 Ml/d at the end of 2012. The upgrading included a new inlet works, refurbishment of the existing aeration and settling tanks, new anaerobic and anoxic basins and settling tank, mechanical sludge dewatering and a new chlorination system. The sludge handling facilities at the Kleinmond and Gansbaai WWTW were also upgraded during 2012/2013. The Stanford WWTW was also recently upgraded.

Kleinmond WWTW: The 2013 Green Drop score for the WWTW was 77.61% and the wastewater risk rating decreased from 47.1% in 2013 to 41.2% in 2014. **It can be noted from Tables C.3.11 and C.3.12 that both the current hydraulic and organic design capacities are inadequate to meet the current demands.** The recommendations from the detail WWTW Process Audit (July 2018 to June 2019) were as follows:

- The flow meter should be calibrated annually and the Calibration Certificate should be kept on site.
- Install an outflow meter and record readings daily.
- Oxygen transfer tests should be conducted to establish the delivery of the aerators.
- All aerators should run for 24 hours per day at present loading rates.
- Additional aeration is required during peak holiday seasons. Investigate the installation of an additional aerator.
- Control the MLSS concentration in the range 4000-6000 mg TSS/l, as at present.
- The Process Controller should monitor the sludge settleability daily and maintain a constant Mixed Liquor Suspended Solids concentration, as at present.
- The sludge mass must be controlled at the prescribed monthly recommendations.
- To successfully maintain a viable biological population and to maintain the proper concentration of solids, the system requires continuous observation and monitoring by the Process Controller, as at present.

- Maintain present sludge return rate.
- The contractor collecting the skips should be informed about the current unsatisfactory working procedure.
- The buildings should be painted.
- Repair the Dissolved Oxygen meter.
- Site should be fenced in to prevent trespassers. Not fixed.
- First Aid sign should be put in place.
- Investigate the option of fencing in the site.
- Access control should be controlled.

Hawston WWTW: The WWTW received a Green Drop award in 2013 (Green Drop score of 90.03%). The wastewater risk rating increased from 29.4% in 2013 to 52.9% in 2014**. It can be noted from Tables C.3.11 and C.3.12 that the Hawston WWTW also needs to be upgraded in the nearby future.** The recommendations from the detail WWTW Process Audit (July 2018 to June 2019) were as follows:

- Inlet and outlet flow meters should be calibrated yearly.
- Calibration Certificates should be kept on site.
- The flow meter readings should be evaluated relative to the raw sewage pump hours and pump capacities.
- Oxygen Transfer Tests should be conducted to establish the delivery of the aerators and the inlet from meter readings should be confirmed in order to establish the exact organic load imposed on the system.
- Excess sludge should be wasted regularly in order to control the MLSS concentration in the range 4000-6000 mg TSS/l.
- The Process Controller should monitor the sludge settleability daily and maintain a constant mixed liquor suspended solids concentration.
- To successfully maintain a viable biological population and to maintain the proper concentration of solids, the system requires continuous observation and monitoring by the Process Controller.
- Increase sludge wastage.
- Maintain adequate sludge wastage programme.
- Ensure 0.25 mg/l Free Chlorine in the final effluent at all times to ensure satisfactory disinfection.
- Investigate the origin of the high Conductivity in the influent.
- Excessive poly drums on site should be removed.

Hermanus WWTW: The WWTW received two consecutive Green Drop awards in 2012 and 2013 (Green Drop score of 91.17% in 2013). The wastewater risk rating decreased from 45.5% in 2013 to 40.9% in 2014. **The capacity of the WWTW is adequate to meet the short to medium future demands.** The recommendations from the detail WWTW Process Audit (July 2018 to June 2019) were as follows:

- The odour control system requires attention. Ensure chemicals are on site to deal with bad odours.
- Maintain the present mode of operation in aeration system.
- Excess sludge should be wasted regularly in order to control the MLSS concentration in the range 4000-6000 mg TSS/l.
- The Process Controller should monitor the sludge settleability daily and maintain a constant mixed liquor suspended solids concentration.
- Sludge age is typically about 20-30 days in activated sludge plants at high (>95%) COD removal efficiencies. A long sludge age is required, at which nitrification is generally assured and a relatively stable sludge is generated. Loading rates are inversely related to sludge age.
- To successfully maintain a viable biological population and to maintain the proper concentration of solids, the system requires continuous observation and monitoring by the Process Controller.
- Increase sludge wastage and maintain an adequate sludge wastage programme.

- Replace sand on drying beds.
- Remove all weeds from drying beds.
- Dry sludge should be removed from the beds to prevent secondary wetting by rainfall.
- Maintain 0.20 mg/l Free Chlorine at all times.
- Ensure that the correct testing parameter templates are updated on IRIS to ensure that compliance percentages are correct.
- A Class III Process Controller should be available during each shift.
- A Visitors Register should be implemented.
- Wind-sock must be erected at chlorine room.
- Attention should be given to surrounds around the inlet and drying bed area.

Stanford WWTW: The WWTW received a Green Drop award in 2013 (Green Drop Score of 93.39%). The wastewater risk rating stayed the same at 29.4% in 2013 and 2014. **The WWTW was recently upgraded and the capacity of the WWTW is adequate.** The recommendations from the detail WWTW Process Audit (July 2018 to June 2019) were as follows:

- Grit should be transported to landfill sites and not disposed into sludge dams.
- Investigate the considerable difference between inlet and outlet flow meter readings.
- Calibrate flow meters annually and keep copies of Calibration Certificates on site.
- Oxygen transfer tests should be conducted to establish the delivery of the aerators.
- Ensure adequate ATML recycle to maintain satisfactory denitrification.
- Excess sludge should be wasted regularly in order to control the MLSS concentration in the rage 4000 – 6000 mg TSS/l.
- Maintain present sludge wastage programme.
- Sludge wastage should be controlled in order to maintain a sludge age of at least 20-25 days.
- Increase the sludge return rate.
- Ensure 0.25 mg/l Free Chlorine in the final effluent at all times, to ensure adequate disinfection.
- Ensure that the correct testing parameter templates are updated on IRIS to ensure that compliance percentages are correct.
- Register staff as Process Controllers with DWS.
- Ensure that a Class I Process Controller is on site per shift and a Class V Supervisor oversees the site.
- Keep Safety Minutes on site.
- Consider combining existing alarm with pepper spray system to discourage burglaries.
- Get First Aid kit.

Gansbaai WWTW: The WWTW received a Green Drop award in 2013 (Green Drop score of 91.76%). The wastewater risk rating increased from 35.3% in 2013 to 41.2% in 2014. **The capacity of the WWTW is adequate to meet the short to medium future demands.** The recommendations from the detail WWTW Process Audit (July 2018 to June 2019) were as follows:

- Investigate the origin of the periodic high inlet Conductivity.
- Inlet and outlet flow meters should be calibrated annually.
- Flow meter Calibration Certificates should be kept on site.
- Maintain the pH in the aeration basin between 6.8 – 7.2.
- Repair the brush aerators.
- Remove all weeds from drying bed used for CIP water.

- An additional scale should be acquired.
- Maintain 0.25 mg/l free chlorine at all times at the outlet of the contact tank in order to maintain complete disinfection.
- Ensure that the correct testing parameter templates are updated on the IRIS to ensure that compliance percentages are correct.
- Ensure that the correct compliance standard is loaded on IRIS.
- Maintain present mode of operation.

Sludge from the WWTWs are being disposed of at the Overberg District Municipality's Karwyderskraal Regional Landfill, for potential composting. Overstrand Municipality will ensure that all sludge from the various WWTWs are classified annually and that the correct management options are followed, according to the classification of the sludge, for the disposal or the potential treatment/composting of the sludge.

Overstrand Municipality reviews on an annual basis the capacity and suitability of the WWTWs to meet the requirements of DWS for the quality of the final effluent being discharged to the receiving water bodies. When the water quality requirements for the final effluent becomes stricter and / or when the inflow to the WWTW has increased to such an extent that the capacity of the plant needs to be increased, the Municipality appoints reputed consulting engineering firms to undertake feasibility studies to perform technical and economical evaluation of the different options available for upgrading or extending the capacity of the treatment works.

The Sewer Master Plan (June 2016) has indicated that based on the most likely land-use development scenario, it will be necessary for the following Waste Water Treatment Works.

Table C.3.13: Future Waste Water Treatment Works Required

Drainage System	Recommendations included in the Sewer Master Plan	Cost (R Million)
Baardskeerdersbos	New conservancy tank or package plant for the existing erven	0.730
Buffeljags Bay	New conservancy tank or package plant for the existing unserviced erven	0.730
Total		1.460

TOPIC 4: WATER SERVICES OPERATION AND MANAGEMENT

Topic C.4.1: Water Services O&M

Section	Intervention Required?	%	Solution description as defined by topic situation assessment	%	Is there an Existing project / activity addressing this problem?	Current Demand Overall Scoring %
O & M Plan 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. 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.	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_2RAPs, 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?**	**%**	**Solution description as defined by topic situation assessment**	**%**	**Is there an Existing project / activity addressing this problem?**	**Current Demand Overall Scoring %**
	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

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 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 are 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 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 Waste Water 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?**	**%**	**Solution description as defined by topic situation assessment**	**%**	**Is there an Existing project/activity addressing this problem?**	**Current Demand Overall Scoring %**
Reducing unaccounted water and water inefficiencies	Yes	100.0	The Municipality will continue with the implementation of their WDM Strategy and Action Plan to reduce the unaccounted for water 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 are 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	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
Conjunctive use of surface - and groundwater	No	100.0				100.0
Working for Water	No	100.0				100.0

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

Some WC/WDM measures are often enforced by local government through water restrictions during drought periods. Appropriate municipal water control (metering) and pricing structure (billing and revenue collection) could however ensure that these measures become routine. The table below gives an overview of the current NRW and Water Losses and the commitment w.r.t. the reduction of the NRW over the next number of years.

Table C.5.3: Commitment to Reduce NRW (Include bulk distribution, treatment and internal distribution)

Distribution System	2019/2020		Committed Future NRW	
	NRW (%/a)	Water Losses (%/a)	2024 (%/a)	2044 (%/a)
Buffels River	48.7%	44.0%	40.0%	30.0%
Kleinmond	33.6%	33.1%	30.0%	25.0%
Greater Hermanus	11.7%	11.3%	10.0%	10.0%
Stanford	28.7%	28.1%	25.0%	20.0%
Greater Gansbaai	28.1%	27.7%	25.0%	20.0%
Pearly Beach	30.6%	30.0%	25.0%	20.0%
Baardskeerdersbos	44.3%	43.6%	40.0%	30.0%
Buffeljags Bay	18.0%	17.5%	15.0%	13.0%

The Municipality's WDM Strategy and Action Plan include the following key activities (June 2020 progress in brackets):

- Continue with pipe replacement in priority areas with old reticulation networks and history of frequent pipe failures (2018/2019 and 2019/2020 phases included Rooi-Els, Pringle Bay, Betty's Bay, Kleinmond, Northcliff and Voëlklip);
- Continued operation and maintenance of intelligent pressure management 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);
- Perform focused leak detection and repair programs in areas with highest minimum night flows (Work in progress);
- Continue with leak repairs at indigent households and installation of water management devices;
- Enhance public awareness on general water and water demand management issues, e.g. the watering of gardens as determined by the bylaws, rain water harvesting, dam levels, and general water saving tips; regular publication of water and waste water quality in local media and on Overstrand Municipality's web-site; pamphlets are being issued with all building plan approvals, and primary school learners are reached with water awareness puppet 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 DBSA 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 in Hermanus and Gansbaai; investigation for Hawston was done).

Overstrand Municipality will continue with the repairing of leaks at indigent households. The following steps can be implemented by Overstrand Municipality to ensure that the project is sustainable.

- Identify areas with high minimum night flows. Record these flows before the project starts in order to ensure that the overall savings achieved by the project can be calculated.
- Visit properties occupied by indigent households on a priority basis (highest consumption first).
- Educate the customer about the project and water saving measures that can be implemented.
- Audit properties for any plumbing leaks and repair the leaks that are found.
- Meters found to be faulty must be replaced.
- Identify where there may be inefficient water usage and water wastage.
- Identify the number of people living at the property so as to determine a reasonable water usage.

Mechanisms to ensure that customers repair new water leaks, maintain an affordable consumption and does not build up arrears need to be addressed in the early stages of the project, in order to ensure the sustainability of the project.

Overstrand Municipality continues with the implementation of their pipeline replacement programme for all the priority areas with old reticulation networks and frequent pipe failures. It is important for Overstrand Municipality to also continue with the implementation of their Leakage Management Programme (Measure the volume of water that is lost, identify and qualify losses, conduct operational and network audits, improve performance: network upgrade, design action plans and sustain performance with good staffing / organization structures).

The Municipality continue with their phased pro-active replacement of all old water meters. Meters not working are immediately replaced. Any leaks at existing meters are also repaired as soon as it is reported. The building inspectors include the inspection of the water meter installations during the foundation inspections at construction / building sites. This information is also implemented and captured on EMIS by the Building Inspectorate.

A rough estimate of the number of meters that need to be replaced every year is the number of meters divided by 12, assuming that the life of the meters is not more than 12 years. Although it is assumed that the average lifespan of a meter is 12 years for budgeting purposes, it is necessary to carry out research to determine the most optimal replacement age for each type of meter in various circumstances. The research should identify the different types of meters, in different pressure zones and carry out accuracy tests for a number of samples at different ages. In this way a policy can be developed of when each type of meter under various circumstances should be replaced.

Overstrand Municipality needs to ensure that adequate funding is allocated under their Capital and Operational budgets towards the implementation of the WC/WDM initiatives. All external funding that could be utilised by Overstrand Municipality for this purpose should be sourced.

Overstrand Municipality's current water information database appears adequate from a water services management perspective (Metering of volume of water at source, WTWs, reservoirs and distribution zones). Overstrand Municipality is committed to continue with the metering of all the influent received at their WWTWs, the quantity of treated effluent re-used and the quantity of treated effluent returned to the Water Resource System. This information is critical for planning purposes with regard to WWTWs upgrading.

Overstrand Municipality is also committed to keep on updating the water balance models on a monthly basis in order to determine locations of wastage and to enable Overstrand Municipality to actively implement their WDM Strategy to reduce the percentage of 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.

TOPIC 6: WATER RESOURCES

Topic C.6.1: Water Resource						
Section	**Intervention Required?**	**%**	**Solution description as defined by topic situation assessment**	**%**	**Is there an Existing project/activity addressing this problem?**	**Current Demand Overall Scoring %**
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

Metering of all water consumption 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.

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 2044 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 projected future water requirements and the yield or licence volume surplus or shortfalls are indicated in the table below for each of the systems.

Table C.6.2: Projected Future Water Requirements and Yield / License Surplus (+) / Shortfall (-) based on WSDP Model						
Distribution System	**Model**	**PROJECTED FUTURE WATER REQUIREMENTS (Ml/a)**				
		2024	**2029**	**2034**	**2039**	**2044**
Buffels River	2.5% Annual Growth	868.914	983.096	1 112.283	1 258.446	1 423.816
	3.5% Annual Growth	912.135	1 083.330	1 286.656	1 528.144	1 814.956
	WSDP Model	**793.529**	**925.148**	**1 084.892**	**1 279.223**	**1 516.155**
	Yield surplus (+) / shortfall (-)	**+923.471**	**+791.852**	**+632.108**	**+437.777**	**+200.845**
Kleinmond	2.5% Annual Growth	1 016.558	1 150.142	1 301.280	1 472.279	1 665.748
	3.5% Annual Growth	1 067.123	1 267.407	1 505.282	1 787.803	2 123.350
	WSDP Model	**980.438**	**1 111.773**	**1 265.334**	**1 445.393**	**1 657.124**
	Yield surplus (+) / shortfall (-)	**+1 608.932**	**+1 477.597**	**+1 324.036**	**+1 143.977**	**+932.246**
Greater Hermanus	3.0% Annual Growth	4 786.301	5 548.634	6 432.388	7 456.900	8 644.591
	4.0% Annual Growth	5 023.201	6 111.492	7 435.564	9 046.501	11 006.452
	WSDP Model	**5 081.060**	**6 412.613**	**8 120.840**	**10 316.302**	**13 142.579**
	License surplus (+) / shortfall (-)	**+118.940**	**-1 212.613**	**-2 920.840**	**-5 116.302**	**-7 942.579**
Stanford	2.5% Annual Growth	413.477	467.811	529.285	598.837	677.529
	3.5% Annual Growth	434.044	515.508	612.261	727.174	863.655
	WSDP Model	**419.164**	**500.432**	**599.499**	**720.415**	**868.170**

Table C.6.2: Projected Future Water Requirements and Yield / License Surplus (+) / Shortfall (-) based on WSDP Model						
Distribution System	**Model**	**PROJECTED FUTURE WATER REQUIREMENTS (Ml/a)**				
		2024	**2029**	**2034**	**2039**	**2044**
	License surplus (+) / shortfall (-)	**+1 180.836**	**+1 099.568**	**+1 000.501**	**+879.585**	**+731.830**
Greater Gansbaai	3.0% Annual Growth	1 767.434	2 048.940	2 375.283	2 753.604	3 192.182
	4.0% Annual Growth	1 854.914	2 256.786	2 745.726	3 340.595	4 064.345
	WSDP Model	**1 783.549**	**2 139.082**	**2 581.662**	**3 134.699**	**3 828.161**
	Yield surplus (+) / shortfall (-)	**+984.432**	**+628.899**	**+186.319**	**-366.718**	**-1 060.180**
Pearly Beach	2.5% Annual Growth	175.785	198.884	225.019	254.589	288.044
	3.5% Annual Growth	184.528	219.162	260.296	309.150	367.173
	WSDP Model	**177.536**	**220.257**	**275.105**	**345.760**	**437.053**
	Yield surplus (+) / shortfall (-)	**+129.364**	**+86.643**	**+31.795**	**-38.860**	**-130.153**
Baardskeer-dersbos	2.5% Annual Growth	20.717	23.440	26.520	30.005	33.948
	3.5% Annual Growth	21.748	25.829	30.677	36.435	43.273
	WSDP Model	**17.589**	**17.486**	**17.465**	**17.534**	**17.706**
	Yield surplus (+) / shortfall (-)	**+72.411**	**+72.514**	**+72.535**	**+72.466**	**+72.294**
Buffeljags Bay	2.5% Annual Growth	5.679	6.425	7.269	8.224	9.305
	3.5% Annual Growth	5.961	7.080	8.409	9.987	11.861
	WSDP Model	**5.385**	**5.978**	**6.718**	**7.645**	**8.810**
	Yield surplus (+) / shortfall (-)	**+22.997**	**+22.404**	**+21.664**	**+20.737**	**+19.573**

The table below gives an overview of the years in which the annual water requirements is 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 2019/2020 requirement (2.5% or 3%)**	**Annual Growth on 2019/2020 requirement (3.5% or 4%)**	**WSDP Projection Model**
Buffels River	1.717 (Y)	> 2044 (2.5%)	2042 (3.5%)	> 2044
Kleinmond	2.589 (Y)	> 2044 (2.5%)	2043 (3.5%)	> 2044
Greater Hermanus	5.200 (L) *	2026 (3.0%)	2024 (4.0%)	2024
Stanford	1.600 (L)	> 2044 (2.5%)	> 2044 (3.5%)	> 2044
Greater Gansbaai	2.768 (Y)	2038 (3.0%)	2034 (4.0%)	2035
Pearly Beach	0.307 (Y)	> 2044 (2.5%)	2038 (3.5%)	2036
Baardskeerdersbos	0.090 (Y)	> 2044 (2.5%)	> 2044 (3.5%)	> 2044
Buffeljags Bay	0.028 (Y)	> 2044 (2.5%)	> 2044 (3.5%)	> 2044

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 (Hemel & Aarde), Stanford, Buffeljags Bay and Baardskeerdersbos. The DWS also updated their 2010/2011 All Towns Reconciliation Strategies during 2015 and the table below gives an overview of the recommended potential future water resources as included in the updated Strategies (**Additional comments by Municipality**):

Table C.6.4: Potential Future Water Resources for the 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):** • Continue with the implementation of the WC/WDM Strategy and measures. • Groundwater development in the TMG Aquifer. • Raising of Buffels River dam wall • Abstraction from the Palmiet River • 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):**

Table C.6.4: Potential Future Water Resources for the Towns (Summary of DWS's All Towns Reconciliation Strategies)	
Distribution System	**Recommended Summary Options**
	• Continue with the implementation of the WC/WDM Strategy and measures. • Increase allocation from the Palmiet River, when required. • **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):** • Full implementation of the WC/WDM Strategy and measures. • **Develop groundwater to its full potential (Licenced volumes).** • Regional scheme with Overberg Water for possible bulk supply from the Theewaterskloof Dam or the Palmiet River. • Direct and indirect potable water re-use. • Desalination of seawater.
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):** • Continue with the implementation of the WC/WDM Strategy and measures. • 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):** • Continue with the implementation of the WC/WDM Strategy and measures. • Groundwater development in the TMG Aquifer. • 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):** • Continue with the full implementation of the WC/WDM Strategy and measures. • Groundwater development, if required.
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):** • Continue with the full implementation of the WC/WDM Strategy and measures. • Further groundwater development, if required.
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):** • Continue with the full implementation of the WC/WDM Strategy and measures. • 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. The Municipality recently completed the augmentation of the Hermanus (Gateway) boreholes, and is busy with planning of augmentation of the Camphill and Volmoed well fields.

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: This involves the installation of a 3 Ml/d seawater desalination plant, situated on the southern shores of the town, near the Abagold abalone cultivation facility. The desalination plant would share Abagold's existing intake and brine outfall facilities which would reduce the capital investment required. In addition, a prefabricated desalination plant with a low chemical consumption is also preferred which would further reduce the capital and operational costs in comparison to a conventional seawater desalination plant of the same size and purpose.

- Desalination-based direct reuse scheme: This process is based on reclaiming secondary treated effluent sources from the Hermanus WWTW and treated to potable standard.

- Non-desalination based direct reuse scheme: This treatment option has very similar merits to the RO based option. However, the treatment train achieves the required treatment objectives without use of reverse osmosis. Consequently, the treatment train is unable to address the high salinity of the raw water, resulting in the need to pump this water to Preekstoel WTW for sufficient dilution and then distribution.

- Remix scheme: This is a hybrid scheme that involves blending desalinated water with reclaimed water on a 50:50 basis. The option involves combining a 1.5 Ml/d plant with a 1.5 Ml/d non-RO-based reuse plant. The motivation behind this configuration being to diminish the wastewater history of the recovered water as well as to reduce the TDS of the reclaimed water with the seawater permeate. The treated water from this scheme is suitable to be fed to the Hermanus 1&2 reservoirs.

- Palmiet River abstraction: This option involves pumping water from the Palmiet River to the De Bos Dam for augmentation of the raw water supplies to the Preekstoel WTW. The water will accordingly be treated via the existing Preekstoel WTW.

- Aquifer recharge: This involves treating secondary effluent from the Hermanus WWTW and then recharging either the fractured rock Table Mountain Group (TMG) aquifer or porous (Quaternary sands) aquifer. However, due to insufficient storage capacity by the aquifer and other reasons discussed in the report, this option was not considered further.

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. 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 (DEA & DP). 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, 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 (DEA & DP);

- 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 (DEA & DP);

- 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 (DEA & DP);

- 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 (DEA & DP);

- 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 Aurecon 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;

- A reliable seawater quality dataset was not received from Abagold although Abagold indicated that they would be willing to share their information with the Consultant in the interest of the study. Overstrand Municipality is currently undertaking a separate seawater sampling program covering all 4 seasons 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: The collection of at least twelve (12) water samples over a twelve (12) month period was proposed and to have these samples analysed comprehensively by an accredited laboratory.

- Renewable energy options: An investigation into available renewable energy options to reduce the impact of the electricity price on the overall operational cost of the desalination plant was explored. Various renewable energy options such as wind, hydro, biomass, wave energy and solar energy were investigated. The suitability of applying these renewable energy options to power a SWRO plant was considered with the following conclusions:
  - Wind technology is not recommended due to the length and complexity of permitting and uncertainty around technology options for small scale self-generation.
  - Hydro technology is not recommended due to high site establishment and capex costs.
  - Biomass digesters are a possible innovative solution; however, the quantity and quality of the abalone farm waste may make this technology unreliable.
  - Whilst there has been tremendous growth in wave & tidal energy over the last decade, it is not yet mature enough to move forward in securing a reliable power supply. The construction costs are simply too high for it to be competitive with well-established renewable energy options such as wind or solar.

  Based on the feasibility study, solar PV is the most viable renewable energy resource. Integrating a battery energy storage system with Solar PV for days when there is inadequate sunlight and to run the SWRO plant during the night is unfortunately an expensive option for the SWRO plant, given the current overall costs of installing and operating a battery energy storage system. It was recommended that a thorough investigation be done regarding the energy mix of the plant and how to optimize the generation to best fit the load requirements.

- Electricity cost sensitivity analysis: Changes less than 40% in the base electricity price of R1-30/kWh will not have a significant impact on the final cost of desalinated water. A 40% increase in the electricity price will only lead to a 15% increase in the overall cost of producing potable water via SWRO desalination. An electricity price increase as high as 65% will lead to an operating cost increase of 35%, where the cost of producing water will then approach R25/kl. For higher plant capacities, electricity price fluctuations are slightly less sensitive on the final cost of desalinated water so the impact would be less.

  However, in order to optimise the high portion that energy consumption has on the overall operating costs, it was recommended to investigate the use of demand-side management tools by utilising Eskom's time-of-use power tariff structures. Additionally, energy recovery devices as well as supplementation with renewable energy could also play a major role in reducing electricity costs. Augmenting grid power with PV plus storage to drive desalination carries a price premium, but also provides an important benefit, namely, an energy storage facility that can provide dispatchable electricity.

- Contracting modes: Overstrand Municipality will need to carefully weigh the risks associated with all project delivery methods and choose a contract mode that will provide desalinated water reliably and cost-effectively to its consumers.

- Recommended water price plan: The operational cost of a seawater reverse osmosis plant was calculated at R16-50/m³. An availability charge may well also have to be added to this prices and can be discussed. The price of water should of course also be reviewed on an annual basis to allow for yearly inflation.

- Suitability of earmarked SWRO site: The identified 9000m² vacant land is more than adequate for the potential construction of a SWRO plant. Currently some challenges are being experienced with regard to the availability of land for the plant, which will need further investigation and negotiations.

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 dam efficiently. Other future resource options include groundwater development and the possible Kraaibosch Dam transfer 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.

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 Waste Water 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: All industrial consumers need to formally apply for the discharge of industrial effluent into the sewer system. The Municipality is currently busy with the updating of their Water Supply and Sanitation Services By-law. The updating include 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 as and when required with regard to the quality of final effluent discharged by them.

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 need to apply for discharge permits and they must 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 management of key financial and governance areas is achieved by focusing on the following:

- Reducing the levels of outstanding debt owed to the Municipality, to assist with service delivery spending and maintaining a healthy cash flow;
- Maintaining an unqualified audit for the Municipality by resolving audit findings and improving financial governance; and
- Maintaining a good credit rating to ensure favourable lending rates and terms.

The financial services challenges of Overstrand Municipality and the actions to address these challenges were indicated as follows in the Municipality's 2019/2020 Annual Report (March 2020).

Table C.7.1: Financial Viability Challenges and Actions to Address These Challenges		
Challenge	**Actions to address challenge**	**Progress made in 2018/19 to address challenge**
The on-going difficulties in the national and local economy and the subsequent risk of an increase in outstanding debtors. The decline of 1.42% in collection of outstanding debtors, can be ascribed to the following areas among others, currently impacting on amounts outstanding: • Fire Services accounts (Sundry), due to lengthy legal processes followed to collect amounts; • Insolvent Private Residential developments (Rates & Taxes); • Outstanding Government Accounts (Rates & Taxes)	Applying Strict credit control measures.	Regression in outstanding debtors recovered: 0.97%. 2018/2019 98.67%, 2017/2018: 99.64% and 2016/2017: 99.44% Procedures and mechanisms to collect all the monies due and payable to the Municipality arising out of the supply of services and annual levies, are enforced on a continuous basis.
Ever aging water, roads, sewage and electricity infrastructure.	Prioritising of projects in terms of Revenue protection, Asset conservation and supply of basic services as a constitutional obligation. Regular and planned maintenance.	The capital budget is set aside for spending on infrastructure and services, such as roads, storm water, essential basic services and other utilities and services that Overstrand needs in order to function, grow and offer opportunities to its residents. Capital expenditure on projects increased: 2018/2019 R175.1M, 2017/2018 R105.2M and 2016/2017 R91.8M Operational Budget expenditure on Repairs and Maintenance relates to an above inflation increase in spending: 2018/2019 R215M, 2017/2018 R160M and 2016/2017 R120.6M
Above inflation increases in salaries & wages and other core expenditure such as fuel, chemicals etc. vs inflation related tariff increases.	Reviewing processes for operational efficiencies, reduction in non-core expenditure and monitor service level standards.	Increases in own controlled operational expenditures have been kept below inflation, except where contractual obligations exists. The outsourcing of the water and waste water treatment plants, in respect of operational efficiencies, has been implemented through a new contract. Adhere to cost containment measures.

Overstrand Municipality's financial viability performance in terms of the National Key Performance indicators is summarised in the table below (2019/2020 Annual Report, March 2020).

Table C.7.2: Financial Viability Performance in Terms of the National Key Performance Indicators							
Description	**Basis of calculation**	**2013/2014**	**2014/2015**	**2015/2016**	**2016/2017**	**2017/2018**	**2018/2019**
Cost coverage	Available cash + Investments / Monthly fixed operational expenditure	2.31	2.47	3.83	5.18	9.36	9.15
Service debtors to revenue	Total outstanding service debtors / annual revenue received for services	10.4%	10.42%	10.43%	10.77%	10.76%	11.30%
Debt coverage	Total Operating Revenue – Operating Grants Received / Debt service payments due within the financial year	16.76	16.97	17.71	18.99	20.72	22.32

Overstrand Municipality has implemented the following financial management reforms to ensure that resources are used efficiently and in order to achieve their financial objectives of effective financial management:

- Efficient costing of services and projects by identifying and managing the cost drivers.
- 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 and implementation of a long term financial plan to ensure the financial viability of the municipality is maintained.

Expenditure:

Operational: The future planned expenditure by type for Overstrand Municipality, as included in the 2020/2021 Adjusted Budget, is as follows:

Table C.7.3: Expenditure Items by Type, as included in the 2020/2021 Adjustments Budget				
Expenditure Items	**% of total 2020/2021 Expenditure**	**2020/2021 Adjusted Budget**	**2021/2022**	**2022/2023**
Employee related costs	32.80%	R440 972 000	R456 328 000	R482 727 000
Remuneration of Councillors	0.89%	R11 896 000	R12 436 000	R13 002 000
Debt Impairment	1.95%	R26 263 000	R27 577 000	R28 955 000
Depreciation and Asset Impairment	10.56%	R141 877 000	R139 714 000	R133 277 000
Finance Charges	3.83%	R51 482 000	R52 210 000	R52 352 000
Bulk Purchases	20.11%	R270 260 000	R290 978 000	R313 126 000
Other Materials	3.78%	R50 806 000	R43 347 000	R45 265 000
Contracted Services	17.06%	R229 349 000	R235 538 000	R247 162 000
Transfers and Grants	0.62%	R8 300 000	R11 610 000	R11 610 000
Other Expenditure	8.40%	R112 917 000	R132 461 000	R144 310 000
Loss on disposal of PPE	0.00%	R0	R0	R0
Total Expenditure	**100.00%**	**R1 344 122 000**	**R1 402 199 000**	**R1 471 786**

Source: 2020/2021 Medium Term Revenue and Expenditure Framework for Overstrand Municipality: Table B4 – Adjustments Budget 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. A maintenance management system was established, which 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.

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

- Develop an AMP, 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.
- 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.
- Overstrand Municipality needs to continue to strictly enforce their Customer Care, Credit Control and Debt Collection Policy and By-laws.

Capital: The Water and Sewer Master Plans (June 2016) recommended upgrades to the values indicated in the tables below in the foreseeable future in order to accommodate development and population growth according to the SDF (2015/2016 Values, which include P&Gs, Contingencies and Fees, but exclude EIA studies, registration of servitudes and / or land acquisition and VAT).

Table C.7.4: Future Water Infrastructure Required (June 2016 Water Master Plan)

System	Component	2017-2020	2021-2025	2026-2030	> 2030	Total
Buffels River	Reticulation	R4 676 420	R4 349 660	R540 540	R0	R9 566 620
	Reservoirs and Pump Stations	R19 480 720	R3 766 000	R0	R0	R23 246 720
	WDM	R317 460	R0	R0	R0	R317 460
	Total	**R24 474 600**	**R8 115 660**	**R540 540**	**R0**	**R33 130 800**
Kleinmond	Reticulation	R1 211 700	R2 253 440	R716 800	R522 060	R4 704 000
	Reservoirs and Pump Stations	R0	R0	R0	R5 914 440	R5 914 440
	WDM	R50 000	R0	R0	R0	R50 000
	Total	**R1 261 700**	**R2 253 440**	**R716 800**	**R6 436 500**	**R10 668 440**
Greater Hermanus	Reticulation	R19 233 480	R8 387 820	R8 412 320	R894 180	R36 927 800
	Reservoirs and Pump Stations	R39 014 080	R15 321 320	R27 462 680	R2 488 080	R84 286 160
	WDM	R700 000	R0	R0	R0	R700 000
	Total	**R58 947 560**	**R23 709 140**	**R35 875 000**	**R3 382 260**	**R121 913 960**
Stanford	Reticulation	R3 268 580	R0	R0	R310 660	R3 579 240
	Reservoirs and Pump Stations	R0	R4 949 000	R0	R0	R4 949 000
	WDM	R100 000	R0	R0	R0	R100 000
	Total	**R3 368 580**	**R4 949 000**	**R0**	**R310 660**	**R8 628 240**
Greater Gansbaai	Reticulation	R19 947 760	R9 838 780	R22 556 800	R1 877 120	R54 220 460
	Reservoirs and Pump Stations	R12 120 500	R18 340 700	R47 767 860	R5 984 300	R84 213 360
	WDM	R500 000	R0	R0	R0	R500 000
	Total	**R32 568 260**	**R28 179 480**	**R70 324 660**	**R7 861 420**	**R138 933 820**
Pearly Beach	Reticulation	R0	R166 460	R853 160	R528 640	R1 548 260
	Reservoirs and Pump Stations	R0	R0	R5 228 160	R0	R5 228 160
	WDM	R100 000	R0	R0	R0	R100 000
	Total	**R100 000**	**R166 460**	**R6 081 320**	**R528 640**	**R6 876 420**
Baardskeerdersbos	Reticulation	R0	R0	R0	R0	R0
	Reservoirs and Pump Stations	R0	R0	R0	R0	R0
	WDM	R0	R0	R0	R0	R0
	Total	**R0**	**R0**	**R0**	**R0**	**R0**
Buffeljags Bay	Reticulation	R0	R0	R0	R0	R0
	Reservoirs and Pump Stations	R0	R0	R0	R0	R0
	WDM	R0	R0	R0	R0	R0
	Total	**R0**	**R0**	**R0**	**R0**	**R0**
Total		**R120 720 700**	**R67 373 180**	**R113 538 320**	**R18 519 480**	**R320 151 680**

Table C.7.5: Future Sewerage Infrastructure Required (June 2016 Sewer Master Plan)

System	Component	2017-2020	2021-2025	2026-2030	> 2030	Total
Buffels River	Drainage network	R80 975 200	R37 733 600	R10 949 000	R0	R129 657 800
	Pump Stations and Rising Mains	R8 153 500	R4 537 700	R2 922 200	R0	R15 613 400
	Bulk sewerage infrastructure	R37 480 400	R7 779 200	R5 067 000	R0	R50 326 600
	Total	**R126 609 100**	**R50 050 500**	**R18 938 200**	**R0**	**R195 597 800**
Kleinmond	Drainage network	R45 348 000	R2 355 200	R0	R0	R47 703 200
	Pump Stations and Rising Mains	R98 200	R0	R0	R0	R98 200
	Bulk sewerage infrastructure	R0	R0	R236 300	R0	R236 300
	Total	**R45 446 200**	**R2 355 200**	**R236 300**	**R0**	**R48 037 700**
Greater Hermanus	Drainage network	R43 715 200	R35 429 700	R10 438 100	R3 698 700	R93 281 700
	Pump Stations and Rising Mains	R4 088 400	R7 621 100	R7 506 500	R0	R19 216 000
	Bulk sewerage infrastructure	R0	R0	R0	R0	R0
	Total	**R47 803 600**	**R43 050 800**	**R17 944 600**	**R3 698 700**	**R112 497 700**

Table C.7.5: Future Sewerage Infrastructure Required (June 2016 Sewer Master Plan)						
System	**Component**	**2017-2020**	**2021-2025**	**2026-2030**	**> 2030**	**Total**
Stanford	Drainage network	R5 240 800	R4 974 500	R337 800	R0	R10 553 100
	Pump Stations and Rising Mains	R1 492 200	R658 700	R775 600	R0	R2 926 500
	Bulk sewerage infrastructure	R0	R0	R0	R0	R0
	Total	**R6 733 000**	**R5 633 200**	**R1 113 400**	**R0**	**R13 479 600**
Greater Gansbaai	Drainage network	R39 921 700	R33 592 600	R36 205 000	R13 615 200	R123 334 500
	Pump Stations and Rising Mains	R4 209 900	R7 383 800	R11 897 100	R8 812 200	R32 303 000
	Bulk sewerage infrastructure	R4 264 900	R7 072 600	R0	R0	R11 337 500
	Total	**R48 396 500**	**R48 049 000**	**R48 102 100**	**R22 427 400**	**R166 975 000**
Pearly Beach	Drainage network	R0	R7 305 500	R15 805 800	R0	R23 111 300
	Pump Stations and Rising Mains	R486 000	R2 605 000	R2 422 500	R0	R5 513 500
	Bulk sewerage infrastructure	R0	R0	R0	R0	R0
	Total	**R486 000**	**R9 910 500**	**R18 228 300**	**R0**	**R28 624 800**
Baardskeerdersbos	Drainage network	R0	R0	R2 957 100	R0	R2 957 100
	Pump Stations and Rising Mains	R0	R0	R0	R0	R0
	Bulk sewerage infrastructure	R0	R0	R730 800	R0	R730 800
	Total	**R0**	**R0**	**R3 687 900**	**R0**	**R3 687 900**
Buffeljags Bay	Drainage network	R0	R0	R300 800	R0	R300 800
	Pump Stations and Rising Mains	R0	R0	R0	R0	R0
	Bulk sewerage infrastructure	R0	R0	R730 800	R0	R730 800
	Total	**R0**	**R0**	**R1 031 600**	**R0**	**R1 031 600**
Total		**R275 474 400**	**R159 049 200**	**R109 282 400**	**R26 126 100**	**R569 932 100**

The previous two tables are for the internal systems and exclude the bulk infrastructure needs (Augmentation of Water Sources, Bulk Pipelines and the upgrading of WTWs and WWTWs).

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

Table C.7.6 Estimated Capital Expenditure (Functional) of Overstrand Municipality's Future Capital Budget			
Capital Expenditure Functional	**2020/2021 Adjusted Budget**	**2021/2022**	**2022/203**
Executive and Council	R466 000	R0	R0
Finance and Administration	R3 070 000	R30 000 000	R20 000 000
Internal Audit	R0	R0	R0
Community and Social Services	R18 084 000	R5 617 000	R0
Sport and Recreation	R8 588 000	R1 739 000	R0
Public Safety	R13 168 000	R1 352 000	R0
Housing	R42 939 000	R46 666 000	R37 850 000
Health	R0	R0	R0
Planning and Development	R10 372 000	R6 822 000	R0
Road Transport	R22 585 000	R3 571 000	R17 000 000
Environmental Protection	R0	R0	R0
Energy Sources	R19 119 000	R38 500 000	R22 000 000
Water Management	R50 036 000	R37 516 000	R22 000 000
Waste Water Management	R69 635 000	R31 634 000	R26 528 000
Waste Management	R22 024 000	R1 200 000	R0
Other	R0	R0	R0
Total Capital Expenditure	**R280 086 000**	**R204 617 000**	**R145 378 000**

Source: 2020/2021 Medium Term Revenue and Expenditure Framework for Overstrand Municipality: Table B5 – Adjustments Capital Expenditure by Vote and Funding

The water and sewerage infrastructure in most of the Municipalities are under increasing threat of widespread failure, due to inadequate rehabilitation and maintenance of the networks. **This is also the case in Overstrand Municipality's Management Area with 63.5% of the water infrastructure and 38.3% of the sewerage infrastructure which has been consumed.** This is placing considerable strain on Overstrand Municipality's maintenance operations. The real solution is for the Municipality to continue with their current commitment towards a substantial and sustained programme of capital renewal works (Rehabilitation and Maintenance of the existing infrastructure).

The CRC of the water infrastructure that is expected to come to the end of its useful life over the next 20 years is R794.519 million (an average of R39.726 million per year) and for sewerage infrastructure the value is R248.193 million (an average of R12.410 million per year). The renewals burden is set to continue to increase sharply over the next 15 years, as is currently the case. Water and sewerage infrastructure assets with a total CRC of R632.372 million and R140.815 million will be reaching the end of their useful life over the next 10 years and will need to be replaced, rehabilitated or reconstructed.

It is therefore important for the Council to continue with their current committed capital renewal programme and to increase the budgets allocated towards the maintenance and rehabilitation of the existing infrastructure. The extent to which each type of water and sewerage infrastructure asset has been consumed are indicated in Tables A.3.6 and A.3.10. The Municipality's dedicated renewal programmes need to target the infrastructure components with low percentage figures (% CV/CRC). If this is not done, there is the risk that the on-going deterioration will escalate to uncontrolled proportions.

The recommendations for Overstrand Municipality, with regard to their Capital Funding, are as follows:

- To carefully balance cost and affordability of future capital budgets.

- 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 two to three 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 Overstrand Municipality's WDM Strategy (Demand Management) 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 and Growth Management Strategy) 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, because most of the funds for the water and sewerage capital infrastructure projects are from Overstrand Municipality's own funding sources. Actively implement the Customer Care, Credit Control and Debt Collection Policy in order to minimize the percentage of non-payment of municipal services.

- To identify all possible sources of external funding over the next number of years to assist Overstrand Municipality to address the bulk infrastructure backlogs that exist in the various towns and to ensure adequate rehabilitation and maintenance of the existing infrastructure.

- Develop AMPs for all water and sewerage infrastructure, which will indicate the real replacement values, the service life of the assets and the funds required to provide for adequate asset replacement.

- Give attention to the provision of basic water and sanitation services in the rural areas, once clear National Policy guidelines are available.

- Ensure adequate funds are allocated on an annual basis towards the rehabilitation and maintenance of the existing water and sewerage infrastructure.

Income:

Operational: The future planned revenue sources for Overstrand Municipality, as included in the 2020/2021 Adjusted Budget, is as follows:

Table C.7.7: Revenue Items by Source, as Included in the 2019/2020 Budget

Revenue Item	% of total 2020/2021 Income	2020/2021 Adjusted Budget	2021/2022	2022/2023
Property Rates	20.69%	R259 241 000	R275 226 000	R288 402 000
Service Charges – Electricity	30.84%	R386 294 000	R403 262 000	R463 064 000
Service Charges - Water	10.26%	R128 520 000	R134 919 000	R141 638 000
Service Charges - Sanitation	6.30%	R78 913 000	R82 858 000	R87 000 000
Service Charges - Refuse	5.55%	R69 482 000	R72 955 000	R76 602 000
Rental of facilities and equipment	0.29%	R3 627 000	R3 803 000	R3 990 000
Interest earned - external investments	2.11%	R26 400 000	R32 975 000	R34 615 000
Interest earned - outstanding debtors	0.37%	R4 650 000	R4 906 000	R5 145 000
Dividends received	0.00%	R0	R0	R0
Fines, penalties and forfeits	2.36%	R29 564 000	R31 039 000	R32 587 000
Licences and permits	0.19%	R2 385 000	R2 498 000	R2 618 000
Agency services	0.51%	R6 438 000	R5 184 000	R5 442 000
Transfers and subsidies	11.85%	R148 458 000	R141 735 000	R154 275 000
Other revenue	8.68%	R108 792 000	R129 827 000	R129 940 000
Gains on disposal of PPE	0.00%	R0	R0	R0
Total Revenue	**100.00%**	**R1 252 764 000**	**R1 321 187 000**	**R1 425 318 000**

Source: 2020/2021 Medium Term Revenue and Expenditure Framework for Overstand Municipality: Table B4 – Adjustments Budget Financial Performance (Revenue and Expenditure)

Capital: The total capital expenditure budget for water and sewerage infrastructure were roughly R60 million for the last two financial years. 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 MIG 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 continue to manage the charges for water and sanitation services and the control of consumer payments effectively, in order to ensure that adequate income is generated to fund the water and sewerage capital projects.

The future funding sources of Overstrand Municipality's total capital budget are summarised in the table below.

Table C.7.8: Sources of Funding for the Future Capital Budgets of Overstrand Municipality

Capital Funding Source	2020/2021 Adjusted Budget	2021/2022	2022/2023
National Government	R35 100 000	R28 470 000	R31 628 000
Provincial Government	R2 127 000	R0	R0
Other transfers and grants	R47 296 000	R52 667 000	R43 750 000
Public contributions and donations	R0	R0	R0
Borrowing	R75 228 000	R67 250 000	R50 000 000
Internally generated funds	R120 335 000	R56 230 000	R20 000 000
Total Capital Funding	**R280 086 000**	**R204 617 000**	**R145 378 000**

Source: 2020/2021 Medium Term Revenue and Expenditure Framework for Overstrand Municipality: Table B5 – Adjustments Capital Expenditure by Vote 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 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 an overview of the block step water tariffs of Overstrand Municipality (Vat Excluded), with some comments on the specific blocks.

Table C.7.9: Comments on the Municipality's Block Step Tariff Structure

Block (Kl / month)	20/21	19/20	18/19	17/18	16/17	Comments
0 – 6 *	R5-85	R5-60	R5-02	R4-50	R4-04	Free Basic Water
7 - 18	R11-99	R11-47	R10-85	R10-24	R9-66	Low volume use
19 - 20	R19-45	R18-61	R17-61	R16-61	R15-67	Typical use volume, including garden irrigation
21 - 30						Above average use, including garden irrigation
31 - 45	R29-95	R28-66	R27-11	R25-57	R24-13	
46 - 60	R38-89	R37-22	R35-21	R33-22	R31-35	Wasteful use and / or severe garden irrigation
61 - 100	R51-87	R49-64	R46-96	R44-30	R41-79	
> 100						Significant waste and / or unnecessary garden irrigation

Note: * Free basic water is only provided to indigent households from 2013/2014 onwards.

Overstrand Municipality will continue with their step block tariff system for water 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 tariff codes of Overstrand Municipality were reviewed to differentiate between residential, commercial and industrial users. These codes can be further reviewed so that distinction can also be made between user types for Municipal Usage (e.g. parks, sports, fire-fighting, etc.). A code should also be used to uniquely describe the water usage by schools.

The MFMA Circular No.78 of 7 December 2015 stipulated the following w.r.t. 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 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."

It is important for Overstrand Municipality to enforce their indigent qualification criteria rigorously in order to ensure that those who do not qualify are removed from the allocation list. The Municipality needs to determine whether the current Indigent Policy is not too generous and creates a situation where too many citizens in Overstrand Municipality's Management Area are making no monetary contribution toward the cost of delivering services to the community.

It is important for Overstrand Municipality to continue with the reading of all their bulk water meters. The bulk meters and meter chambers also need to be properly maintained and the meters need to be protected from vandalism.

TOPIC 8: WATER SERVICES INSTITUTIONAL ARRANGEMENTS AND CUSTOMER CARE

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 developed a new WSDP website to assist WSAs with the WSDP process and to provide a framework for the capturing of the data. Overstrand Municipality is committed to develop a new WSDP every five years and to update the WSDP as necessary and appropriate in the interim years.

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.

Mechanisms are in place to effectively monitor the compliance of consumers with regard to the Water Supply, Sanitation Services and Industrial Effluent By-laws.

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 classified workforce with dedicated training programmes for supervisors and operational personnel. A Work Place Skills Plan for 2020/2021 is in place, which lists the training to be provided during the current financial year.

The effective management and monitoring of Veolia Water Solutions & Technologies South Africa (Pty) Ltd, who was appointed for the Water and Waste Water 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.

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_2RAP and this WSDP contain some information on which the courses can be based. This will assist Overstrand Municipality's Human Resource 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 an Improvement / Upgrade Plan. The purpose of the Improvement / Upgrade Plan is to address the existing significant risks where the existing controls were not effective or absent. Barriers implemented by Overstrand Municipality against contamination and deteriorating water quality include the following:

- Participate in Catchment management and water source protection initiatives.
- Protection at points of abstraction such as river intakes and dams (Abstraction Management).
- Correct operation and maintenance of WTWs (Coagulation, flocculation, sedimentation and filtration).
- Protection and maintenance of the distribution system. This includes ensuring an adequate disinfectant residual at all times, rapid response to pipe bursts and other leaks, regular cleaning of reservoirs, keeping all delivery points tidy and clean, etc.

Three other important barriers implemented by Overstrand Municipality against poor quality drinking water that are a prerequisite to those listed above are as follows:

- A well-informed Council and top management that understands the extreme importance of and are committed to providing adequate resources for continuous professional operation and maintenance of the water supply system.
- Competent managers and supervisors in the technical department who are responsible for water supply services and lead by example and are passionate about monitoring and safeguarding drinking water quality.
- Well informed community members and other consumers of water supply services that have respect for water as a precious resource.

SECTION D: WATER SERVICES OBJECTIVES AND STRATEGIES

The water services strategies presented below were derived from the 2020/2021 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 (FY2019/2020 status quo)	WSDP FY2020/21 TARGET	WSDP FY2021/22 TARGET	WSDP FY2022/23 TARGET	WSDP FY2023/24 TARGET	WSDP FY2024/25 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 funding and sustainability of type of service).*	*100% of applications received are supported (Subject to availability of funding and sustainability of type of service).*	*100% of applications received are supported (Subject to availability of funding 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 funding and sustainability of type of service).*	*100% of applications received are supported (Subject to availability of funding and sustainability of type of service).*	*100% of applications received are supported (Subject to availability of funding 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.	285	300	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.	29 800	30 396	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.	884	930	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.	29 631	30 520	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.	130	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.
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.	98	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.
Topic 3: Water Services Asset Management							

Table: Table D.1: Water Services Objectives and Strategies							
Objective / Strategy	Key Performance Indicator	Baseline (FY2019/2020 status quo)	WSDP FY2020/21 TARGET	WSDP FY2021/22 TARGET	WSDP FY2022/23 TARGET	WSDP FY2023/24 TARGET	WSDP FY2024/25 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 (FY2019/2020 status quo)	WSDP FY2020/21 TARGET	WSDP FY2021/22 TARGET	WSDP FY2022/23 TARGET	WSDP FY2023/24 TARGET	WSDP FY2024/25 TARGET
The provision and maintenance of municipal services.	*% Of recommendations, as included in the Improvement / Upgrade Plan of the W_2RAP, 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.*
Completion of works orders within the next calendar month for sewerage maintenance (network): Gansbaai, Hermanus, Stanford and Hangklip/Kleinmond.	% Compliance within the completion time.	92%	92%	92%	92%	92%	92%
Completion of works orders within the next calendar month for sewer tanker services maintenance: Gansbaai, Hermanus, Stanford and Hangklip/Kleinmond.	% Compliance within the completion time.	98%	98%	98%	98%	98%	98%
Completion of works orders within the next calendar month for water distribution services: Gansbaai, Hangklip/Kleinmond, Hermanus and Stanford.	% Compliance with the completion time.	92%	92%	92%	92%	92%	92%
95% Of the total approved operational budget spent by the Deputy Director and Director, excluding capital charges and depreciation:	% Of maintenance budget spent.	95%	95%	95%	95%	95%	95%
Maintenance of sanitation services (tankers and networks) measured	% Completed.	92%	92%	92%	92%	92%	92%

Table: Table D.1: Water Services Objectives and Strategies							
Objective / Strategy	Key Performance Indicator	Baseline (FY2019/2020 status quo)	WSDP FY2020/21 TARGET	WSDP FY2021/22 TARGET	WSDP FY2022/23 TARGET	WSDP FY2023/24 TARGET	WSDP FY2024/25 TARGET
by the daily recording / completion of enquiries within the next calendar month.							
Maintenance of water services measured by the daily recording/completion of enquiries within the next calendar month.	% Completed.	92%	92%	92%	92%	92%	92%
95% of the total approved operational budget spent by the Senior Manager: Gansbaai, Hangklip/Kleinmond, Hermanus and Stanford, excluding capital charges and depreciation.	% Of maintenance budget spent	95%	95%	95%	95%	95%	95%
95% of the total approved operational budget spent by the Senior Operational Manager: Gansbaai, Hangklip/Kleinmond, Hermanus and Stanford, excluding capital charges and depreciation.	% Of maintenance budget spent.	95%	95%	95%	95%	95%	95%
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 90% with general or special limit in terms of the Water Act (Act 36 of 1998).	% Compliance	90%	90%	90%	90%	90%	90%
Quality of potable water comply 95% with SANS241.	% Compliance with SANS241.	95%	95%	95%	95%	95%	95%
Topic 5: Conservation and Demand Management (Topic 5.1: Water Resources)							
Limit unaccounted water to less than 20%.	% of water unaccounted for	19%	19%	19%	19%	19%	19%
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 well as final effluent re-used for*	-	-	*95% of all flows at WWTWs metered and meters read and*	*96% of all flows at WWTWs metered and meters read and*	*97% of all flows at WWTWs metered and meters read and*	*98% of all flows at WWTWs metered and meters read and*

Table: Table D.1: Water Services Objectives and Strategies							
Objective / Strategy	Key Performance Indicator	Baseline (FY2019/2020 status quo)	WSDP FY2020/21 TARGET	WSDP FY2021/22 TARGET	WSDP FY2022/23 TARGET	WSDP FY2023/24 TARGET	WSDP FY2024/25 TARGET
	irrigation purposes and that meters are read and recorded on at least a monthly basis.			*recorded at least monthly.*	*recorded at least monthly.*	*recorded at least monthly.*	*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%	95%	95%
Topic 8: Institutional Arrangements and Customer Care							
Respond to 90% of all citizen queries / complaints / requests and memorandums within 14 days from when the request is received via the Collaborator system.	% Responded within 14 days	90%	90%	90%	90%	90%	90%
Report on the implementation of the Water Services Development Plan annually by the end of October.	Report submitted.	1	1	1	1	1	1

SECTION E: WATER SERVICES MTEF PROJECTS

The Draft Water Services Medium-Term Expenditure Framework (MTEF) projects are presented below and outline the water services projects which are funded for implementation within the next three financial years. Table E.2a provides the projects identified for implementation in FY2021/22, Table E.2b provides the projects identified for implementation in FY2022/23 and Table E2c provides the projects identified for implementation in FY2023/24. The 2021/2022 Capital Budget is not yet finalised and the funded projects therefore might still change.

It should be highlighted that the projects included herein, represents only projects for which funding has already been secured, and therefore does not comprise the comprehensive water services project requirements of Overstrand Municipality.

The summary of the MTEF water services projects are presented as follows:

Table E.1: Summary of MTEF Projects

Project Main Category	FY2021/22		FY2022/23		FY2023/24		MTEF Total	
	Nr	Value (R'000)	Nr	Value (R'000)	Nr	Value (R'000)	Nr	Value (R'000)
Water Projects	8	R35,715	7	R25,900	7	R22,000	**22**	**R83,615**
Sanitation Projects	7	R34,366	6	R35,328	7	R31,568	**20**	**R101,262**
Combined Water & Sanitation Projects	**15**	**R70,081**	**13**	**R61,228**	**14**	**R53,568**	**42**	**R184,877**

Table E.2a: Water Services MTEF Projects - FY2021/22 (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 FY2018/19	FY2021/22 Budget	FY2021/22 Own	FY2021/22 MIG	FY2021/22 RBIG	FY2021/22 WSIG	FY2021/22 DR	FY2021/22 MWIG	FY2021/22 Other	Total Cost	
1. Infrastructure Projects								**R0**	**R45,081**								**R45,081**	
1.1		Fencing at water installations	Install fencing at water infrastructure	Security	Water	Other	Security		**R700**	R700							**R700**	Water Safety Plans
1.2		Water Facilities (Contingency)	Ensure adequate equipment at water facilities.	Water Quality	Water	Bulk	WTW		**R400**	R400							**R400**	WTW Process Audits
1.3		Upgrade water lines and new Booster PS valves	Upgrade water pipelines and Booster PS	Services	Water	Internal	Reticulation		**R4,000**		R4,000						**R4,000**	Water Master Plans
1.4		Upgrade bulk water Stanford	Upgrade bulk water	Services	Water	Bulk	Bulk pipelines		**R5,615**		R5,615						**R5,615**	Water Master Plans
1.5		Sewerage Facilities (Contingency)	Ensure adequate equipment at sewerage facilities.	Effluent Quality	Sewerage	Bulk	WWTW		**R650**	R650							**R650**	WWTW Process Audits
1.6		Kleinmond WWTW refurbishment and upgrade.	Upgrade and refurbish WWTW	Effluent Quality	Sewerage	Bulk	WWTW		**R3,450**	R3,450							**R3,450**	WSDP and WWTW Process Audit
1.7		Gansbaai CBD sewer network extension	Sewerage network extension in Gansbaai	Waterborne sanitation	Sewerage	Internal	Drainage network		**R6,250**	R6,250							**R6,250**	Sewer Master Plans
1.8		Fencing at sewerage installations	Install fencing at sewerage infrastructure	Security	Sewerage	Other	Security		**R2,000**	R2,000							**R2,000**	W_2RAP
1.9		Upgrading of pump stations and rising mains	Upgrade pump stations and rising mains	Waterborne sanitation	Sewerage	Bulk	Pump stations and rising mains		**R14,182**	R9,000			R5,182				**R14,182**	WSDP and Sewer Master Plans
1.10		Hermanus WWTW upgrade Screens RAS Sludge Dewatering	Upgrade and WWTW	Effluent Quality	Sewerage	Bulk	WWTW		**R3,000**	R3,000							**R3,000**	WWTW Process Audit
1.11		Upgrade bulk sewer supply area A&B (Masakhane)	Upgrade bulk sewer pipeline in Masakhane	Waterborne sanitation	Sewerage	Bulk	Sewer pipeline		**R4,834**		R4,834						**R4,834**	Sewer Master Plans
2. Source Development Projects								**R0**	**R2,000**								**R2,000**	
2.1		Upgrade Hermanus Wellfields Phase 2	Further groundwater development for Hermanus	Security of Supply	Water	Bulk	Sources		**R2,000**	R2,000							**R2,000**	WSDP
3. Demand Management projects								**R0**	**R18,000**								**R18,000**	
3.1		Replacement of water pipelines	Replace old sections of water reticulation network	Refurbishment	Water	Internal	Water reticulation		**R18,000**	R18,000							**R18,000**	Refurbishment
3.2		Meter Replacement Programme	Replace old / broken / leaking meters	Reduced NRW	Water	Internal	Water reticulation		**R0 ***								**R0 ***	WSDP
4. O&M Commitments								**R0**	**R5,000**								**R5,000**	
Operations																		
									R0								**R0**	
Maintenance																		
4.1		Refurbishment of bulk water pipelines	Replace old bulk water pipelines	Refurbishment	Water	Bulk	Bulk pipelines		**R3,000**	R3,000							**R3,000**	Refurbishment
4.2		Access Roads to Kleinmond and Buffelsrivier WTW upgrade	Upgrade access roads to WTW	Refurbishment	Water	Bulk	WTW		**R2,000**	R2,000							**R2,000**	Refurbishment
5. Institutional								**R0**	**R0 ***								**R0 ***	
5.1		Water Services Planning Projects	Water Services Audit, WSDP, By-laws Water and Sewer Master Plannning	Water Services Planning	Water and Sanitation	Other	Planning		**R0 ***								**R0 ***	WSDP
6. Water Services Programmes								**R0**	**R0 ***								**R0**	
Awareness Programs																		
6.1		Schools Awareness Programme	WC/WDM Awareness Raising Programmes for Schools	WC/WDM and reduced Demands	Water	Other	WC/WDM		**R0 ***								**R0 ***	WSDP
WASH Programs																		
									R0								**R0**	
		Total						**R0**	**R70,081**								**R70,081**	

Note: * Budget included under the O&M Budget and not the Capital Budget

WSDP-IDP WATER SECTOR INPUT REPORT FOR 2021/2022

Table E.2b: Water Services MTEF Projects - FY2022/23 (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										MTEF Project Source
								Prev spent FY2018/19	FY2022/23 Budget	FY2022/23 Own	FY2022/23 MIG	FY2022/23 RBIG	FY2022/23 WSIG	FY2022/23 DR	FY2022/23 MWIG	FY2022/23 Other	Total Cost	
1. Infrastructure Projects								**R0**	**R42,028**								**R42,028**	
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		New Voorberg Booster Pump Station	Construction of new pump station for Voorberg	Services	Water	Bulk	Pump Station		**R3,000**	R3,000							**R3,000**	Water Master Plans
1.4		Upgrade water lines and new Booster PS valves	Upgrade water pipelines and Booster PS	Services	Water	Internal	Reticulation		**R3,900**		R3,900						**R3,900**	Water Master Plans
1.5		Sewerage Facilities (Contingency)	Ensure adequate equipment at sewerage facilities.	Effluent Quality	Sewerage	Bulk	WWTW		**R700**	R700							**R700**	WWTW Process Audits
1.6		Kleinmond sewer network extension	Sewer network extension	Waterborne sanitation	Sewerage	Internal	Drainage network		**R4,000**	R4,000							**R4,000**	WSDP and Sewer Master Plans
1.7		Kleinmond WWTW refurbishment and upgrade.	Upgrade and refurbish WWTW	Effluent Quality	Sewerage	Bulk	WWTW		**R10,000**	R8,000	R2,000						**R10,000**	WSDP and WWTW Process Audit
1.8		Upgrading of pump stations and rising mains	Upgrade pump stations and rising mains	Waterborne sanitation	Sewerage	Bulk	Pump stations and rising mains		**R14,200**	R5,000			R9,200				**R14,200**	WSDP and Sewer Master Plans
1.9		Upgrade bulk sewer supply area A&B (Masakhane)	Upgrade bulk sewer pipeline in Masakhane	Waterborne sanitation	Sewerage	Bulk	Sewer pipeline		**R5,228**		R5,228						**R5,228**	WSDP and Sewer Master Plans
2. Source Development Projects								**R0**	**R0**								**R0**	
									R0								**R0**	
3. Demand Management projects								**R0**	**R10,000**								**R10,000**	
3.1		Replacement of water pipelines	Replace old sections of water reticulation network	Refurbishment	Water	Internal	Water reticulation		**R10,000**	R10,000							**R10,000**	Refurbishment
3.2		Meter Replacement Programme	Replace old / broken / leaking meters	Reduced NRW	Water	Internal	Water reticulation		**R0 ***								**R0 ***	WSDP
4. O&M Commitments								**R0**	**R9,200**								**R9,200**	
Operations																		
									R0								**R0**	
Maintenance																		
4.1		Refurbishment of bulk water pipelines	Replace old bulk water pipelines	Refurbishment	Water	Bulk	Bulk pipelines		**R2,000**	R2,000							**R2,000**	Refurbishment
4.2		Refurbishment of the Kleinmond and Buffels River WTW	Refurbishment of WTWs	Refurbishment	Water	Bulk	WTW		**R6,000**	R6,000							**R6,000**	Refurbishment
4.3		Refurbish Hermanus WWTW Treated Effluent irrigation Pipeline	Refurbish irrigation pipeline	Re-use	Sewerage	Bulk	Bulk pipelines		**R1,200**	R1,200							**R1,200**	Refurbishment
5. Institutional								**R0**	**R0 ***								**R0 ***	
5.1		Water Services Planning Projects	Water Services Audit, WSDP, By-laws Water and Sewer Master Plannning	Water Services Planning	Water and Sanitation	Other	Planning		**R0 ***								**R0 ***	WSDP
6. Water Services Programmes								**R0**	**R0 ***								**R0**	
Awareness Programs																		
6.1		Schools Awareness Programme	WC/WDM Awareness Raising Programmes for Schools	WC/WDM and reduced Demands	Water	Other	WC/WDM		**R0 ***								**R0 ***	WSDP
WASH Programs																		
									R0								**R0**	
		Total						**R0**	**R61,228**								**R61,228**	

Note: * Budget included under the O&M Budget and not the Capital Budget

Table E.2c: Water Services MTEF Projects - FY2023/24 (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 FY2018/19	FY2023/24 Budget	FY2023/24 Own	FY2023/24 MIG	FY2023/24 RBIG	FY2023/24 WSIG	FY2023/24 DR	FY2023/24 MWIG	FY2023/24 Other	Total Cost	
1. Infrastructure Projects								**R0**	**R37,068**								**R37,068**	
1.1		Water Facilities (Contingency)	Ensure adequate equipment at water facilities.	Water Quality	Water	Bulk	WTW		**R500**	R500							**R500**	WTW Process Audits
1.2		WTW for Buffeljags Bay	New WTW for Buffeljags Bay	Water Quality	Water	Bulk	WTW		**R3,000**		R3,000						**R3,000**	WSDP
1.3		New Booster pump station Gansbaai to De Kelders & Pipeline Refurbishment	Construction of new pump station and Pipeline refurbishment	Services	Water	Bulk	Pump Station and Reticulation		**R2,000**	R2,000							**R2,000**	WSDP and Water Master Plans
1.4		Sewerage Facilities (Contingency)	Ensure adequate equipment at sewerage facilities.	Effluent Quality	Sewerage	Bulk	WWTW		**R700**	R700							**R700**	WWTW Process Audits
1.5		Kleinmond sewer network extension	Sewer network extension	Waterborne sanitation	Sewerage	Internal	Drainage network		**R3,300**	R3,300							**R3,300**	WSDP and Sewer Master Plans
1.6		Kleinmond WWTW refurbishment and upgrade.	Upgrade and refurbish WWTW	Effluent Quality	Sewerage	Bulk	WWTW		**R4,538**	R3,000	R1,538						**R4,538**	WSDP and 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		**R4,000**	R4,000							**R4,000**	WSDP and Sewer Master Plans
1.8		Hawston WWTW refurbishment and upgrade.	Upgrade and refurbish WWTW	Effluent Quality	Sewerage	Bulk	WWTW		**R5,000**	R5,000							**R5,000**	WSDP and WWTW Process Audit
1.9		Upgrade bulk sewer supply area A&B (Masakhane)	Upgrade bulk sewer pipeline in Masakhane	Waterborne sanitation	Sewerage	Bulk	Sewer pipeline		**R10,530**		R10,530						**R10,530**	WSDP and Sewer Master Plans
1.10		Sewerage network extension and replacement for Zwelihle	Sewerage network extension and replacement in Zwelihle	Waterborne sanitation	Sewerage	Internal	Drainage network		**R3,500**		R3,500						**R3,500**	WSDP and Sewer Master Plans
2. Source Development Projects								**R0**	**R0**								**R0**	
									R0								**R0**	
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
3.2		Meter Replacement Programme	Replace old / broken / leaking meters	Reduced NRW	Water	Internal	Water reticulation		**R0 ***								**R0 ***	WSDP
4. O&M Commitments								**R0**	**R9,500**								**R9,500**	
Operations																		
									R0								**R0**	
Maintenance																		
4.1		Refurbishment of bulk water pipelines	Replace old bulk water pipelines	Refurbishment	Water	Bulk	Bulk pipelines		**R1,500**	R1,500							**R1,500**	Refurbishment
4.2		Refurbishment of the Kleinmond and Buffels River WTW	Refurbishment of WTWs	Refurbishment	Water	Bulk	WTW		**R6,000**	R6,000							**R6,000**	Refurbishment
4.3		Refurbish Kraaibosch Pump Station and Pipeline	Refurbishment of pump station and pipeline	Refurbishment	Water	Bulk	Pump Station and bulk pipeline		**R2,000**	R2,000							**R2,000**	Refurbishment
5. Institutional								**R0**	**R0 ***								**R0 ***	
5.1		Water Services Planning Projects	Water Services Audit, WSDP, By-laws Water and Sewer Master Plannning	Water Services Planning	Water and Sanitation	Other	Planning		**R0 ***								**R0 ***	WSDP
6. Water Services Programmes								**R0**	**R0 ***								**R0 ***	
Awareness Programs																		
6.1		Schools Awareness Programme	WC/WDM Awareness Raising Programmes for Schools	WC/WDM and reduced Demands	Water	Other	WC/WDM		**R0 ***								**R0 ***	WSDP
WASH Programs																		
									R0								**R0**	
		Total						**R0**	**R53,568**								**R53,568**	

Note: * Budget included under the O&M Budget and not the Capital Budget

SECTION F: WSDP PROJECTS

The identification of projects necessary to ensure the provision of adequate levels of water and sanitation services is based primarily 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 2016 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 Waste Water Treatment Works Master Plans;
- Infrastructure replacement needs (Asset Register);
- Ad hoc technical investigations;
- Budget proposals; and
- Asset Management Plans.

Overstrand Municipality's key water and sewerage capital infrastructure projects for the next three years are as follows:

- Upgrade various sections of the bulk and internal water reticulation networks, as recommended by the Water Master Plans. New Masakhane booster pump station valves and upgrade water lines. New Voorberg booster pump station.
- Refurbishment and replacement of various bulk water pipelines and internal water reticulation networks.
- Refurbishment of the Kleinmond- and Buffels River WTW and access roads. A new WTW for Buffeljags Bay.
- Continue with the implementation of WDM measures (Meter replacements, pipeline replacements, pressure management, etc.).
- New booster pump station for Gansbaai to De Kelders and pipeline refurbishment.
- Upgrade of the Hermanus Well Field Phase 2.
- Fencing at water and sewerage installations.
- Upgrade and extension of various sections of the bulk sewer pipelines and internal drainage networks (Hermanus, Kleinmond, Gansbaai), as recommended by the Sewer Master Plans.
- Upgrade screens, RAS and sludge dewatering at Hermanus WWTW. Refurbish Hermanus WWTW's treated effluent irrigation pipeline.
- Rehabilitation of the Kleinmond bulk sewer pipeline to the WWTW and the refurbishment and upgrade of the Kleinmond WWTW.
- Refurbishment and upgrade of the Hawston WWTW.
- Upgrade some of the sewer pump stations and replacement of various pumps.

The new 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 R261.201 million of which 71% are funded, 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 FY2021/22: 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	WSDP	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	WSDP	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		Fencing at water installations	R1,200	No	Yes	Yes
3.2	Some equipment at water facilities needs to be replaced	Ensure compliance with water quality standards SANS241	MTEF Project	Yes		Water Facilities (Contingency)	R2,600	No	Yes	Yes
3.3	Inadequate pressure and supply to consumers	Ensure adequate pressure and supply	MTEF Project	Yes		New Voorberg Booster Pump Station	R3,000	Yes	Yes	Yes
3.4	Capacity of existing water reticulation network is inadequate	Upgrade water reticulation network capacity	MTEF Project	Yes		Upgrade water lines and new Booster PS valves (Masakhane)	R7,900	Yes	Yes	Yes
3.5	Bulk pipeline capacity is inadequate	Upgrade bulk water pipelines capacity	MTEF Project	Yes		Upgrade bulk water for Stanford	R5,615	Yes	Yes	Yes
3.6	Lack of adequate treatment of raw water	Ensure compliance with water quality standards SANS241	MTEF Project	Yes		WTW for Buffeljags Bay	R3,000	Yes	Yes	Yes
3.7	Inadequate pressure and supply to consumers	Ensure adequate pressure and supply	MTEF Project	Yes		New Booster pump station Gansbaai to De Kelders & Pipeline Refurbishment	R6,000	Yes	Yes	Yes
3.8	Some equipment at sewerage facilities needs to be replaced	Ensure compliance with final effluent quality standards	MTEF Project	Yes		Sewerage Facilities (Contingency)	R3,450	No	Yes	Yes
3.9	Not all areas connected to waterborne sewer network	Sewer network extension and replacement	MTEF Project	Yes		Kleinmond sewer network extension	R7,300	No	Yes	Yes
3.10	Capacity of existing WWTW is inadequate	Ensure adequate treatment capacity	MTEF Project	Yes		Kleinmond WWTW refurbishment and upgrade.	R22,988	Yes	Yes	Yes
3.11	Not all areas connected to waterborne sewer network	Sewer network extension	MTEF Project	Yes		Gansbaai CBD sewer network extension	R11,550	No	Yes	Yes
3.12	Security at sewerage installations not adequate	Ensure all sewerage installations are adequately secured	MTEF Project	Yes		Fencing at sewerage installations	R2,000	No	Yes	Yes
3.13	Inadequate pump and bulk rising mains capacity	Upgrade capcity of sewer pump stations and rising mains	MTEF Project	Yes		Upgrading of pump stations and rising mains	R42,382	No	Yes	Yes
3.14	Capacity of existing WWTW is inadequate	Ensure adequate treatment capacity	MTEF Project	Yes		Hawston WWTW refurbishment and upgrade.	R18,300	Yes	Yes	Yes
3.15	Capacity of existing WWTW is inadequate	Ensure adequate treatment capacity	MTEF Project	Yes		Hermanus WWTW upgrade Screens RAS Sludge Dewatering	R3,000	Yes	Yes	Yes
3.16	Bulk sewer pipeline capacity is inadequate	Ensure adequate bulk sewer pipeline capacity	MTEF Project	Yes		Upgrade bulk sewer supply area A & B (Zwelihle)	R20,592	Yes	Yes	Yes
3.17	Not all areas connected to waterborne sewer network	Sewer network extension and replacement	MTEF Project	Yes		Sewerage network extension and replacement in Zwelihle	R3,500	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		Refurbishment of bulk water pipelines	R10,500	No	Yes	Yes
4.2	Access roads to Kleinmond and Buffelsriver WTW are inadequate.	Improve access roads to WTW	MTEF Project	Yes		Access Roads to Kleinmond Buffelsrivier WTW upgrade	R2,000	Yes	Yes	Yes
4.3	Existing re-use treated irrigation pipeline needs to be refurbished	Refurbish existing re-use bulk pipeline (Irrigation)	MTEF Project	Yes		Refurbish Hermanus WWTW Treated Effluent irrigation Pipeline	R1,200	Yes	Yes	Yes
4.4	Some of the components of the Kleinmond and Buffels River WTWs need to be refurbish (WTW Process Audits)	Refurbish existing WTWs	MTEF Project	Yes		Refurbishment of the Kleinmond and Buffels River WTW	R24,300	Yes	Yes	Yes
4.5	The Kraaibosch Pump Station needs to be refurbished	Refurbish existing pump stations that are in a poor or very poor condition, with regular failures.	MTEF Project	Yes		Refurbish Kraaibosch Pump Station and Pipeline	R2,500	Yes	Yes	Yes
4.6	WTW Process Audits need to be done annually	Sustainable operation of WTW	WSDP	Yes	O&M	Annual WTW Process Audits	R150	Yes	Yes	Yes
4.7	WWTW Process Audits need to be done annually	Sustainable operation of WWTW	WSDP	Yes	O&M	Annual WWTW Process Audits	R150	Yes	Yes	Yes
Topic 5: Conservation and Demand Management (Topic 5.1 Water Resources)										
	Done internally through O&M Budget									
Topic 5: Conservation and Demand Management (Topic 5.2 Water Balance)										
5.1	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		Replacement of Overstrand water pipelines	R51,200	No	Yes	Yes
5.2	Meter Replacement Programme	Replace old / broken / leaking meters	MTEF Project	Yes		Replacement of Overstrand water meters (Part of O&M Budget)	R0	No	Yes	Yes
5.3	WC/WDM programmes are required at schools to raise awareness	Schools Awareness Programme	MTEF Project	Yes		WC/WDM Awareness Raising Programmes for Schools (Part of O&M Budget)	R0	No	Yes	Yes
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		Upgrade Hermanus Wellfields Phase 2	R2,000	Yes	Yes	Yes

Table F.1: WSDP FY2021/22: 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 7: Financial										
	Done by other Department									
Topic 8: Institutional Arrangements and Customer Care										
8.1	Ensure adequate water and sanitation services planning	Water Services Audit, WSDP, By-laws, Water and Sewer Master Plannning	MTEF Project	Yes		Water Services Planning Projects (Part of O&M Budget)	R0	No	Yes	Yes
TOTAL: CURRENT NEEDS							**R261,201**			
	Funded						R184,877			
	% funded						71%			
FUTURE NEEDS										
Infrastructure										
F.1	Inadequate capacity of existing internal water reticulation networks	Ensure adequate internal water reticulation capacity	Water Master Plan	No	Various	Future internal reticulation network items for Buffels River	R9,567	Yes	No	No
F.2			Water Master Plan	No	Various	Future internal reticulation network items for Kleinmond	R4,704	Yes	No	No
F.3			Water Master Plan	No	Various	Future internal reticulation network items for Greater Hermanus	R36,928	Yes	No	No
F.4			Water Master Plan	No	Various	Future internal reticulation network items for Stanford	R3,579	Yes	No	No
F.5			Water Master Plan	No	Various	Future internal reticulation network items for Greater Gansbaai	R54,220	Yes	No	No
F.6			Water Master Plan	No	Various	Future internal reticulation network items for Pearly Beach	R1,548	Yes	No	No
F.7	Inadequate capacity of existing bulk water infrastructure (Reservoirs, pump stations and bulk pipelines)	Ensure adequate bulk water supply capacity	Water Master Plan	No	Various	Future reservoirs and pump stations for Buffels River	R23,247	Yes	No	No
F.8			Water Master Plan	No	Various	Future reservoirs and pump stations for Kleinmond	R5,914	Yes	No	No
F.9			Water Master Plan	No	Various	Future reservoirs and pump stations for Greater Hermanus	R84,286	Yes	No	No
F.10			Water Master Plan	No	Various	Future reservoirs and pump stations for Stanford	R4,949	Yes	No	No
F.11			Water Master Plan	No	Various	Future reservoirs and pump stations for Greater Gansbaai	R84,213	Yes	No	No
F.12			Water Master Plan	No	Various	Future reservoirs and pump stations for Pearly Beach	R5,228	Yes	No	No
F.13	Reduce NRW	Implementation of WDM measures	Water Master Plan	No	Various	Future WDM items for Overstrand	R1,767	Yes	No	No
F.14	Inadequate capacity of existing internal sewer drainage network	Ensure adequate internal sewer drainage capacity	Sewer Master Plan	No	Various	Future internal sewer drainage network items for Buffels River	R129,658	Yes	No	No
F.15			Sewer Master Plan	No	Various	Future internal sewer drainage network items for Kleinmond	R47,703	Yes	No	No
F.16			Sewer Master Plan	No	Various	Future internal sewer drainage network items for Greater Hermanus	R93,282	Yes	No	No
F.17			Sewer Master Plan	No	Various	Future internal sewer drainage network items for Stanford	R10,553	Yes	No	No
F.18			Sewer Master Plan	No	Various	Future internal sewer drainage network items for Greater Gansbaai	R123,335	Yes	No	No
F.19			Sewer Master Plan	No	Various	Future internal sewer drainage network items for Pearly Beach	R23,111	Yes	No	No
F.20			Sewer Master Plan	No	Various	Future internal sewer drainage network items for Baardskeerdersbos	R2,957	Yes	No	No
F.21			Sewer Master Plan	No	Various	Future internal sewer drainage network items for Buffeljags Bay	R301	Yes	No	No
F.22	Inadequate capacity of existing sewer pump stations	Ensure adequate bulk sewerage, pump station and rising mains capacity	Sewer Master Plan	No	Various	Future sewer pump stations and rising mains for Buffels River	R65,940	Yes	No	No
F.23			Sewer Master Plan	No	Various	Future sewer pump stations and rising mains for Kleinmond	R335	Yes	No	No
F.24			Sewer Master Plan	No	Various	Future sewer pump stations and rising mains for Greater Hermanus	R19,216	Yes	No	No
F.25			Sewer Master Plan	No	Various	Future sewer pump stations and rising mains for Stanford	R2,927	Yes	No	No
F.26			Sewer Master Plan	No	Various	Future sewer pump stations and rising mains for Greater Gansbaai	R43,641	Yes	No	No
F.27			Sewer Master Plan	No	Various	Future sewer pump stations and rising mains for Pearly Beach	R5,514	Yes	No	No
F.28	No sewer dainage network or plant	Ensure adequate treatment capacity	Sewer Master Plan	No	Various	New conservancy tank or package plant for existing erven	R731	Yes	No	No
F.29	No sewer dainage network or plant	Ensure adequate treatment capacity	Sewer Master Plan	No	Various	New conservancy tank or package plant for existing erven	R731	Yes	No	No
F.30	Capacity of existing WWTW is inadequate	Ensure adequate treatment capacity	WSDP	No	OS1415037	Expand Gansbaai WWTW	R10,000	Yes	No	No
F.31	Capacity of existing WWTW is inadequate	Ensure adequate treatment capacity	WSDP	No	OS1415099	Upgrade Kleinmond WWTW to 3.8 Ml/d	R136,459	Yes	No	No
F.32	Capacity of bulk supply pipeline is inadequate to meet future water requirements.	Ensure adequate bulk water supply capacity	WSDP	No	OS1415040	Upgrade bulk supply from Franskraal Dam to Franskraal WTW	R3,500	Yes	No	No
F.33	Capacity of bulk supply pipeline is inadequate to meet future water requirements.	Ensure adequate bulk water supply capacity	WSDP	No	OS1415041	Upgrade bulk supply from Kraaibosch Dam to Franskraal Dam	R44,000	Yes	No	No
F.34	Existing WTW needs to be refurbished	Ensure WTW remains fully operational	WSDP	No	OS1415117	Refurbishment of Pearly Beach WTW	R5,000	Yes	No	No

Table F.1: WSDP FY2021/22: 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.35	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	OS1415042	Augmentation of Greater Gansbaai existing sources	R30,000	Yes	No	No
F.36	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	OS1415067	Re-use of treated effluent for potable use (3Ml/day), Phase 1	R88,000	Yes	No	No
F.37	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	OS1415068	5Ml/day Seawater desalination plant	R60,000	Yes	No	No
F.38	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	OS1415116	Augmentation of Pearly Beach existing sources	R15,000	Yes	No	No
F.39	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							**R1,282,043**			