OVERSTRAND MUNICIPALITY

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

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

FY 2019/2020

OVERSTRAND MUNICIPALITY

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OVERSTRAND MUNICIPALITY

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PROJECT C00565 - OVERSTRAND MUNICIPALITY'S WSDP-IDP SECTOR INPUT REPORT FOR 2019/2020

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OVERSTRAND MUNICIPALITY

WSDP – IDP WATER SECTOR INPUT REPORT (EXECUTIVE SUMMARY)

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AADD	Average Annual Daily Demand
ACIP	Accelerated Community Infrastructure Programme
ADWF	Average Dry Weather Flow
AIDS	Acquired Immune Deficiency Syndrome
AMP	Asset Management Plan
BDS	Blue Drop System
COD	Chemical Oxygen Demand
CRC	Current Replacement Cost
CRR	Cumulative Risk Ratio
CRU	Community Residential Units
DAFF	Dissolved Air Flotation and Filtration
DRC	Depreciated Replacement Cost
DWQ	Drinking Water Quality
DWS	Department of Water and Sanitation
EC	Electrical Conductivity
EHP	Emergency Housing Programme
EIA	Environmental Impact Assessment
EMIS	Education Management Information Systems
EMS	Environmental Management Services Section
EPHP	Enhanced People's Housing Process
GA	General Authorisation
GAMAP	General Accepted Municipal Accounting Practice
GDIP	Green Drop Improvement Plan
GDS	Green Drop System
GRAP	Generally Recognized Accounting Practice
HH	Households
HIV	Human Immunodeficiency Virus
IBT	Inclining Block Tariff
IDP	Integrated Development Plan
ILI	Infrastructure Leakage Index
IMQS	Infrastructure Management Query System
IRDP	Integrated Rural Development Program
IRIS	Integrated Regulatory Information System
ISP	Internal Strategic Perspective
km^2	Square Kilometre
LGTAS	Local Government Turn Around Strategy
LM	Local Municipality
m	Metre
MAP	Mean Annual Precipitation
MAR	Mean Annual Runoff
MFMA	Municipal Finance Management Act
MISA	Municipal Infrastructure Support Agent
Mℓ	Mega Litre
Mℓ/a	Mega Litre per Annum
MLSS	Mixed Liquor Suspended Solids
MTEF	Medium-Term Expenditure Framework
MTREF	Medium Term Revenue Expenditure Framework
NRW	Non-Revenue Water
NWRS	National Water Resource Strategy

ORIO	Netherlands Facility for Infrastructure Development
PAT	Progress Assessment Tool
PDA	Previously Disadvantage Area
PDD	Peak Daily Demand
PRV	Pressure Reducing Valve
PS	Pump Station
RBIG	Regional Bulk Infrastructure Grant
RDP	Reconstruction and Development Programme
RM	Rand Million
RR	Risk Rating
RUL	Remaining Useful Life
SA	South Africa
SALGA	South African Local Government Association
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
SS	Suspended Solids
SW	Surface Water
TB	Tuberculosis
TMG	Table Mountain Group
TSS	Total Suspended Solids
TWL	Top Water Level
VAT	Value Added Tax
VIP	Ventilated Improved Pit
WC/WDM	Water Conservation / Water Demand Management
WCNCB	Western Cape Nature Conservation Board (South Africa)
WDM	Water Demand Management
WMA	Water Management Area
WSA	Water Services Authority
WSDP	Water Services Development Plan
WSP	Water Services Provider
WTP	Water Treatment Plant
WTW	Water Treatment Works
WWTP	Waste Water Treatment Plant
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.
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.
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.
Global Warming	The increase in the average surface temperatures across the globe, usually measured over long periods of time; reported to have increased by 1^{o}C over the past hundred years.
IDP	A municipal plan as defined in the Municipal Systems Act. An IDP is a legislative requirement of 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.
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.
RUL	The time remaining over which an asset is expected to be used.
SDBIP	Service Delivery Budget Implementation Plan. The SDBIP is a management, implementation and monitoring tool that enable the Municipal Manager to monitor the performance of senior managers, the Mayor to monitor the performance of the Municipal Manager, and for the community to monitor the performance of the municipality.
Water Balance	The regulation or rationalisation of human activity to match the sustainable local water supply, rather than base, or a process of balancing water supply and demand to ensure that water use does not exceed supply.
WSA	A WSA is any municipality that has the executive authority to provide water services within its area of jurisdiction in terms of the Municipal Structures Act 118 of 1998 or the ministerial authorisations made in terms of this Act. 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.
WSDP	A compulsory plan for water and sanitation services in terms of the Water Services Act.

KEY TERMS AND INTERPRETATIONS

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.
WSP	A Water services provider is • Any person who has a contract with a WSA or another WSP to sell water to, and/or accept wastewater for the purpose of treatment from that Authority or Provider, who is usually a bulk water services provider); or • Any person who has a contract with a WSA to take responsibility for providing retail water services to one or more consumers within a specific geographic area; or • A WSA that provides either or both of the above services itself.
WC	The minimisation of loss or waste, the care and protection of water resources and the efficient and effective use of water.
WDM	The adaptation and implementation of a strategy or a programme 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.

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 WSP. 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 are supplied with bulk water from the Buffels River Dam.

- 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.

- 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. A portion of the final effluent from the Hermanus WWTW is used for irrigation purposes at various sports complexes.

- 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 "Kouevlakte" boreholes were also drilled during 2010/2011 and a new bulk pipeline was constructed the following year in order to connect the boreholes to the existing network.

- 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. 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 privately owned Koekemoer Dam free of charge to the Municipality.

- 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.

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

  Bulk water supply to Buffeljags Bay is from a borehole.

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. 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 and processes.

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	102 072	80%
1.2 Total Number of Households (Permanent)	35 470	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	96 885	33 501	80%
Urban	33	5 187	1 969	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	5 187	1 969	2.63	80%
Urban	Urban - Informal Settlements (Squatter Camp)	7	12 208	3 052	4.00	80%
Urban	Urban - Formal Town	26	84 677	30 449	2.78	80%

Table.A.1.4 Amenities summary (Health & Educational facilities)		
Amenity Type	**Number of Amenities**	**Assessment Score**
Health Facilities	12	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 IDP, 1st Review of 5 Year IDP (2018/19) Final 30 May 2018, indicated the 2017 population at 96 116 persons and the future average annual population growth rate at 2.90%. The top three main reasons for moving to the Overstrand, according to the 2016 Stats SA Community survey, were to look for paid work (2.47%), followed by retirement (1.77%) and moving as a household with a household member for health (1.65%).

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 2017/2018 population was estimated by applying an annual growth rate of 4.04% to the 2011 Census population figure. The current population figures and the annual population growth percentages used in the WSDP IDP Sector Input Report are aligned with the figures used in DWS's GeoDatabase. The future estimated annual population growth percentages, as listed in the table below, were agreed with the Municipality's Community Services and Engineering Planning Departments during January 2014.

Table A.1.5: Estimated Future Annual Population Growth Percentages per Distribution System	
Town	**Estimated future annual Population Growth %**
Buffels River	4.15%
Kleinmond	2.50%
Greater Hermanus	4.45%
Stanford	2.65%
Greater Gansbaai	4.89%
Pearly Beach	2.11%
Baardskeerdersbos	0.50%
Buffeljags Bay	0.50%
Farms	1.56%
Total	**4.04%**

The total housing demand in the Overstrand Municipality mainly consists of the people living in informal settlements and in backyards.

WSDP-IDP WATER SECTOR INPUT REPORT FOR 2019/2020

The table below gives an overview of the population and households and the water service level categories in Overstrand Municipality's Management Area.

Table A.1.6: Water Services Overview (Water)															
	2011/2012		2017/2018		Water category										
Settlement Type	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	1,478	2,932	P		P								
Kleinmond	2,351	5,101	2,790	6,172	P		P								
Greater Hermanus	14,256	41,884	19,000	56,342	P		P								
Stanford	1,379	4,325	1640	5,165	P		P								
Greater Gansbaai	3,251	7,698	4917	12,602	P		P								
Pearly Beach	314	363	550	1,187	P		P								
Baardskeerdersbos	39	122	40	126	P										
Buffeljagsbaai	33	147	34	151	P										
Sub-Total	**22,781**	**61,937**	**30,449**	**84,677**											
Townships					**Adequate**			**Below RDP**					**None**	
Sub-Total	**0**	**0**	**0**	**0**											
Informal Settlements					**Adequate**			**Below RDP**					**None**	
Greater Gansbaai	1,407	5,628	1,286	5,144		P									
Greater Hermanus	1,362	5,448	1,280	5,120		P									
Kleinmond	382	1,528	379	1,516		P									
Stanford	114	456	107	428		P									
Pearly Beach	171	684	0	0											
Sub-Total	**3,436**	**13,744**	**3,052**	**12,208**											
Working towns & service centres					**Adequate**			**Below RDP**					**None**	
Sub-Total	**0**	**0**	**0**	**0**											
Sub-Total: (Urban)	**26,217**	**75,681**	**33,501**	**96,885**											
RURAL															
Rural / Farming					**Adequate**			**Below RDP**					**None**	
Overstrand Rural	1,794	4,727	1,969	5,187	P		P								P
Sub-Total	**1,794**	**4,727**	**1,969**	**5,187**											
Informal Settlements					**Adequate**			**Below RDP**					**None**	
Sub-Total	**0**	**0**	**0**	**0**											
Sub-Total (Rural)	**1,794**	**4,727**	**1,969**	**5,187**											
TOTAL	**28,011**	**80,408**	**35,470**	**102,072**											

WSDP-IDP WATER SECTOR INPUT REPORT FOR 2019/2020

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.

Proper disposal, clean platform, vector and rodent control.

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.		

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.

WSDP-IDP WATER SECTOR INPUT REPORT FOR 2019/2020

All the formal households in the urban areas of Overstrand Municipality's Management Area are provided with water connections inside the erven. Informal areas are supplied with shared services as an intermediary measure. 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, once clear and practical policy guidelines are made available from the DWS and funding is made available.

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	
		FY2017/18		FY2016/17		FY2015/16	
		Nr	%	Nr	%	Nr	%
	WATER (ABOVE MIN LEVEL)						
Piped (tap) water inside dwelling/institution	House connections	36,319	81%	35,188	81%	34,264	80%
Piped (tap) water inside yard	Yard connections	5,300	12%	5,300	12%	5,300	12%
Piped (tap) water on community stand: distance less than 200m from dwelling/institution	Standpipe connection < 200 m	3,083	7%	3,098	7%	3,137	7%
	Sub-Total: Minimum Serivce Level and Above	**44,702**	**100%**	**43,586**	**100%**	**42,701**	**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	**44,785**	**100%**	**43,669**	**100%**	**42,784**	**100%**

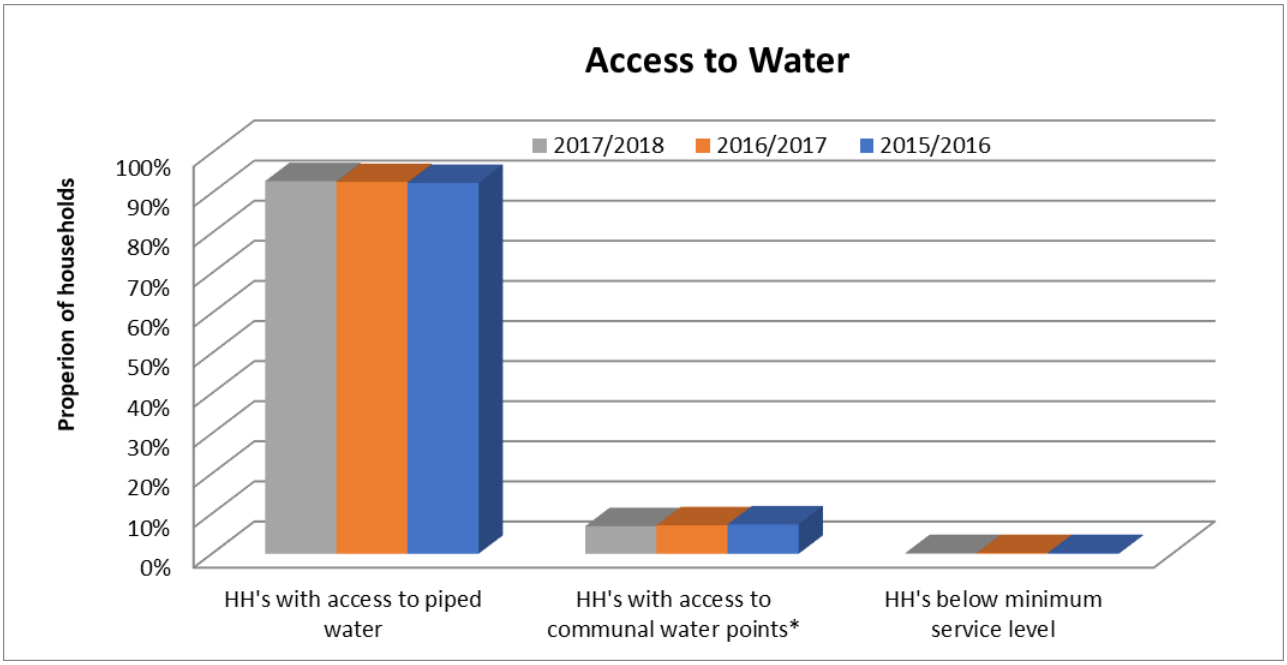

Figure A.2.1: Access to water services.

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	379	1 280	107	1 286	0	0	0	0	3 052
Total Housing Need	**0**	**379**	**1 280**	**107**	**1 286**	**0**	**0**	**0**	**0**	**3 052**
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)]	3 416	3 606	19 460	1 227	5 213	1 691	64	30	1 612	36 319
Total Adequate	**3 422**	**3 888**	**23 083**	**1 709**	**5 838**	**1 730**	**64**	**30**	**1 886**	**41 650**
Total Residential Consumer Units for the Municipality	**3 422**	**4 267**	**24 363**	**1 816**	**7 124**	**1 730**	**64**	**30**	**1 969**	**44 785**

Notes:

1) Number of residential consumer units for urban areas for 2017/2018, 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 2018).
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	2017/18		2016/17 (-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
Piped water inside the dwelling/house-Households	36 319	80%
Piped water inside yard-Households	5 300	80%
Piped water distance <200m - Households	3 083	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	26	60%

Table A.2.7: Water Reliability Profile

Section: Water Reliability Profile	Totals	Assessment Score
Total Number of Households having Reliable Service	44 702	80%
Total Number of Households NOT having Reliable Service due to: New Scheme	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	
		FY2017/18		FY2016/17		FY2015/16	
		Nr	%	Nr	%	Nr	%
	SANITATION (ABOVE MIN LEVEL)						
Flush toilet (connected to sewerage system)	Waterborne	26,123	58%	25,547	59%	24,099	56%
	Waterborne: Low Flush	4,100	9%	4,100	9%	4,100	10%
Flush toilet (with septic tank)	Septic tanks / Conservancy	11,213	25%	10,658	24%	11,182	26%
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)	3,052	7%	3,067	7%	3,106	7%
	Sub-Total: Minimum Serivce Level and Above	**44,520**	**99%**	**43,404**	**99%**	**42,519**	**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	**44,785**	**100%**	**43,669**	**100%**	**42,784**	**100%**

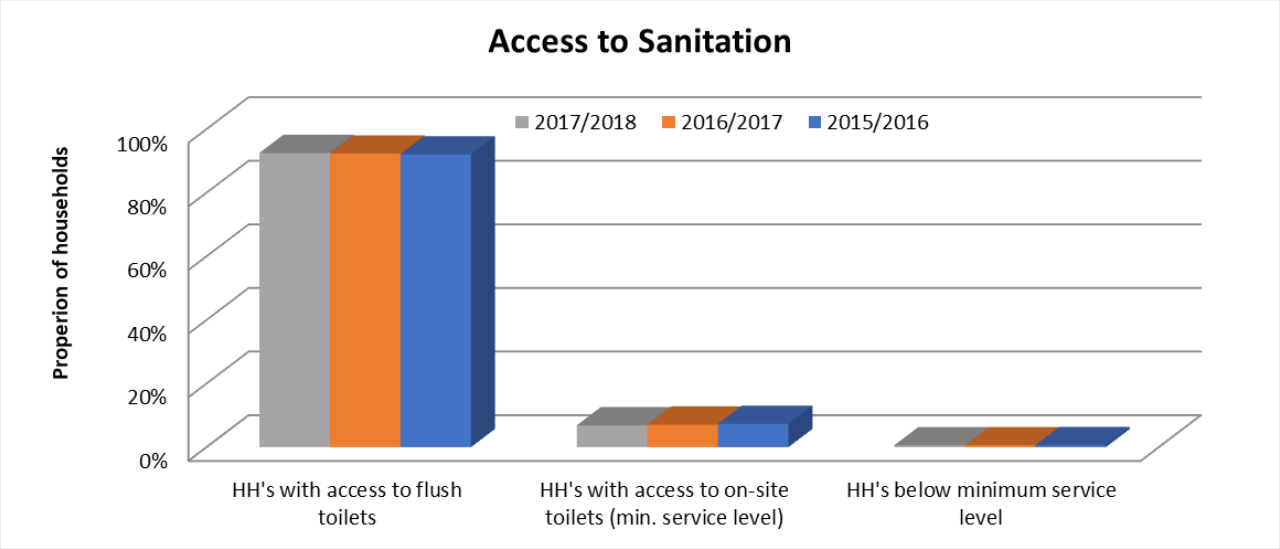

Figure A.2.2: Access to sanitation services.

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	379	1 280	107	1 286	0	0	0	0	3 052
Total Housing Need	**0**	**379**	**1 280**	**107**	**1 286**	**0**	**0**	**0**	**0**	**3 052**
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	2 792	748	0	110	719	352	64	30	1 672	6 487
Conservancy	630	341	1 379	10	2 100	266	0	0	0	4 726
Waterborne	0	2 799	17 604	1 589	3 019	1 112	0	0	0	26 123
Total Adequate [2)]	**3 422**	**3 888**	**23 083**	**1 709**	**5 838**	**1 730**	**64**	**30**	**1 699**	**41 463**
Total Residential Consumer Units for the Municipality	**3 422**	**4 267**	**24 363**	**1 816**	**7 124**	**1 730**	**64**	**30**	**1 969**	**44 785**

1) Total for Septic Tanks and Conservancy tanks in Urban Areas according to Municipal information for June 2018 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 2018).

Table A.2.10: Improvement in Eradicating the Sanitation Backlog					
Settlement	**Urban / Rural**	**2017/18**		**2016/17 (-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

Table A.2.10: Improvement in Eradicating the Sanitation Backlog					
Settlement	Urban / Rural	2017/18		2016/17 (-Y1)	
		Sanitation backlog HH	Sanitation Backlog Population	Sanitation backlog HH	Sanitation Backlog Population
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	11 213	80%
Flush toilet (connected to sewerage system) - Households	33 275	80%
None - Households	185	60%

Table A.2.12: Sanitation Reliability Profile		
Section: Sanitation Reliability Profile	Totals	Assessment Score
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%

Overstrand Municipality's Directorate Community Services regularly count the number of households in the informal areas. The municipality renders basic services in terms of potable water, sewer infrastructure (toilets), and cleaning services to all informal settlements. Toilet facilities and potable water taps are provided according to the following national ratios, namely:

- Water: 1:25 families
- Toilets: 1:5 families

WSDP-IDP WATER SECTOR INPUT REPORT FOR 2019/2020

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.
- 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.

The current number of households in the informal areas, with access to communal basic services, is 3 052. 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 2018).

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	107	16	6.69	6	17.83
Kleinmond	Overhills	379	107	3.54	22	17.23
Gansbaai	Mashakhane	1 180	269	4.39	39	30.26
	Beverly Hills	91	24	3.79	13	7.00
	Buffeljachts	15	8	1.88	2	7.50
Hawston	Erf 170	11	4	2.75	2	5.50
Zwelihle	Tsepe-Tsepe	216	40	5.40	6	36.0
	Serviced Sites	76	22	3.45	3	25.33

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**
	Thambo Square	332	39	8.51	6	55.33
	Asazani	58	13	4.46	6	9.67
	Temporary Relocation Area	250	125	2.00	125	2.00
	New Camp	54	12	4.50	5	10.80
	Transit Camp	283	115	2.46	18	15.72
Total		**3 052**	**794**	**3.84**	**253**	**12.06**

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.2.16: Number of Consumer Units in each User Sector for the Last Five 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**
Stanford	1 187	55	2	18	**1 262**
Greater Gansbaai	5 091	234	3	202	**5 530**
Pearly Beach	1 500	3	0	7	**1 510**
Baardskeerdersbos	64	0	0	3	**67**

Table A.2.16: Number of Consumer Units in each User Sector for the Last Five Financial Years					
Distribution System	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffeljags Bay	30	0	0	6	**36**
TOTALS	**33 607**	**1 706**	**42**	**678**	**36 033**
2017/2018 (Average over period July 2017 – June 2018)					
Buffels River	3 416	118	0	30	3 564
Kleinmond	3 606	295	0	70	3 971
Greater Hermanus	19 460	1 039	38	499	21 036
Stanford	1 227	56	3	18	1 304
Greater Gansbaai	5 213	286	5	197	5 701
Pearly Beach	1 691	5	0	8	1 704
Baardskeerdersbos	64	0	0	3	67
Buffeljags Bay	30	0	0	6	36
TOTALS	**34 707**	**1 799**	**46**	**831**	**37 383**

Table A.2.17: Total Number of Consumer Units per Town and Percentage Growth from 2013/2014 to 2017/2018						
Distribution System	**Annual Growth % 13/14 – 17/18**	**17/18**	**16/17**	**15/16**	**14/15**	**13/14**
Buffels River	1.39%	3 564	3 510	3 457	3 406	3 372
Kleinmond	0.76%	3 971	3 943	3 880	3 862	3 852
Greater Hermanus	2.80%	21 036	20 175	19 644	19 428	18 836
Stanford	2.06%	1 304	1 262	1 229	1 216	1 202
Greater Gansbaai	1.37%	5 701	5 530	5 464	5 378	5 399
Pearly Beach	11.79%	1 704	1 510	1 265	1 234	1 091
Baardskeerdersbos	0.38%	67	67	67	66	66
Buffeljags Bay	2.99%	36	36	36	34	32
TOTALS	**2.51%**	**37 383**	**36 033**	**35 042**	**34 624**	**33 850**

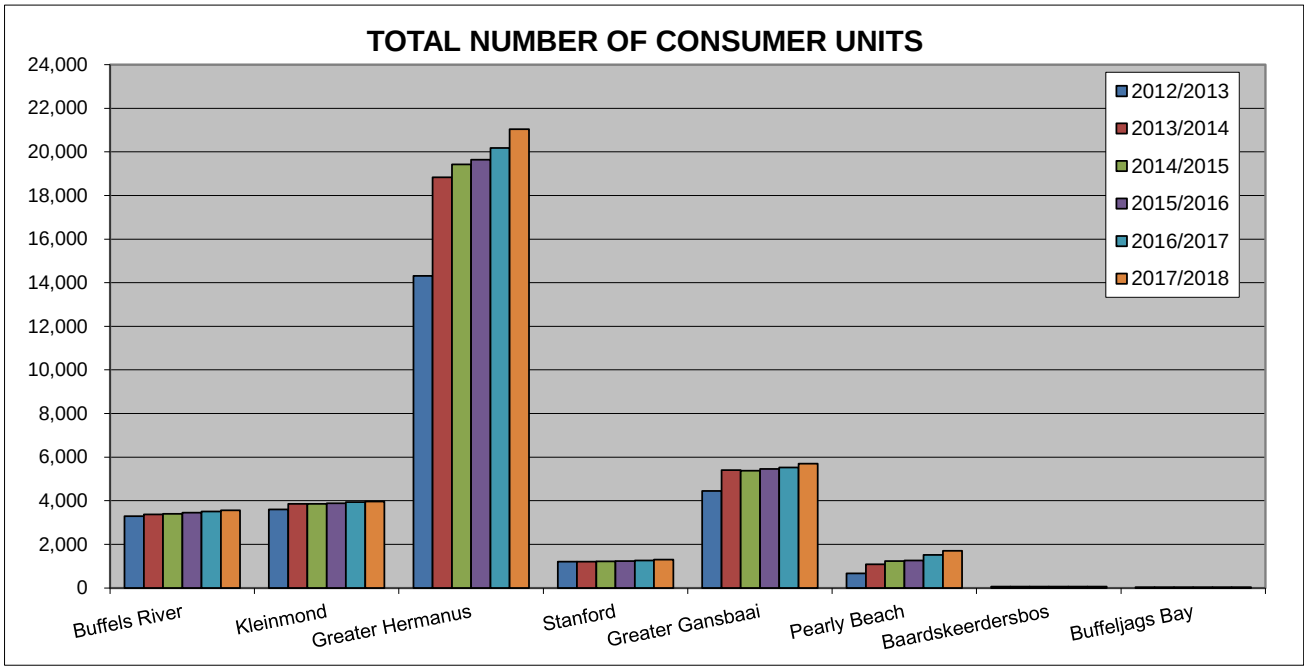

Figure A.2.3: Number of Billed Metered Consumption Units per System for the Last Six Financial Years

Public Amenities

Table A.2.18: 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)**
Water				
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
Health Centres	1	0	0	R0
Clinics	9	0	0	R0
Other	-	-	-	-
Total	**12**	**0**	**0**	**R0**

Table A.2.19: 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)**
Sanitation				
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
Health Centres	1	0	0	R0
Clinics	9	0	0	R0
Other	-	-	-	-
Total	**12**	**0**	**0**	**R0**

TOPIC 3: WATER SERVICES INFRASTRUCTURE MANAGEMENT (INFRASTRUCTURE)

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	98.8 km	45.2 km	44	6	80%

WSDP-IDP WATER SECTOR INPUT REPORT FOR 2019/2020

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 (Resources)	WTWs and Treatment Processes	
		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 by contact filtration, Caustic Soda dosing and Aeration
Stanford	Stanford Spring and two Kouevlakte Boreholes	-	Disinfection (Sodium Hypochlorite)
Greater Gansbaai	Franskraal and Kraaibosch Dams	Franskraal (6.500)	Chemical dosing (Aluminium Sulphate, 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	21	38.386
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**	**44**	**66.594**

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	33
	12.000	9 000	Hermanus Activated Sludge System			
Stanford	0.500	350	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	To be confirmed	Eluxolweni Oxidation Pond System	0.900	5.200	2
Baardskeerdersbos	-	-	-	-	-	-
Buffeljags Bay	-	-	-	-	-	-
Total Overstrand				**45.200**	**322.900**	**51**

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 & 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	0	2	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	0	4	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.

Water Infrastructure: The current replacement cost and depreciated replacement cost of the water infrastructure of Overstrand Municipality is summarised in the table below (June 2018):

Table A.3.6: Current Replacement Cost and Depreciated Replacement Cost of the Water Infrastructure - June 2018			
Asset Type	**CRC**	**DRC**	**% DRC / CRC**
Dams	R15 103 439	R5 015 484	33.2%
Boreholes	R11 619 334	R6 697 756	57.6%
Bulk Water Pipelines	R127 451 002	R45 098 760	35.4%
Pump Stations	R49 260 105	R14 495 649	29.4%
Reservoirs	R120 756 059	R52 225 964	43.2%
Water Reticulation Pipelines	R681 501 128	R220 004 014	32.3%
Buffels River WTW	R13 813 820	R4 098 202	29.7%
Kleinmond WTW	R27 568 183	R10 116 409	36.7%
Preekstoel WTW	R78 510 492	R72 774 125	92.7%
Franskraal New WTW	R36 743 472	R23 536 886	64.1%
Franskraal Old WTW	R20 036 738	R4 897 445	24.4%
Baardskeerdersbos WTW	R6 724 089	R4 695 921	69.8%
Pearly Beach WTW	R8 154 514	R5 351 458	65.6%
De Kelders WTW	R18 982 042	R8 798 125	46.3%
Totals	**R1 216 224 417**	**R477 806 198**	**39.3%**

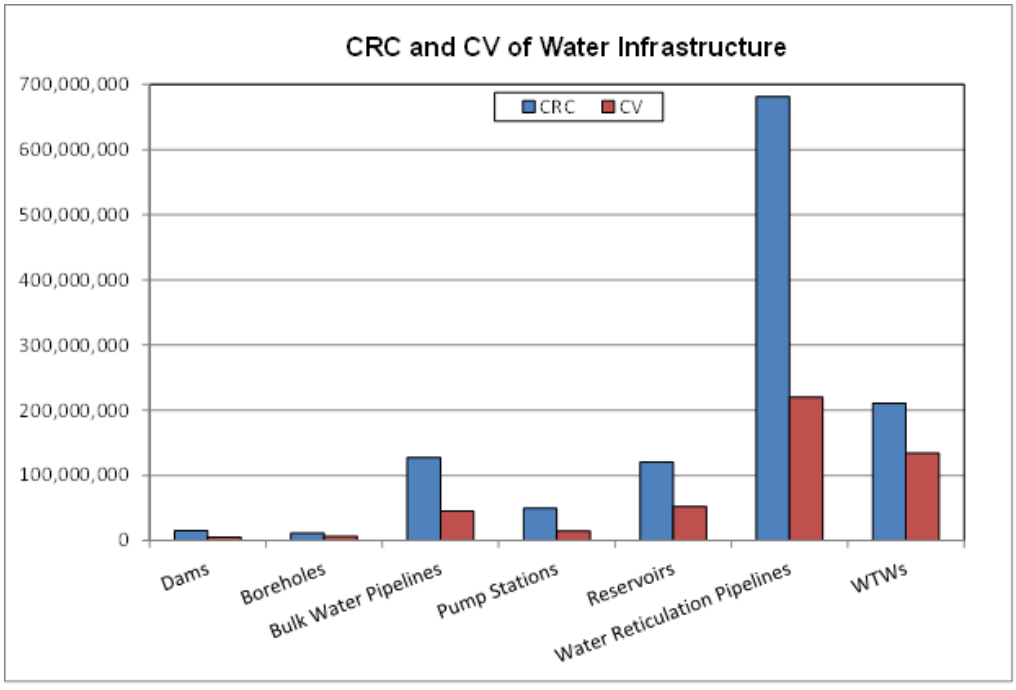

Figure A.3.1: CRC and DRC of the Water Infrastructure

The above table means that 60.7%% of the value of the water supply infrastructure has been consumed.

The following table gives an overview of the remaining useful life 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 2018 (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Remaining Useful Life					
Dams	R410 162	R0	R3 584 560	R0	R11 108 717
Boreholes	R1 157 169	R4 882 976	R698 676	R487 550	R4 392 963
Bulk Water Pipelines	R66 198 631	R0	R1 975 841	R0	R59 276 530
Pump Stations	R22 334 445	R4 754 318	R3 548 919	R331 379	R18 291 044
Reservoirs	R10 526 842	R2 774 153	R4 240 176	R428 995	R102 785 893
Water Reticulation Pipelines	R438 576 815	R0	R21 947 656	R0	R220 976 657
Buffels River WTW	R4 064 746	R110 197	R1 279 189	R0	R8 359 688
Kleinmond WTW	R3 523 735	R8 518	R413 610	R18 819	R23 603 501
Preekstoel WTW	R1 546 369	R8 141 147	R5 919 392	R987 859	R61 915 725
Franskraal New WTW	R14 721	R14 502 574	R354 761	R63 424	R21 807 992
Franskraal Old WTW	R5 282 245	R38 310	R2 260 796	R6 955	R12 448 432
Baardskeerdersbos WTW	R0	R10 486	R5 198 392	R65 430	R1 449 781
Pearly Beach WTW	R224 796	R2 436 609	R2 650 272	R112 658	R2 730 179
De Kelders WTW	R86 730	R12 488 801	R0	R242 892	R6 163 619
Totals	**R553 947 406**	**R50 148 089**	**R54 072 240**	**R2 745 961**	**R555 310 721**

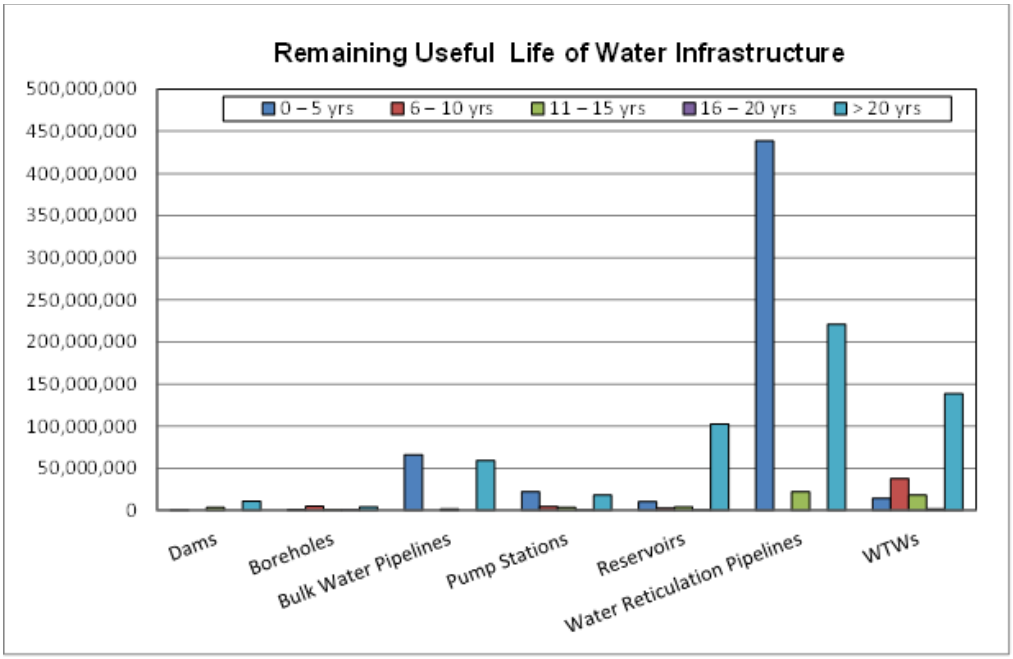

Figure A.3.2: Remaining Useful Life of the Water Infrastructure

The following table gives an overview of the age distribution by facility type for the water infrastructure (CRC):

Table A.3.8: Overview of the Age Distribution by Facility Type for the Water Infrastructure – June 2018 (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Age distribution by Facility Type					
Dams	R0	R8 053	R410 162	R3 831	R14 681 393
Boreholes	R964 068	R9 153 619	R937 920	R47 614	R516 113
Bulk Water Pipelines	R0	R25 147 920	R0	R0	R102 303 082
Pump Stations	R238 775	R6 785 113	R21 718 020	R7 232 727	R13 285 470
Reservoirs	R1 407 859	R9 531 308	R6 308 538	R20 666 572	R82 841 782
Water Reticulation Pipelines	R26 593 582	R119 209 386	R134 535 758	R18 984 677	R382 177 725
Buffels River WTW	R0	R112 335	R3 987 088	R1 022 659	R8 691 738

Table A.3.8: Overview of the Age Distribution by Facility Type for the Water Infrastructure – June 2018 (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Age distribution by Facility Type					
Kleinmond WTW	R0	R1 625 527	R3 521 323	R5 837 000	R16 584 333
Preekstoel WTW	R54 653 671	R22 330 327	R1 526 494	R0	R0
Franskraal New WTW	R31 823	R36 711 649	R0	R0	R0
Franskraal Old WTW	R0	R232 856	R2 476 656	R2 606 165	R14 721 061
Baardskeerdersbos WTW	R6 724 089	R0	R0	R0	R0
Pearly Beach WTW	R0	R6 293 841	R560 130	R1 032 162	R268 381
De Kelders WTW	R0	R18 982 042	R0	R0	R0
Totals	**R90 613 867**	**R256 123 976**	**R175 982 089**	**R57 433 407**	**R636 071 078**

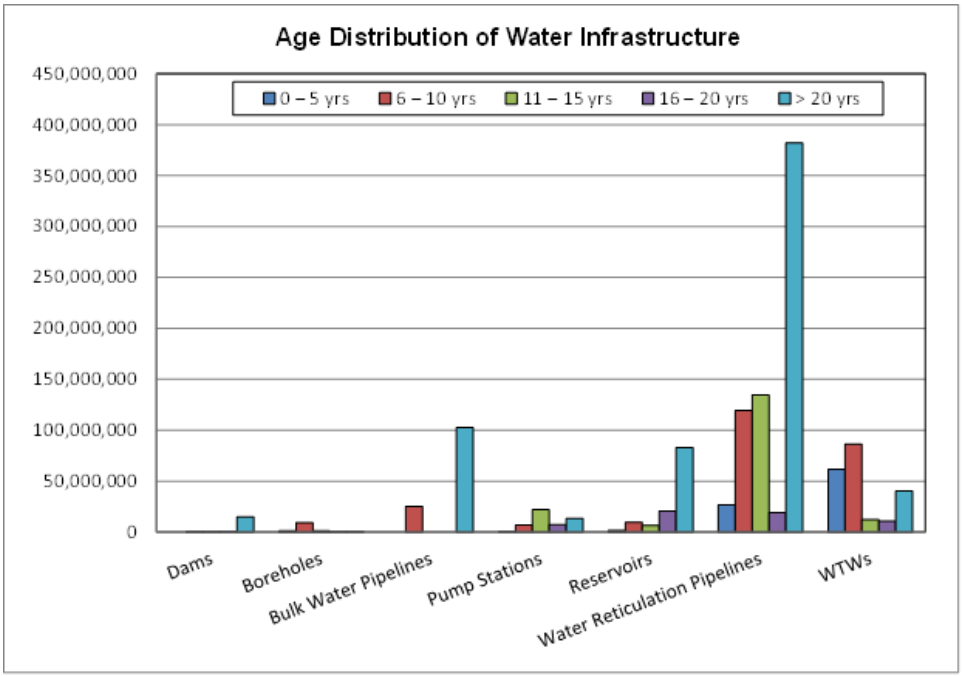

Figure A.3.3: Age distribution of the Water Infrastructure

Table A.3.9: Overview of the Condition Grading by Facility Type for the Water Infrastructure – June 2018 (CRC)					
Asset Type	**Very Poor**	**Poor**	**Fair**	**Good**	**Very Good**
Condition grading by Facility Type					
Dams	R0	R3 572 676	R11 522 710	R8 053	R0
Boreholes	R308 849	R78 365	R8 682 191	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	R921 951	R6 103 315	R31 217 742	R10 752 696	R264 401
Reservoirs	R5 006 986	R3 691 538	R81 212 279	R30 246 276	R598 980
Water Reticulation Pipelines	R307 354 345	R21 947 656	R183 106 914	R34 745 303	R134 346 910
Buffels River WTW	R0	R409 206	R13 311 152	R93 462	R0
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	**R380 615 235**	**R44 474 651**	**R429 958 073**	**R160 049 201**	**R201 127 257**

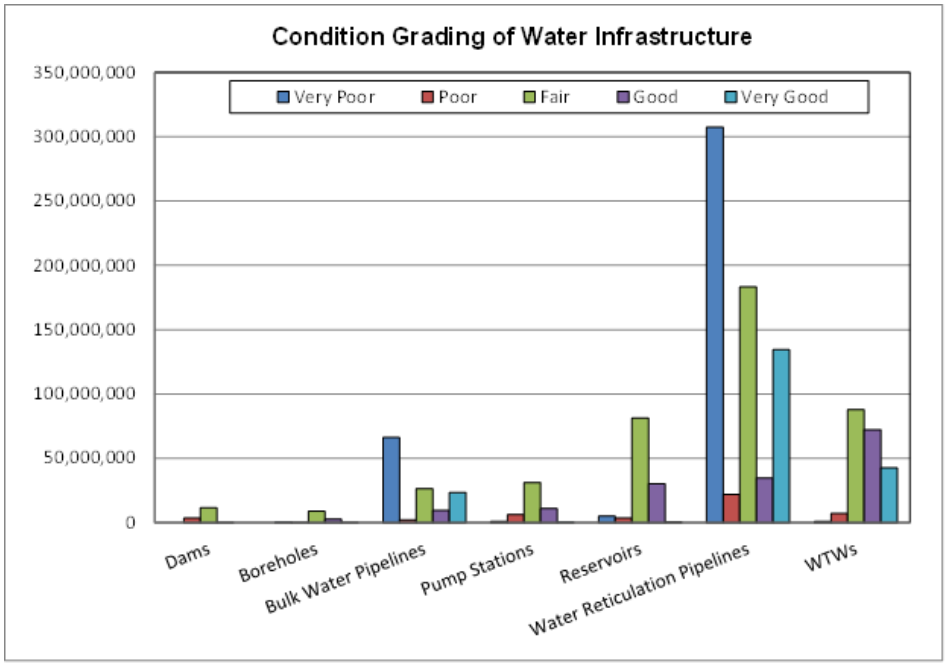

Figure A.3.4: Condition Grading of the Water Infrastructure

Sewerage Infrastructure: The current replacement cost and depreciated replacement cost of the sewerage infrastructure of Overstrand Municipality is summarised in the table below (June 2018):

Table A.3.10: Current Replacement Cost and Depreciated Replacement Cost of the Sewerage Infrastructure – June 2018

Asset Type	CRC	DRC	% DRC / CRC
Sanitation Pump Stations	R52 242 208	R28 377 559	54.3%
Sewer Reticulation Pipelines	R540 132 119	R245 641 865	45.5%
Stanford WWTW	R26 379 445	R8 751 408	33.2%
Hermanus WWTW	R97 706 408	R44 264 438	45.3%
Hawston WWTW	R14 823 834	R5 563 673	37.5%
Kleinmond WWTW	R17 315 851	R6 931 329	40.0%
Gansbaai WWTW	R43 974 977	R15 398 221	35.0%
Pearly Beach WWTW	R14 240 616	R6 958 774	48.9%
Totals	**R806 815 458**	**R361 887 267**	**44.9%**

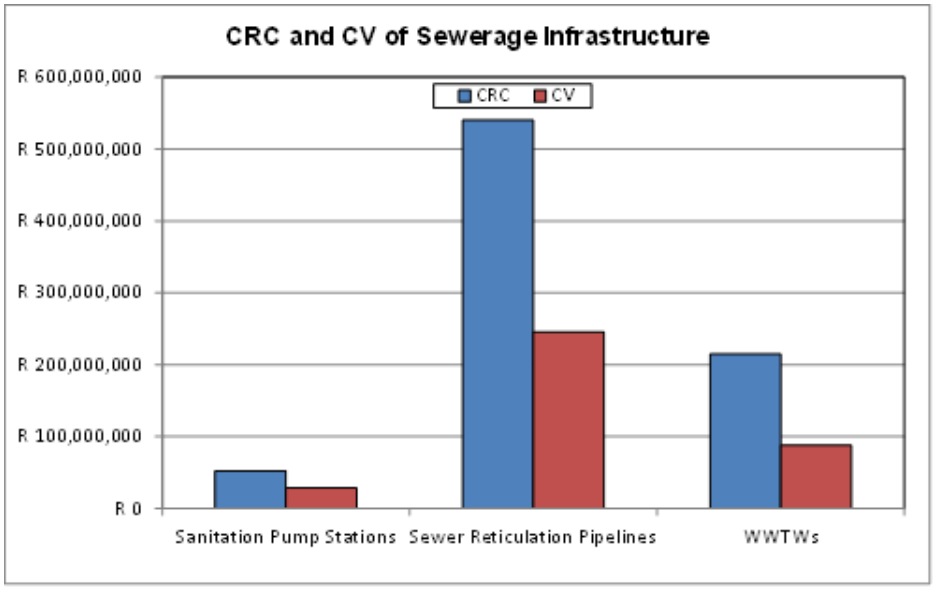

Figure A.3.5: CRC and DRC of the Sewerage Infrastructure

The information in the previous table means that 55.1 % of the value of the sewerage infrastructure has been consumed.

The following table gives an overview of the remaining useful life 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 2018 (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Sanitation Pump Stations	R20 915 910	R3 258 572	R6 856 025	R260 436	R20 951 265
Sewer Reticulation Pipelines	R6 004 602	R0	R57 373 144	R16 364 662	R460 389 711
Stanford WWTW	R5 599 963	R9 839 696	R1 505 391	R160 296	R9 274 099
Hermanus WWTW	R10 507 240	R2 353 740	R53 368 949	R1 152 925	R30 323 554
Hawston WWTW	R4 164 466	R2 010 055	R1 928 739	R333 689	R6 386 885
Kleinmond WWTW	R5 473 468	R1 950 001	R3 135 305	R268 546	R6 488 531
Gansbaai WWTW	R22 689 895	R903 945	R7 353 467	R559 554	R12 468 116
Pearly Beach WWTW	R0	R109 910	R526 685	R376 756	R13 227 265
Totals	**R75 355 544**	**R20 425 919**	**R132 047 705**	**R19 476 864**	**R559 509 426**

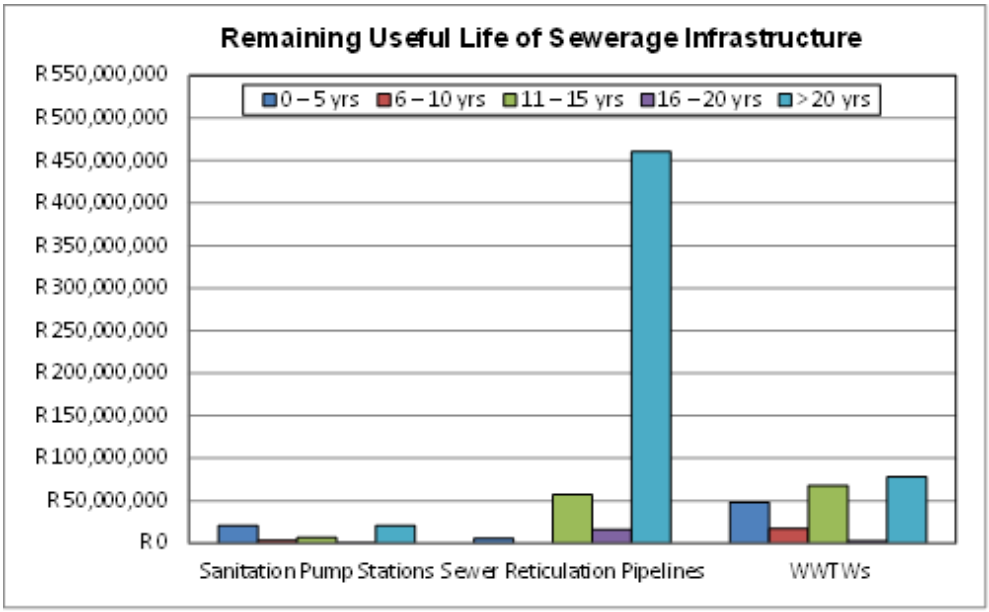

Figure A.3.6: Remaining Useful Life of the Sewerage Infrastructure

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 2018 (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Sanitation Pump Stations	R8 201 967	R5 342 491	R21 074 619	R1 238 916	R16 384 215
Sewer Reticulation Pipelines	R31 425 774	R62 537 691	R0	R56 099 504	R390 069 150
Stanford WWTW	R0	R10 620 482	R5 607 558	R1 285 721	R8 865 684
Hermanus WWTW	R64 748 801	R3 702 326	R2 761 307	R3 434 221	R23 059 753
Hawston WWTW	R0	R5 020 421	R3 692 506	R2 863 813	R3 247 094
Kleinmond WWTW	R2 948 804	R1 549 672	R5 940 222	R3 972 408	R2 904 745
Gansbaai WWTW	R7 325 028	R2 894 662	R20 754 659	R5 734 273	R7 266 355
Pearly Beach WWTW	R14 240 616	R0	R0	R0	R0
Totals	**R128 890 990**	**R91 667 745**	**R59 830 871**	**R74 628 856**	**R451 796 996**

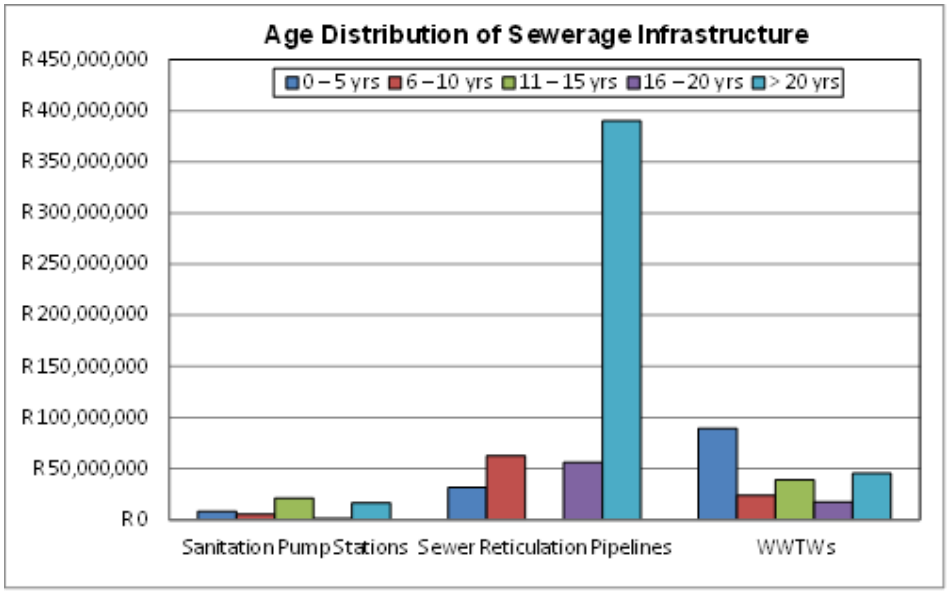

Figure A.3.7: Age distribution of the Sewerage Infrastructure

Table A.3.13: Overview of the Condition Grading by Facility Type for the Sewerage Infrastructure – June 2018 (CRC)					
Asset Type	**Very Poor**	**Poor**	**Fair**	**Good**	**Very Good**
Sanitation Pump Stations	R23 130	R49 116	R42 035 279	R4 269 785	R5 864 898
Sewer Reticulation Pipelines	R6 004 602	R77 387 971	R213 324 264	R185 725 906	R57 689 376
Stanford WWTW	R0	R1 369 389	R14 355 342	R10 654 714	R0
Hermanus WWTW	R11 419 549	R2 365 473	R49 677 685	R23 170 760	R11 072 941
Hawston WWTW	R0	R256 582	R8 478 454	R3 784 557	R2 304 241
Kleinmond WWTW	R33 363	R19 993	R8 891 696	R8 370 799	R0
Gansbaai WWTW	R6 139 927	R930 682	R26 420 007	R7 799 256	R2 685 105
Pearly Beach WWTW	R0	R74 705	R0	R209 072	R13 956 839
Totals	**R23 620 571**	**R82 453 911**	**R363 182 727**	**R243 984 849**	**R93 573 400**

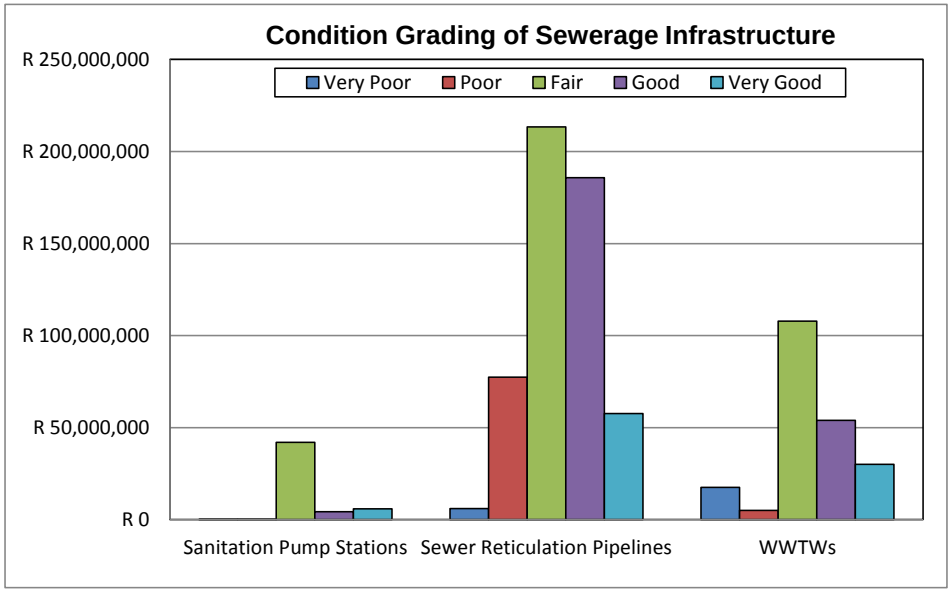

Figure A.3.8: Condition Grading of the Sewerage Infrastructure

The CRC of the water and sewerage infrastructure that will need to be replaced over the next five years (RUL <5 yrs) is R629.303 million. The CRC of the existing water and sewerage infrastructure with a condition grading of “Very Poor” is R404.236 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 maintenance in the future due to backlog being created. This Bulk Works Contract addresses the capacity constraints, the Municipality previously experienced, with regard to the operation of the WTWs and WWTWs.

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

TOPIC 4: WATER SERVICES INFRASTRUCTURE MANAGEMENT (O&M)

Water Safety Plans are in place for all the water distribution systems and treatment facilities. A detailed risk assessment was executed as part of the process and the existing control measures implemented by Overstrand Municipality were evaluated. An Improvement / Upgrade Plan is also in place with relevant Water and Safety Management Procedures for any type of incident.

A W_2RAP for the various WWTWs is also in place. 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 identified risks can then be managed according to its potential impacts on the receiving environment / community / resource.

The Water Safety Plan and W_2RAP Teams of Overstrand Municipality are committed to meet regularly to review the implementation of all the aspects of the Water Safety Plan and W_2RAP to ensure that they are still accurate and to determine whether the field assessments need updates or modifications and whether the Incident Response Management Protocol is still adequate. In addition to the regular three year review, the Water Safety Plan and W_2RAP will also be reviewed when, for example, a new water source is developed, major treatment improvements are planned and brought into use, or after a major incident.

An Incident Response Management Protocol is in place and forms part of Overstrand Municipality's Water Safety Plan and W_2RAP. The Incident Response Management Protocol entails that certain reactive procedures are followed when an incident occurs, such as when a malfunction of the treatment processes occurs due to power failures, faulty equipment, adverse weather conditions or human error.

Operational Alert Levels are also in place for the various WTWs and 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, specific actions are taken to bring the operational parameters back to within the target ranges.

The Maintenance Team mainly performs their own repair and preventative maintenance work to the equipment and infrastructure of the Municipality, except when specialised repair work is required, in which case the work is sub-contracted to approved sub-contractors on the municipal database.

An Operational and Compliance Water Quality and Final Effluent Monitoring Programme, which meets the requirements of the DWS as stipulated in their Blue and Green Drop criteria, were drawn up by Overstrand Municipality and are implemented by the Municipality.

Table A.4.1: Operation & 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	Min. requirement	Above min. requirement	Above min. requirement	Min. requirement	Min. requirement	Min. requirement	Min. requirement
Activity Control & Management	Above min. requirement	Min. requirement	Above min. requirement	Above min. requirement	Min. requirement	Min. requirement	Above min. requirement	Above min. requirement

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 tenth 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.4.2: 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.

Table A.4.2: Blue Drop Performance of the Municipality (DWS's 2014 Blue Drop Report)								
6. Standby air compressor is not installed.								
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.4.3: 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%

Table A.4.3: DWS's 2014 Blue Drop Risk Ratings for the Various Towns								
Municipal Blue Drop Risk Rating								**41%**
Risk Management RR	17.4%	26.1%	13.0%	26.1%	17.4%	13.0%	26.1%	13.0%
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.4.4: Average Residential Daily Consumption (l/p/d) for the Last Four Financial Years.												
Distribution System	**2014/2015**			**2015/2016**			**2016/2017**			**2017/2018**		
	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 consumptio n (l/p/d)**	**Estimated Permanent Population**	**Aver. Daily Billed Metered Res. Consump-tion (kl)**	**Aver. Daily consump-tion (l/p/d)**
Buffels River	2 595	834	**321**	2 703	864	**320**	2 815	805	**286**	2 932	724	**247**
Kleinmond	7 139	1 050	**147**	7 317	1 072	**147**	7 500	1 074	**143**	7 688	1 001	**130**
Greater Hermanus	53 936	6 754	**125**	56 336	6 848	**122**	58 843	7 141	**121**	61 462	6 566	**107**
Stanford	5 171	420	**81**	5 308	447	**84**	5 449	429	**79**	5 593	428	**77**
Greater Gansbaai	15 378	1 533	**100**	16 130	1 558	**97**	16 919	1 418	**84**	17 746	1 538	**87**
Pearly Beach	1 115	211	**189**	1 138	243	**214**	1 162	255	**219**	1 187	225	**190**
Baardskeerdersbos	124	16	**129**	124	18	**145**	125	18	**144**	126	18	**143**
Buffeljags Bay	149	7	**47**	150	8	**53**	151	7	**46**	151	7	**46**
All Systems	**85 607**	**10 824**	**126**	**89 206**	**11 056**	**124**	**92 964**	**11 147**	**120**	**96 885**	**10 508**	**108**

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.4.5: 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 12Ml/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 summarised as follow in DWS's 2014 Green Drop Risk Profile Progress Report.

Table A.4.6: 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 couldn't 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 couldn't 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 couldn't 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 last financial year. The table below gives an overview of the 2016 Green Drop Scores.

Table A.4.7 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%**

TOPIC 5: CONSERVATION AND DEMAND MANAGEMENT

The table below gives a summary of the NRW for the various distribution systems in Overstrand Municipality's Management Area.

Table A.5.1: Non-Revenue Water for the Various Distribution Systems

Description	Unit	17/18	Record : Prior (Ml/a)				
			16/17	15/16	14/15	13/14	12/13
Buffels River	Volume	265.104	455.126	327.463	400.622	478.209	540.123
	Percentage	45.31%	55.42%	46.22%	50.83%	58.19%	59.72%
	ILI	**2.67**	**4.63**	**3.36**	**4.34**	**5.21**	**5.45**
Kleinmond	Volume	188.379	203.625	202.304	227.374	237.027	283.500
	Percentage	26.90%	27.06%	28.07%	30.88%	33.17%	34.21%
	ILI	**2.28**	**2.48**	**2.49**	**2.16**	**2.26**	**2.49**
Greater Hermanus	Volume	262.270	317.045	474.020	359.729	380.399	324.189
	Percentage	7.20%	7.71%	11.66%	9.13%	10.91%	9.04%
	ILI	**0.62**	**0.77**	**1.19**	**0.88**	**0.96**	**0.85**
Stanford	Volume	78.723	76.937	73.438	80.356	76.516	91.388
	Percentage	26.20%	25.29%	24.19%	26.97%	25.87%	30.83%
	ILI	**3.81**	**3.80**	**3.69**	**2.81**	**2.69**	**2.90**
Greater Gansbaai	Volume	449.900	529.125	384.841	363.302	413.621	405.799
	Percentage	32.01%	37.33%	28.49%	27.96%	31.30%	31.19%
	ILI	**3.84**	**4.58**	**3.35**	**2.93**	**3.34**	**3.15**
Pearly Beach	Volume	23.495	21.928	36.951	52.640	87.708	67.435
	Percentage	19.52%	16.54%	25.41%	33.68%	48.42%	41.93%
	ILI	**1.43**	**1.43**	**1.00**	**2.86**	**4.79**	**4.79**
Baardskeerdersbos	Volume	6.752	5.047	6.654	6.251	5.665	4.000
	Percentage	45.91%	38.67%	45.44%	46.26%	48.62%	36.30%
	ILI	**2.12**	**1.58**	**1.30**	**1.28**	**1.16**	**0.75**
Buffeljags Bay	Volume	0.373	0.200	0.705	0.612	0.004	0.090
	Percentage	8.40%	5.09%	15.85%	15.45%	0.12%	2.63%
	ILI	**2.0**	**1.06**	**3.83**	**3.80**	**0.42**	**0.46**
TOTAL	**Volume**	**1 274.996**	**1 609.033**	**1 506.376**	**1 490.886**	**1 679.149**	**1 716.524**
	Percentage	**18.82%**	**21.29%**	**20.60%**	**20.61%**	**24.56%**	**24.20%**
	ILI	**1.57**	**2.03**	**1.74**	**1.78**	**2.02**	**2.26**

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	40%
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 also 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 further crises.

TOPIC 6: WATER RESOURCES

Table A.6.1: Water Resources							
*** Number of sources**	*** Current abstraction (Mm^3/a)**	**Components abstraction registered**	**Components abstraction recorded**	*** Licensed abstraction (Mm^3/a)**	**Community water supply**		**Assessment Score**
					Rural	**Urban**	
Boreholes	0.344	15	15	1.600	1	3	60%
Surface Water Abstraction	0.776	2	2	1.600	1	9	80%
External Sources (Bulk Purchase)	0.000			0.000			80%
Water returned to source	2.410						60%
Conjunctive Use	6.429	7	7	7.847	1	21	80%

Table A.6.2: Additional Sources				
Additional Source Available	*** Number of sources**	**Potential Volume**	*** Licensed abstraction (Mm^3/a)**	**Assessment Score**
Ground Water	3	0.800	0.800	60%
Surface Water	0	0	0	60%
External Sources (Bulk Purchase)	0	0	0	60%

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)	Monthly	40%
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.

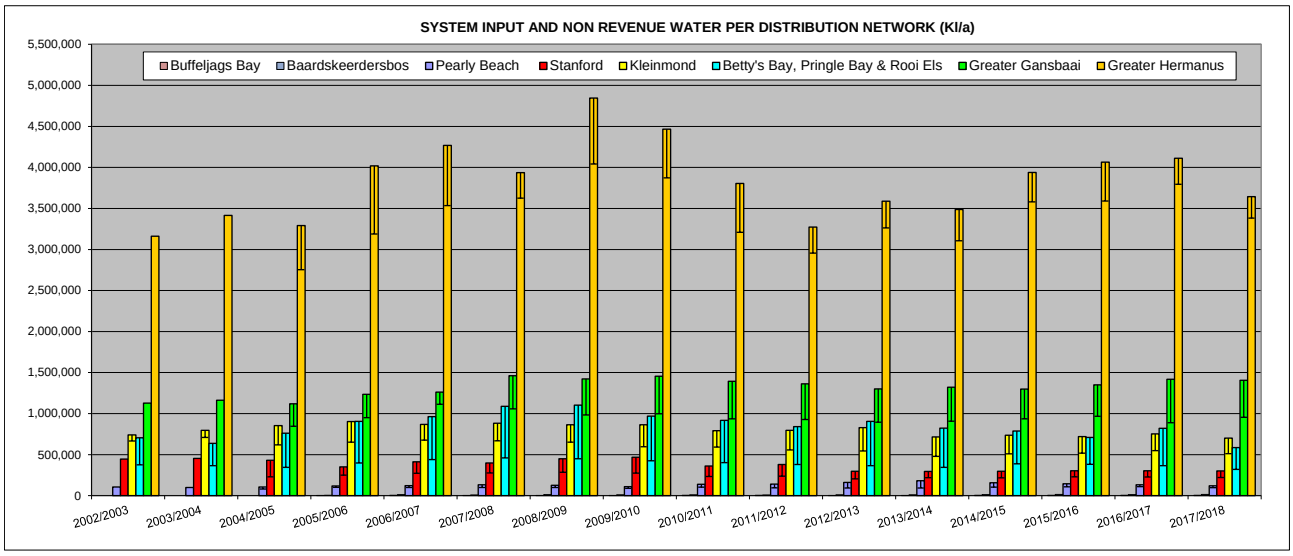

Figure A.6.1: System input volume and NRW per distribution network

The table below summarise the bulk raw water supplied to the various towns in Overstrand Municipality's Management Area.

Table A.6.4: Bulk Water Supply to the Various Towns							
Distribution System	**Source**	**17/18**	**Record : Prior (Ml/a)**				
			16/17	**15/16**	**14/15**	**13/14**	**12/13**
Buffels River	Buffels River Dam	649.669	882.833	762.669	832.082	884.443	959.091
Kleinmond	Palmiet River and Dorpsfontein spring	716.358	820.956	772.220	770.268	757.170	937.438
Greater Hermanus	De Bos Dam and Groundwater	4 182.703	4 765.620	4 636.164	4 611.987	4 012.029	3 698 894
Stanford	Stanford spring and two Boreholes	321.479	313.302	387.777	310.787	295.818	296.392
Greater Gansbaai	Kraaibosch and Franskraal Dam, Klipgat, De Kelders Grotte	1 529.544	1 579.802	1 511.060	1 501.361	1 535.945	1 486.216
Pearly Beach	Pearly Beach Springs and Koekemoer Dam	126.233	142.581	150.919	162.746	190.304	160.831
Baardskeerdersbos	Two Boreholes	17.154	16.019	18.380	17.466	11.652	11.019
Buffeljags Bay	Borehole	4.966	4.533	5.427	3.962	3.258	3.418
Total Supply to all towns		**7 548.106**	**8 525.646**	**8 244.616**	**8 210.659**	**7 690.619**	**7 553.299**

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 via the internet. Once entered the data is automatically compared to SANS241. 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	0%	0%
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	0%	0%
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	0%	0%
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 overall percentage of compliance of the water quality samples taken over the period July 2017 to June 2018 is summarised in the table below per distribution system (SANS241:2015 Limits).

Table A.6.6: Percentage Compliance of the Water Quality Samples for the Period July 2017 to June 2018			
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)**
Buffels River			
Acute Health Microbiological	No (Excellent)	98.0%	-
Acute Health Chemical	No (Excellent)	100.0%	-
Chronic Health	No (Excellent)	100.0%	-
Aesthetic	No (Excellent)	99.6%	-
Operational Efficiency	No (Good)	90.4%	-
Kleinmond			
Acute Health Microbiological	No (Excellent)	100.0%	-
Acute Health Chemical	No (Excellent)	100.0%	-
Chronic Health	No (Excellent)	98.9%	-
Aesthetic	No (Excellent)	100.0%	-
Operational Efficiency	No (Excellent)	98.6%	-
Greater Hermanus			
Acute Health Microbiological	No (Excellent)	99.6%	-
Acute Health Chemical	No (Excellent)	100.0%	-
Chronic Health	No (Excellent)	99.9%	-
Aesthetic	No (Excellent)	98.7%	-
Operational Efficiency	No (Excellent)	97.6%	-
Stanford			
Acute Health Microbiological	No (Excellent)	100.0%	-
Acute Health Chemical	No (Excellent)	100.0%	-
Chronic Health	No (Excellent)	100.0%	-
Aesthetic	No (Excellent)	100.0%	-

Table A.6.6: Percentage Compliance of the Water Quality Samples for the Period July 2017 to June 2018			
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)**
Operational Efficiency	No (Excellent)	100.0%	-
Greater Gansbaai			
Acute Health Microbiological	No (Excellent)	99.2%	-
Acute Health Chemical	No (Excellent)	100.0%	-
Chronic Health	No (Excellent)	99.5%	-
Aesthetic	No (Excellent)	100.0%	-
Operational Efficiency	No (Good)	92.0%	-
Pearly Beach			
Acute Health Microbiological	No (Good)	95.3%	-
Acute Health Chemical	No (Excellent)	100.0%	-
Chronic Health	No (Excellent)	100.0%	-
Aesthetic	No (Excellent)	100.0%	-
Operational Efficiency	No (Excellent)	98.4%	-
Baardskeerdersbos			
Acute Health Microbiological	No (Excellent)	100.0%	-
Acute Health Chemical	No (Excellent)	100.0%	-
Chronic Health	No (Excellent)	97.7%	-
Aesthetic	No (Excellent)	93.6%	-
Operational Efficiency	Yes (Unacceptable)	86.6%	Monthly
Buffeljags Bay			
Acute Health Microbiological	No (Good)	96.5%	-
Acute Health Chemical	No (Excellent)	100.0%	-
Chronic Health	No (Excellent)	97.7%	-
Aesthetic	Yes (Unacceptable)	77.6%	Quarterly
Operational Efficiency	No (Excellent)	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 2017 to June 2018.

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 2017/2018
Buffels River	2 932	2	12.0
Kleinmond	7 688	2	7.8
Greater Hermanus	61 462	12.3	21.8
Stanford	5 593	2	7.9
Greater Gansbaai	17 746	3.5	21.4
Pearly Beach	1 187	2	8.5
Baardskeerdersbos	126	2	8.2
Buffeljags Bay	151	2	6.8

It can be noted from the above table that the number of monthly E.Coli samples taken by the Municipality during the 2017/2018 financial year was far more than the required number of samples for all the water distribution systems.

Effluent quality: 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- and Gansbaai WWTW is 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	2017/2018	2016/2017	2015/2016
Kleinmond	100.0%	91.7%	100.0%
Hawston	100.0%	100.0%	91.7%
Hermanus	100.0%	91.7%	100.0%
Stanford	91.7%	91.7%	91.7%
Gansbaai	91.7%	75.0%	83.3%
Total	**96.7%**	**90.0%**	**93.3%**

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

WWTW	2017/2018					2016/2017					2015/2016				
	Ammonia	Nitrites & Nitrates	COD	Ortho Phosphate	Overall	Ammonia	Nitrites & Nitrates	COD	Ortho Phosphate	Overall	Ammonia	Nitrites & Nitrates	COD	Ortho Phosphate	Overall
Kleinmond	41.7%	91.7%	100.0%	100.0%	**83.3%**	83.3%	91.7%	100.0%	100.0%	**93.8%**	41.7%	91.7%	66.7%	100.0%	**75.0%**
Hawston	83.3%	100.0%	83.3%	100.0%	**91.7%**	41.7%	100.0%	50.0%	100.0%	**72.9%**	25.0%	100.0%	50.0%	100.0%	**73.3%**
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%	100.0%	100.0%	**100.0%**
Stanford	91.7%	41.7%	91.7%	91.7%	**79.2%**	91.7%	83.3%	91.7%	100.0%	**91.7%**	100.0%	75.0%	100.0%	100.0%	**95.0%**
Gansbaai	91.7%	100.0%	100.0%	100.0%	**97.9%**	100.0%	83.3%	100.0%	100.0%	**95.8%**	83.3%	91.7%	83.3%	91.7%	**88.3%**
Total	**81.7%**	**86.7%**	**95.0%**	**98.3%**	**90.4%**	**83.3%**	**91.7%**	**88.3%**	**100.0%**	**90.8%**	**70.0%**	**91.7%**	**80.0%**	**98.3%**	**86.3%**

Table A.6.11: Percentage Physical Compliance of the Compliance Samples Taken at the Various WWTWs for the Last Three Financial Years												
WWTW	2017/2018				2016/2017				2015/2016			
	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%	91.7%	**97.2%**	100.0%	100.0%	100.0%	**100.0%**	100.0%	91.7%	75.0%	**88.9%**
Hawston	100.0%	58.3%	91.7%	**83.3%**	100.0%	41.7%	75.0%	**72.2%**	100.0%	50.0%	83.3%	**77.8%**
Hermanus	100.0%	100.0%	100.0%	**100.0%**	100.0%	100.0%	100.0%	**100.0%**	100.0%	0.0%	91.7%	**63.9%**
Stanford	100.0%	100.0%	91.7%	**97.2%**	100.0%	100.0%	91.7%	**97.2%**	100.0%	91.7%	100.0%	**97.2%**
Gansbaai	100.0%	91.7%	100.0%	**97.2%**	100.0%	100.0%	100.0%	**100.0%**	83.3%	66.7%	83.3%	**77.8%**
Total	**100.0%**	**90.0%**	**95.0%**	**95.0%**	**100.0%**	**88.3%**	**93.3%**	**93.9%**	**96.7%**	**60.0%**	**86.7%**	**81.1%**

The EMS Section of Overstrand Municipality continues with the extensive monitoring of the recreational waters to determine the severity of faecal pollution in the Klein River Estuary, on behalf of Overberg District Municipality. Data collected and assimilated from the monthly samples form the basis of a monthly Water Quality Report, which is used to recommend actions to address health hazards in the Estuarine and marine recreational environment. The long term goal is to extend the monitoring programme to embrace estuarine and marine environments throughout the municipal region. This will enable the department to establish accurate data and to recommend best practice in the management of these systems to ensure appropriate water quality.

Industrial Consumers: The Municipality is currently busy with the updating of their Water Supply and Sanitation Services By-law. The updating includes the reviewing of the system of 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 liaises with the industrial consumers as and when necessary with regard to the quality of final effluent discharged by them.

TOPIC 7: FINANCIAL

Capital Budget: The table below gives an overview of Overstrand Municipality's historical water and sewerage capital expenditure over the last seven 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%

Operational Budget: The table below gives a summary of the total operational costs and income for water and sanitation services for the last five financial years.

Table A.7.2: Summary of Operational Expenditure and Income Budgets for water and sanitation services						
Service	**Expenditure / Income**	**Actual 17/18**	**Actual 16/17**	**Actual 15/16**	**Actual 14/15**	**Actual 13/14**
Water	Expenditure	R115 139 624	R103 668 318-50	R105 388 386-73	R87 684 218-72	R95 829 984-21
	Income	R123 749 823	R121 632 409-97	R117 279 277-35	R109 580 993-32	R96 057 574-71
	Surplus / (Deficit)	**R8 610 199**	**R17 964 091-47**	**R11 890 890-62**	**R21 896 774-60**	**R227 590-50**
Sanitation	Expenditure	R79 310 459	R67 828 646-82	R64 371 024-75	R59 653 861-52	R57 539 215-06
	Income	R83 627 554	R82 291 447-63	R77 211 013-42	R75 482 947-03	R65 032 183-93
	Surplus / (Deficit)	**R4 317 095**	**R14 462 800-81**	**R12 839 988-67**	**R15 829 085-51**	**R7 492 968-87**

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.

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 water tariff structures for Overstrand Municipality for the 2017/2018 financial year and the previous three financial years are summarised in the table below (Subject to 15% VAT).

Table A.7.3: Water Tariffs							
Consumer / Description	**Tariff Code**	**Category**		**17/18**	**16/17**	**15/16**	**14/15**
Consumer Deposits	WD1	Domestic Water		R530-00	R500-00	R955-00	R901-00
	WD2	Commercial Water Cons. < 40 kl		R2 120-00	R2 000-00	R2 191-00	R2 067-00
	WD3	Commercial Water Cons 40 – 100 kl		R7 420-00	R7 000-00	R7 722-00	R7 722-00
	WD4	Commercial Water Cons. 100 kl +		R12 720-00	R12 000-00	R12 865-00	R12 137-00
	WD5	Domestic – Water RUEs		Applicable RUE's x WD1A			
	WD6	Indigent Registered		R169-60	R160-00	R150-00	R138-00
Basic Charge	W1A1	Basic Monthly Charge per erf/unit per month		R121-83	R114-04	R108-42	R102-28
	W1A3	Fixed Infrastructure Basic Charge per erf/unit per month		R15-45	R15-45	R15-45	R15-45
Consumption Households and Registered Indigent Households (0 - 6 kl subsidised for indigent households)	W1B1	Normal Tariff & Level 1 restrictions	0 – 6 kl per kl	R4-50	R4-04	R3-62	R3-25
	W1B2		7 - 18 kl per kl	R10-24	R9-66	R9-12	R8-60
	W1B3		19 – 30 kl per kl	R16-61	R15-67	R14-79	R13-95
	W1B4		31 – 45 kl per kl	R25-57	R24-13	R22-76	R21-48
	W1B5		46 - 60 kl per kl	R33-22	R31-35	R29-57	R27-90
	W1B6		> 60 kl per kl	R44-30	R41-79	R39-43	R37-20
	W1B7	Restriction Tariff 1 (level 2 & 3 restrictions)	0 – 6 kl per kl	R4-50	R4-04	R4-71	R4-23
	W1B8		7 – 18 kl per kl	R13-31	R12-56	R11-85	R11-18
	W1B9		19 - 30 kl per kl	R21-59	R20-38	R19-22	R18-13
	W1B10		31 - 45 kl per kl	R33-25	R31-37	R29-59	R27-92
	W1B11		46 - 60 kl per kl	R43-19	R40-75	R38-45	R36-27

Table A.7.3: Water Tariffs							
Consumer / Description	**Tariff Code**	**Category**		**17/18**	**16/17**	**15/16**	**14/15**
	W1B12		> 60 kl	R57-59	R54-33	R51-25	R48-35
	W1B13	Restriction Tariff 2 (level 4 & 5 restrictions)	0 – 6 kl per kl	R4-50	R4-04	R5-80	R5-21
	W1B14		7 – 18 kl per	R16-39	R15-46	R14-59	R13-75
	W1B15		19 - 30 kl per kl	R26-58	R25-08	R23-66	R22-32
	W1B16		31 - 45 kl per kl	R40-92	R38-61	R36-42	R34-36
	W1B17		46 - 60 kl per kl	R53-17	R50-16	R47-32	R44-64
	W1B18		> 60 kl	R70-88	R66-87	R63-08	R59-51
	W1B19	Restriction Tariff 3 (level 6 restrictions)	0 – 6 kl per kl	R4-50	R4-04	R7-25	R6-51
	W1B20		7 – 18 kl per kl	R20-48	R19-33	R18-23	R17-19
	W1B21		> 18 kl per kl	R88-59	R83-58	R78-85	R74-39
Consumption – All other	W1C1	Normal Tariff & Level 1 restrictions	0 – 18 kl per kl	R11-33	R10-69	R9-59	R8-60
	W1C2		19 -30 kl per kl	R16-61	R15-67	R14-79	R13-95
	W1C3		31 – 45 kl per kl	R25-57	R24-13	R22-76	R21-48
	W1C4		46 – 60 kl per kl	R33-22	R31-35	R29-57	R27-90
	W1C5		> 60 kl per kl	R44-30	R41-79	R39-43	R37-20
	W1C6	Restriction Tariff 1 (level 2 & 3 restrictions)	0 – 18 kl per kl	R14-73	R13-90	R12-47	R11-18
	W1C7		19 – 30 kl per kl	R21-59	R20-38	R19-22	R18-13
	W1C8		31 - 45 kl per kl	R33-25	R31-37	R29-59	R27-92
	W1C9		46 - 60 kl per kl	R43-20	R40-75	R38-45	R36-27
	W1C10		> 60 kl	R57-58	R54-33	R51-25	R48-35
	W1C11	Restriction Tariff 2 (level 4 & 5 restrictions)	0 – 18 kl per kl	R18-13	R17-11	R15-34	R13-75
	W1C12		19 - 30 kl per kl	R26-58	R25-08	R23-66	R22-32
	W1C13		31 - 45 kl per kl	R40-92	R38-61	R36-42	R34-36
	W1C14		46 - 60 kl per kl	R53-17	R50-16	R47-32	R44-64
	W1C15		> 60 kl	R70-88	R66-87	R63-08	R59-51
	W1C16	Restriction Tariff 3 (level 6 restrictions)	0 – 10 kl per kl	R22-66	R21-38	R19-18	R17-19
	W1C17		> 10 kl per kl	R88-59	R83-58	R78-85	R74-39
Other Consumers	W1D1	Departmental per kl		R18-42	R18-42	R13-95	R13-95
	W1D2	Fire Hoses: Basic per month		R155-04	R145-61	R137-99	R130-18
	W1D3	Bulk usage (Unconnected to networks) per kl		R12-54	R11-75	R11-16	R11-16
	W1D4	Kidbrooke (Van Cauter 0 – 8000 kl /a)		R0-08	R0-08	R0-08	R0-08
	W1D5	Onrus Small Holdings Tariff 2 (Van Cauter)		R0-08	R0-08	R0-08	R0-08
	W1D6	Onrus Small Holdings Tariff 4 (Per Agreement)		R1-05	R1-05	R1-05	R1-05
	W1D7	Contractors water consumption – temporary connection		R18-42	R18-42	R13-95	R13-95
Wet Commercial, Sport, Parks etc. (must apply for this tariff)	W1E1	Normal Tariff & Level 1 restrictions	0 – 500 kl per kl	R16-48	R15-53	R13-95	R13-95
	W1E2		501 – 1 000 kl per kl	R24-92	R23-51	R22-18	R20-92
	W1E3		> 1 000 kl per kl	R33-23	R31-35	R29-57	R27-90
	W1E4	Restriction Tariff 1 (level 2 & 3 restrictions)	0 – 300 kl per kl	R21-44	R20-19	R18-14	R18-13
	W1E5		301 – 700 kl per kl	R32-39	R30-56	R28-83	R27-20
	W1E6		> 700 kl per kl	R43-20	R40-75	R38-45	R36-27
	W1E7	Restriction Tariff 2 (level 4 & 5 restrictions)	0 – 250 kl per kl	R26-38	R24-85	R22-32	R22-32
	W1E8		251 – 500 kl per kl	R39-87	R37-61	R35-48	R33-48
	W1E9		> 500 kl per kl	R53-16	R50-16	R47-32	R44-64
	W1E10	Restriction Tariff 3 (level 6 restrictions)	0 – 100 kl per kl	R32-97	R31-06	R27-90	R27-90
	W1E11		>100 kl per kl	R66-46	R62-70	R59-15	R55-80
Wet Industry (Marine etc, must apply for this tariff)	W1F1	Normal Tariff & Level 1 restrictions	1 – 5 800 kl per kl	R17-17	R16-20	R14-53	R13-03
	W1F2		> 5 800 kl per kl	R33-23	R31-35	R29-57	R27-90
	W1F3		1 – 5 800 kl per kl	R22-32	R21-06	R28-89	R16-94

Table A.7.3: Water Tariffs							
Consumer / Description	**Tariff Code**	**Category**		**17/18**	**16/17**	**15/16**	**14/15**
(Average of 100kl per day over prev. 365 days)	W1F4	Restriction Tariff 1 (level 2 & 3 restrictions)	> 5 800 kl per kl	R43-20	R40-75	R38-45	R36-27
	W1F5	Restriction Tariff 2 (level 4 & 5 restrictions)	1 – 5 800 kl per kl	R27-48	R25-92	R23-25	R20-85
	W1F6		> 5 800 kl per kl	R53-16	R50-16	R47-32	R44-64
	W1F7	Restriction Tariff 3 (level 6 restrictions	1 – 5 800 kl per kl	R34-34	R32-40	R29-06	R26-06
	W1F8		> 5 800 kl per kl	R66-46	R62-70	R59-15	R55-80
Availability Charges	W2A1	Overstrand per month		R121-83	R114-04	R108-42	R102-28
	W2A2	Farms connected to water pipe line		R121-83	R114-04	R108-42	R102-28
Rebates (Granted by Municipal Manager after application)	W2J1	Kl above average – per kl		R18-42	R18-42	R13-95	R13-95
Irrigation Water (Leiwater) & Raw Water	W3A1	Use and pump water (80-90min) per month Stanford		R37-20	R35-09	R18-81	R17-75
	W3A2	Pearly Beach Small Holdings: Basic		R45-39	R42-98	R40-40	R38-11
	W3A3	Pearly Beach Small Holdings: Consumption 0 – 70 kl per kl		R3-55	R3-35	R3-16	R2-98
	W3A4	Pearly Beach Small Holdings: Consumption > 70 kl per kl		R8-30	R7-81	R7-39	R6-97
	W3A5	Others		R3-55	R3-35	R3-16	R298
	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
	W3A7	Farm 586 Volmoed raw water from De Bos pipeline consumption 0-300 kl/month per kl		R0-00	R0-00	-	-
	W3A8	Farm 586 Volmoed raw water from De Bos pipeline consumption >300 kl/month per kl		R3-55	R3-33	-	-
Irrigation Water (Treated Effluent)	W3B2	Hermanus Golf Club per month		R40 422-01	R37 954-39	R35 975-44	R33 938-59
	W3B3	All other per kl		R2-27	R2-19	R2-02	R1-89
	W3B4	Schools, municipal sports grounds & project sport grounds as per agreement		No Charge	No Charge	No Charge	No Charge
	W3B5	Curro Holdings – 250kl free per day as per deed of sale		R2-27	R2-19	R2-02	R1-89
Sundry Charges	W4A1	Testing of a meter (Call-out fee incl.)		R813-59	R767-54	R723-68	R657-90
	W4A2	Testing of a meter (Ind. / Bulk Meter)		Min charge of R500-00	Min charge of R500-00	Min charge of R500-00	Min charge of R500-00
	W4A3	Disconnection		R369-14	R348-25	R328-07	R297-54
	W4A4	Reconnection		R369-14	R348-25	R328-07	R297-54
	W4A5	Reconnection after normal working hrs		R737-35	R695-61	R656-14	R595-08
	W4A6	Administration fee – recalculation due to no meter access		R144-12	R135-97	R128-07	R116-23
	W4A7	Verification of a meter reading		R201-77	R190-35	R179-83	R162-72
	W4A8	Final and special readings		R184-10	R173-68	R164-04	R148-77
	W4A9	Call-out fee – Normal working hrs		R368-21	R347-37	R328-07	R297-54
	W4A10	Call-out fee – After hrs		R737-35	R695-61	R656-14	R595-08
	W4A11	Replacement of damage meter		R990-00	-	-	-
	W4A13	Registration of Borehole		R276-16	R260-53	R245-61	R223-16
	W4A14	Repositioning of Meter (Excl. pipe)		R809-88	R764-04	R721-05	R655-53
	W4A15	Convert to water flow restrictor meter		R2 638-84	R2 489-47	R2 348-25	R2 134-21
	W4A16	Temporary connections – deposit		R6 944-06	R6 551-00	R6 180-00	R5 618-00
	W4A17	Temporary connection – usage per kl		R13-02	R12-28	R11-58	R10-53
	W4A18	Damage to Water Meter		Actual cost plus 15%	Actual cost plus 15%	Actual cost plus 15%	Actual cost plus 15%

Table A.7.3: Water Tariffs						
Consumer / Description	**Tariff Code**	**Category**	**17/18**	**16/17**	**15/16**	**14/15**
	W4A19	Damage of Watermain	Actual cost plus R2 790-98	Actual cost plus R2 633-00	Actual cost plus R2 495-24	Actual cost plus R2 268-40
	W4A20	Damage of Service Connection (including water meter)	Actual cost plus R697-48	Actual cost plus R658-00	Actual cost plus R623-81	Actual cost plus R567-10
Illegal Connection / Tampering Fee	W5A1	1st Offence	R6 158-60	R5 810-00	R5 480-00	R4 982-00
	W5A2	2nd Offence – Must convert to a flow-restriction water meter at applicable tariff	R7 227-08	Restricted Access	Total dis-connection	Total dis-connection
	W5A3	3rd Offence (Restriction of service and remedial action fee = double previous offence fee)	Previous offence amount x 2	-	-	-
Connection Fee	W6A1	20mm Connection Conventional Meter	R4 511-51	R4 256-14	R4 014-91	R3 650-00
	W6A2	20 mm Connection Water Flow Restrictor Meter	R5 357-65	R5 054-39	R4 768-42	R4 335-09
	W6A3	Other Connections	Actual Cost + 15%	Actual Cost + 15%	Actual Cost + 15%	Actual Cost + 15%
	W6A4	Connections (Erf Boundary – by Dev.)	R1 172-51	R1 106-14	R1 043-86	R949-12
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 domestic sewerage tariff is based on 70% of water consumption, to a maximum of 50kl water consumption per month, i.e. maximum 35kl/month sewerage charged. The sewerage tariff structures for Overstrand Municipality for the 2017/2018 financial year and the previous three financial years are summarised in the table below (Subject to 15% VAT).

Table A.7.4: Sewerage Tariffs						
Consumer / Description	**Tariff Code**	**Category**	**17/18**	**16/17**	**15/16**	**14/15**
Sewerage – Single and Intermediate Residential (Conventional sewers, small bore sewers and conservancy tanks)	SE7A1	0 – 35 kl per kl (based on 70% of 50 kl water usage) – per unit per month. Conservancy tank service only during office hours per month. For after-hours service, refer to tariff SE9B.	R12-22	R11-54	R10-88	R10-26
Sewerage – registered indigent households	SE7A4	0 – 4.2 kl – subsidised	R12-22	R11-54	R10-88	R10-26
	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.	R12-22	R11-54	R10-88	R10-26
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.	R12-22	R11-54	R10-88	R10-26
Sewerage – Guest house, bed & breakfast establishments	SE7C1	Per kl (based on 70% of water usage) per unit per month	R12-22	R11-54	R10-88	R10-26
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	R12-22	R11-54	R10-88	R10-26
Consumption - Departmental	SE7E1	0 – 35 kl per kl (based on 70% of 50 kl water usage) per unit per month.	R12-22	R11-54	R10-88	R10-26
Basic Charge	SE8A	Basic Monthly Charge Developed sites per erf/unit per month.	R108-54	R102-63	R96-61	R91-14
	SE8B	Basic Monthly Charge Undeveloped sites – cannot connect to the network per erf/unit per month.	R73-13	R69-30	R65-08	R61-40

Table A.7.4: Sewerage Tariffs							
Consumer / Description	**Tariff Code**	**Category**		**17/18**	**16/17**	**15/16**	**14/15**
	SE8C	Basic Monthly Charge Undeveloped sites – can connect to the network per erf/unit per month		R108-54	R122-81	R116-23	R109-65
	SE8D	Basic Monthly Charge Developed sites – with a septic Tank per erf/unit per month		R73-13	R69-30	R65-08	R61-40
	SE8E	Basic Monthly Charge – Low Cost Housing & Single Quarters per erf/unit per month		R73-13	R69-30	R65-08	R61-40
	SE8F	Fixed Infrastructure Basic Charge per erf/unit per month		R9-60	R9-60	R9-60	R9-60
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)	R499-40	R471-05	R444-46	R419-30
	SE9A2		Vacuum Tanker service provided on request <5kl (per 5kl or part thereof)	R499-40	R471-05	R444-46	R419-30
	SE9A4		Vacuum Tanker service provided on request >6kl (per 6kl or part thereof)	R499-40	R471-05	R444-46	R419-30
	SE9A5		Call out fee for Tank Service request but no service due to another defect	R499-40	R471-05	R444-46	R419-30
	SE9A6		More than 3 pipes an additional fee per pipe for users not paying tariff SE7 above	R73-13	R69-30	R65-08	R61-40
	SE9B1	After Hours Vacuum Tanker Service – Provided on request	After hours per request < 6kl (per 6kl or part thereof)	R998-80	R942-11	R888-92	R838-60
	SE9B2		After hours per request > 6kl (per 6kl or part thereof)	R998-80	R942-11	R888-92	R838-60
	SE9B3		After hours per request < 5kl (per 5 kl or part thereof)	R998-80	R942-11	R888-92	R838-60
	SE9B2		After hours businesses with Public Toilets per removal	R299-83	R283-33	R266-86	R251-75
	SE9C1	Vacuum Tanker Service outside urban areas – Provided on request	Normal applicable Tariff (SE9A1 or SE9A2 or SE9A4) plus additional per hour plus SE9C2	R299-83	R283-33	R266-86	R251-72
	SE9C2		Normal applicable Tariff (SE9A1 or SE9A2 or SE9A4) plus additional per km	R14-63	R13-82	R13-02	R12-28
	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	R299-83	R283-33	R266-86	R251-75
	SE9C7		After hours applicable Tariff (SE9B1 or SE9B2 or SE9B3) plus additional per km	R14-63	R13-82	R13-02	R12-28
	SE9D1	Testing and Connection Fees	Testing of septic and conservancy tanks per test	R1 229-04	R1 225-44	R1 156-14	R1 050-88
	SE9D2		Small bore sewerage connection fee (including tank test)	R5 962-97	R5 625-44	R5 307-02	R4 824-56
	SE9D3		Sewer connection	R4 467-80	R4 214-91	R3 976-32	R3 614-91
	SE9E1	Disposal	Charge per kl or part thereof	R65-05	R61-40	R57-89	R52-63

Table A.7.4: Sewerage Tariffs						
Consumer / Description	**Tariff Code**	**Category**	**17/18**	**16/17**	**15/16**	**14/15**
Bulk services development fees	SEW10	Bulk services development fees	Development Contributions will be determined as set out in the Annexure in respect of Development Contribution Policy			
Illegal Connection / Tampering Fee	SE11A	1st Offence	R6 126-80	R5 780-00	-	-
	SE11B	2nd Offence	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 act as the WSP for the whole area. Current water services are delivered by way of an internally operated and managed mechanism. A Water and Waste Water Bulk Works Contract was signed in 2018 between Overstrand Municipality and Veolia Water Solutions & Technologies South Africa (Pty) Ltd to operate and maintain the bulk infrastructure in Overstrand Municipality's Management Area for a period of fifteen (15) years. The Municipality also has the right to extend the contract for a further five (5) years.

The 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.

Finally, the Annual Report, of which the WSDP Performance- and Water Services Audit Report form a part, records the success or otherwise of the previous year's implementation.

The Municipal personnel is 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.

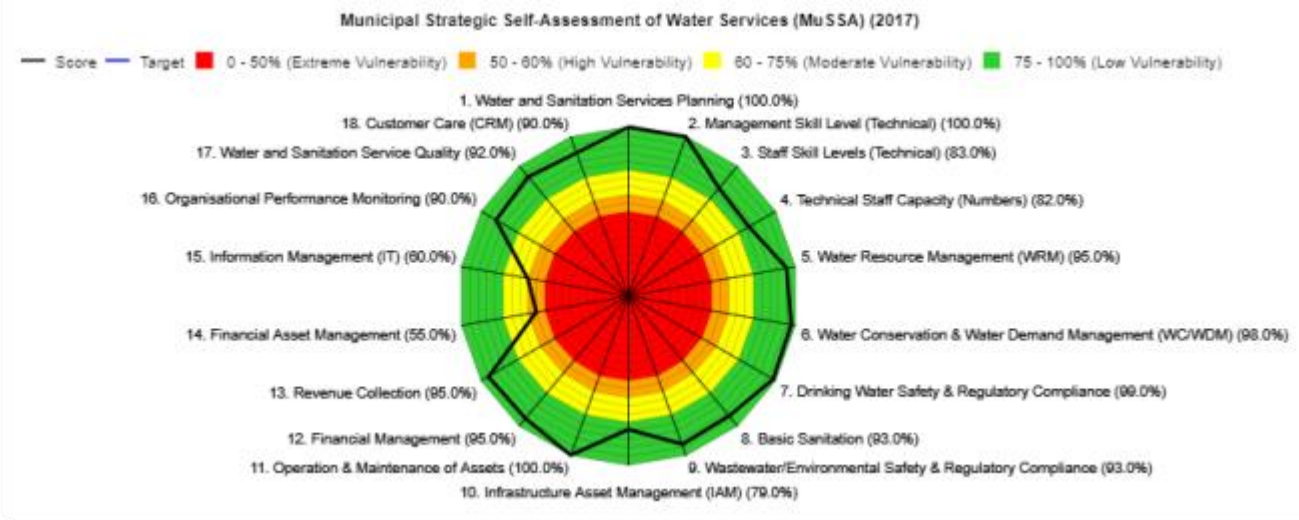

Figure A.8.1: Spider Diagram of the vulnerability levels of Overstrand Municipality for 2017

The one area of concern evident from the 2017 assessment is Financial Asset Management, which only obtained a score of 55%. The overall vulnerability Index of Overstrand Municipality is 0.16 for the 2017 assessment.

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 treated effluent at 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 purification works and Green Drop status for all our wastewater treatment plants.

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 10 working 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.

A comprehensive Customer Services and Complaints system is in place at Overstrand Municipality and 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 mail or works-order system to ensure execution thereof. All help desks were equipped with Batho Pele picture signage.

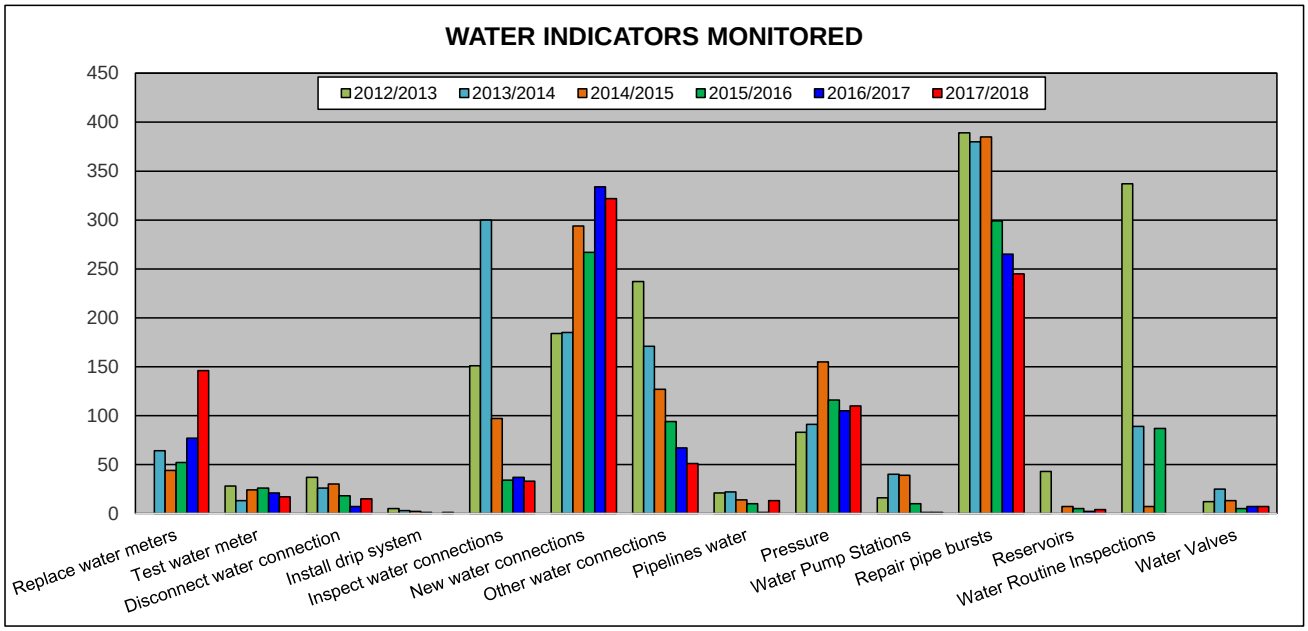

Figure A.8.2: Water Indicators Monitored by Overstrand Municipality

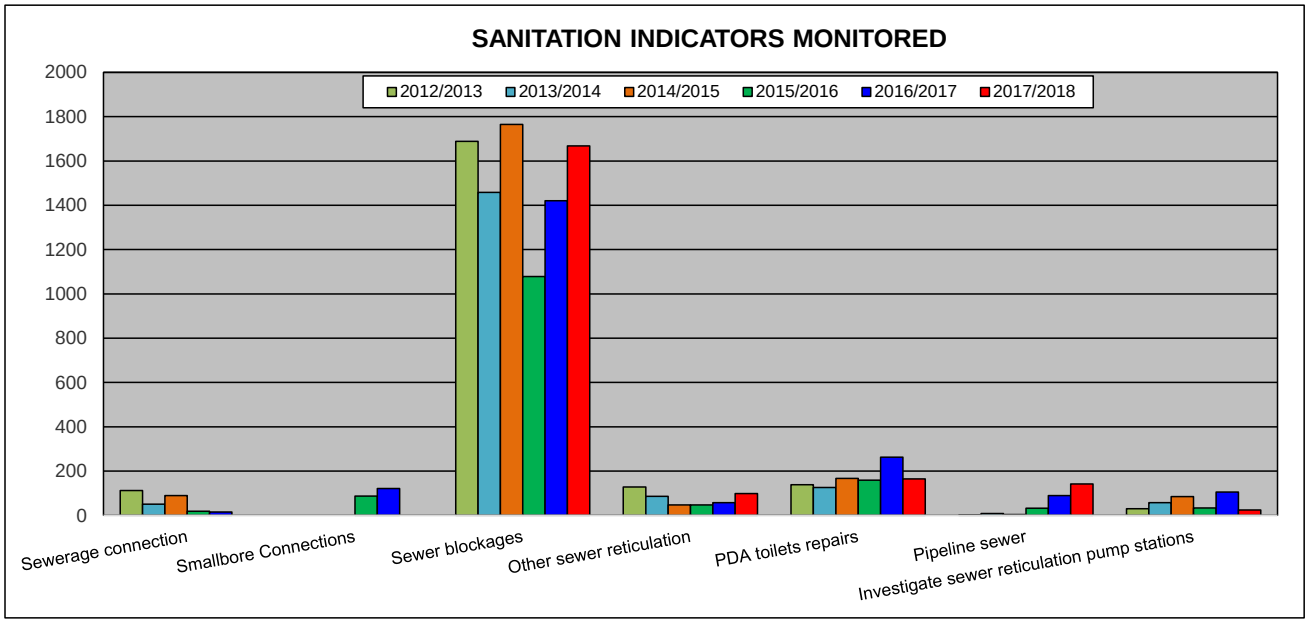

Figure A.8.3: Sanitation Indicators Monitored by Overstrand Municipality

WSDP-IDP WATER SECTOR INPUT REPORT FOR 2019/2020

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	Gansbaai					Hermanus					Kleinmond					Stanford					Overstrand Total				
		17/18	16/17	15/16	14/15	13/14	17/18	16/17	15/16	14/15	13/14	17/18	16/17	15/16	14/15	13/14	17/18	16/17	15/16	14/15	13/14	17/18	16/17	15/16	14/15	13/14
Sewerage connection	Provision of connection or inspection of existing connections	**-**	4	-	-	1	**-**	4	16	87	44	**-**	4	2	2	4	**-**	3	1	-	2	**-**	**15**	**19**	**89**	**51**
Smallbore Connections	Test new tanks smallbore	**-**	-	-	-	-	**-**	121	87	-	-	**-**	-	-	-	-	**-**	-	-	-	-	**-**	**121**	**87**	**0**	**0**
Sewer blockages	Repair blockages on main sewer pipelines up to connection points	**132**	136	122	109	128	**1 284**	1 031	689	1 350	1 057	**200**	208	217	224	227	**52**	46	50	82	46	**1 668**	**1 421**	**1 078**	**1 765**	**1 458**
Other sewer reticulation	Any other sewer reticulation inspections	**9**	15	19	29	60	**84**	35	21	14	16	**3**	4	2	3	9	**3**	4	5	1	1	**99**	**58**	**47**	**47**	**86**
PDA toilets repairs	Previously disadvantaged toilets repaired	**138**	235	96	124	122	**20**	23	63	43	3	**6**	4	-	-	-	**1**	1	-	-	1	**165**	**263**	**159**	**167**	**126**
Pipeline sewer	Installation of sewer pipelines or repair of pipelines	**-**	-	-	-	1	**141**	88	32	4	3	**-**	1	-	-	3	**1**	-	1	-	2	**142**	**89**	**33**	**4**	**9**
Investigate sewer reticulation pump stations	Work carried out at sewer pump stations	**-**	1	-	7	-	**16**	101	19	25	20	**2**	4	2	18	9	**6**	-	13	35	29	**24**	**106**	**34**	**85**	**58**
Replace water meters	Replace water meters	**59**	4	3	3	23	**55**	31	10	30	11	**20**	11	20	11	13	**12**	31	19	-	17	**146**	**77**	**52**	**44**	**64**
Test water meter	Testing of water meter for accuracy	**4**	3	1	3	-	**12**	17	25	20	12	**1**	1	-	1	1	**-**	-	-	-	-	**17**	**21**	**26**	**24**	**13**
Disconnect water connection	Disconnect supply	**4**	-	2	2	4	**5**	1	13	17	13	**1**	5	1	10	6	**5**	1	2	1	3	**15**	**7**	**18**	**30**	**26**
Install drip system	Installation and inspection of drip systems	**-**	-	1	1	1	**-**	-	-	-	-	**1**	-	-	1	2	**-**	-	-	-	-	**1**	**-**	**1**	**2**	**3**
Inspect water connections	Inspect connections	**4**	6	13	9	13	**11**	9	5	61	259	**8**	7	12	19	19	**10**	15	4	8	9	**33**	**37**	**34**	**97**	**300**
New water connections	New water connections	**76**	72	45	51	29	**161**	168	149	158	101	**69**	78	67	72	53	**16**	16	6	13	2	**322**	**334**	**267**	**294**	**185**
Other water connections	Inspections and work carried out at water connections	**25**	16	44	45	56	**14**	21	29	20	16	**7**	15	5	31	73	**5**	15	16	31	26	**51**	**67**	**94**	**127**	**171**
Pipelines water	Installation or repair of water pipelines	**3**	-	2	-	7	**2**	1	7	2	1	**5**	-	-	1	1	**3**	-	1	11	13	**13**	**1**	**10**	**14**	**22**
Pressure	Complaints with regard to pressure in the system	**25**	35	23	44	14	**44**	39	55	70	16	**40**	30	38	41	61	**1**	1	-	-	-	**110**	**105**	**116**	**155**	**91**
Water Pump Stations	Inspections and work carried out at water pump stations.	**-**	-	-	-	2	**1**	1	-	2	-	**-**	-	1	2	3	**-**	-	9	35	35	**1**	**1**	**10**	**39**	**40**
Repair pipe bursts	Repair of burst water pipelines	**23**	14	61	35	16	**45**	82	89	157	151	**174**	148	98	165	204	**3**	21	51	28	9	**245**	**265**	**299**	**385**	**380**
Reservoirs	Inspection of reservoirs and work carried out at reservoirs	**1**	-	-	6	-	**2**	1	1	-	-	**1**	1	4	-	-	**-**	-	-	1	-	**4**	**2**	**5**	**7**	**0**
Water Routine Inspections	Any water related inspections	**-**	-	69	-	63	**-**	-	-	6	-	**-**	-	-	-	5	**-**	-	18	1	21	**-**	**-**	**87**	**7**	**89**
Water Valves	Inspection of valves and work carried out on valves	**-**	-	1	-	2	**7**	5	1	7	10	**-**	1	-	6	12	**-**	1	3	-	1	**7**	**7**	**5**	**13**	**25**

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.

Overstrand Municipality also compiled annual WSDP Performance- and Water Services Audit Reports for the last number of years. 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 2017/2018 WSDP Performance- and Water Services Audit Report was approved by Council as part of the Municipality's Annual Report.

Overstrand Municipality's 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 latest 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 two financial years.

- The Water Services Audit Report for 2016/2017 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 2017) 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 and GDS. All the WTWs and WWTWs are registered on the IRIS and GDS websites.
- Overstrand Municipality continues with their Groundwater Monitoring and Management Programmes (Umvoto Africa for the Greater Hermanus area, Stanford and Baardskeerdersbos, and SRK for the monitoring of the potential impact of the Gansbaai WWTW on the groundwater).
- The information from the previously approved WSDP was transferred onto the new DWS's WSDP website, as rolled-out to the Municipalities in the Overberg Region by the DWS on the 17th of October 2017.
- A leak detection exercise was carried out on all the bulk water pipelines between the Buffels River WTW and the Rooi Els, Pringle Bay and Betty's Bay reservoirs (Visual, Listen and Correlation methods were used). Leak detection was also done on all the water network pipelines within the Hawston residential area (Visual and listen methods were used, with only correlation methods in specific identified areas).
- The Asset Register was updated to include all the water and sewerage capital projects completed during the 2017/2018 financial year.
- Detailed WTW and WWTW Process Audits were completed during the last financial year for all the WTWs and WWTWs.

- The following Technical investigations were completed during the 2017/2018 financial year:
  - Water Conservation and Water Demand Management Investigation into Highest Water Consumers in Overstrand Municipality (GLS). A pipeline replacement prioritisation analysis is also currently being done.
  - Detailed Technical assessments were completed for the Kleinmond and Hawston WWTWs for potential future upgrades (Aurecon).

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, 1st Review of 5 Year IDP (2018/19), 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 WTWs;
- WTW (Stabilization) at Stanford;
- WTW for Buffeljags Bay;
- Direct waste water re-use scheme for Hermanus, or alternatively a seawater desalination scheme; and
- 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 WWTW;
- Upgrade of sewerage pump stations;
- Upgrade of Zwelihle sewer network;
- Upgrade of Kidbrooke sewer;
- Extension of sewer networks in Kleinmond, Stanford and Gansbaai;
- Replacement of sewer rising main pipelines in Kleinmond and Greater Hermanus; and
- Refurbishment of components / processes at Hawston and Kleinmond WWTWs.

TOPIC 1: SETTLEMENTS AND DEMOGRAPHICS

Topic C.1.1: Settlement Demographics & 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	100.00	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	92.86
Summary by Settlement Group	No	100.00				100.00
Assessment Score by Settlement Type	No	100.00				100.00
Amenities Summary	No	100.00				100.00

The six 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: Six 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.
Housing Strategy	Eliminate the current subsidised housing backlog through the implementation of a co-ordinated housing supply plan. Ensure that the overall provision of land for housing makes provision for a balanced mix and range of housing types for all income groups.
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 reserve 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.

Table C.1.2: Six key strategies that should underpin all spatially related decision making (SDF)	
Spatial Development Strategy	**Strategy**
Rural development strategy	Demarcate Rural Development Areas (RDAs) to ensure that non-agricultural development outside urban areas is managed and promoted in a sustainable manner.

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	100.00	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 become available from the DWS.	100.00	No	28.57

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 Sanitation	Yes	100.00	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 become available from the DWS.	100.00	No	28.57
Water Services Infrastructure Supply Level Profile	No	100.00				100.00
Water Reliability Profile	Yes	100.00	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.	100.00	No	28.57
Sanitation Service Infrastructure Supply Level Profile	No	100.00				100.00
Sanitation Reliability Profile	Yes	100.00	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.	100.00	No	28.57
Water Services: Education	No	100.00				100.00
Water Services: Health	No	100.00				100.00
Sanitation Services: Education	No	100.00				100.00
Sanitation Services: Health	No	100.00				100.00
Health and Educational Facilities	No	100.00				100.00

Overstrand Municipality's basic water and sanitation service delivery challenges are summarised in the table below:

Table C.2.2: Basic water and sanitation service delivery challenges		
Service Area	**Challenge**	**Actions to address**
Water and Sewerage	Aging infrastructure	Increased maintenance and replacement of network and water meters.
All basic services	Vandalism	Educational programmes, increased security measures.
Sewerage systems	High number of blockages	Repair / replace sections of pipelines and increase public awareness / education on sewerage systems.
Water	High water losses / Aging infrastructure	Pipe replacement programme, pressure management, awareness programmes, water meter replacement, leak repairs.

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 works towards providing all households in the towns with a water connection inside the erf and connecting all households to a waterborne sanitation system.

All the formal households in the urban areas of Overstrand Municipality's Management Area are provided with water connections on the property (Higher level of service). Communal standpipes and ablution facilities are provided in the informal areas as temporary emergency services. 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'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 house).

- 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.

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.

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.

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 good. 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 INFRASTRUCTURE MANAGEMENT (INFRASTRUCTURE)

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	Yes	100.00	Update the Asset Register to include all the water and sewerage infrastructure assets.	100.00	Yes	100.00
Operation	Yes	100.00	Provide additional reservoir storage capacity for the towns with inadequate storage capacity, as identified through the WSDP and Water Master Plans. Upgrade existing water pump stations and provide new water pump stations for specific areas, as identified in the Water Master Plan. Upgrade sections of the water reticulation network as proposed in the Water Master Plan. Upgrade existing sewer pump stations and provide new sewer pump stations for specific areas, as identified in the Sewer Master Plan. Upgrade sections of the sewer drainage network as proposed in the Sewer Master Plan.	100.00	Yes	92.86
Functionality Observation	No	100.00				100.00
Asset Assessment Spectrum	No	100.00				100.00
Water and Sanitation schemes	No	100.00				100.00

WSDP-IDP WATER SECTOR INPUT REPORT FOR 2019/2020

The Annual Report, Draft Audited 22 January 2019, 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 in the Western Cape	The town in Overstrand which is currently the most affected by the current Western Cape drought, is Hermanus. Level 1 water restrictions were implemented from 1 November 2017, and level 2 from 1 June 2018.
Ageing infrastructure	Increased the maintenance budget and enhanced asset replacement programmes through the capital budget.
Waste water (sanitation)	
Provision of adequate treatment capacity in all areas.	Upgrade of waste water treatment works when required.
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.
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.

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 operation and maintenance contract signed with Veolia Water Solutions & Technologies South Africa (Pty) Ltd will ensure the adequate operation and maintenance of the WTWs and WWTWs and the other bulk water and sewerage infrastructure.

It is also important for the Municipality to secure adequate funding for the provision of bulk infrastructure and development of additional sources to keep up with the high demand for services.

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

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**
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. The Hermanus well fields are to be expanded within the MTREF.

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.3.4: Existing Capacities and Flows at each of the WTWs (Ml/d)					
WTW	**Existing Hydraulic Capacity**	**Peak Daily Flow (Dec 2017 / January 2018)**	**Peak Month Average Daily Flow**	**Average Daily Flow (Jul 2017 – Jun 2018)**	**Required Treatment Capacity (1.5 x AADD10yr)**
Buffels River	5.500	3.033	2.219 (Dec 2017)	1.780	3.588
Kleinmond	5.800	4.195	2.451 (Dec 2017)	1.957	3.946
Preekstoel and Bio-filtration	38.000	17.418	14.672 (Dec 2017)	11.459	25.444
Franskraal	6.500	5.965	4.002 (Dec 2017)	3.043	6.756
De Kelders	1.600	1.450	1.426 (Aug 2017)	1.148	1.600
Pearly Beach	1.440	1.217	0.552 (Dec 2017)	0.346	0.697
Baardskeerdersbos	0.185	0.110	0.071(Dec 2017)	0.047	0.095

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, as completed during the 2017/2018 financial year, are 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.
- Include Total Alkalinity test in the monthly analysis in order to determine stability of treated water.
- Maintain at least 0.40 mg/l free chlorine at all times.
- 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, as completed during the 2017/2018 financial year, are as follows:

- The inflow meter should be installed in a kiosk or should be protected from inclement weather.
- Flow meters should be calibrated annually and Calibration Certificates 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 Maintenance Plan with a Standard Operating Procedure should be available to clean reservoirs.
- The reservoirs should be cleaned.
- Jar testing equipment should be available on site.
- Jar tests should be conducted regularly as raw water changes.
- Chemical standards should be acquired and used daily prior to testing to ensure quality of results.
- 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.

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, as completed during the 2017/2018 financial year, are 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 O2.
- 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:

- Keep flow meter Calibration Certificates on site.
- 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 and adequate colour removal.
- 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 upflow 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.
- 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.
- A First-Aid sign should be erected.

Stanford WTW: The raw water complies with SANS 0241:2015 standards. A new chlorination facility was however constructed in order to eliminate potential risks, which includes a telemetry connection to the Franskraal WTW. 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%. The recommendations from the detail WTW Process Audit, as completed during the 2017/2018 financial year, are 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.
- Operation Manual should be kept on site.
- 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.
- It is recommended that an alarm be installed due to periodic break-ins.

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, as completed during the 2017/2018 financial year, are 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.
- All staff should be registered as Process Controllers with DWS.
- Chlorine room must be ventilated.
- All personnel handling chlorine must undergo appropriate accredited chlorine handling training.

De Kelders WTW: This new Reverse Osmosis WTW was constructed during 2011 at De Kelders. The recommendations from the detail WTW Process Audit, as completed during the 2017/2018 financial year, are 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.
- All records should be readily available on site.
- All staff should be registered as Process Controllers with DWS.
- A Class III Process Controller should be appointed to for supervision.
- Breathing apparatus and eye goggles should be 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, as completed during the 2017/2018 financial year, are 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.
- A Maintenance Plan with a Standard Operating Procedure should be available to clean the reservoir.
- All staff should be registered as Process Controllers with DWS.
- A Class III Process Controller should be available to oversee the works.
- 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, as completed during the 2017/2018 financial year, are as follows:

- Flow meters should be calibrated annually and Calibration Certificates should be kept on site.
- Investigate the difference between the inlet and outlet meters.
- Record volumes of sludge being disposed.
- Maintain 0.40 mg/l Free Chlorine at all times.
- 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, as completed during the 2017/2018 financial year, are as follows:

- Flow meter 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.3.5: 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 require 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 2017/2018, based on 1 x PDD (24 hours storage capacity), are 1.45 for Buffels River, 2.20 for Kleinmond, 1.84 for Greater Hermanus, 1.56 for Stanford, 1.23 for Greater Gansbaai, 2.57 for Pearly Beach, 1.13 for Baardskeerdersbos and 2.91 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.3.6: 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).	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 (Currently under construction) (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 (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.3.7: 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.3.7: 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.3.8: 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.3.8: 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.

Table C.3.8: Future Sewer Reticulation Infrastructure Required
• New outfall sewers are proposed to accommodate future development areas and to service the existing unserviced erven in Pearly Beach.
BAARDSKEERDERSBOS
• A new sewer reticulation system is proposed for the town of Baardskeerdersbos, which are 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 are 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.3.9: 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.	2020	0.255

Table C.3.9: Future Sewer Pump Stations Required			
Drainage System	**Recommendations included in the Sewer Master Plan**	**Year**	**Cost (R Million)**
	New PS when lower lying erven of future area GH1 develops (Cost for Developer)	2035	-
	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 capacities and current flows at each of the WWTWs (Ml/d).

Table C.3.10: Existing Capacities and Flows at each of the WWTWs (Ml/d)

WWTW	Existing Hydraulic Capacity	Peak Daily Flow (Dec 2017 / January 2018)	Peak Month Average Daily Flow	Average Daily Flow (July 2017 – June 2018)	Average Wet Weather Flow (Jun'18, Jul'17, Aug'17)
Kleinmond	2.000	1.991	1.343 (Dec'17)	1.090	1.139
Hawston	1.000	0.531	0.365 (Jun'18)	0.334	0.353
Hermanus	12.000	7.215	7.640 (Aug'17)	6.016	6.667
Stanford	0.500	0.435	1.024 (Sept'17)	0.662	0.664
Gansbaai	2.000	1.054	0.880 (Aug'17)	0.823	0.835
Eluxolweni	0.259	Flows not yet available			

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 is currently being 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. The recommendations from the detail WWTW Process Audit, as completed during the 2017/2018 financial year, are 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.
- Leaking skip should be repaired/replaced.
- The chlorine contact tank should be erected with a 30 minute contact time.
- Maintain 0.25 mg/l Free Chlorine in the final effluent at all times to ensure complete disinfection.
- Site should be fenced in. 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. The recommendations from the detail WWTW Process Audit, as completed during the 2017/2018 financial year, are as follows:

- 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.
- Replace sand on drying beds.
- Maintain adequate sludge wastage programme.
- Remove dry sludge from site regularly.
- 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.
- Visitors Register should be enforced.
- 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 recommendations from the detail WWTW Process Audit, as completed during the 2017/2018 financial year, are as follows:

- Investigate the occasional differences between the inlet and outlet flow meters.
- Maintain the present mode of operation.
- 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.
- Manage sludge bin removals.
- Sludge management should receive more attention.
- Increase sludge wastage and maintain an adequate sludge wastage programme.
- Replace sand on drying beds.
- Remove all weeds from drying beds.
- Maintain 0.20 mg/l Free Chlorine at all times.
- Ensure that the correct testing parameter templates are updated on the GDS to ensure that compliance percentages are correct.
- All Process Controllers must be registered with DWS.
- A Visitors Register should be implemented.
- Wind-sock must be erected at chlorine room.

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 recommendations from the detail WWTW Process Audit, as completed during the 2017/2018 financial year, are as follows:

- Grit should be transported to landfill sites and not disposed into sludge dams.
- Investigate the difference between inlet and outlet flow meter readings.
- Oxygen transfer tests should be conducted to establish the delivery of the aerators.
- Ensure adequate ATML recycle to maintain satisfactory denitrification.
- 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.
- Clean out the two sludge lagoons.
- Ensure 0.25 mg/l Free Chlorine in the final effluent at all times, as at present.
- Register staff as Process Controllers with DWS.
- Ensure that a classified Process Controller is on site per shift and a Class V Supervisor oversees the site.
- Keep Safety Minutes on site.
- Install an eye wash/shower facility.
- Get fire extinguisher and 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 recommendations from the detail WWTW Process Audit, as completed during the 2017/2018 financial year, are 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 beds.
- 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 GDS to ensure that compliance percentages are correct.
- Ensure that the correct compliance standard is loaded on the GDS.
- Maintain present mode of operation.

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.3.11: 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

ASSET MANAGEMENT ASSESSMENT

An Asset Management Policy is in place. Overstrand Municipality however 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.

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

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 needs to ensure that the maintenance and rehabilitation plan is part of the WSDP and that the plan is implemented. Assets must be rehabilitated and / or replaced before the end of their economic life and the necessary capital funds must be allocated for this purpose. Priority should be given to rehabilitating existing infrastructure as this generally makes best use of financial resources and can achieve an increase in (operational) services level coverage's most rapidly. The preparation of maintenance plans and the allocation of sufficient funding for maintenance are required to prevent the development of a large condition backlog. The potential renewal projects for 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.

TOPIC 4: WATER SERVICES INFRASTRUCTURE MANAGEMENT (O&M)

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 %**
Operation & Maintenance Plan	No	100.00				100.00
Is There an Operation and Maintenance Plan?	No	100.00				100.00
Resources	Yes	100.00	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. 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	100.00	Yes	100.00

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 %**
			monitor the External Service Provider's compliance with regard hereto.			
Information	Yes	100.00	Develop an Asset Management Plan (AMP) from the updated Asset Register. 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. Municipality needs to keep record of all breakages / failures per infrastructure type. The External Service Provider needs to ensure that operational limits, monitoring programmes, verification procedures and pre-determined corrective actions are in place for all the WTWs and WWTWs treatment processes. Overstrand Municipality will monitor their compliance with regard hereto.	100.00	No	92.86
Activity Control & Management	Yes	100.00	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 External Service Provider is responsible for compliance wrt the Occupational Health and Safety requirements at the WTWs and WWTWs. The Municipality will monitor the External Service Provider compliance with regard hereto. Implement Improvement/Upgrade Plans of Water Safety Plans and W_2RAPs. Implement recommendations from detail WTW and WWTW Process Audits. Asset Management, the operation and maintenance of the existing bulk water services infrastructure and the training of staff involved forms part of the Bulk Water Services Contract. The Municipality will monitor the compliance of the External Service Provider with regard hereto.	100.00	Yes	92.86

The Water Safety Plan and W_2RAP Teams of Overstrand Municipality are committed to meet regularly to review the implementation of all the aspects of the Water Safety Plan and W_2RAP to ensure that they are still accurate and to determine whether the field assessments need updates or modifications and whether the Incident Response Management Protocol is still adequate. In addition to the regular three year review, the Water Safety Plan and W_2RAP will also be reviewed when, for example, a new water source is developed, major treatment improvements are planned and brought into use, or after a major incident.

The Veolia Contract allows for the classification of all the treatment works and operators along the lines of the regulations by establishing a programme for certification of works, operators, technicians and managers. The process will include reviewing the skills needed and aligning resources to these needs as well as reviewing total staff numbers necessary to meet all the objectives in the National Water Act.

The Occupational Health and Safety Act contain provisions directing employers to maintain a safe workplace and to minimize the exposure of employees and the public to workplace hazards. It is therefore important for Veolia Water Solutions & Technologies South Africa (Pty) Ltd to compile a Legal Compliance Audit of their WTWs and WWTW, which will provide the management of Veolia Water Solutions & Technologies South Africa (Pty) Ltd with the necessary information to establish whether they are in compliance with the legislation or not.

Overstrand Municipality and Veolia Water Solutions & Technologies South Africa (Pty) Ltd are committed to work with the DWS and the other role-players in order to further improve on the Municipality's 2014 Blue Drop Score for the various distribution systems. The Water Safety Plans, Process Audits that were carried out at all the WTWs and Operation and Maintenance Manuals which were compiled for all the WTWs will be used to improve the Municipality's performance. The Improvement / Upgrade Plan of the Water Safety Plan will also

be implemented by the Municipality in order to address the potential risks identified through the Water Safety Plan process.

It is also important for Overstrand Municipality to continue with the upgrading of WWTWs when necessary, in order to reduce the risk of source contamination. WWTWs will be managed and operated by Veolia Water Solutions & Technologies South Africa (Pty) Ltd and Overstrand Municipality to comply with the permitted standards and in so doing intends to work towards green drop status for the Municipality's other WWTWs as well.

Veolia Water Solutions & Technologies South Africa (Pty) Ltd and Overstrand Municipality is committed to work with the DWS and the other role-players in order to improve on their 2013 Green Drop Score and to reduce the 2014 Wastewater Risk Ratings for the various WWTWs and to get the Municipality ready for the next round of assessments. The W_2RAPs that are in place for all the WWTWs will assist in reducing the current CRRs for the various WWTWs. The following will also further assist in the process of reducing the CRRs.

- Forward planning and upgrading / refurbishment of treatment plants to ensure adequate capacity for the flows received;
- Ensure sound management of the Water and Wastewater Treatment Operation Management Contract with Veolia Water Solutions & Technologies South Africa (Pty) Ltd;
- Monitoring of flow to- and from the plants;
- Sampling and monitoring of effluent quality;
- Appropriate authorisation in accordance with the National Water Act (36 of 1998); and / or
- Where plant is overloaded, introduce innovative methods to ensure enhancement of effluent quality.

TOPIC 5: CONSERVATION AND DEMAND MANAGEMENT

Topic C.5.1: Conservation & 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	100.00	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 to below 20%.	100.00	No	92.86
Leak and meter repair programmes.	Yes	100.00	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.	100.00	Yes	92.86
Consumer/end-use demand management: Public Information & Education Programmes	Yes	100.00	Support schools with WDM initiatives (Especially during Water Week). Raise awareness under the public of water efficient devices and water conservation projects.	100.00	No	28.57
Conjunctive use of surface - and groundwater	No	100.00				100.00
Working for Water	No	100.00				100.00

Topic C.5.2: Conservation & 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

Overstrand Municipality is committed to keep the percentage of NRW for the various water distribution systems to below 20%.

Table C.5.3: Committed Reduction in Total NRW (Include bulk distribution, treatment and internal distribution)

Distribution System	17/18 (%/a)	2022 (%/a)	2042 (%/a)
Buffels River	50.7%	40.0%	30.0%
Kleinmond	28.3%	20.0%	15.0%
Greater Hermanus	19.2%	15.0%	15.0%
Stanford	31.0%	20.0%	15.0%
Greater Gansbaai	37.5%	25.0%	20.0%
Pearly Beach	23.3%	20.0%	15.0%
Baardskeerdersbos	53.6%	30.0%	15.0%
Buffeljags Bay	18.0%	15.0%	15.0%

The Municipality's WDM Strategy and Action Plan include the following key activities (June 2018 progress in brackets):

- Sourcing of funding for implementation of water reclamation for potable purposes in the longer term (applications for RBIG grant funding have been submitted to the Department of Water and Sanitation (DWS));
- Continue with pipe replacement in priority areas with old reticulation networks and history of frequent pipe failures (Contract phases completed in Pearly Beach, Gansbaai, De Kelders and Rooi-Els to Hermanus);
- Implementation of intelligent pressure management in Stanford, Kleinmond and Betty's Bay;
- Phased pro-active replacement of older water meters (latest three year contract was awarded in June 2016);
- Review and improve efficiency of remote monitoring of minimum night flows in all zones (On-going maintenance 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 (Second two year leak detection contract awarded in 2015 – work in progress);
- Continue with leak repairs at indigent households and installation of water management devices (latest contract was awarded in June 2016);
- Enhance public awareness on 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);
- 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 RBIG and ACIP programs, ORIO, Green Fund and Disaster Reduction Program;
- Tariffs structured to discourage excessive use of water, including volumetric sewerage tariffs, and specific water restriction tariffs implemented for specific dam levels (implemented and on-going);

- Continue with removal of alien vegetation in catchment areas (Work for Water program – ongoing);
- Maximum use of treated effluent for irrigation (Implemented in Hermanus and Gansbaai).

Leak detection exercise was carried out on all the bulk water pipelines between the Buffels River WTW and the Rooi Els, Pringle Bay and Betty's Bay reservoirs (Visual, Audio and Correlation methods were used). One leak was found and repaired, which had a 20% decrease in monthly water losses. The bulk water distribution losses between the Buffels River WTW and the Rooi Els, Pringle Bay and Betty's Bay reservoirs is now less than 5%.

Leak detection was also done on all the water network pipelines within the Hawston residential area (Visual and audio methods were used, with only correlation methods in specific identified areas). Only a few minor seepage leaks were found of which the impact of the repairs still needs to be determined.

Overstrand Municipality will continue with the repairing of leaks at all the 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 is busy with the phased pro-active replacement of the old water meters, as identified through the detail water meter audit. The meters not working and the meters with existing leaks were also replaced and the leaks were repaired. 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 of 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	100.00				100.00
Additional Sources Available	Yes	100.00	Continue with the further augmentation of the Greater Hermanus water resources.	100.00	Yes	92.86
Monitoring	Yes	100.00	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.	100.00	Yes	57.14
Water Quality	No	100.00				100.00
Operation	Yes	100.00	Ensure all surface and groundwater resources are registered with the DWS.	100.00	Yes	92.86

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 the 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.

The Western Cape is currently experiencing a severe drought, which also impacts on the yield of the Municipality's own existing surface and groundwater resources. WC/WDM measures to lower the future water requirements and the augmentation of the existing water resources with groundwater or other sources are therefore critical at this stage.

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 2042 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.

WSDP-IDP WATER SECTOR INPUT REPORT FOR 2019/2020

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

Table C.6.2: Projected Future Water Requirements and Yield / Licence Surplus (+) / Shortfall (-) based on WSDP Model						
Distribution System	**Model**	**PROJECTED FUTURE WATER REQUIREMENTS (Ml/a)**				
		2022	**2027**	**2032**	**2037**	**2042**
Buffels River	3% Annual Growth	753.144	873.101	1 012.163	1 173.374	1 360.263
	5% Annual Growth	829.161	1 058.242	1 350.615	1 723.765	2 200.010
	WSDP Model	**645.802**	**759.223**	**897.050**	**1 064.897**	**1 269.732**
	Yield surplus (+) / shortfall (-)	**1 071.198**	**957.777**	**819.950**	**652.103**	**447.268**
Kleinmond	3% Annual Growth	828.174	960.080	1 112.996	1 290.268	1 495.774
	5% Annual Growth	911.763	1 163.666	1 485.166	1 895.489	2 419.178
	WSDP Model	**728.222**	**825.770**	**938.785**	**1 070.009**	**1 222.721**
	Yield surplus (+) / shortfall (-)	**1 861.148**	**1 763.600**	**1 650.585**	**1 519.361**	**1 366.649**
Greater Hermanus	4% Annual Growth	5 088.898	6 191.422	7 532.812	9 164.817	11 150.402
	6% Annual Growth	5 597.400	7 490.584	10 024.091	13 414.495	17 951.621
	WSDP Model	**4 963.225**	**6 197.457**	**7 770.810**	**9 781.418**	**12 356.551**
	Licence surplus (+) / shortfall (-)	**236.775**	**997.457**	**2 570.810**	**4 581.418**	**7 156.551**
Stanford	3% Annual Growth	372.682	432.041	500.854	580.627	673.106
	5% Annual Growth	410.298	523.655	668.332	852.979	1 088.642
	WSDP Model	**338.277**	**407.481**	**492.109**	**595.698**	**722.611**
	Licence surplus (+) / shortfall (-)	**1 261.723**	**1 192.519**	**1 107.891**	**1 004.302**	**877.389**
Greater Gansbaai	4% Annual Growth	1 860.924	2 264.099	2 754.622	3 351.419	4 077.514
	6% Annual Growth	2 046.875	2 739.180	3 665.641	4 905.455	6 564.605
	WSDP Model	**1 571.679**	**1 916.756**	**2 346.900**	**2 884.422**	**3 557.688**
	Yield surplus (+) / shortfall (-)	**1 196.302**	**851.225**	**421.081**	**116.441**	**789.707**
Pearly Beach	3% Annual Growth	146.339	169.647	196.667	227.991	264.304
	5% Annual Growth	161.109	205.620	262.429	334.934	427.470
	WSDP Model	**151.387**	**187.070**	**232.447**	**290.363**	**364.524**
	Yield surplus (+) / shortfall (-)	**155.513**	**119.830**	**74.453**	**16.537**	**57.624**
Baardskeer-dersbos	2% Annual Growth	18.939	20.911	23.087	25.490	28.143
	4% Annual Growth	20.870	25.392	30.893	37.587	45.730
	WSDP Model	**11.489**	**11.153**	**10.855**	**10.591**	**10.356**
	Yield surplus (+) / shortfall (-)	**78.511**	**78.847**	**79.145**	**79.409**	**79.644**
Buffeljags Bay	2% Annual Growth	5.483	6.054	6.684	7.379	8.147
	4% Annual Growth	6.042	7.351	8.943	10.881	13.239
	WSDP Model	**4.924**	**5.068**	**5.216**	**5.371**	**5.530**
	Yield surplus (+) / shortfall (-)	**23.458**	**23.315**	**23.166**	**23.012**	**22.852**

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

Table C.6.3: Years in which the Annual Water Requirement will Exceed the Sustainable Yields from the Various Resources				
Distribution System	**Total sustainable Yield (x 10^6 m^3/a)**	**Annual Growth on 2017/2018 requirement (2%, 3% or 4%)**	**Annual Growth on 2017/2018 requirement (4%, 5% or 6%)**	**WSDP Projection Model**
Buffels River	1.717	> 2042 (3%)	2036 (5%)	> 2042
Kleinmond	2.589	> 2042 (3%)	> 2042 (5%)	> 2042
Greater Hermanus	5.200*	2022 (4%)	2020 (6%)	2023
Stanford	1.600	> 2042 (3%)	> 2042 (5%)	> 2042
Greater Gansbaai	2.768	2032 (4%)	2027 (6%)	2036
Pearly Beach	0.307	> 2042 (3%)	2035 (5%)	2038
Baardskeerdersbos	0.090	> 2042 (2%)	> 2042 (4%)	> 2042
Buffeljags Bay	0.028	> 2042 (2%)	> 2042 (4%)	> 2042

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 Various Towns (DWS's All Towns Reconciliation Strategies)

Distribution System	Option	Potential
Betty's Bay, Rooi Els and Pringle Bay	Re-use of water	• The Buffels River area does not have its own WWTW and therefore the re-use water is not a feasible option for the area.
	Groundwater	• Boreholes into the Peninsula Formation north of the Buffels River Dam are likely to yield between 5 – 10 l/s (provided the right structures are targeted), with good water quality (Class 0-1) being present. It is recommended that only 0.5 – 1 M m³/a is abstracted from the Peninsula Formation, in order to prevent any large drawdowns in the environmentally sensitive recharge and discharge areas. Any groundwater use in this area should in turn be carefully managed and monitored. 0.5 – 1 M m³/a will only meet the low-growth scenario shortfalls up to 2035, and other water sources will be required to meet the medium and high-growth scenario future shortfalls.
	Surface Water	• The Buffels River Dam is currently supplying the towns of Betty's Bay, Rooi Els and Pringle Bay. It has a maximum safe yield of 1.617 million m³/a, which is sufficient for the current population as the current water requirement is only 0.925 million m³/a for the low-growth scenario and 0.943 million m³/a for the high-growth scenario. • Betty's Bay is close to the lower Palmiet River making the river an obvious choice to supply the town when the water requirement exceeds the capacity of the current resources after 2040. The Rooi Els River is also another river considered for investigation if the Palmiet River may not be a good choice.
	Other Sources	• Rainwater harvesting is a suitable option for the area, considering the MAP is acceptable for rainwater harvesting to be deemed feasible. This should be promoted for all new houses being built.
	Summary	**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	Re-use of water	• Re-use of water from the WWTW for domestic purposes can only be allowed if the existing works is upgraded to a suitable process technology that can provide a 95% assurance of supply in terms of quality requirements.
	Groundwater	• Future groundwater targets should include the confined Peninsula Formation to the NE of the golf course along a NE-SW orientated normal fault, where high yields and good quality water (Class 0-1) can be expected. The unconfined Skurweberg Formation can also be targeted in the area, although the yields are likely to be lower and higher iron concentrations might be present.
	Surface Water	A study was carried out on the Palmiet River by DWS for further development of the surface water resources with the following recommendations: • Transferring water from the Kogelberg Dam to the Steenbras Dams and this was implemented the same year and provided 22.5 Mm³/a at 1:50 year assurance. • Raising of the current Eikenhof Dam to increase its capacity from 22.5 Mm³/a to 30 Mm³/a and this would provide additional yields of 4.5 Mm³/a for the Palmiet River area. The total storage would be only 27% of the MAR of 301.8 Mm³, but the ecological freshwater flow requirements of the Palmiet River would limit further development. **The Municipality is currently in discussions with Overberg Water to investigate the possibility of a regional scheme with Overberg Water for the bulk supply from the Theewaterskloof Dam to Kleinmond.**
	Other Sources	• Rainwater harvesting can be a suitable option for the area, considering the mean annual precipitation is acceptable for rainwater harvesting.
	Summary	**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):** • Continue with the implementation of the WC/WDM Strategy and measures. • Increase allocation from the Palmiet River, when required.

Table C.6.4: Potential Future Water Resources for the Various Towns (DWS's All Towns Reconciliation Strategies)		
Distribution System	**Option**	**Potential**
		• **Regional scheme with Overberg Water for possible bulk supply from the Theewaterskloof Dam.**
Hermanus	Re-use of water	• Treated effluent is currently used at the Hermanus WWTW for the irrigation of the Hermanus golf course, sports fields at the High School, the cricket club and Mount Pleasant, Bowling Club, Curro School and Zwelihle School. • Water users could be supplied with up to 4 million m³/a by 2030, assuming that 50% of the bulk water consumption is available for re-use. **A feasibility study will be undertaken in 2018/19.**
	Groundwater	• PSPs were appointed to proceed with groundwater investigation and exploration projects. Five target options for potential TMG wellfield sites have been identified and three of these have been investigated and implemented to various stages of progress. Gateway Well field (Within the town of Hermanus) Camphill Well field (In the Hemel en Aarde Valley) Volmoed Well field (In the Hemel en Aarde Valley) • A new pipeline from the Camphill and Volmoed boreholes to the Preekstoel WTW was constructed and the new boreholes were incorporated into the system. The licence for these two wellfields was also received. The Gateway monitoring programme is also applied at Camphill and Volmoed wellfield, and results are presented to the monitoring committee. • The TMG in the greater Hermanus area is subdivided into hydraulically bound fault units. The Gateway wellfield targets "Structural Sub-Area 1" which receives recharge from "Structural Sub-Area 3" and these are disconnected from "Structural Sub-Area 2", which Camphill and two boreholes of Volmoed penetrate. The total groundwater stored in the Peninsula within these sub-areas is 2 876 million m³ and 1 882 million m³ respectively. Base on the resource potential, an unexploited additional resource of 3.09 million m³/a is available from the Peninsula aquifer alone in the area.
	Surface Water	• The only feasible option identified in the Western Overberg Coastal Zone Water Supply Study (DWS, 2000) was the construction of the Hartebeest River Dam. The feasibility study however showed that the costs were significantly higher than the identified groundwater options that were implemented by the Municipality. • The Municipality is currently in discussions with Overberg Water to investigate the possibility of a regional scheme with Overberg Water for the bulk supply from the Theewaterskloof Dam or from the Palmiet River to Hermanus.
	Other Sources	• Desalination of seawater is seen as a potential future supply source for Hermanus. **A feasibility study was undertaken in 2018/19, and proved this option as a feasible next bulk water augmentation option for Hermanus.**
	Summary	**Hermanus will experience a shortfall by 2030 in water supply under all growth scenarios. This will increase to 2.874 million m³/a by 2040 under the low-growth scenario and to 8.632 million m³/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	Re-use of water	• Re-use of water from the WWTW for domestic purposes can only be allowed if the existing works is upgraded to a suitable process technology that can provide a 95% assurance of supply in terms of quality requirements.
	Groundwater	• 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. The Stanford Aquifer Licence authorises Overstrand Municipality to abstract up to 1.6 million m³/a groundwater from the Stanford Aquifer.
	Surface Water	• The Klein River runs through Stanford into the Klein River Lagoon, which is a sensitive and protected environment. The low flow of the Klein River at Stanford is close to zero during summer, due to heavy irrigation abstractions upstream of the lagoon.
	Other Sources	• Rainwater harvesting cannot be a suitable option for Stanford, considering the mean annual precipitation is too low for rainwater harvesting.
	Summary	**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.

Table C.6.4: Potential Future Water Resources for the Various Towns (DWS's All Towns Reconciliation Strategies)		
Distribution System	**Option**	**Potential**
		• Further Kouevlakte Wellfield development, if required.
Greater Gansbaai	Re-use of water	• The existing WWTW is in a good physical condition, but the wastewater will need further treatment to meet potable standards.
	Groundwater	• The best groundwater targets in the area are the TMG and Bredasdorp Group. The unconfined Peninsula Formation could be targeted along the coastline, however there is a risk of saltwater intrusion, as well as groundwater pollution from the Gansbaai landfill site and WWTW (both of which are highly monitored at present). • Gravels of the Klein Brak Formation (Bredasdorp Group) form a significant groundwater resource in the area, however abstraction from this unit could put the springs that are currently used by Gansbaai at risk. The Bredasdorp Group sediments are also highly susceptible to anthropogenic pollution and any future boreholes need to be monitored for contamination. • The confined Peninsula Formation can be targeted at depth in the vicinity of the Franskraal and Kraaibosch dams. The risk of both salt-water (negligible at Kraaibosch Dam) and anthropogenic contamination is reduced in both cases, however monitoring of salt-water intrusion will still be essential at any borehole into the Peninsula Formation at Franskraal Dam. Borehole yields are likely to be in the range of 5 – 10 l/s and water quality is expected to be good.
	Surface Water	• The small size of the rivers, the ecological freshwater flow requirements of the estuaries and the high salinity of the water in some of the rivers are limiting factors for further development of the surface water resources. • Other current water sources for the town include the Franskraal Dam and the Klipgat and De Kelders springs. • The Kraaibosch Dam will provide for Gansbaai and environs until about 2030 and there is no need for additional water resources to be developed in the area.
	Other Sources	• Rainwater harvesting can be a suitable option for the area, considering the mean annual precipitation is acceptable for rainwater harvesting.
	Summary	**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	Re-use of water	• The treated effluent from the oxidation pond system may eventually be used for the irrigation of the sports fields. • The provision of water for re-use for any other purpose than irrigation is not a feasible option within the short to medium term, considering the small quantities available.
	Groundwater	Three groundwater options exist for Pearly Beach to meet future annual shortfalls. • Either the Peninsula Formation or the Skurweberg Formation could be explored along the Groenkloof Fault, however this may put the presently used springs at risk. • The second TMG option would be the exploration of the Peninsula Formation in a semi-confined state to the east of the Kraaibosch Dam, if the dam is to be used to augment the supply to Pearly Beach. Yields of 5 – 10 l/s can be expected from the two TMG aquifers if either option is followed, with good water quality (Class 0-1). However, use of this resource adjacent to the dam may be in future competition with Gansbaai and surrounding areas that use Kraaibosch Dam. • The most immediate groundwater option would be the exploration of the Bredasdorp Group sedimentary units and the area has the presence of the Klein Brak Formation palaeochannel gravel deposits. Thick palaeochannel deposits can yield boreholes of between 2 – 5 l/s. Two 10 l/s boreholes or four 5 l/s boreholes would meet all scenarios except the high shortfall scenario for 2040, where an additional 10 l/s borehole may be required.
	Surface Water	• The Kraaibosch Dam is a potential option to augment the supply for Pearly Beach. This can be achieved by directly linking the Pearly Beach supply to the Kraaibosch Dam. Another option would be to link the Pearly Beach supply to the Gansbaai supply system. • A Service Level Agreement is also in place for the supply of 0.26 Ml/day from the Koekemoer Dam free of charge to the Municipality. Raising of the Koekemoer Dam wall is being investigated, which may result in increased allocation to the Overstrand Municipality.
	Other Sources	• Rainwater harvesting cannot be a suitable option for Pearly Beach, considering the mean annual precipitation is too low for rainwater harvesting.
	Summary	**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**

Table C.6.4: Potential Future Water Resources for the Various Towns (DWS's All Towns Reconciliation Strategies)		
Distribution System	**Option**	**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	Re-use of water	• The re-use of water is not a suitable supply option for Baardskeerdersbos, as there is no formal sewerage system and WWTW available.
	Groundwater	• The best groundwater target option is the fractured sandstones and quartzites of the Peninsula Formation, in a confined or unconfined state along the Baardskeerdersbos Fault. Two boreholes were drilled in 2008 targeting the Peninsula Formation, with blow yields of 13.1 and 1.8 l/s. The higher yielding borehole was tested and a sustainable yield of 5 l/s over 24 hours or 8 l/s over 8 hours was determined. Shortfalls are not expected for the next 25 years in the town; however if water is required the Peninsula Formation can be further explored along the fault with similar yields.
	Surface Water	Potential future surface water sources for the town, as identified in the Breede WMA ISP (DWS, 2004), are the utilisation of: • A tributary of the Boesmans River, and • The Uilkraals River
	Other Sources	• Rainwater harvesting is an appropriate option for the area, considering that the MAP is acceptable for rainwater harvesting to be feasible.
	Summary	**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	Re-use of water	• The re-use of water is not a suitable option for the town, as there is no formal sewerage system and WWTW available.
	Groundwater	• The town is currently supplied by one borehole, with a sustainably supply 0.028 million m³/a. Two other boreholes were also previously drilled into the Peninsula Formation near the shoreline and have low sustainable yields of 0.1 and 0.5 l/s. • Two further groundwater target options for the town, if required, could be the shelly gravels of the Klein Brak Formation and the fractured quartzites and sandstones of the Skurweberg Formation in the Buffeljags Mountains. The Buffeljags Mountains are relatively elevated in comparison to the rest of the region and higher recharge into the unconfined Skurweberg Formation can be expected there in comparison to the deeper confined Peninsula Formation further south-west. • Higher yields of between 2-5 l/s can be expected (with a good water quality of Class 0-1), with a reduced risk of salt-water intrusion. Boreholes into the Klein Brak Formation and overlying Quaternary sediment are likely to have yields of 5 l/s, however Quaternary aquifers can be susceptible to over abstraction and anthropogenic contamination.
	Surface Water	• There are no surface water sources in close proximity to Buffeljags Bay.
	Other Sources	• Rainwater harvesting is not a feasible option due to the low annual rainfall. • Desalination of seawater or brackish groundwater could be an option, if no other sources are available.
	Summary	**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 will implement the augmentation of the Hermanus (Gateway) boreholes during 2018/19 and 2019/20.

A detail feasibility study was also completed during the 2010/2011 financial year for the re-use of treated effluent from the Hermanus WWTWs. An ORIO application was prepared and submitted for the Hermanus Reclamation Project. The Municipality will do a feasibility study on desalination and re-use as options for the future in 2018/19.

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.

Greater Gansbaai: A new 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.

Pearly Beach: Overstrand Municipality is committed to manage the dam efficiently. Other future resource options include groundwater development and the possible Kraaibosch scheme.

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

Buffeljags Bay: The current supply from the borehole is adequate to supply the medium- and long-term future water requirements. Eskom completed a new electricity connection to the borehole.

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.

Industrial Consumers: A "Form of Application for Permission to Discharge Industrial Effluent into the Municipality's sewer" is included in Overstrand Municipality's water services by-laws and all industries now 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 regularly liaise with the industrial consumers 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 2017/2018 Draft Annual Report.

Table C.7.1: Financial Viability Challenges and Actions to Address These Challenges

Challenge	Actions to address challenge	Progress made in 2017/18 to address challenge
The on-going difficulties in the national and local economy and the subsequent risk of an increase in outstanding debtors.	Applying Strict credit control measures.	No regression in outstanding debtors recovered: 2017/2018: 99.64% (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 Spend on projects increased: 2017/2018: R105.1M (2016/2017:R91.9M) Operational Budget spend on Repairs and Maintenance relates to an above inflation increase in spending: 2017/2018: R191.2M (2016/2017: R120.7M)
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. 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 (2017/2018 Draft Annual Report).

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**
Cost coverage	Available cash + Investments / Monthly fixed operational expenditure	2.31	2.47	3.83	5.18	5.12
Service debtors to revenue	Total outstanding service debtors / annual revenue received for services	10.4%	10.42%	10.43%	10.77%	10.55%
Debt coverage	Total Operating Revenue – Operating Grants Received / Debt service payments due within the financial year	16.76	16.97	17.71	18.99	19.79

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

- 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.

Capital Budget: The Water and Sewer Master Plans (June 2016) recommends 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.7.3: 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

Table C.7.3: Future Water Infrastructure Required (June 2016 Water Master Plan)						
System	**Component**	**2017-2020**	**2021-2025**	**2026-2030**	**> 2030**	**Total**
	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.7.4: 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**
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).

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The water supply systems 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 60.7% of the water infrastructure and 55.1% 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 replacement value of the water infrastructure that is expected to come to the end of its useful life over the next 5 years is R553.947 million (an average of R110.8 million per year) and for sewerage infrastructure the value is R75.356 million (an average of R15.1 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 current replacement value of R604.1 million and R95.8 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 was previously summarised. The Municipality's dedicated renewal programmes need to target the poor and very poor assets. If this is not done, there is a risk that the ongoing deterioration will escalate to uncontrollable proportions, with considerable impact on customers, the economy of the area and the image of Overstrand Municipality.

The recommended implementation strategies with regard to capital funds are as follows:

- 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.

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

Operational Budget: 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 recently 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 recommended implementation strategies with regard to 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.

Tariff and Charges: 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.7.5: Comments on the Municipality's Block Step Tariff Structure

Block (Kl / month)	17/18	16/17	15/16	14/15	Comments
0 – 6 *	R4-50	R4-04	R3-62	R3-25	Free Basic Water
7 - 18	R10-24	R9-66	R9-12	R8-60	Low volume use
19 - 20	R16-61	R15-67	R14-79	R13-95	Low volume use
21 - 30	R16-61	R15-67	R14-79	R13-95	Typical use volume, including garden irrigation
31 - 45	R25-57	R24-13	R22-76	R21-48	Above average use, including garden irrigation
46 - 60	R33-22	R31-35	R29-57	R27-90	Above average use, including garden irrigation
61 - 100	R44-30	R41-79	R39-43	R37-20	Wasteful use and / or severe garden irrigation
> 100	R44-30	R41-79	R39-43	R37-20	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's current block step water tariff structure adequately promotes the efficient use of water by consumers and discourages the wastage of water. 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 Structure 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

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.

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 2018/2019 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 Wastewater Treatment Operation Management Contract is the most important factor that will determines the ability of Overstrand Municipality to 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 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:

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Table: Table D.1: Water Services Objectives and Strategies							
Objective / Strategy	Key Performance Indicator	Baseline (FY2017 status quo)	WSDP FY2018/19 TARGET	WSDP FY2019/20 TARGET	WSDP FY2020/21 TARGET	WSDP FY2021/22 TARGET	WSDP FY2022/23 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.	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.	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.	252	239 (Ref. D340)	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.	34 449	30 209 (Ref. D341)	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.	794	770 (Ref. D344)	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.	28 841	29 841 (Ref. D345)	28 183	28 183	28 183	28 183
Topic 3: Water Services Asset Management							
The provision and maintenance of municipal services.	% Of recommendations, as included in the WTW Process Audits, implemented.	-	-	50% of recommendations implemented.	60% of recommendations implemented.	70% of recommendations implemented.	80% of recommendations implemented.

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Table: Table D.1: Water Services Objectives and Strategies

Objective / Strategy	Key Performance Indicator	Baseline (FY2017 status quo)	WSDP FY2018/19 TARGET	WSDP FY2019/20 TARGET	WSDP FY2020/21 TARGET	WSDP FY2021/22 TARGET	WSDP FY2022/23 TARGET
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.	% Of recommendations, as included in the WWTW Process Audits, implemented.	-	-	50% of recommendations implemented.	60% of recommendations implemented.	70% of recommendations implemented.	80% 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.	-	-	50% of recommendations implemented.	60% of recommendations implemented.	70% of recommendations implemented.	80% of recommendations implemented.
The provision and maintenance of municipal services.	% Of recommendations, as included in the Improvement / Upgrade Plan of the W_2RAP, implemented.	-	-	50% of recommendations implemented.	60% of recommendations implemented.	70% of recommendations implemented.	80% of recommendations implemented.
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	-	-	Annual reporting to the Financial Department	Annual reporting to the Financial Department	Annual reporting to the Financial Department	Annual reporting to the Financial Department

Table: Table D.1: Water Services Objectives and Strategies							
Objective / Strategy	Key Performance Indicator	Baseline (FY2017 status quo)	WSDP FY2018/19 TARGET	WSDP FY2019/20 TARGET	WSDP FY2020/21 TARGET	WSDP FY2021/22 TARGET	WSDP FY2022/23 TARGET
	in the Asset Register, with accurate CRC, DRC, RUL and Age.			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.	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.	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.	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.
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.
Completion of works orders within the next calendar month for sewer network maintenance: Gansbaai, Hermanus, Stanford and Hangklip/Kleinmond.	% Compliance within the completion time.	92%	92% (Ref. D296, D305, D314, D324,)	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% (Ref. D297, D306, D315, D325,)	98%	98%	98%	98%
Completion of works orders within the next calendar month for water distribution services: Gansbaai, Hangklip/Kleinmond, Hermanus and Stanford.	% Compliance within the completion time.	92%	92% (Ref D300, D309, D318, D328,)	92%	92%	92%	92%
Topic 4: Water Services Operation and Maintenance							
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% (Ref. D274, D354)	95%	95%	95%	95%
Maintenance of sanitation services (tankers and networks) measured by the daily recording / completion	% Completed.	92%	92% (Ref. D275)	92%	92%	92%	92%

Table: Table D.1: Water Services Objectives and Strategies							
Objective / Strategy	Key Performance Indicator	Baseline (FY2017 status quo)	WSDP FY2018/19 TARGET	WSDP FY2019/20 TARGET	WSDP FY2020/21 TARGET	WSDP FY2021/22 TARGET	WSDP FY2022/23 TARGET
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% (Ref. D277)	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% (Ref. D235, D244, D252, D271)	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% (Ref. D293, D302, D311, D321)	95%	95%	95%	95%
Reporting on water quality and wastewater quality compliance percentages.	Report at least annually on the percentage of water quality and wastewater quality compliance.	-	-	At least annual publication of water quality and wastewater quality compliance percentages.	At least annual publication of water quality and wastewater quality compliance percentages.	At least annual publication of water quality and wastewater quality compliance percentages.	At least annual publication of water quality and wastewater quality compliance percentages.
Monthly monitoring of water and waste water quality results of all treatment plants and reporting to DWS via website.	Number of months monitored.	12	12 (Ref. D383)	12	12	12	12
Quality of effluent comply 90% with general limit in terms of the Water Act (Act 36 of 1998).	% Compliance	90%	90% (Ref D385)	90%	90%	90%	90%
Quality of potable water comply 95% with SANS241.	% Compliance with SANS241.	95%	95% (Ref D386)	95%	95%	95%	95%
Report on the implementation of the Water Services Development Plan annually by the end of October.	Report submitted.	1	1 (Ref D388)	1	1	1	1
Topic 5: Conservation and Demand Management (Topic 5.1: Water Resources)							

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Table: Table D.1: Water Services Objectives and Strategies

Objective / Strategy	Key Performance Indicator	Baseline (FY2017 status quo)	WSDP FY2018/19 TARGET	WSDP FY2019/20 TARGET	WSDP FY2020/21 TARGET	WSDP FY2021/22 TARGET	WSDP FY2022/23 TARGET
Limit unaccounted water to less than 20%.	% of water unaccounted for	20%	20% (Ref. D338)	20%	20%	20%	20%
Topic 5: Conservation and Demand Management (Topic 5.2: Water Balance)							
The provision and maintenance of municipal services.	Ensure all bulk water is metered at source, at WTW (incoming and outgoing) and at bulk storage reservoirs and the meters are read and recorded on at least a monthly basis.	-	-	95% of all sources metered and bulk water meters read and recorded at least monthly.	96% of all sources metered and bulk water meters read and recorded at least monthly.	97% of all sources metered and bulk water meters read and recorded at least monthly.	98% of all sources metered and bulk water meters read and recorded at least monthly.
The provision and maintenance of municipal services.	Ensure all incoming and outgoing flows at WWTWs are metered, as well as final effluent re-used for irrigation purposes and that meters are read and recorded on at least a monthly basis.	-	-	95% of all flows at WWTWs metered and meters read and recorded at least monthly.	96% of all flows at WWTWs metered and meters read and recorded at least monthly.	97% of all flows at WWTWs metered and meters read and recorded at least monthly.	98% of all flows at WWTWs metered and meters read and recorded at least monthly.
Topic 6: Water Resources							
The provision and maintenance of municipal services.	% Of abstraction from sources registered and authorized by the DWS.	-	-	70% Compliance.	80% Compliance	90% Compliance	95% Compliance
The provision and maintenance of municipal services.	Ensure yields and allocations are adequate to meet at least the projected five year water requirements for all eight areas.	-	-	100% adequate supply to meet water requirements for all eight areas.	100% adequate supply to meet water requirements for all eight areas.	100% adequate supply to meet water requirements for all eight areas.	100% adequate supply to meet water requirements for all eight areas.
The provision and maintenance of municipal services.	% Monitoring of effluent discharged by industrial consumers (Quantity and Quality)	-	-	20% of all industrial consumers monitored wrt quality and quantity of effluent discharged by them.	30% of all industrial consumers monitored wrt quality and quantity of effluent discharged by them.	40% of all industrial consumers monitored wrt quality and quantity of effluent discharged by them.	50% 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 budget spent	95%	95% (Ref. D243, D265, D292, D320, D353, D372, D384, D427, D428)	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	% Responded within 14 days	90%	90% (Ref. D233, D242, D251, D260, D268,	90%	90%	90%	90%

Table: Table D.1: Water Services Objectives and Strategies							
Objective / Strategy	Key Performance Indicator	Baseline (FY2017 status quo)	WSDP FY2018/19 TARGET	WSDP FY2019/20 TARGET	WSDP FY2020/21 TARGET	WSDP FY2021/22 TARGET	WSDP FY2022/23 TARGET
when the request is received via the Collaborator system.			D273, D291, D301, D310, D319, D346, D382)				

SECTION E: WATER SERVICES MTEF PROJECTS

The 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 FY2019/20, Table E.2b provides the projects identified for implementation in FY2020/21 and Table E2c provides the projects identified for implementation in FY2021/22.

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	FY2019/20		FY2020/21		FY2021/22		MTEF Total	
	Nr	Value (R'000)	Nr	Value (R'000)	Nr	Value (R'000)	Nr	Value (R'000)
Water Projects	11	R36,909	9	R36,075	11	R48,500	**31**	**R121,484**
Sanitation Projects	6	R14,900	8	R17,961	8	R38,407	**22**	**R71,268**
Combined Water & Sanitation Projects	**17**	**R51,809**	**17**	**R54,036**	**19**	**R86,907**	**53**	**R192,752**

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Table E.2a: Water Services MTEF Projects - FY2019/20 (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	FY2019/20 Budget	FY2019/20 Own	FY2019/20 MIG	FY2019/20 RBIG	FY2019/20 ACIP	FY2019/20 DR	FY2019/20 MWIG	FY2019/20 Other	Total Cost	
1. Infrastructure Projects								**R0**	**R38,349**								**R38,349**	
1.1		Water Master Plan Implementation	Implement Water Master Plan items	Services	Water	Bulk & Internal	Reticulation		**R10,000**	R10,000							**R10,000**	Water Master Plans
1.2		Fencing at water installations	Install fencing at water infrastructure	Security	Water	Other	Security		**R700**	R700							**R700**	Water Safety Plans
1.3		Water Facilities (Contingency)	Ensure adequate equipment at water facilities.	Water Quality	Water	Bulk	WTW		**R300**	R300							**R300**	WTW Process Audits
1.4		New 4 Ml reservoir	New reservoir for Masakhane	Storage capacity	Water	Bulk	Reservoir		**R8,446**		R8,446						**R8,446**	WSDP
1.5		Water stabilization plant for Stanford	Construction of a WTW for Stanford	Water Quality	Water	Bulk	WTW		**R2,500**	R2,500							**R2,500**	WTW Process Audits
1.6		New reservoir for Pringle Bay	New reservoir for Pringle Bay	Storage capacity	Water	Bulk	Reservoir		**R5,503**	R5,503							**R5,503**	WSDP
1.7		Sewerage Facilities (Contingency)	Ensure adequate equipment at sewerage facilities.	Effluent Quality	Sewerage	Bulk	WWTW		**R600**	R600							**R600**	WWTW Process Audits
1.8		Kleinmond sewer network extension	Sewer network extension	Waterborne sanitation	Sewerage	Internal	Drainage network		**R5,000**	R5,000							**R5,000**	Sewer Master Plans
1.9		Provision of bulk sewer supply	Installation of bulk sewer pipelines	Waterborne sanitation	Sewerage	Bulk	Bulk pipelines		**R500**		R500						**R500**	Sewer Master Plans
1.10		Fencing at sewerage installations	Install fencing at sewerage infrastructure	Security	Sewerage	Other	Security		**R800**	R800							**R800**	W_2RAP
1.11		Sewerage network extension and replacement	Sewerage network extension and replacement in Overstrand	Waterborne sanitation	Sewerage	Internal	Drainage network		**R4,000**	R4,000							**R4,000**	Sewer Master Plans
									R0								**R0**	
2. Source Development Projects								**R0**	**R4,000**								**R4,000**	
2.1		Upgrade Hermanus Wellfields Phase 1	Further groundwater development for Hermanus	Security of Supply	Water	Bulk	Sources		**R4,000**	R4,000							**R4,000**	
									R0								**R0**	
3. Demand Management projects								**R0**	**R0**								**R0**	
									R0								**R0**	
4. O&M Commitments								**R0**	**R9,460**								**R9,460**	
Operations																		
									R0								**R0**	
Maintenance																		
4.1		Refurbishment of bulk water pipelines	Replace old bulk water pipelines	Refurbishment	Water	Bulk	Bulk pipelines		**R360**	R360							**R360**	Refurbishment
4.2		Replacement of water pipelines	Replace old sections of water reticulation network	Refurbishment	Water	Internal	Water reticulation		**R2,900**	R2,900							**R2,900**	Refurbishment
4.3		Buffels river and De Bos dam intake structures and equipment	Refurbishment work	Refurbishment	Water	Bulk	Source infrastructure		**R1,300**	R1,300							**R1,300**	Refurbishment
4.4		Kleinmond Palmiet pump station and bulk water pipeline refurbishment	Refurbishment of pump station and bulk pipeline	Refurbishment	Water	Bulk	Pump station and bulk pipeline		**R900**	R900							**R900**	Refurbishment
4.5		Rehabilitate main bulk sewer to WWTW Phase 1	Rehabilitate main bulk sewer pipeline to WWTW in Kleinmond	Waterborne sanitation	Sewerage	Bulk	Bulk pipelines		**R4,000**	R4,000							**R4,000**	Refurbishment
									R0								**R0**	
5. Institutional								**R0**	**R0**								**R0**	
									R0								**R0**	
6. Water Services Programmes								**R0**	**R0**								**R0**	
Awareness Programs																		
									R0								**R0**	
WASH Programs																		
									R0								**R0**	
		Total						**R0**	**R51,809**								**R51,809**	

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Table E.2b: Water Services MTEF Projects - FY2020/21 (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	FY2020/21 Budget	Own	MIG	RBIG	ACIP	DR	MWIG	Other	Total Cost	
1. Infrastructure Projects								**R0**	**R43,136**								**R43,136**	
1.1		Water Master Plan Implementation	Implement Water Master Plan items	Services	Water	Bulk & Internal	Reticulation		**R10,000**	R10,000							**R10,000**	Water Master Plans
1.2		Fencing at water installations	Install fencing at water infrastructure	Security	Water	Other	Security		**R700**	R700							**R700**	Water Safety Plans
1.3		Water Facilities (Contingency)	Ensure adequate equipment at water facilities.	Water Quality	Water	Bulk	WTW		**R400**	R400							**R400**	WTW Process Audits
1.4		New 4 Ml reservoir	New reservoir for Masakhane	Storage capacity	Water	Bulk	Reservoir		**R12,075**	R5,000	R7,075						**R12,075**	WSDP
1.5		Upgrade water lines	Upgrade water pipelines for Masakhane	Services	Water	Internal	Reticulation		**R2,000**		R2,000						**R2,000**	Water Master Plans
1.6		New booster pump station and valves.	Construction of new pump station for Masakhane	Services	Water	Bulk	Pump Station		**R2,000**		R2,000						**R2,000**	Water Master Plans
1.7		Sewerage Facilities (Contingency)	Ensure adequate equipment at sewerage facilities.	Effluent Quality	Sewerage	Bulk	WWTW		**R600**	R600							**R600**	WWTW Process Audits
1.8		Kleinmond sewer network extension	Sewer network extension	Waterborne sanitation	Sewerage	Internal	Drainage network		**R4,400**	R4,400							**R4,400**	Sewer Master Plans
1.9		Kleinmond WWTW refurbishment and upgrade.	Upgrade and refurbish WWTW	Effluent Quality	Sewerage	Bulk	WWTW		**R2,500**	R2,500							**R2,500**	WWTW Process Audit
1.10		Upgrade link sewer supply	Upgrade bulk sewer pipeline in Masakhane	Waterborne sanitation	Sewerage	Bulk	Sewer pipeline		**R1,961**		R1,961						**R1,961**	Sewer Master Plans
1.11		Upgrade bulk sewer	Upgrade bulk sewer pipeline in Masakhane	Waterborne sanitation	Sewerage	Bulk	Sewer pipeline		**R2,000**		R2,000						**R2,000**	Sewer Master Plans
1.12		Fencing at sewerage installations	Install fencing at sewerage infrastructure	Security	Sewerage	Other	Security		**R500**	R500							**R500**	W_2RAP
1.13		Sewerage network extension and replacement	Sewerage network extension and replacement in Overstrand	Waterborne sanitation	Sewerage	Internal	Drainage network		**R4,000**	R4,000							**R4,000**	Sewer Master Plans
									R0								**R0**	
2. Source Development Projects								**R0**	**R6,000**								**R6,000**	
2.1		Upgrade Hermanus Wellfields Phase 1	Further groundwater development for Hermanus	Security of Supply	Water	Bulk	Sources		**R6,000**	R6,000							**R6,000**	
									R0								**R0**	
3. Demand Management projects								**R0**	**R0**								**R0**	
									R0								**R0**	
4. O&M Commitments								**R0**	**R4,900**								**R4,900**	
Operations																		
									R0								**R0**	
Maintenance																		
4.1		Refurbishment of bulk water pipelines	Replace old bulk water pipelines	Refurbishment	Water	Bulk	Bulk pipelines		**R900**	R900							**R900**	Refurbishment
4.2		Kleinmond Palmiet pump station and bulk water pipeline refurbishment	Refurbishment of pump station and bulk pipeline	Refurbishment	Water	Bulk	Pump station and bulk pipeline		**R2,000**	R2,000							**R2,000**	Refurbishment
4.3		Rehabilitate main bulk sewer to WWTW Phase 1	Rehabilitate main bulk sewer pipeline to WWTW in Kleinmond	Waterborne sanitation	Sewerage	Bulk	Bulk pipelines		**R2,000**	R2,000							**R2,000**	Refurbishment
									R0								**R0**	
5. Institutional								**R0**	**R0**								**R0**	
									R0								**R0**	
6. Water Services Programmes								**R0**	**R0**								**R0**	
Awareness Programs																		
									R0								**R0**	
WASH Programs																		
									R0								**R0**	
		Total						**R0**	**R54,036**								**R54,036**	

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Table E.2c: Water Services MTEF Projects - FY2021/22 (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									Total Cost	MTEF Project Source
								Prev spent FY2018/19	FY2021/22 Budget	Own	MIG	RBIG	ACIP	DR	MWIG	Other		
1. Infrastructure Projects								**R0**	**R54,907**								**R54,907**	
1.1		Water Master Plan Implementation	Implement Water Master Plan items	Services	Water	Bulk & Internal	Reticulation		**R10,000**	R10,000							**R10,000**	Water Master Plans
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		Fencing at water installations	Install fencing at water infrastructure	Security	Water	Other	Security		**R800**	R800							**R800**	Water Safety Plans
1.4		Water Facilities (Contingency)	Ensure adequate equipment at water facilities.	Water Quality	Water	Bulk	WTW		**R400**	R400							**R400**	WTW Process Audits
1.5		Upgrade water lines	Upgrade water pipelines for Masakhane	Services	Water	Internal	Reticulation		**R2,200**		R2,200						**R2,200**	Water Master Plans
1.6		New booster pump station and valves.	Construction of new pump station for Masakhane	Services	Water	Bulk	Pump Station		**R2,100**		R2,100						**R2,100**	Water Master Plans
1.7		Upgrade bulk water	Upgrade bulk water in Stanford	Services	Water	Bulk	Bulk pipelines		**R2,000**		R2,000						**R2,000**	Water Master Plans
1.8		Sewerage Facilities (Contingency)	Ensure adequate equipment at sewerage facilities.	Effluent Quality	Sewerage	Bulk	WWTW		**R700**	R700							**R700**	WWTW Process Audits
1.9		Kleinmond WWTW refurbishment and upgrade.	Upgrade and refurbish WWTW	Effluent Quality	Sewerage	Bulk	WWTW		**R15,000**	R15,000							**R15,000**	WWTW Process Audit
1.10		Upgrade bulk sewer	Upgrade bulk sewer pipeline in Masakhane	Waterborne sanitation	Sewerage	Bulk	Sewer pipeline		**R3,087**		R3,087						**R3,087**	Sewer Master Plans
1.11		Upgrade bulk sewer	Upgrade bulk sewer pipeline in Stanford	Waterborne sanitation	Sewerage	Bulk	Sewer pipeline		**R620**		R620						**R620**	Sewer Master Plans
1.12		Fencing at sewerage installations	Install fencing at sewerage infrastructure	Security	Sewerage	Other	Security		**R1,000**	R1,000							**R1,000**	W_2RAP
1.13		Gansbaai CBD sewer network extension	Sewerage network extension in Gansbaai	Waterborne sanitation	Sewerage	Internal	Drainage network		**R5,000**	R5,000							**R5,000**	Sewer Master Plans
1.14		Upgrading of pump stations and rising mains	Upgrade pump stations and rising mains	Waterborne sanitation	Sewerage	Bulk	Pump stations and rising mains		**R9,000**	R9,000							**R9,000**	Sewer Master Plans
									R0								**R0**	
2. Source Development Projects								**R0**	**R0**								**R0**	
									R0								**R0**	
3. Demand Management projects								**R0**	**R0**								**R0**	
									R0								**R0**	
4. O&M Commitments								**R0**	**R32,000**								**R32,000**	
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		Replacement of water pipelines	Replace old sections of water reticulation network	Refurbishment	Water	Internal	Water reticulation		**R5,000**	R5,000							**R5,000**	Refurbishment
4.3		Refurbishment of the Kleinmond and Buffels River WTW	Refurbishment of WTWs	Refurbishment	Water	Bulk	WTW		**R12,000**	R12,000							**R12,000**	Refurbishment
4.4		Kleinmond Palmiet pump station and bulk water pipeline refurbishment	Refurbishment of pump station and bulk pipeline	Refurbishment	Water	Bulk	Pump station and bulk pipeline		**R8,000**	R8,000							**R8,000**	Refurbishment
4.5		Rehabilitate main bulk sewer to WWTW Phase 1	Rehabilitate main bulk sewer pipeline to WWTW in Kleinmond	Waterborne sanitation	Sewerage	Bulk	Bulk pipelines		**R4,000**	R4,000							**R4,000**	Refurbishment
									R0								**R0**	
5. Institutional								**R0**	**R0**								**R0**	
									R0								**R0**	
6. Water Services Programmes								**R0**	**R0**								**R0**	
Awareness Programs																		
									R0								**R0**	
WASH Programs																		
									R0								**R0**	
		Total						**R0**	**R86,907**								**R86,907**	

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)
- Budget proposals
- 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 and replacement of various pumps.
- Construction of new reservoirs for Pringle Bay and Masakhane.
- Refurbishment of the Kleinmond- and Buffels River WTW. A new WTW for Buffeljags Bay and a water stabilization plant for Stanford.
- Refurbishment of the Kleinmond Palmiet pump station and bulk water pipeline.
- Refurbishment of the Buffels River and De Bos dam intake structures and equipment.
- Continue with the implementation of WDM measures (Meter replacements, pipeline replacements, pressure management, etc.).
- Upgrade of the Hermanus Well Fields Phase 1.
- Upgrade and extension of various sections of the bulk sewer pipelines and internal drainage networks (Hermanus, Stanford, Kleinmond, Gansbaai), as recommended by the Sewer Master Plans.
- Rehabilitation of the Kleinmond bulk sewer pipeline to the WWTW and the refurbishment and upgrade of the Kleinmond 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.

Overstrand Municipality's recommended implementation strategies, with regard to new water and sewerage infrastructure, are as follows:

- Take the recommended projects, as identified through the Water and Sewer Master Plans and the WSDP, into account during the planning and prioritization process for new infrastructure. Prioritize from the desired list, those items which can be implemented from available funding in the particular financial year.
- Undertake revised master planning at least every two to three years and to use the Master Plans to list the desired infrastructure development requirements and reflect these in the IDP.
- Ensure adequate funds are allocated on an annual basis towards the rehabilitation and maintenance of the existing water and sewerage infrastructure.
- 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.
- Give attention to the provision of basic water and sanitation services in the rural areas, once clear National Policy guidelines are available.
- 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.
- 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.

The current needs projects are estimated at R195.876 million of which 99% 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.

WSDP-IDP WATER SECTOR INPUT REPORT FOR 2019/2020

Table F.1: WSDP FY2019/20: 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.	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.	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	Inadequate capacity of existing water reticulation network	Implement recommende Water Master Plan items	MTEF Project	Yes		Water Master Plan implementation	R30,000	No	Yes	Yes
3.2	Lack of adequate treatment of raw water	Ensure compliance with water quality standards SANS241	MTEF Project	Yes	OS1415131	WTW for Buffeljags Bay	R3,000	Yes	Yes	Yes
3.3	Security at water installations not adequate	Ensure all water installations are adequately secured	MTEF Project	Yes		Fencing at water installations	R2,200	No	Yes	Yes
3.4	Some equipment at water facilities needs to be replaced	Ensure compliance with water quality standards SANS241	MTEF Project	Yes		Water facilities (Contingency)	R1,100	No	Yes	Yes
3.5	Inadequate reservoir storage capacity	Additional reservoir storage capacity for Masakhane	MTEF Project	Yes		New 4Ml reservoir for Masakhane	R20,521	Yes	Yes	Yes
3.6	Capacity of existing water reticulation network is inadequate	Upgrade water reticulation network capacity	MTEF Project	Yes		Upgrade water pipelines for Masakhane	R4,200	Yes	Yes	Yes
3.7	Inadequate pressure and supply to consumers	Ensure adequate pressure and supply	MTEF Project	Yes		New booster pump station and valves for Masakhane	R4,100	Yes	Yes	Yes
3.8	Bulk pipeline capacity is inadequate	Upgrade bulk water pipelines capacity	MTEF Project	Yes		Upgrade bulk water pipelines for Stanford	R2,000	No	Yes	Yes
3.9	The water quality increase the corrosion of the water network	Reduce corrosion of water reticulation network and mains	MTEF Project	Yes		Water stabilization plant for Stanford	R2,500	Yes	Yes	Yes
3.10	Inadequate reservoir storage capacity	Additional reservoir storage capacity for Pringle Bay	MTEF Project	Yes		New reservoir for Pringle Bay	R5,503	Yes	Yes	Yes
3.11	Some equipment at sewerage facilities needs to be replaced	Ensure compliance with final effluent quality standards	MTEF Project	Yes		Sewerage facilities (Contingency)	R1,900	No	Yes	Yes
3.12	Not all areas connected to waterborne sewer network	Sewer network extension	MTEF Project	Yes		Kleinmond sewer network extension	R9,400	No	Yes	Yes
3.13	Not all areas connected to waterborne sewer network	Sewer network extension	MTEF Project	Yes		Provision of bulk sewer supply for Blompark	R500	Yes	Yes	Yes
3.14	Capacity of existing WWTW is inadequate	Ensure adequate treatment capacity	MTEF Project	Yes	OS1415098	Kleinmond WWTW refurbishment and upgrade	R17,500	Yes	Yes	Yes
3.15	Bulk sewer pipeline capacity is inadequate	Ensure adequate bulk sewer pipeline capacity	MTEF Project	Yes		Upgrade link sewer supply for Masakhane	R1,961	Yes	Yes	Yes
3.16	Bulk sewer pipeline capacity is inadequate	Ensure adequate bulk sewer pipeline capacity	MTEF Project	Yes		Upgrade bulk sewer for Masakhane	R5,087	Yes	Yes	Yes
3.17	Bulk sewer pipeline capacity is inadequate	Ensure adequate bulk sewer pipeline capacity	MTEF Project	Yes		Upgrade bulk sewer for Stanford	R620	No	Yes	Yes
3.18	Security at sewerage installations not adequate	Ensure all sewerage installations are adequately secured	MTEF Project	Yes		Fencing at sewerage installations	R2,300	Yes	Yes	Yes
3.19	Not all areas connected to waterborne sewer network	Sewer network extension and replacement	MTEF Project	Yes		Sewerage network extension and replacement	R8,000	No	Yes	Yes
3.20	Not all areas connected to waterborne sewer network	Sewer network extension	MTEF Project	Yes		Gansbaai CBD sewer network extension	R5,000	No	Yes	Yes
3.21	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	R9,000	No	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	R4,260	No	Yes	Yes
4.2	Sections of the existing water reticulation networks are in a poor or very poor condition and need to be replaced.	Refurbish all water reticulation pipelines that are in a poor or very poor condition, with regular pipeline failures.	MTEF Project	Yes		Replacement of Overstrand water pipes	R7,900	No	Yes	Yes
4.3	The intake structures and equipment of the Buffels River and De Bos dam are in a poor condition and needs to be replaced.	Refurbish existing structures and equipment that are in a poor or very poor condition.	MTEF Project	Yes		Buffels River and De Bos dam intake structures and equipment	R1,300	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	OS1415097 OS1415111	Refurbishment of Kleinmond and Buffels River WTW	R12,000	Yes	Yes	Yes
4.5	The Kleinmond Palmiet pump station and bulk water pipeline needs to be refurbish.	Refurbish existing pump stations and bulk water pipelines that are in a poor or very poor condition, with regular failures.	MTEF Project	Yes		Kleinmond Palmiet pump station and bulk pipeline refurbishment	R10,900	Yes	Yes	Yes
4.6	The Kleinmond bulk sewer pipeline needs to be rehabilitated.	Refurbish existing bulk sewer pipelines that are in a poor or very poor condition with regular failures.	MTEF Project	Yes		Rehabilitate main bulk sewer to Kleinmond WWTW Phase 1	R10,000	No	Yes	Yes
4.7	WTW Process Audits need to be done annually	Sustainable operation of WTW	WSDP	Yes	O&M	Annual WTW Process Audits	R150	Yes	Yes	Yes
4.8	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)										
	Done internally through O&M Budget									
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	OS1415087	Upgrade Hermanus Well field Phase 1	R10,000	Yes	Yes	Yes

WSDP-IDP WATER SECTOR INPUT REPORT FOR 2019/2020

Table F.1: WSDP FY2019/20: 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										
	Done internally through O&M Budget									
TOTAL: CURRENT NEEDS							**R195,876**			
	Funded						R193,052			
	% funded						99%			
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	OS1415085	Hawston WWTW Upgrading	R6,500	Yes	No	No
F.31	Capacity of existing WWTW is inadequate	Ensure adequate treatment capacity	WSDP	No	OS1415037	Expand Gansbaai WWTW	R10,000	Yes	No	No
F.32	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.33	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.34	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.35	Existing WTW needs to be refurbished	Ensure WTW remains fully operational	WSDP	No	OS1415117	Refurbishment of Pearly Beach WTW	R5,000	Yes	No	No

WSDP-IDP WATER SECTOR INPUT REPORT FOR 2019/2020

Table F.1: WSDP FY2019/20: 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.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	OS1415042	Augmentation of Greater Gansbaai existing sources	R30,000	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	OS1415067	Re-use of treated effluent for potable use (3Ml/day), Phase 1	R88,000	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	OS1415068	5Ml/day Seawater desalination plant	R60,000	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	OS1415116	Augmentation of Pearly Beach existing sources	R15,000	Yes	No	No
F.40	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	Yes	No
TOTAL: FUTURE NEEDS							**R1,288,543**			