



OVERSTRAND MUNICIPALITY –

Water Services Development Plan for 2016-2017

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Draft Documents	WSDP Documents for 2017-2022 (First Cycle): <ul style="list-style-type: none"> <li>WSDP-IDP Water Sector Input Report</li> <li>eWSDP</li> <li>Module 2: Base Data and Compliance Data</li> <li>Module 3: Strategies</li> </ul>	Busy with drafting	Draft Documents
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**PROJECT 280850 - OVERSTRAND MUNICIPALITY'S WSDP FOR 2017-2022 (FIRST CYCLE)**

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OVERSTRAND MUNICIPALITY

WSDP – IDP WATER SECTOR INPUT REPORT (EXECUTIVE SUMMARY)

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## ABBREVIATIONS AND DEFINITIONS

ACIP	Accelerated Community Infrastructure Programme
ADWF	Average Dry Weather Flow
AMP	Asset Management Plan
BDS	Blue Drop System
COD	Chemical Oxygen Demand
CRC	Current Replacement Cost
CRR	Cumulative Risk Ratio
CRU	Community Residential Units
DRC	Depreciated Replacement Cost
DTTC	Desmond Tutu Tuberculosis Centre
DWQ	Drinking Water Quality
DWS	Department of Water and Sanitation
EHP	Emergency Housing Programme
EIA	Environmental Impact Assessment
EMS	Environmental Management Services Section
EPHP	Enhanced People's Housing Process
EPWP	Expanded Public Works Programme
GAMAP	General Accepted Municipal Accounting Practice
GDIP	Green Drop Improvement Plan
GDPR	Regional Gross Domestic Product
GDS	Green Drop System
HIV	Human Immunodeficiency Virus
IAMP	Immovable Asset Management Programme
IDP	Integrated Development Plan
ILI	Infrastructure Leakage Index
IMQS	Infrastructure Management Query System
IRDP	Integrated Rural Development Program
ISP	Internal Strategic Perspective
LED	Local Economic Development
m	Metre
MAP	Mean Annual Precipitation
MAR	Mean Annual Runoff
MIG	Municipal Infrastructure Grant
MI	Mega Litre
MI/a	Mega Litre per Annum
MTEF	Medium-Term Expenditure Framework
NGO	Non-governmental organization
NRW	Non-Revenue Water
NWRS	National Water Resource Strategy
OMAF	Overstrand Municipal Advisory Forum
OREIA	Overstrand Rehabilitation & Educational Institute for Adolescents

## ABBREVIATIONS AND DEFINITIONS / Continue

ORIO	Netherlands Facility for Infrastructure Development
PACA	Participatory Analysis for Community Action
PAT	Progress Assessment Tool
PDA	Previously Disadvantage Area
PDD	Peak Daily Demand
PRV	Pressure Reducing Valve
RBIG	Regional Bulk Infrastructure Grant
RDP	Reconstruction and Development Programme
RSA	Republic of South Africa
RUL	Remaining Useful Life
SANS	South African National Standard
SCADA	Supervisory Control and Data Acquisition
SCM	Supply Chain Management
SDBIP	Service Delivery and Budget Implementation Plan
SDF	Spatial Development Framework
TMG	Table Mountain Group
TWL	Top Water Level
VAT	Value Added Tax
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
WTW	Water Treatment Works
WWTP	Waste Water Treatment Plant
WWTW	Waste Water Treatment Works

**KEY TERMS**

TERM	INTERPRETATION
Basic Water Supply Facility	The infrastructure necessary to supply 25 litres of potable water per person per day supplied within 200 metres of a household and with a minimum flow of 10 litres per minute (in the case of communal water points) or 6 000 litres of potable water supplied per formal connection per month (in the case of yard or house connections).
Basic Water Supply Service	The provision of a basic water supply facility, the sustainable operation of the facility (available for at least 350 days per year and not interrupted for more than 48 consecutive hours per incident) and the communication of good water-use, hygiene and related practices.
Basic Sanitation Facility	The infrastructure necessary to provide a sanitation facility which is safe, reliable, private, protected from the weather and ventilated, keeps smells to the minimum, is easy to keep clean, minimises the risk of the spread of sanitation-related diseases by facilitating the appropriate control of disease carrying flies and pests, and enables safe and appropriate treatment and/or removal of human waste and wastewater in an environmentally sound manner.
Basic Sanitation Service	The provision of a basic sanitation facility which is easily accessible to a household, the sustainable operation of the facility, including the safe removal of human waste and wastewater from the premises where this is appropriate and necessary, and the communication of good sanitation, hygiene and related practices.
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°C over the past hundred years.
IDP	A municipal plan as defined in the Municipal Systems Act.
National Water Resource Strategy 2	<p>Sets out how we will achieve the following core objectives:</p> <ul style="list-style-type: none"> <li>• Water supports development and the elimination of poverty and inequality.</li> <li>• Water contributes to the economy and job creation, and</li> <li>• Water is protected, used, developed, conserved, managed and controlled sustainably and equitably.</li> </ul>



<b>KEY TERMS</b>
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<b>TERM</b>	<b>INTERPRETATION</b>
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.
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 plan for water and sanitation services in terms of the Water Services Act.
WSP	A Water services provider is <ul style="list-style-type: none"> <li>• 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</li> <li>• 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</li> <li>• A WSA that provides either or both of the above services itself.</li> </ul>
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 all customers or potential customers in its area of jurisdiction to progressively ensure efficient, affordable, economical and sustainable access to water services that 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 eWSDP website to assist WSAs with the WSDP process and to provide a framework for the capturing of the data. The business elements included in the website and also addressed in detail in the two Modules of Overstrand Municipality's WSDP are as follows:

- Administration
- Demographics Profile
- Service Levels Profile
- Socio Economic Background Profile
- Water Services Infrastructure Profile
- Operation and Maintenance Profile
- Associated Services Profile
- Water Resources Profile
- Conservation and Demand Management Profile
- Financial Profile
- Institutional Arrangements Profile
- Social and Customer Service Requirements Profile
- Needs Development Plan

The 2017-2022 WSDP (First Cycle) of Overstrand Municipality consists of the following documents.

- WSDP-IDP Water Sector Input Report (For Council approval and Public Participation Process)
- eWSDP: Base data and an overview and assessment of the status of information and strategies on a WSA level.
- Module 2: Base Data and Compliance Data.
- Module 3: Strategies.

The primary instrument of planning in the water services sector is the WSDP. The following principles apply to the WSDP, as taken from the Strategic Framework for Water Services (2003):

- 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

### Business Element 1: Administration

Section 14 of the Water Services Act requires that the WSA must take reasonable steps to bring its draft WSDP to the notice of a number of different stakeholders so that they have the opportunity to comment on it. Section 15 of the Act requires that the WSA must supply a copy of the WSDP to the Minister of Water and Sanitation, Minister of Provincial and Local Government, the relevant Province and all neighbouring WSAs.

The 2017-2022 (First Cycle) WSDP will be distributed to the public as part of the IDP public participation process. The draft WSDP will also be distributed to all the neighbouring WSAs for their comments. All relevant comments received on the draft WSDP will be included in the final WSDP.

## Business Element 2: Demographics

Overstrand Municipality falls within the newly established 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 commenced with a 15 years contract with an external Contractor on the 1<sup>st</sup> of November 2015 of which the main purpose is to effectively and efficiently operate and maintain the bulk water services infrastructure with emphasis on driving efficiencies and to provide appropriate skills and expertise. Overstrand Municipality however remains the WSA and WSP with direct accountability to the community. Overstrand Municipality's Management Area includes the following towns and **Water Distribution Systems**:

- Rooi Els, Pringle Bay, Betty's Bay – **Buffels River System**  
The towns of Rooi Els, Pringle Bay and Betty's Bay obtain their bulk water from the Buffels River Dam.
- Kleinmond – **Kleinmond System**  
Kleinmond is supplied from the Palmiet River. The "Dorpsfontein" and a borehole (1998), located 300m to the east of the fountain, are used as additional sources.
- Fisherhaven, Hawston, Vermont, Onrus, Sandbaai, Zwelihle, Mount Pleasant, 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.
- 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 newly drilled Kouevlakte boreholes were however 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.
- Pearly Beach – **Pearly Beach System**  
Pearly Beach is supplied from seven springs located in the mountains some 6km from Pearly Beach. The water from the springs is kept in storage at the Pearly Beach Dam. A Service Level Agreement is also in place for the supply of 0.26 Ml/d from the Koekemoer Dam free of charge to the Municipality.
- Baardskeedersbos – **Baardskeedersbos System**  
Bulk water supply to Baardskeedersbos is from two boreholes, which were recently drilled and commissioned. Baardskeedersbos previously received their bulk water from the Boskloof Stream, which will now be used as back-up supply only.
- 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, the replacement and upgrading of old infrastructure to accommodate development, the operation and maintenance of the new WTWs and WWTWs in a sustainable manner, 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:

Global Warming: 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:

The stretch of coastline includes three remarkable blue flag beaches, namely Kleinmond, Grotto and Hawston. The Grotto beach also received the prestigious international “Blue Flag” award. The Management Area also includes the Kogelberg Biosphere Reserve which is only one of two such areas in the Republic. It is commonly referred to as the heart of the Cape floral kingdom as roughly one fifth of all known fynbos species occurs here.

An Environmental Management Services Section (EMS) was created to advise Council on environmental concerns. The EMS section addresses the concerns of environmental management policy, public participation, scientific decision support and compliance with the provisions of Environmental Legislation. This focus will guide and promote continual improvement in the management of the natural environment within the municipal region.

Demographic Perspective:

Economics: Overstrand Municipality was the fastest growing Municipality in the Overberg Region, growing at 6.8% per annum over the period 2000 – 2011 (Real GDP growth rate). Overstrand- and Theewaterskloof Municipality have the largest municipal economies and combined accounted to close to 70% of the region-wide GDP in 2011. Most of the economic activity is presently occurring in Hermanus with Gansbaai showing all the signs of fast growing economic activity. Manufacturing, wholesale and retail trade; catering and accommodation and finance and business services are the most important economic sectors.

The Overstrand Municipality's economy has shown positive growth signs in the past five years. It can be described as healthy and with great economic potential surpassing other municipalities in the region. This growth happened against the backdrop of the economic downturn and does not neglect the fact that some sectors suffered in the period.

There are two dominant features of the local economy that merit high level attention. First, the future of the Overstrand economy cannot be separated from the region's natural heritage. The physical beauty of the area is its single biggest asset, but the natural resource base may also limit growth if resources are not effectively managed. In Overstrand the economy and its ecology are inseparable. Overstrand Municipality has a fairly diversified economy and a great potential for tourism.

The second is the highly racialised and geographically concentrated poverty of the area. Economic forces (e.g. the decline in fishing and the seasonality of tourism and agriculture) impact negatively on the semi-skilled and unskilled workforce of Overstrand, while the growth sectors have benefited mainly the wealthy. In migration of poor and unskilled people to the area is associated with rising rates of poverty and inequality. Other than the formal safety nets of grants, the poor depend on informal work (construction) or on the third economy of informal livelihoods.

Social: The key human development issues facing the Municipality include poverty and unemployment. People migrating to the Overstrand have far reaching implications for the Municipality as it has a major effect on the economy. In-migration of people has an impact on the provision of housing and services, unemployment, poverty and the economy in general.

The 2014/2015 population of Overstrand Municipality was estimated by applying an annual growth rate of 4.04% to the 2011 Census population figures. The annual population growth percentages for the individual towns are included in Table A.7, which were agreed with the Municipality during January 2014. The current estimated population figures and the annual population growth percentages used in this WSDP-IDP Water Sector Input Report are aligned with the figures used in DWS’s National GeoDatabase, which forms the baseline for the WSDP Guide Framework.

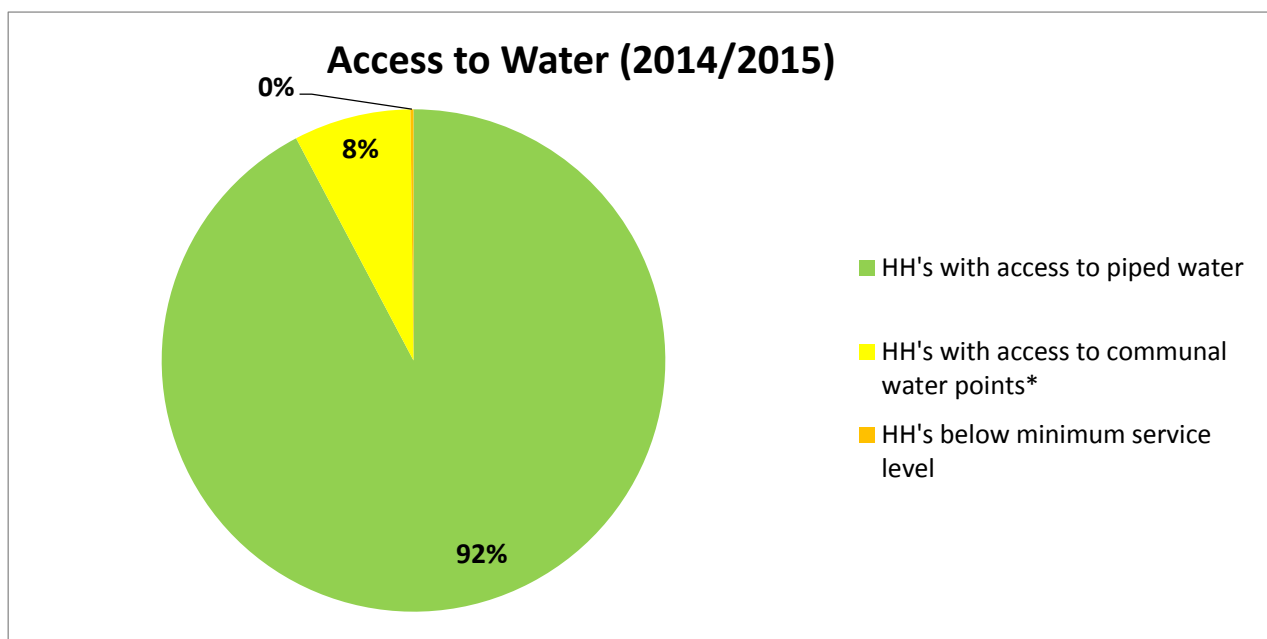
Table A.1: Water services overview					Water category										Sanitation category										
Settlement Type	2011/12		2014/15		Adequate: Formal	Adequate: Informal	Adequate: Sahred Services	Water resources needs only	O&M needs only	Infrastructure needs only	Infrastructure & O&M needs	Infrastructure, O&M & Resource need	No Services: Informal	No Services: Formal	Adequate: Formal	Adequate: Informal	Adequate: Sahred 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	
	Households	Population	Households	Population																					
<b>URBAN</b>																									
<b>Metropolitan Area</b>					Adequate	Below RDP	None	Adequate	Below RDP	None															
Sub-Total					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Formal Town</b>					Adequate	Below RDP	None	Adequate	Below RDP	None															
Buffels River	1,158	2,297	1308	2,595	✓									✓											
Kleinmond	2,351	5,101	2564	5,623	✓									✓											
Greater Hermanus	14,256	41,884	16458	48,580	✓	✓								✓	✓										
Stanford	1,379	4,325	1505	4,731	✓	✓								✓	✓										
Greater Gansbaai	3,251	7,698	4077	10,186	✓	✓								✓	✓										
Pearly Beach	314	363	489	1,007	✓	✓								✓	✓										
Baardskeerdersbos	39	122	40	124	✓	✓								✓	✓										
Buffeljags Bay	33	147	18	89	✓									✓											
Sub-Total					22,781	61,937	26,460	72,935	8	0	5	0	0	0	8	0	5	0	0	0	0	0	0	0	
<b>Townships</b>					Adequate	Below RDP	None	Adequate	Below RDP	None															
Sub-Total					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Informal Settlements</b>					Adequate	Below RDP	None	Adequate	Below RDP	None															
Greater Gansbaai	1,407	5,628	1,298	5,192		✓									✓										
Greater Hermanus	1,362	5,448	1,339	5,356		✓									✓										
Kleinmond	382	1,528	379	1,516		✓									✓										
Stanford	114	456	110	440		✓									✓										
Pearly Beach	171	684	27	108		✓									✓										
Buffeljags Bay	-	-	15	60		✓									✓										
Sub-Total					3,436	13,744	3,168	12,672	0	6	0	0	0	0	0	6	0	0	0	0	0	0	0	0	
<b>Working towns &amp; service centres</b>					Adequate	Below RDP	None	Adequate	Below RDP	None															
Sub-Total					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total: (Urban)					26,217	75,681	29,628	85,607	8	6	5	0	0	0	8	6	5	0	0	0	0	0	0	0	
<b>RURAL</b>																									
<b>Rural / Farming</b>					Adequate	Below RDP	None	Adequate	Below RDP	None															
Overstrand Rural	1,794	4,727	1,879	4,952	✓		✓						✓	✓	✓								✓		
Sub-Total					1,794	4,727	1,879	4,952	1	0	1	0	0	0	1	1	0	1	0	0	0	0	0	1	
<b>Informal Settlements</b>					Adequate	Below RDP	None	Adequate	Below RDP	None															
Sub-Total					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total (Rural)					1,794	4,727	1,879	4,952	1	0	1	0	0	0	1	1	0	1	0	0	0	0	0	1	
<b>TOTAL</b>					28,011	80,408	31,507	90,559	9	6	6	0	0	0	1	9	6	6	0	0	0	0	0	1	

The 2011 Census data indicated that there are still a number of households on the farms in the rural areas without basic water and sanitation services and the current service levels for the farms were therefore taken from the 2011 Census data.

### Business Element 3: Service Levels

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

Table A.2: Residential water services delivery access profile: Water							
Census Category	Description	Year 0		Year -1		Year -2	
		FY2014/15		FY2013/14		FY2012/13	
		Nr	%	Nr	%	Nr	%
	<b>WATER (ABOVE MIN LEVEL)</b>						
Piped (tap) water inside dwelling/institution	House connections	33,895	80%	33,145	79%	31,928	78%
Piped (tap) water inside yard	Yard connections	5,335	13%	5,300	13%	5,300	13%
Piped (tap) water on community stand: distance less than 200m from dwelling/institution	Standpipe connection < 200 m	3,199	8%	3,361	8%	3,365	8%
	<b>Sub-Total: Minimum Service Level and Above</b>	<b>42,429</b>	<b>100%</b>	<b>41,806</b>	<b>100%</b>	<b>40,593</b>	<b>100%</b>
	<b>WATER (BELOW MIN LEVEL)</b>						
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%	121	0%
	<b>Sub-Total: Below Minimum Service Level</b>	<b>83</b>	<b>0%</b>	<b>83</b>	<b>0%</b>	<b>155</b>	<b>0%</b>
	<b>Total number of households</b>	<b>42,512</b>	<b>100%</b>	<b>41,889</b>	<b>100%</b>	<b>40,748</b>	<b>100%</b>





The existing residential water service levels for the individual towns in Overstrand Municipality's Management Area are indicated in the table below:

Table A.3: Residential water service levels (Residential Consumer Units)										
Service Level	Buffels River	Kleinmond	Greater Hermanus	Stanford	Greater Gansbaai	Pearly Beach	Baardskeerdersbos	Buffeljags Bay	Farms	Total
No Water Services	0	0	0	0	0	0	0	0	49 <sup>2)</sup>	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 <sup>3)</sup>	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
<b>Total Basic Need (RDP)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>83</b>	<b>83</b>
Below Housing Interim <sup>4)</sup>	0	0	0	0	0	0	0	0	0	0
Adequate Housing Permanent <sup>5)</sup>	0	379	1 339	110	1 298	27	0	15	0	3 168
<b>Total Housing Need</b>	<b>0</b>	<b>379</b>	<b>1 339</b>	<b>110</b>	<b>1 298</b>	<b>27</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>3 168</b>
Standpipes	0	0	0	0	0	0	0	0	31	31
Yard Connections <sup>6)</sup>	6	280	3 627	482	658	39	0	0	243	5 335
House Connections <sup>1)</sup>	3 264	3 533	18 168	1 147	4 962	1 221	63	15	1 522	33 895
<b>Total Adequate</b>	<b>3 270</b>	<b>3 813</b>	<b>21 795</b>	<b>1 629</b>	<b>5 620</b>	<b>1 260</b>	<b>63</b>	<b>15</b>	<b>1 796</b>	<b>39 261</b>
<b>Total Residential Consumer Units for the Municipality</b>	<b>3 270</b>	<b>4 192</b>	<b>23 134</b>	<b>1 739</b>	<b>6 918</b>	<b>1 287</b>	<b>63</b>	<b>30</b>	<b>1 879</b>	<b>42 512</b>

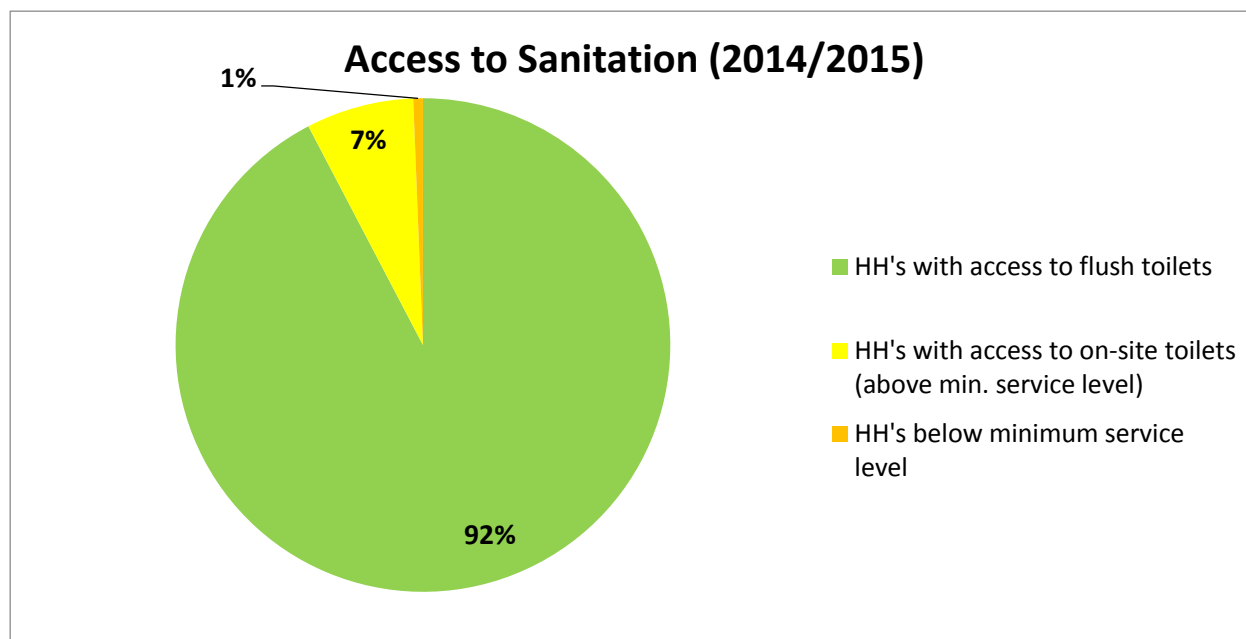
Notes:

- 1) Number of residential consumer units for urban areas for 2014/2015, 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 shacks in informal areas without basic water services.
- 5) Adequate Housing Permanent in the above table is the number of shacks in informal areas with communal water services, as confirmed by the Municipality (December 2014).
- 6) Estimated number of backyard dwellers, as agreed with the Municipality during January 2014, as part of DWS's Backlog Eradication Strategy process.

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

**Table A.4: Residential water services delivery access profile: Sanitation**

Census Category	Description	Year 0		Year -1		Year -2	
		FY2014/15		FY2013/14		FY2012/13	
		Nr	%	Nr	%	Nr	%
	<b>SANITATION (ABOVE MIN LEVEL)</b>						
Flush toilet (connected to sewerage system)	Waterborne	23,792	56%	22,818	54%	21,690	53%
	Waterborne: Low Flush	4,100	10%	4,100	10%	4,100	10%
Flush toilet (with septic tank)	Septic tanks / Conservancy	11,155	26%	11,344	27%	11,255	28%
Chemical toilet	Non-waterborne (above min. service level)	5	0%	5	0%	5	0%
Pit toilet with ventilation (VIP)		27	0%	27	0%	27	0%
Other		3,168	7%	3,330	8%	3,334	8%
	<b>Sub-Total: Minimum Service Level and Above</b>	<b>42,247</b>	<b>99%</b>	<b>41,624</b>	<b>99%</b>	<b>40,411</b>	<b>99%</b>
	<b>SANITATION (BELOW MIN LEVEL)</b>						
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%	138	0%
	<b>Sub-Total: Below Minimum Service Level</b>	<b>265</b>	<b>1%</b>	<b>265</b>	<b>1%</b>	<b>337</b>	<b>1%</b>
	<b>Total number of households</b>	<b>42,512</b>	<b>100%</b>	<b>41,889</b>	<b>100%</b>	<b>40,748</b>	<b>100%</b>



The existing residential sanitation service levels for the individual towns in Overstrand Municipality's Management Area are indicated in the table below:

Table A.5: Residential sanitation service levels (Residential Consumer Units)										
Service Levels	Buffels River	Kleinmond	Greater Hermanus	Stanford	Greater Gansbaai	Pearly Beach	Baardskeerdersbos	Buffeljags Bay	Farms	Total
No Sanitation Services	0	0	0	0	0	0	0	0	66 <sup>3)</sup>	66
Below RDP: Infrastructure Upgrade	0	0	0	0	0	0	0	0	204 <sup>4)</sup>	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
<b>Total Basic Need (RDP)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>270</b>	<b>270</b>
Below Housing Interim <sup>5)</sup>	0	0	0	0	0	0	0	0	0	0
Adequate Housing Permanent <sup>6)</sup>	0	379	1 339	110	1 298	27	0	15	0	3 168
<b>Total Housing Need</b>	<b>0</b>	<b>379</b>	<b>1 339</b>	<b>110</b>	<b>1 298</b>	<b>27</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>3 168</b>
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	2 748	807	0	142	769	355	63	15	1 582	6 481
Conservancy	522	339	1 413	10	2 124	266	0	0	0	4 674
Waterborne	0	2 667	16 282	1 477	2 727	639	0	0	0	23 792
<b>Total Adequate<sup>2)</sup></b>	<b>3 270</b>	<b>3 813</b>	<b>21 795</b>	<b>1 629</b>	<b>5 620</b>	<b>1 260</b>	<b>63</b>	<b>15</b>	<b>1 609</b>	<b>39 074</b>
<b>Total Residential Consumer Units for the Municipality</b>	<b>3 270</b>	<b>4 192</b>	<b>23 134</b>	<b>1 739</b>	<b>6 918</b>	<b>1 287</b>	<b>63</b>	<b>30</b>	<b>1 879</b>	<b>42 512</b>

- 1) Total for Septic Tanks and Conservancy tanks in Urban Areas according to Municipal information for June 2015 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 shacks in informal areas without basic sanitation services.
- 6) Adequate Housing Permanent in the above table is the number of shacks in informal areas with communal ablution facilities, as confirmed by the Municipality (December 2014).

Overstrand Municipality's Directorate Community Services regularly count the number of households in the informal areas. The current number of households in the informal areas, with access to communal basic services, is 3 188. 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 2015).

<b>Table A.6: Communal service levels in the informal areas</b>						
<b>Area</b>	<b>Informal Settlement</b>	<b>No. of Households</b>	<b>Number of Toilets</b>	<b>Household / Toilet</b>	<b>Number of Taps</b>	<b>Households / Tap</b>
Stanford	Die Kop	110	16	6.88	6	18.33
Kleinmond	Overhills	379	118	3.21	23	16.48
Gansbaai	Mashakhane	1 204	251	4.80	38	31.68
	Beverly Hills	94	20	4.70	13	7.23
Pearly Beach	Eluxolweni	27	28	0.96	28	0.96
Zwelihle	Tsepe-Tsepe	221	40	5.53	6	36.83
	Serviced Sites	79	24	3.29	3	26.33
	Thambo Square / Zipunzana	398	52	7.65	6	66.33
	Asazani	72	14	5.14	4	18.00
	Mandela Square	199	44	4.52	7	28.43
	New Camp	55	12	4.58	7	7.86
	Transit Camp	315	106	2.97	12	26.25
Buffeljags Bay		15	8	1.88	2	7.50
<b>Total</b>		<b>3 168</b>	<b>733</b>	<b>4.32</b>	<b>155</b>	<b>20.44</b>

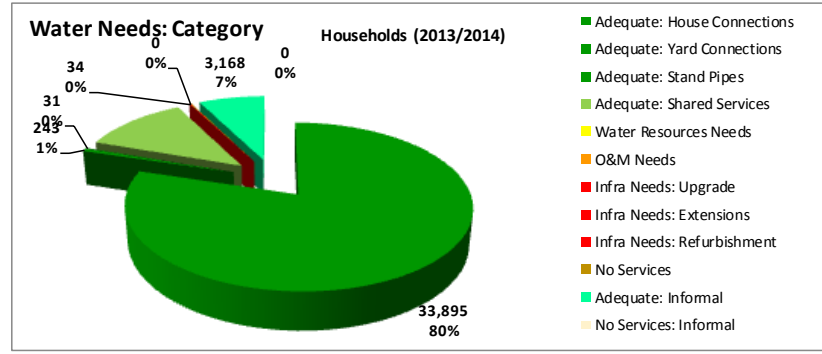
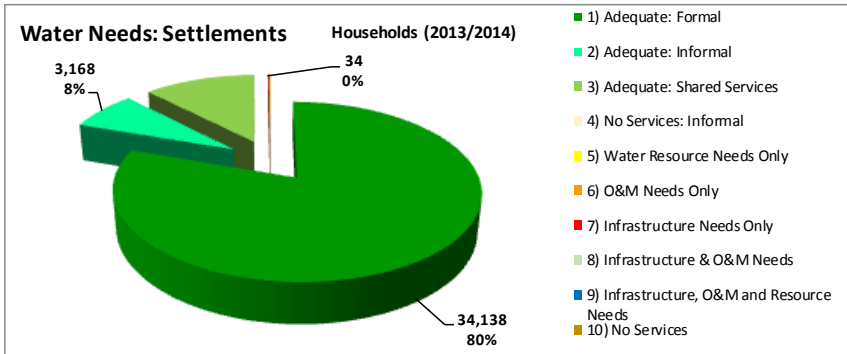
The number of user connections in each user sector, for the various distribution systems in Overstrand Municipality's Management Area, is as follows:

<b>Table A.7: Number of consumer units in each user sector for 2014/2015</b>					
<b>Distribution System</b>	<b>Residential</b>	<b>Commercial</b>	<b>Industrial</b>	<b>Other</b>	<b>Total</b>
Buffels River	3 264	106	0	36	<b>3 406</b>
Kleinmond	3 533	264	0	65	<b>3 862</b>
Greater Hermanus	18 168	904	31	325	<b>19 428</b>
Stanford	1 147	53	2	14	<b>1 216</b>
Greater Gansbaai	4 962	225	4	188	<b>5 378</b>
Pearly Beach	1 221	5	0	7	<b>1 234</b>
Baardskeerdersbos	63	0	0	3	<b>66</b>
Buffeljags Bay	30	0	0	4	<b>34</b>
<b>TOTALS</b>	<b>32 388</b>	<b>1 557</b>	<b>37</b>	<b>642</b>	<b>34 624</b>

All the households in the urban areas of Overstrand Municipality's Management Area are provided with water connections inside the houses. 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.

Table A.8(a): Residential water services delivery adequacy profile (Water)

Water Categorisation	Number of settlements	FORMAL																		INFORMAL								
		Adequate								Water Resource needs		O & M Needs		Infrastructure Needs						No services		Adequate		No services				
		House Connections		Yard Connections		Stand Pipes		Shared Services		HH	%	HH	%	HH	%	Upgrades	Extensions		Refurbishment		HH	%	HH	%	HH	%	HH	%
1	9	33,895	100%	243	100%																							
2	5																								3,168	100%		
3	7					31	100%	5,092	100%																			
4	0																											
5	0																											
6	0																											
7	0														34	100%												
8	0																											
9	0																											
10	1																			49	100%							
Total Household Interventions required		33,895		243		31		5,092		0		0		0		34		0		49		3,168		0				



1	Adequate	3	Adequate: Shared services	5	Water Resources Needs <u>Only</u>	7	Infrastructure Needs <u>Only</u>	9	Infrastructure, O&M & Resource Needs
2	Adequate: Informal	4	No Services: Informal	6	O & M Needs <u>Only</u>	8	Infrastructure & O&M needs	10	No Services



#### Business Element 4: Socio Economic

The 2001 Census recorded the population in the Overstrand Municipality's Management Area at 55 770 persons (19 082 Households) and the 2011 Census data recorded the population at 80 408 persons (28 011 Households). The population of Overstrand Municipality is currently estimated at approximately 90 559 persons for 2014/2015.

Due to the high levels of uncertainty projecting the current and future population of Overstrand Municipality it was decided to include a **high** and **low** estimate in the WSDP. The high growth percentages were however used in the future water requirement projection models for each of the water distribution systems. The low growth percentages were as agreed with the Municipality during January 2014. The estimated current population and the population growth rates for the various distribution systems are summarised in the table below.

**Table A.9: Estimated current population and population growth rates**

Distribution System	Historical Population Growth per year (2001 – 2011)	Census 2011			Future Population Growth per year (2011 Onwards)	Projections for 2014/2015		Number of Residential Consumer Units for 2014/2015 + HH in Informal Areas
		Population	Number of Households	Persons / Household		Population	Number of Households (Permanent)	
Buffels River	4.15%	2 297	1 158	1.98	5.00%	2 659	1 341	3 264
					4.15%	2 595	1 308	
Kleinmond	2.50%	6 629	2 733	2.43	3.00%	7 244	2 986	3 533 + 377 = 3 910
					2.50%	7 139	2 943	
Greater Hermanus	4.45%	47 332	15 618	3.03	5.50%	55 579	18 338	18 168 + 1 343 = 19 511
					4.45%	53 936	17 797	
Stanford	2.65%	4 781	1 493	3.20	4.50%	5 456	1 704	1 147 + 110 = 1 257
					2.65%	5 171	1 615	
Greater Gansbaai	4.89%	13 326	4 658	2.86	5.50%	15 648	5 470	4 962 + 1 331 = 6 293
					4.89%	15 378	5 375	
Pearly Beach	2.11%	1 047	485	2.16	6.00%	1 247	578	1 221 + 27 = 1 248
					2.11%	1 115	516	
Baardskeerdersbos	0.05%	122	39	3.13	0.50%	124	40	63
					0.50%	124	40	
Buffeljags Bay	1.56%	4 874	1 827	2.67	0.50%	149	33	30
					0.50%	149	33	
Farms					1.56%	4 952	1 880	1 879
<b>TOTALS</b>	<b>3.73%</b>	<b>80 408</b>	<b>28 011</b>	<b>2.87</b>	<b>4.99%</b>	<b>93 058</b>	<b>32 370</b>	<b>37 455</b>
					<b>4.04%</b>	<b>90 559</b>	<b>31 507</b>	

Overstrand Municipality had the highest number of households 4 585 in 2011 in the Overberg Region that received no income. The number of indigent households in Overstrand Municipality increased from 6 581 in June 2013 to 6 535 in June 2014 and 6 923 in June 2015. The number of people employed grew from 18 619 in 2001 to 27 260 in 2011, which represents an average annual increase of 3.89%. The overall unemployment rate increased from 22.7% to 23.3% over the same period. Overstrand Municipality plays a key role in assisting organisations delivering services to the most vulnerable groups in its communities.

The biggest economic growth sectors over the period 2000 - 2011 were Finance, insurance, real estate and business services (10.8%), Transport, storage and communication (9.5%) and Construction (8.1%). The Overstrand economy has improved over the last few years and has experienced significant growth within specific sectors which assisted with job creation. Tourism growth indicated positive signs, with growth in the number of visitors and attendance in locally organized events such as festivals.

### Business Element 5: Water Services Infrastructure Management (Infrastructure)

The bulk water and sewerage infrastructure for which the O&M functions were outsourced to an external Contractor from 1 November 2015 are as follows:

- Water Sources: Five (5) dams, one (1) river abstraction, Seventeen (17) boreholes and three (3) springs.
- Bulk Water Infrastructure: Nine (9) WTWs, nineteen (19) water pump stations, forty four (44) reservoirs and seventy eight (78) km of bulk water pipelines.
- Bulk Wastewater Infrastructure: Five (5) WWTWs, thirty six (36) sewer pump stations and forty five (45) km of bulk sewer pipelines.

The table below gives an overview of the water and sewerage infrastructure in Overstrand Municipality's Management Area.

Table A.10: Summary of Overstrand Municipality's existing water and sewerage infrastructure	
Component	Description of the main functional tasks
Dams (5)	Bulk raw water storage and surface water supply.
Boreholes (17)	Groundwater supply.
Bulk supply pipelines (78 km)	Bulk water supply to urban areas.
WTW: Buffels River	Chemical dosing (Alum and Soda Ash), flocculation, sedimentation, filtration (Rapid gravity sand filters), stabilization (Soda Ash) and disinfection (Chlorine Gas).
WTW: Disakloof (Not in use)	Filtration (Rapid gravity sand filters) and disinfection (Chlorination).
WTW: Kleinmond	Chemical dosing (Alum and Lime), flocculation, sedimentation, filtration (Rapid gravity sand filters), stabilization (Soda Ash) and disinfection (Chlorine Gas).
WTW: Stanford	Disinfection (Chlorine gas)
WTW: Preekstoel	Chemical dosing (Alum, Poly-electrolyte and Lime), flocculation, sedimentation, filtration (Rapid gravity sand filters), stabilization (Lime) and disinfection (Cl Gas or HTH Granules as back-up).
WTW: Preekstoel Biofilter Plant	pH adjustment (soda ash) and Biofiltration of iron and manganese from groundwater.
WTW: Franskraal	Chemical dosing (Alum, Poly-electrolyte, Soda-Ash), flocculation, sedimentation, filtration (Rapid gravity sand filters), disinfection (Chlorine Gas) and stabilization (Soda-Ash).
WTW: De Kelders	Reverse Osmosis Plant and Disinfection (Chlorine Gas). The plant was commissioned in 2011/2012.
WTW: Pearly Beach	Ultra Filtration and disinfection (Chlorine Gas)
WTW: Baardskeedersbos	New Ultra-Filtration plant with a capacity of 0.185 Ml/day and disinfection (Chlorine Gas)
WTW: Buffeljags Bay	Disinfection (Chlorine gas)
Water Reticulation (780 km)	Water distribution to consumers
Potable Water Pump stations (23)	Ensure adequate pressure and supply to specific areas
Reservoirs (44)	Balancing peak demands and providing some emergency storage
Water Towers (1)	Ensure adequate pressure for high lying areas, balancing peak demands and providing some emergency storage.
Bulk sewer pipelines (45 km)	Draining of sewerage from networks to WWTWs
Sewer Reticulation (450 km)	Collecting sewerage
Sewer Pump Stations (40)	Pumping sewerage to WWTWs
WWTWs (6)	Activated Sludge Systems at Kleinmond, Hawston, Hermanus and Stanford. Nereda system at Gansbaai and oxidation pond system at Pearly Beach.

A new oxidation pond WWTW was recently commissioned at Eluxolweni in Pearly Beach. Rooi Els, Pringle Bay, Betty's Bay, Fisherhaven, De Kelders, Kleinbaai, Franskraal and Pearly Beach are not currently serviced by a sewer reticulation system. The towns of Kleinmond, Hawston, Hermanus, Stanford and Gansbaai are partially serviced by a sewer system.



**Water Infrastructure:** The purchase cost and current value of the water infrastructure of Overstrand Municipality is summarised in the table below (June 2015):

Asset Type	PC	CV	% CV / PC
Dams	R19 799 712	R11 805 506	59.6%
Boreholes	R20 028 931	R15 707 256	78.4%
Monitoring Boreholes	R2 620 410	R1 309 801	50.0%
Bulk Water Pipelines	R110 618 279	R32 753 612	29.6%
Pump Stations	R33 729 442	R11 252 847	33.4%
Reservoirs	R146 196 641	R69 803 888	47.7%
Water Reticulation Pipelines	R536 705 663	R133 593 657	24.9%
Consumer Connections	R247 919 000	R8 041 267	3.2%
Buffels River WTW	R41 355 727	R7 194 276	17.4%
Kleinmond WTW	R15 384 720	R2 007 038	13.0%
Preekstoel WTW	R114 822 910	R87 570 680	76.3%
Franskraal New WTW	R32 879 243	R22 766 254	69.2%
Franskraal Old WTW	R46 479 731	R37 940 767	81.6%
Buffeljags Bay WTW	R99 275	R69 520	70.0%
Baardskeerdersbos WTW	R5 007 188	R4 719 124	94.2%
Pearly Beach WTW	R7 593 558	R4 021 296	53.0%
Stanford WTW	R99 075	R59 445	60.0%
De Kelders WTW	R12 017 612	R11 122 906	92.6%
<b>Totals</b>	<b>R1 393 357 117</b>	<b>R461 739 140</b>	<b>33.1%</b>

The value of the total water assets of Overstrand Municipality, included in the Municipality's asset register, increased by 1.5% from 2013/2014 to 2014/2015 (Increased by R20.809 million). The above table means that 66.9% 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 (PC):

Asset Type	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
<b>Remaining Useful Life</b>					
Dams	R80 000	R651 594	R316 234	R0	R18 751 884
Boreholes	R1 605 636	R3 297 330	R699 733	R388 407	R14 037 825
Monitoring Boreholes	R550 000	R750 000	R0	R0	R1 320 410
Bulk Water Pipelines	R50 567 593	R9 548 248	R3 867 318	R7 043 911	R39 591 209
Pump Stations	R21 213 481	R3 975 785	R1 567 481	R170 634	R6 802 061
Reservoirs	R8 378 113	R10 721 784	R14 432 384	R34 347 647	R78 316 714
Water Reticulation Pipelines	R360 500 209	R719 586	R26 578 320	R4 072 662	R144 834 886
Consumer Connections	R89 460 000	R158 459 000	R0	R0	R0
Buffels River WTW	R33 720 452	R182 826	R568 375	R0	R6 884 074
Kleinmond WTW	R9 323 978	R2 774 965	R0	R197 492	R3 088 285
Preekstoel WTW	R15 839 300	R8 139 627	R374 182	R43 382 335	R47 087 466
Franskraal New WTW	R1 363	R17 261 671	R0	R0	R15 616 209
Franskraal Old WTW	R4 524 523	R426 594	R60 942	R809 100	R40 658 572
Buffeljags Bay WTW	R0	R69 997	R0	R0	R29 278
Baardskeerdersbos WTW	R0	R75 903	R3 705 114	R0	R1 226 171
Pearly Beach WTW	R3 611 943	R3 863 049	R41 883	R0	R76 683
Stanford WTW	R0	R99 075	R0	R0	R0
De Kelders WTW	R0	R50 000	R0	R0	R11 967 612
<b>Totals</b>	<b>R599 376 591</b>	<b>R221 067 034</b>	<b>R52 211 966</b>	<b>R90 412 188</b>	<b>R430 289 339</b>

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

<b>Table A.13: Overview of the age distribution by facility type for the water infrastructure – June 2015 (PC)</b>					
<b>Asset Type</b>	<b>0 – 5 yrs</b>	<b>6 – 10 yrs</b>	<b>11 – 15 yrs</b>	<b>16 – 20 yrs</b>	<b>&gt; 20 yrs</b>
<b>Age distribution by Facility Type</b>					
Dams	R92 780	R0	R771 932	R80 000	R18 855 000
Boreholes	R14 989 027	R3 422 134	R1 333 341	R0	R284 430
Monitoring Boreholes	R0	R0	R1 320 410	R0	R1 300 000
Bulk Water Pipelines	R9 488 726	R0	R0	R24 709 914	R76 419 639
Pump Stations	R5 078 458	R3 818 223	R11 636 434	R1 623 973	R11 572 355
Reservoirs	R9 040 567	R14 686 336	R9 304 043	R12 735 862	R100 429 833
Water Reticulation Pipelines	R73 089 778	R10 367 879	R4 635 625	R48 995 388	R399 616 994
Consumer Connections	R0	R0	R0	R0	R247 919 000
Buffels River WTW	R568 375	R2 031 400	R5 968 298	R0	R32 787 654
Kleinmond WTW	R186 154	R81 256	R253 925	R0	R14 863 385
Preekstoel WTW	R82 959 995	R203 394	R14 487 942	R1 861 406	R15 310 173
Franskraal New WTW	R0	R32 877 880	R1 363	R0	R0
Franskraal Old WTW	R36 602 786	R1 027 405	R8 849 540	R0	R0
Buffeljags Bay WTW	R99 275	R0	R0	R0	R0
Baardskeerdersbos WTW	R5 007 188	R0	R0	R0	R0
Pearly Beach WTW	R7 471 674	R0	R121 884	R0	R0
Stanford WTW	R99 075	R0	R0	R0	R0
De Kelders WTW	R12 017 612	R0	R0	R0	R0
<b>Totals</b>	<b>R 256 791 470</b>	<b>R68 515 907</b>	<b>R58 684 737</b>	<b>R90 006 543</b>	<b>R919 358 463</b>

**Sewerage Infrastructure:** The purchase cost and current value of the sewerage infrastructure of Overstrand Municipality is summarised in the table below (June 2015):

<b>Table A.14: Purchase cost and current value of the sewerage infrastructure – June 2015</b>			
<b>Asset Type</b>	<b>PC</b>	<b>CV</b>	<b>% CV / PC</b>
Sanitation Pump Stations	R70 334 219	R33 267 830	47.3%
Sewer Reticulation Pipelines	R336 299 477	R238 872 230	71.0%
Sewer Consumer Connections	R177 085 000	R5 937 652	3.4%
Septic Tanks	R99 028	R93 087	94.0%
Ablution Blocks	R4 011 913	R3 285 899	81.9%
Stanford WWTW	R13 572 411	R5 768 236	42.5%
Hermanus WWTW	R73 097 386	R54 882 206	75.1%
Hawston WWTW	R10 657 652	R5 160 702	48.4%
Kleinmond WWTW	R13 250 161	R9 323 336	70.4%
Gansbaai WWTW	R28 230 707	R19 134 639	67.8%
Pearly Beach WWTW	R6 313 784	R6 313 784	100.0%
Betty's Bay – Conservancy Tanks	R281 000	R241 504	85.9%
Klipfontein – Conservancy Tank	R146 335	R97 557	66.7%
<b>Totals</b>	<b>R733 379 073</b>	<b>R382 378 662</b>	<b>52.1%</b>

The value of the total sewerage assets of Overstrand Municipality increased by 2.7% from 2013/2014 to 2014/2015 (Increased by R19.700 million). The information in the previous table means that 47.9% 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 (PC):

<b>Table A.15: Overview of the remaining useful life by facility type for the sewerage infrastructure – June 2015 (PC)</b>					
<b>Asset Type</b>	<b>0 – 5 yrs</b>	<b>6 – 10 yrs</b>	<b>11 – 15 yrs</b>	<b>16 – 20 yrs</b>	<b>&gt; 20 yrs</b>
<b>RUL</b>					
Sanitation Pump Stations	R34 646 561	R10 077 576	R4 161 964	R933 524	R20 514 594
Sewer Reticulation Pipelines	R0	R455 471	R0	R6 160 909	R329 683 097
Sewer Consumer Connections	R0	R177 085 000	R0	R0	R0
Septic Tanks	R0	R0	R0	R0	R99 028
Ablution Blocks	R2 790 599	R826 446	R239 232	R0	R155 636
Stanford WWTW	R6 120 769	R1 292 537	R1 235 038	R144 567	R4 779 500
Hermanus WWTW	R5 101 626	R7 270 281	R26 771 439	R2 090 324	R31 863 716
Hawston WWTW	R3 159 880	R1 229 339	R1 893 699	R0	R4 374 734
Kleinmond WWTW	R2 898 206	R916 818	R4 250 731	R146 530	R5 037 876
Gansbaai WWTW	R3 058 783	R6 772 326	R4 035 946	R2 015 000	R12 348 652
Pearly Beach WWTW	R64 766	R1 580 279	R17 711	R4 651 027	R0
Betty's Bay – Conservancy Tanks	R0	R0	R0	R0	R281 000
Klipfontein – Conservancy Tank	R0	R146 335	R0	R0	R0
<b>Totals</b>	<b>R57 841 190</b>	<b>R207 652 408</b>	<b>R42 605 760</b>	<b>R16 141 881</b>	<b>R409 137 833</b>

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

<b>Table A.16: Overview of the age distribution by facility type for the sewerage infrastructure (PC)</b>					
<b>Asset Type</b>	<b>0 – 5 yrs</b>	<b>6 – 10 yrs</b>	<b>11 – 15 yrs</b>	<b>16 – 20 yrs</b>	<b>&gt; 20 yrs</b>
<b>Age distribution by Facility Type</b>					
Sanitation Pump Stations	R8 696 698	R7 643 462	R44 455 265	R3 843 878	R5 694 916
Sewer Reticulation Pipelines	R29 587 872	R22 448 050	R3 876 628	R264 446 022	R15 940 905
Sewer Consumer Connections	R0	R0	R0	R0	R177 085 000
Septic Tanks	R99 028	R0	R0	R0	R0
Ablution Blocks	R4 011 913	R0	R0	R0	R0
Stanford WWTW	R1 694 702	R885 317	R6 454 889	R272 719	R4 264 784
Hermanus WWTW	R45 991 400	R8 530 299	R6 602 761	R1 985 760	R9 987 166
Hawston WWTW	R1 401 479	R0	R1 391 509	R7 864 664	R0
Kleinmond WWTW	R5 596 918	R0	R7 653 243	R0	R0
Gansbaai WWTW	R6 084 364	R14 405 500	R3 575 043	R0	R4 165 800
Pearly Beach WWTW	R6 313 784	R0	R0	R0	R0
Betty's Bay – Conservancy Tanks	R281 000	R0	R0	R0	R0
Klipfontein – Conservancy Tank	R146 335	R0	R0	R0	R0
<b>Totals</b>	<b>R109 905 493</b>	<b>R53 912 628</b>	<b>R74 009 338</b>	<b>R278 413 043</b>	<b>R217 138 571</b>

Overstrand Municipality's Asset Register is being reviewed in the 2015/2016 financial year in consultation with National Treasury.

#### **Business Element 6: 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<sub>2</sub>RAP for the various WWTWs is also in place. The W<sub>2</sub>RAP is an all-inclusive risk analysis tool by which risks associated with the management of collection, treatment and disposal of wastewater, are identified and rated (quantified). The identified risks can then be managed according to its potential impacts on the receiving environment / community / resource.

The Water Safety Plan and W<sub>2</sub>RAP Teams of Overstrand Municipality are committed to meet regularly to review the implementation of all the aspects of the Water Safety Plan and W<sub>2</sub>RAP 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<sub>2</sub>RAP 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<sub>2</sub>RAP. 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.

## 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 seventh year of existence and promises 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:

Table A.17: 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%
<p><b>Regulatory Impression:</b> 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:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> </ul> <p>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.</p> <p>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.</p> <p>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.</p> <p><b>Site Inspection (Preekstoel WTW (88%) and Buffels River WTW (90%)):</b> The site inspection impression at the <b>Preekstoel WTW</b> was considered to be good. A number of drinking water quality management practices still require attention, including:</p> <ol style="list-style-type: none"> <li>1. A flow chart was displayed of the incident management protocol that indicates roles and responsibilities but alert levels were not included.</li> <li>2. Records of the results of the jar tests that are routinely undertaken could not be provided.</li> <li>3. Emergency shower and eye wash facilities were not located at the chemical dosing room.</li> <li>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.</li> <li>5. Standby chlorine dosing equipment is not installed.</li> </ol> <p>The site inspection impression at the <b>Buffels River WTW</b> was considered to be good. A number of drinking water quality management practices still require attention, including:</p> <ol style="list-style-type: none"> <li>1. A flow chart was displayed of the incident management protocol that indicates roles and responsibilities but alert levels were not included.</li> <li>2. The original O&amp;M manual for the WTW is not available. Standard operating procedures have been compiled.</li> <li>3. Records of jar tests undertaken by the service provider could not be provided.</li> <li>4. Chemical tanks are not contained within a bounded area.</li> <li>5. Standby chlorine dosing equipment is not installed.</li> <li>6. Standby air compressor is not installed.</li> </ol>	

Overstrand Municipality achieved overall 3<sup>rd</sup> 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.

Performance Area	Baardskeerdersbos	Buffeljags Bay	Buffels Rivier	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
<b>Blue Drop Score (2014)</b>	<b>63.87%</b>	<b>71.83%</b>	<b>87.20%</b>	<b>88.30%</b>	<b>96.44%</b>	<b>86.59%</b>	<b>87.35%</b>	<b>90.94%</b>
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
<b>Microbiological Compliance (%)</b>	<b>90.0%</b>	<b>95.5%</b>	<b>99.9%</b>	<b>99.9%</b>	<b>98.9%</b>	<b>99.9%</b>	<b>99.9%</b>	<b>99.9%</b>
<b>Chemical Compliance (%)</b>	<b>92.0%</b>	<b>99.9%</b>	<b>96.4%</b>	<b>96.1%</b>	<b>96.4%</b>	<b>96.4%</b>	<b>99.9%</b>	<b>96.4%</b>

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

Distribution System	2012/2013			2013/2014			2014/2015		
	Estimated Permanent Population	Aver. Daily Billed Metered Res. Consumption (kl)	Average Daily consumption (l/p/d)	Estimated Permanent Population	Aver. Daily Billed Metered Res. Consumption (kl)	Average Daily consumption (l/p/d)	Estimated Permanent Population	Aver. Daily Billed Metered Res. Consumption (kl)	Average Daily consumption (l/p/d)
Buffels River	2 392	760	318	2 492	756	303	2 595	834	321
Kleinmond	6 795	1 034	152	6 965	1 009	145	7 139	1 050	147
Greater Hermanus	49 438	5 946	120	51 638	6 155	119	53 936	6 754	125
Stanford	4 908	388	79	5 038	403	80	5 171	420	81
Greater Gansbaai	13 978	1 508	108	14 661	1 503	103	15 378	1 533	100
Pearly Beach	1 069	193	181	1 092	197	180	1 115	211	189
Baardskeerdersbos	123	16	130	123	15	122	124	16	129
Buffeljags Bay	148	7	47	148	8	54	149	7	47

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.

Table A.19: 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 Rivier	Greater Gansbaai	Greater Hermanus	Kleinmond	Pearly Beach	Stanford
2014								
Blue Drop Risk Rating (2014)	47.2%	60.1%	57.3%	57.6%	17.2%	57.3%	56.1%	27.1%
Process Control RR	55.6%	71.1%	64.1%	74.4%	34.1%	64.1%	71.1%	40.5%
Drinking Water Quality RR	70.4%	55.6%	40.7%	40.7%	25.9%	40.7%	11.1%	11.1%
Risk Management RR	17.4%	26.1%	13.0%	26.1%	17.4%	13.0%	26.1%	13.0%
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%

## DWS's Green Drop Process

The DWS also completed their Third Order Assessment of Municipal Waste Water Treatment Plants, DWS's Green Drop Report for 2013, which provides a scientific and verifiable status of municipal waste water treatment. Green drop status is awarded to those WSAs that comply with 90% criteria on key selected indicators on waste water quality management.

The green drop performance of Overstrand Municipality is summarised as follows in the DWS's 2013 Green Drop Report.

Table A.20: 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%				
<p><b>Regulatory Impression:</b> 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 "... <i>the team's enthusiasm, expertise and knowledge of the wastewater business.</i>" 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.</p> <p>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.</p> <p>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<sub>2</sub>RAP process, is commendable. Overstrand is an accomplished service provider in wastewater management, and deserves to be mentioned amongst the top performers in the Province.</p> <p><b>Green Drop Findings:</b></p> <ol style="list-style-type: none"> <li>1. Regulation 17 compliance needs to receive attention.</li> <li>2. Sea outfall monitoring frequency need to be revised for Hermanus.</li> <li>3. Sludge monitoring and handling could improve going forward.</li> <li>4. Some shortcomings are evident on process assessment which might possibly resolve some of the lower compliance to ammonia, EC, O-PO<sub>4</sub>, SS/COD at some plants, given that ample capacity exist at all plants.</li> </ol>					
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
<b>Green Drop Score (2013)</b>	<b>91.17%</b>	<b>90.03%</b>	<b>93.39%</b>	<b>91.76%</b>	<b>77.61%</b>
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, sportsfield irrigate	Sea (shallow outfall)
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%
<b>Wastewater Risk Rating (2012)</b>	<b>34.70%</b>	<b>33.30%</b>	<b>44.40%</b>	<b>38.90%</b>	<b>44.40%</b>
<b>Wastewater Risk Rating (2013)</b>	<b>45.45%</b>	<b>29.41%</b>	<b>29.41%</b>	<b>35.29%</b>	<b>47.06%</b>



Table A.20: Green Drop Performance of the Municipality (DWS's 2013 Green Drop Report)					
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 risks 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.21: 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
<b>2014 Wastewater Risk Rating (%CRR/CRR<sub>max</sub>)</b>	<b>40.9%</b>	<b>52.9%</b>	<b>29.4%</b>	<b>41.2%</b>	<b>41.2%</b>
<b>2013 Wastewater Risk Rating (%CRR/CRR<sub>max</sub>)</b>	<b>45.5%</b>	<b>29.4%</b>	<b>29.4%</b>	<b>35.3%</b>	<b>47.1%</b>
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 <sub>2</sub> RAP Abatement Document and Status Commentary	<p>Hermanus: Date of document could not be established. Action plan refers to 12/13. Quite a few references to Gansbaai in Hermanus W<sub>2</sub>RAP, 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.</p> <p>Hawston: Date of document could not be established. Action points refer to 13/14. Quite a few references to Gansbaai in Hawston W<sub>2</sub>RAP - to be rectified. No high risk identified. Non-compliance of effluent not identified as high risk.</p> <p>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.</p> <p>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.</p> <p>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.</p>				

### 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.

### **Business Element 7: Associated Services**

All schools and medical facilities in Overstrand Municipality's Management Area are supplied with a higher level of water and sanitation services.

### **Business Element 8: Conservation and Demand Management**

Overstrand Municipality is committed to reduce the current percentage of non-revenue water for the various distribution systems to 17% by June 2017 (SDBIP). The Municipality's WDM Strategy and Action Plan include the following key activities (June 2015 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 (Phase 2 contract completed in Pearly Beach, Gansbaai and De Kelders in June 2014 and contract for Rooi-Els to Hermanus in progress – Three year contract until February 2016);
- Implementation of intelligent pressure management in specific areas. (Stanford, Kleinmond and Betty's Bay were completed);
- Phased pro-active replacement of older water meters (Three year contract was awarded in August 2013);
- 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 (Completed for Hermanus, ongoing for other 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 (Three year contract was awarded in August 2013 – part of water meter tender, work in progress);
- 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 and Green Fund (ACIP funding of R1 million was received from DWS for 2014/2015 for Water Demand Management interventions);
- 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).

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

Table A.22: NRW for the various distribution systems							
Description	Unit	14/15	Record : Prior (MI/a)				
			13/14	12/13	11/12	10/11	09/10
Buffels River	Volume	286.578	350.035	438.541	533.140	526.339	498.478
	Percentage	42.51%	50.46%	57.03%	58.47%	56.66%	54.01%
	ILI	3.10	3.82	5.45	5.07	5.06	6.69
Kleinmond	Volume	236.018	248.504	285.680	239.492	246.783	338.327
	Percentage	31.68%	34.23%	34.38%	30.08%	29.41%	36.22%
	ILI	2.25	2.26	2.49	2.58	2.17	4.09
Greater Hermanus	Volume	359.729	380.399	324.189	317.241	594.352	593.867
	Percentage	9.13%	10.91%	9.04%	9.69%	15.62%	13.30%
	ILI	0.88	0.96	0.85	0.98	1.50	2.22
Stanford	Volume	80.356	76.516	91.388	142.029	128.297	194.486
	Percentage	26.97%	25.87%	30.83%	37.46%	35.46%	41.56%
	ILI	2.81	2.69	2.90	5.90	5.67	11.08
Greater Gansbaai	Volume	363.302	413.621	405.799	435.335	457.525	457.580
	Percentage	27.96%	31.30%	31.19%	31.96%	32.83%	31.45%
	ILI	2.93	3.34	3.15	3.46	3.71	2.07
Pearly Beach	Volume	52.640	87.708	67.435	45.689	36.511	21.683
	Percentage	33.68%	48.42%	41.93%	32.28%	26.27%	19.68%
	ILI	2.86	4.79	4.79	3.02	2.41	3.20
Baardskeedersbos	Volume	6.251	5.665	4.000	2.778	4.085	2.722
	Percentage	46.26%	48.62%	36.30%	29.26%	37.29%	25.85%
	ILI	1.28	1.16	0.75			
Buffeljags Bay	Volume	0.612	0.004	0.090	0.019	0	0
	Percentage	15.45%	0.12%	2.63%	0.49%	0%	0%
	ILI	3.80	0.42	0.46			
TOTAL	Volume	1 385.486	1 562.452	1 617.122	1 715.723	1 993.892	2 107.143
	Percentage	19.43%	23.25%	23.23%	24.94%	26.65%	25.18%
	ILI	1.78	2.02	2.26	2.02	2.33	2.94

Notes: 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.

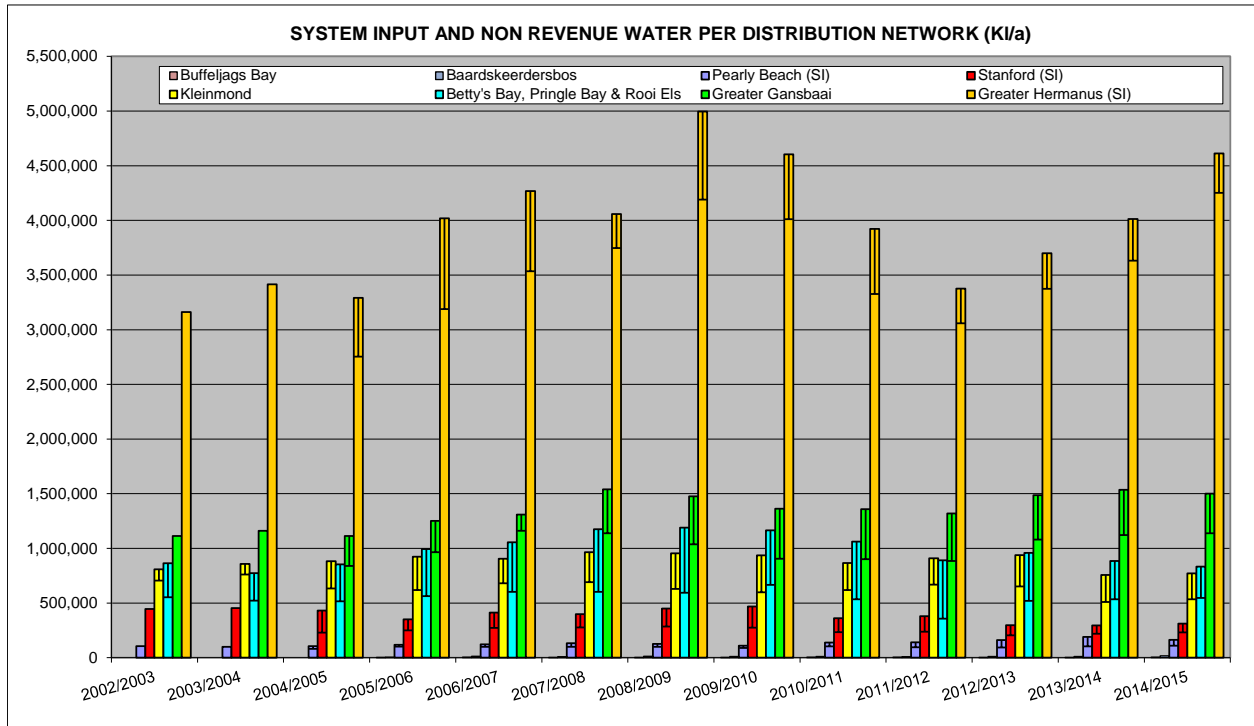
**Category C** = Requires attention

**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 and 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 easily since this implies that the actual leakage is less than the theoretical minimum level of leakage.

**Business Element 9: Water Resources**

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.



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

Table A.23: Amount of bulk raw water supplied to the various towns							
Distribution System	Source Name	Current 14/15	Record : Prior (MI/a)				
			13/14	12/13	11/12	10/11	09/10
Buffels River	Buffels River Dam	832.082	884.443	959.091	890.129	1 060.903	1 164.946
Kleinmond	Palmiet River, Kleinmond borehole & Dorpsfontein spring	770.268	757.170	937.438	908.556	865.079	936.748
Greater Hermanus	De Bos Dam & Groundwater	4 611.987	4 012.029	3 698 894	3 375.238	3 921.834	4 604.446
Stanford	Stanford spring and two boreholes	310.787	295.818	296.392	379.130	361.810	467.953
Greater Gansbaai	Kraaibosch and Franskraal Dam, Kilipgat, De Kelders Grotte	1 501.361	1 535.945	1 486.216	1 320.178	1 358.985	1 362.847
Pearly Beach	Pearly Beach Springs and Koekemoer Dam	162.746	190.304	160.831	141.542	138.969	110.198
Baardskeersdersbos	Two boreholes	17.466	11.652	11.019	9.495	10.954	10.531
Buffeljags Bay	Borehole	3.962	3.258	3.418	3.895	3.560	2.582
<b>Total supply to all towns</b>		<b>8 210.659</b>	<b>7 690.619</b>	<b>7 553.299</b>	<b>7 028.163</b>	<b>7 722.094</b>	<b>8 660.251</b>

**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 BDS via the internet. Once entered the data is automatically compared to SANS241. This real-time system allows for immediate intervention to rectify any problems.

The overall percentage of compliance of the water quality samples taken over the period July 2014 to June 2015 is summarised in the table below per distribution system (DWS's 2014 Blue Drop Limits).

<b>Table A.24: Percentage compliance of the water quality samples for the period July 2014 to June 2015</b>		
<b>Performance Indicator</b>	<b>Performance Indicator categorised as unacceptable Yes / No (Table 4 of SANS 241-2:2011)</b>	<b>% Sample Compliance according to DWS's 2014 Blue Drop Limits</b>
<b>Buffels River</b>		
Acute Health – 1 Microbiological	No (Excellent)	100.0%
Acute Health – 2 Microbiological	No (Excellent)	100.0%
Acute Health – 1 Chemical	No (Excellent)	100.0%
Chronic Health	No (Excellent)	98.0%
Aesthetic	No (Excellent)	99.6%
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	98.4%
Operational Efficiency	No (Excellent)	95.9%
<b>Kleinmond</b>		
Acute Health – 1 Microbiological	No (Excellent)	97.2%
Chronic Health	No (Excellent)	99.4%
Aesthetic	No (Excellent)	98.9%
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	99.9%
Operational Efficiency	No (Excellent)	95.9%
<b>Greater Hermanus</b>		
Acute Health – 1 Microbiological	No (Excellent)	100.0%
Chronic Health	No (Excellent)	100.0%
Aesthetic	No (Excellent)	99.0%
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	99.7%
Operational Efficiency	No (Excellent)	94.7%
<b>Stanford</b>		
Acute Health – 1 Microbiological	No (Excellent)	100.0%
Acute Health – 2 Microbiological	No (Excellent)	100.0%
Acute Health – 1 Chemical	No (Excellent)	100.0%
Chronic Health	No (Excellent)	100.0%
Aesthetic	No (Excellent)	100.0%
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	100.0%
Operational Efficiency	No (Excellent)	98.9%
<b>Greater Gansbaai</b>		
Acute Health – 1 Microbiological	No (Excellent)	100.0%
Acute Health – 2 Microbiological	No (Excellent)	100.0%
Acute Health – 1 Chemical	No (Excellent)	100.0%
Chronic Health	No (Excellent)	99.6%
Aesthetic	No (Excellent)	99.4%
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	99.7%
Operational Efficiency	No (Excellent)	98.9%
<b>Pearly Beach</b>		
Acute Health – 1 Microbiological	No (Excellent)	100.0%
Chronic Health	No (Excellent)	99.3%
Aesthetic	No (Excellent)	100.0%
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	99.5%
Operational Efficiency	No (Excellent)	98.7%

<b>Table A.24: Percentage compliance of the water quality samples for the period July 2014 to June 2015</b>		
<b>Performance Indicator</b>	<b>Performance Indicator categorised as unacceptable Yes / No (Table 4 of SANS 241-2:2011)</b>	<b>% Sample Compliance according to DWS's 2014 Blue Drop Limits</b>
<b>Baardskeedersbos</b>		
Acute Health – 1 Microbiological	No (Excellent)	100.0%
Acute Health – 2 Microbiological	No (Excellent)	100.0%
Acute Health – 1 Chemical	No (Excellent)	100.0%
Chronic Health	No (Excellent)	97.8%
Aesthetic	No (Excellent)	94.2%
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	98.2%
Operational Efficiency	No (Excellent)	96.4%
<b>Buffeljags Bay</b>		
Acute Health – 1 Microbiological	No (Excellent)	100.0%
Acute Health – 1 Chemical	No (Excellent)	100.0%
Chronic Health	No (Excellent)	100.0%
Aesthetic	No (Excellent)	92.3%
Risk assessment defined Health (Acute or Chronic)	No (Excellent)	100.0%
Operational Efficiency	Yes (Unacceptable)	89.5%

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

<b>Table A.25: Five categories under which the risks posed by micro-organism, physical or aesthetic property or chemical substance of potable water is normally classified</b>	
<b>Category</b>	<b>Risk</b>
Acute Health - 1	Routinely quantifiable determinand that poses an immediate unacceptable health risk if consumed with water at concentration values exceeding the numerical limits specified in SANS 241.
Acute Health - 2	Determinand that is presently not easily quantifiable and lacks information pertaining to viability and human infectivity which, however, does pose immediate unacceptable health risks if consumed with water at concentration values exceeding the numerical limits specified in 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 operational water sampling programmes of Overstrand Municipality complies with the minimum monitoring requirements of the SANS: 241 (Table 1: Minimum monitoring for process indicators) for the various WTWs and distribution systems.

The table below indicates the compliance of the E.Coli monitoring frequency in the water distributions systems of Overstrand Municipality, in terms of the minimum requirements of SANS: 241. The period assessed was for samples taken from July 2014 to June 2015.

Distribution System	Population served	Minimum number of samples required as per SANS 241	Number of E.Coli samples taken by Municipality during 2014/2015
Buffels River	2 595	2	5
Kleinmond	7 139	2	3
Greater Hermanus	53 936	10.8	9.3
Stanford	5 171	2	1.2
Greater Gansbaai	15 378	3.1	8.9
Pearly Beach	1 115	2	2.2
Baardskeerdersbos	124	2	2
Buffeljags Bay	149	2	1.1

Overstrand Municipality revised their Water Quality Compliance Sampling Programme during 2015/2016, in order to comply with SANS:241 requirements, w.r.t. the number of microbiological samples to be taken.

**Effluent quality:** The overall Microbiological, Chemical and Physical compliance percentages of the final effluent samples taken over the period July 2014 to June 2015, for the various WWTWs, are as follows:

WWTW	Micro-biological	Chemical						Physical			
	Faecal Coliforms	Ammonia	Nitrates & Nitrites	COD Unfiltered	COD Filtered	Ortho-phosphates	Overall	pH	EC	SS	Overall
Kleinmond	91.7%	41.7%	83.3%	91.7%	91.7%	100.0%	<b>81.7%</b>	100%	91.7%	83.3%	<b>91.7%</b>
Hawston	100.0%	50.0%	100.0%	41.7%	58.3%	91.7%	<b>68.3%</b>	100%	91.7%	83.3%	<b>91.7%</b>
Hermanus	75.0%	100.0%	100.0%	100.0%	100.0%	100.0%	<b>100.0%</b>	100%	8.3%	75.0%	<b>61.1%</b>
Stanford	91.7%	100.0%	83.3%	100.0%	100.0%	100.0%	<b>96.7%</b>	100%	91.7%	100.0%	<b>97.2%</b>
Gansbaai	91.7%	91.7%	100.0%	91.7%	100.0%	91.7%	<b>95.0%</b>	100%	75.0%	91.7%	<b>88.9%</b>
Total	<b>90.0%</b>	<b>76.7%</b>	<b>93.3%</b>	<b>85.0%</b>	<b>90.0%</b>	<b>96.7%</b>	<b>88.3%</b>	<b>100%</b>	<b>71.7%</b>	<b>86.7%</b>	<b>86.1%</b>

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 volumes and nutrient loads of effluent discharged by industries in Overstrand Municipality's Management Area into the Municipality's sewer system are not yet monitored by Overstrand Municipality. The Municipality's tariff structure for the discharge of effluent by industrial consumers does not make provision for nutrient loads and volume to be taken into account. There is no limit on the permitted volume of effluent that can be discharged into the sewer system, but the concentration limits for the various parameters are included in the Municipality's Water Services by-laws (Acceptance of industrial effluent for discharge into the sewage disposal system).

**Business Element 10: Financial**

**Capital Budget:** Overstrand Municipality's proposed Water and Sewerage Capital Budget for 2016/2017 is R12.4 million and R13.5 million respectively. The updated Water and Sewer Master Plans (July 2012) recommends upgrades to the values indicated in the table below in the foreseeable future in order to accommodate development and population growth according to the SDF (2011 Values, which include P&Gs, Contingencies and Fees, but exclude EIA studies, registration of servitudes and / or land acquisition and VAT).

System	Water Infrastructure (R'000)				Sewerage Infrastructure (R'000)		
	Reticulation	Reservoirs and Pump Stations	WDM	Total	Reticulation	Pump Stations	Total
Buffels River	R8.594	R12.978	R1.488	R23.060	R132.957	R13.377	R146.334
Kleinmond	R6.390	R0.596	R0.852	R7.838	R31.103	R0.708	R31.811
Greater Hermanus	R65.021	R51.770	R0.700	R117.491	R68.832	R7.475	R76.307
Stanford	R1.924	R3.872	R0.383	R6.179	R11.897	R1.789	R13.686
Greater Gansbaai	R46.569	R47.762	R0.500	R94.831	R113.634	R16.733	R130.367
Pearly Beach	R3.631	R0.000	R0.100	R3.731	R20.713	R2.785	R23.498
<b>Totals</b>	<b>R132.129</b>	<b>R116.978</b>	<b>R4.023</b>	<b>R253.130</b>	<b>R379.136</b>	<b>R42.867</b>	<b>R422.003</b>

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

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

Service	Expenditure / Income	Actual 14/15	Actual 13/14	Actual 12/13	Actual 11/12	Actual 10/11
Water	Expenditure	R87 684 218-72	R95 829 984-21	R85 498 520-43	R83 115 288-69	R73 321 373-08
	Income	R109 580 993-32	R96 057 574-71	R96 578 920-13	R104 938 998-48	R79 588 700-02
	<b>Surplus / (Deficit)</b>	<b>R21 896 774-60</b>	<b>R227 590-50</b>	<b>R11 080 399-70</b>	<b>R21 823 709-79</b>	<b>R6 267 326-94</b>
Sanitation	Expenditure	R59 653 861-52	R57 539 215-06	R51 607 042-31	R45 790 334-40	R40 666 933-48
	Income	R75 482 947-03	R65 032 183-93	R64 291 003-56	R74 623 658-62	R50 911 541-99
	<b>Surplus / (Deficit)</b>	<b>R15 829 085-51</b>	<b>R7 492 968-87</b>	<b>R12 683 961-25</b>	<b>R28 833 324-22</b>	<b>R10 244 608-51</b>

**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 Overstrand 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 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 30 kl per household per month. Punitive tariffs are in place for excessive water consumption.

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.



### **Business Element 11: Water Services Institutional Arrangements**

Overstrand Municipality acts as both WSA and WSP to the consumers in their Municipal Management Area and therefore does not manage other WSPs. A 15 year contract with Veolia however commenced on the 1<sup>st</sup> of November 2015 to effectively and efficiently operate and maintain the Municipality's bulk water and sewerage infrastructure on behalf of Overstrand Municipality, as previously mentioned. Overstrand Municipality remains accountable to the community and the contractor is accountable to the Municipality. The benefits of the bulk water services operation and maintenance contract are as follows:

- Extensive training and development of staff.
- Regulatory compliance to be achieved within three years (Regulation 2834).
- The operational risk is transferred to the Operator.
- Improved operational efficiencies (e.g. SCM processes and Treatment Process Optimization)
- Substantial saving compared to the Municipality performing the full function (R9M per year).

A comprehensive set of Water Services By-laws are in place for Overstrand Municipality's Management Area. The By-laws cover the provision of services for water supply, sanitation and industrial effluent.

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.

At a technical, operations and management level, municipal staff is continuously exposed to training opportunities, skills development and capacity building in an effort to create a more efficient overall service to the users. Submissions were also made to the DWS for the classification and registration of the Process Controllers and Supervisors at the various plants. A skills audit is conducted during each year, which leads to various training programmes in order to wipe out skills shortages and to provide employees with the necessary capacity. A Workplace Skills Plan for 2015/2016 is in place.

### **Business Element 12: Social and Customer Service Requirements**

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.

The table below gives a summary of the records that are kept by Overstrand Municipality of the maintenance work carried out over the last four financial years.

Table A.30: Water and sanitation indicators monitored by Overstrand Municipality with regard to customer services and maintenance work																					
Service	Definition	Gansbaai				Hermanus				Kleinmond				Stanford				Total			
		14/15	13/14	12/13	11/12	14/15	13/14	12/13	11/12	14/15	13/14	12/13	11/12	14/15	13/14	12/13	11/12	14/15	13/14	12/13	11/12
Sewerage connection	Provision of connection or inspection of existing connections	-	1	24	1	87	44	86	67	2	4	1	-	-	2	1	-	89	51	112	68
Sewer blockages	Repair blockages on main sewer pipelines up to connection points	109	128	69	68	1 350	1 057	1 389	1 283	224	227	202	132	82	46	28	18	1 765	1 458	1 688	1 501
Investigate sewer reticulation network	Investigate network	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0
Manholes sewer reticulation	Inspection and installation of manholes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0
Other sewer reticulation	Any other sewer reticulation inspections	29	60	49	54	14	16	44	78	3	9	6	7	1	1	29	36	47	86	128	175
PDA toilets repairs	Previously disadvantaged toilets repaired	124	122	134	132	43	3	5	5	-	-	-	-	-	1	-	-	167	126	139	137
Pipeline sewer	Installation of sewer pipelines or repair of pipelines	-	1	-	-	4	3	1	4	-	3	-	1	-	2	-	-	4	9	1	5
Investigate sewer reticulation pump stations	Work carried out at sewer pump stations	7	-	-	3	25	20	21	36	18	9	6	10	35	29	3	2	85	58	30	51
Test water meter	Testing of water meter for accuracy	3	-	-	2	20	12	27	23	1	1	-	8	-	-	-	-	24	13	28	33
Disconnect water connection	Disconnect supply	2	4	3	6	17	13	17	10	10	6	12	11	1	3	5	1	30	26	37	28
Install drip system	Installation and inspection of drip systems	1	1	1	1	-	-	-	-	1	2	4	-	-	-	-	-	2	3	5	1
Inspect water connections	Inspect connections	9	13	20	78	61	259	52	79	19	19	44	150	8	9	35	42	97	300	151	349
New water connections	New water connections	51	29	56	92	158	101	84	74	72	53	35	60	13	2	9	60	294	185	184	286
Other water connections	Inspections and work carried out at water connections	45	56	127		20	16	18		31	73	79		31	26	13		127	171	237	
Pipelines water	Installation or repair of water pipelines	-	7	-	8	2	1	2	1	1	1	7	11	11	13	12	59	14	22	21	79
Pressure	Complaints with regard to pressure in the system	44	14	21	28	70	16	13	20	41	61	46	29	-	-	3	2	155	91	83	79
Water Pump Stations	Inspections and work carried out at water pump stations.	-	2	-	8	2	-	-	15	2	3	8	35	35	35	8	3	39	40	16	61
Repair pipe bursts	Repair of burst water pipelines	35	16	43	61	157	151	130	88	165	204	210	232	28	9	6	16	385	380	389	397
Reservoirs	Inspection of reservoirs and work carried out at reservoirs	6	-	2	-	-	-	3	7	-	-	37	89	1	-	1	7	7	0	43	103
Water Routine Inspections	Any water related inspections	-	63	174	199	6	-	-	5	-	5	4	6	1	21	159	83	7	89	337	293
Water Valves	Inspection of valves and work carried out on valves	-	2	2	6	7	10	3	8	6	12	6	15	-	1	1	2	13	25	12	31

## SECTION B: STATE OF WATER SERVICES PLANNING

This WSDP is for 2017-2022 (First Cycle) and Overstrand Municipality is committed to update their WSDP for the interim years and to compile a new WSDP every five years, as required by legislation. The 2017-2022 (First Cycle) WSDP was also populated on the eWSDP website of the DWS.

Overstrand Municipality also compiled annual WSDP Performance and Water Services Audit Reports for the last number of years. The 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 2014/2015 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, 2012, GLS Consulting
- Sewer Master Plan, Overstrand Municipality, 2012, GLS Consulting

The Municipality is however currently busy with the updating of their Water and Sewer Master Plans and the updated plans will be in place by June 2016.

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

- The Water Services Audit Report for 2014/2015 was finalised and approved by Council as part of the Annual Report. The non-revenue water balance models were also updated for each of the distribution systems (Up to the end of June 2015) as part of the Water Services Audit Process.
- Overstrand Municipality continues with the management and improvement 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 BDS and GDS. All the WTWs and WWTWs are also registered on the BDS and GDS websites.
- The previous WSDP-IDP Sector Input Report was compiled and taken to Council with the IDP and approved.
- The Asset Register was updated to include all the water and sewerage capital projects completed during the 2014/2015 financial year.
- A MIG Technical Report was compiled for the construction of the new Pearly Beach Oxidation dams.
- The Municipality completed the Section 78(1) Municipal Systems Act investigation for the bulk water and sewerage services, and made a resolution i.t.o Section 78 (2) to continue with an internal service delivery mechanism, but with a support contract. The Contract with Veolia commenced on the 1<sup>st</sup> of November 2015.

## 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:

- Quality: Assessment current status against compliancy requirements.
- Quantity: An indication of the representation of the total area to address the issue.
- Future plan assessment: Degree in which future demand has been established.
- Strategy assessment: Whether a Strategy is in place to address the need.

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.

### Business Element 1: Administration

Table C.1 : Business Element 1: Administration (Topic 1)					
Overview of Topic		Status Quo and Knowledge Interpretation Statistics			
This topic provides knowledge on the status of the WSA's 5-year WSDP as well as with the contact particulars of the key role-players which have contributed to the development of the WSDP.	Item	Quality (%) assessment of current status against compliancy requirements	Quantity (%) an indication of the representation of the total area to address the issue	Future Plan Assessment	Strategy Assessment
	n/a	n/a	n/a	n/a	n/a
	<b>TOTAL for Topic</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>
Problem Definition Statements					
Nr	Statements - Short Comings	Possible Improvement / Project			
1	Key issues raised in the WSDP need to be taken to the IDP	Ensure Executive Summary of WSDP (WSDP-IDP Water Sector Input Report) is included in the IDP.			

The Municipality has three distinct structures through which formalised public participation with its communities takes place i.e.

- Ward Committees;
- The Overstrand Municipal Advisory Forum (OMAF); and
- Making important draft documentation available for public comment and input.

Ward Committees as a governance structure promotes public accountability and strengthens community participation. The Ward Committee System is fully institutionalised and capacitated within the Overstrand Municipality.

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 Objectives 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.

## Business Element 2: Demographics

Table C.2: Business Element 2: Demographics (Topic 2)					
Overview of Topic		Status Quo and Knowledge Interpretation Statistics			
This topic provides an overview of demographics of the WSA as sourced from the National Geo-Referenced Database, aligned to Census figures as well as the number of public amenities and private facilities within the jurisdictional area of the WSA.	Item	Quality (%) assessment of current status against compliance requirements	Quantity (%) an indication of the representation of the total area to address the issue	Future Plan Assessment	Strategy Assessment
	Settlement Types (Urban, Rural , Farming)	Scores will be finalised once the new eWSDP website is fully populated.			
	Public Amenities Consumer types				
	<b>TOTAL for Topic</b>				
Problem Definition Statements					
Nr	Statements - Short Comings	Possible Improvement / Project			
1	Conservative approach is followed regarding the management of water sources, due to the possible impact 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. Establish assurance of supply levels of all water sources.			
2	Municipality needs to evaluate all land use planning applications against the broad SDF and Growth Management Strategy principles before approvals and recommendations are made.	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.			
3	Ensure that the required bulk water and sewerage infrastructure are in place before housing projects are implemented.	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.			

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.3: 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.
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.

Objectives	Housing Programmes and Related Projects
<ul style="list-style-type: none"> <li>Upscale provision and implementation of serviced sites.</li> <li>Increasing densities of new human settlement developments on well-located land.</li> <li>Reduce bulk infrastructure as a constraint to human settlement development.</li> <li>Acquiring well-located land for well-planned integrated Human Settlements.</li> <li>Provide a fair allocation of housing opportunities.</li> <li>Increase beneficiary involvement in the development of housing opportunities.</li> <li>Enhancing supply of new rental housing opportunities and encourage improved property management and rental stock.</li> <li>Increase sustainable resource use by exploring alternative technologies and building methodologies.</li> <li>Implement Overstrand Municipal Growth Management Strategy.</li> </ul>	<ul style="list-style-type: none"> <li>Integrated residential Development Programme (IRDP)</li> <li>Upgrading of Informal Settlements</li> <li>Provision of Economic &amp; Social Facilities</li> <li>Institutional Subsidies</li> <li>Enhanced People's Housing Process (EHP)</li> <li>Emergency Housing Programme (EHP)</li> <li>Social Housing Programme</li> <li>Community Residential Units (CRU)</li> </ul>

### Business Element 3: Service Levels

Overview of Topic	Status Quo and Knowledge Interpretation Statistics				
Topic 3 information is presented in terms of the Department of Water and Sanitations' service level classification which considers the adequacy of services in establishing the service level profile. The profile is presented in terms of settlements, population and households.	Item	Quality (%) assessment of current status against compliancy requirements	Quantity (%) an indication of the representation of the total area to address the issue	Future Plan Assessment	Strategy Assessment
	Water - Below: No Services (Formal)	Scores will be finalised once the new eWSDP website is fully populated.			
	Water - Below: Infra. Needs				
	Water - Below: O&M Needs				
	Water - Below No Services (Informal)				
	Sanitation – Below: No Services (Formal)				
	Sanitation – Below: Infra. Needs				
	Sanitation – Below: O&M Needs				
	Sanitation – Below: No Services (Informal)				
	Residential, Public Institutions and Industries Amenities				
<b>TOTAL for Topic</b>					
Problem Definition Statements					
Nr	Statements - Short Comings	Possible Improvement / Project			
1	Ensure that all households on the farms in the rural areas with existing services below RDP standard are provided with at least basic water and sanitation services	Assist private landowners as far as possible with the provision of basic water and sanitation services to all the households in the Municipality's Management Area with existing service levels below RDP standard.			

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

Service Area	Challenge	Actions to address
Water and Sewerage	Aging infrastructure	Increased maintenance and replacement (capital and operational funding).
All basic services	Vandalism	Educational programmes, increased security measures.
Sewerage	Blockages	Educational programmes, upgrading of ageing infrastructure
Water	High water losses	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.

The clinics and hospitals in Overstrand Municipality's Management Area have adequate and safe water supply and sanitation services. All the schools in Overstrand Municipality's Management Area also have adequate and safe water supply and sanitation services. 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.



**Business Element 4: Socio Economic**

Table C.7: Business Element 4: Socio-Economic (Topic 4)					
Overview of Topic		Status Quo and Knowledge Interpretation Statistics			
<p>The socio-economic information contained in the WSDP provides a broad overview of the socio-economic status of the municipality in terms of population growth rates, age and gender profile, employment profile, migration patterns, household income and economics. The topic also contains a quick reference to water services affordability by expressing the typical monthly water bill in terms of average monthly income in the municipal area.</p>	<b>Item</b>	<b>Quality (%)</b> assessment of current status against compliancy requirements	<b>Quantity (%)</b> an indication of the representation of the total area to address the issue	<b>Future Plan Assessment</b>	<b>Strategy Assessment</b>
	General	Scores will be finalised once the new eWSDP website is fully populated.			
	Age and gender profile				
	Employment profile				
	Demographic trends and migration patterns				
	Household income				
	Water Affordability				
	Sanitation Affordability				
	Economics				
	<b>TOTAL for Topic</b>				
Problem Definition Statements					
Nr	Statements - Short Comings	Possible Improvement / Project			
1	Various socio-economic needs in the Management Area.	Adequately covered through the Municipality's Policies, LED Strategy, SDF and Social Programmes.			
2	Challenges of poverty in the area	Alleviation of poverty by means of the Municipality's Indigent Policy, Local Labour Promotion Projects, OREIA, LED projects and the use of Supply Chain Management Policy as an instrument to enforce the maximum use of local labour.			

**Social:** The Department of Communication at the Municipality through the Grant-in-Aid provides financial assistance to qualifying organisations. The LED Department assists the youth through the creation of employment opportunities and skills development projects. The Junior Town Council assists in rolling out additional projects and programmes to the youth.

The Overstrand Rehabilitation & Educational Institute for Adolescents (OREIA) is a registered NGO that aims to establish an adolescent rehabilitation centre in the municipal area that will focus on counselling services, rehabilitation and education facilitation and skills development. The project is in conceptual phase and managed by external role-players, with the Hawston Secondary School as a project partner.

A Sustainable Primary Healthcare Facility is planned in the Gansbaai area by the Desmond Tutu Tuberculosis Centre (DTTC), Facility of Health Services, at the University of Stellenbosch. The project is in the planning phase and the municipality is considering making land available at a nominal rate, due to the significant social benefits that can be derive from the project.

A local NGO, "Greater Hermanus Training Centre / Groter Hermanus Opleiding Sentrum" aims to offer training courses throughout the Overstrand area.

Apart from the challenge to facilitate more housing developments, there is also the challenge to integrate these areas with areas of opportunities to work, facilities and affordable service delivery. A detailed action plan has been set in place to reduce the backlog and address the current and future housing need. This Housing Strategy Five-Year Plan will incorporate several housing programmes, each focused on and addressing different needs. Overstrand Municipality also compiled a comprehensive Five Year Human Settlement Strategy to guide and improve housing development and delivery within the Municipality.

**Economic:** The need to work together is increasingly becoming critical and important to building up the economic future, including the quality of life of its inhabitants. The Municipality realizes and recognises the importance of putting LED as one of its key strategic objectives thus giving adequate attention to economic development and constantly deal with the impact of the changing economic climate.

The economic challenges highlighted in the 2014/2015 IDP and the actions to address these challenges are summarised in the table below:

<b>Table C.8: Economic Challenges and Actions to address these challenges</b>	
<b>Challenge</b>	<b>Actions by Overstrand Municipality</b>
High level of unemployment and poverty	Implement municipal capital projects through EPWP principles and facilitate an environment that will attract sectors with high value and support industries that yield employment opportunities and are prevalent in the area.
Co-operation with the private sector	Introduce activities that build co-operation with the private sector – clarify roles and responsibilities including implementation of joint projects aimed at improving the local economy. Introduce participatory tools such as PACA to install ownership.
Seasonality	Vigorous marketing campaign as a destination of all seasons. Encourage on all year round programmes for festivals and events. Encourage “buy local” campaigns and better business management strategies to cushion businesses from impact of seasonality.
Low skill base, brain drain and inequality	Implement joint programmes with other spheres of government and NGOs focusing on skills development, learnerships and promotion of early childhood development.
Skewed Gini-co-efficiency (the gap between the rich and the poor)	Work with the private sector and other spheres of government to improve income levels through quality jobs, education and entrepreneurship.
Restrictive environmental considerations	Co-operation between the municipality, responsible government department and the community and introduction of appropriate planning methods with improved responses.
Inward focus economy attracting few provincial and national focus enterprises.	Conducive business environment taking into consideration business needs – effective and efficient systems to do business in the area. Improve business attraction strategies.
Financial and investment support programmes	Understanding the eco-system of entrepreneurs and financiers to better understand the types of companies suited for the area and which are not. Tapping into government development incentives.
Exporting	Investigate and apply for consideration as a Special Economic Zone to boost export potential. Need to expand export potential.

Overstrand Municipality’s approaches towards growing the Local Economies are comprehensively addressed in the 2015/2016 IDP and the section below just summarise the main key focus areas:

- Promotion of shared values;
- Link between the environment and the economy;
- Encouraging business growth;
- Servicing new and retaining existing enterprises;
- Stakeholder management and engagement;
- Promoting economic development;
- Skills and capacity development;
- Sustainable urban development including potential of towns; and
- Export and direct investment

**Business Element 5: Water Services Infrastructure Management (Infrastructure)**

Table C.9: Business Element 5: Water Services Infrastructure (Topic 5)					
Overview of Topic		Status Quo and Knowledge Interpretation Statistics			
<p>Topic 5.1 provides an overview of the extent-, functionality- and asset status of the municipality's water services infrastructure. It also provides an overview of the municipality's compliance in terms of legislation- and regulations concerning asset management, disaster management, water quality management, water resource licensing, etc. It should be emphasized that the topic does not provide the detail per infrastructure element, but provides an overview per each main water services infrastructure component.</p>	<b>Item</b>	<b>Quality (%)</b> assessment of current status against compliancy requirements	<b>Quantity (%)</b> an indication of the representation of the total area to address the issue	<b>Future Plan Assessment</b>	<b>Strategy Assessment</b>
	General Information	Scores will be finalised once the new eWSDP website is fully populated.			
	Operation				
	Monitoring and sample failure				
	Functionality				
	Institutional status				
	Asset assessment spectrum				
	Type and capacity				
	<b>TOTAL for Topic</b>				
Problem Definition Statements					
Nr	Statements - Short Comings	Possible Improvement / Project			
1	Ensure adequate reservoir storage capacity for the various towns	Provide additional reservoir storage capacity for the towns with inadequate storage capacity, as identified through the WSDP and Water Master Plans.			
2	Inadequate capacities of water pump stations and reticulation networks.	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.			
3	Inadequate capacities of sewer pump stations and sewer drainage networks.	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.			
4	Priority should be given to rehabilitating existing infrastructure as this generally makes best use of financial resources and can achieve an increased 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.			
5	Ensure that an appropriate maintenance and rehabilitation plan (IAMP) is developed and implemented.	Develop an Infrastructure Asset Management Plan (IAMP) 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.			
6	Records need to be kept of the number of breakages / failures per infrastructure type in order to assist the Municipality with their refurbishment and maintenance planning.	Keep record of all breakages / failures per infrastructure type.			
7	The Municipality needs to differentiate between budget allocated towards the operation and maintenance of the water and sewerage infrastructure and 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 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.			
8	The Water and Sewer Master Plans were last updated in 2012.	Update the Water and Sewer Master Plans			
9	Ensure that all the assets, as listed under the various tables in this chapter, are included in the Asset Register.	Update the Asset Register to include all the water and sewerage infrastructure assets.			

Some of the key challenges for 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. There is a concern that new technology installed is not adequately maintained and in the longer term this could cause a massive increase in maintenance due to backlog being created.

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. It is believed that the technology and the expansion of infrastructure and the capacity has not been developed in the same manner, accordingly the human resources found it difficult to operate and maintain the infrastructure and did not necessarily had the skills to operate the infrastructure optimally.

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 (July 2012) 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.

Zone / Area	Water Infrastructure	Sewerage Infrastructure	Total
Buffels River System	R23 060 000	R146 334 000	R169 394 000
Kleinmond	R7 838 000	R31 811 000	R39 649 000
Greater Hermanus	R117 491 000	R76 307 000	R193 798 000
Stanford	R6 179 000	R13 686 000	R19 865 000
Greater Gansbaai	R94 831 000	R130 367 000	R225 198 000
Pearly Beach	R3 731 000	R23 498 000	R27 229 000
<b>Total</b>	<b>R253 130 000</b>	<b>R422 003 000</b>	<b>R675 133 000</b>

Note: 2011 Values, which include P&Gs, Contingencies and Fees, but exclude EIA studies, registration of servitudes and / or land acquisition and VAT.

## **WATER TREATMENT WORKS INFRASTRUCTURE**

*Buffels River WTW:* Under normal circumstances the plant is operated below its design capacity, and is only in operation for 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 for the foreseeable 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 included in the 2015 Process Audit Report were as follows:

- The inflow and outflow meters should be calibrated annually and Calibration Certificates 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.
- Maintain at least 0.40 mg/l free chlorine at all times.
- All staff should be registered as Process Controllers by DWS.
- A Visitors Log book should be implemented and access to plant should be controlled with the book.
- All personnel handling chlorine must be undergone appropriate accredited chlorine handling training.

*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 included in the 2015 Process Audit Report were as follows:

- The flow meters should be calibrated 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.
- Sludge disposal facilities should be constructed.
- Maintain at least 0.40 mg/l Free Chlorine at all times.
- The reservoir levels should be measured and recorded daily.
- A Maintenance Plan with a Standard Operating Procedure should be available to clean reservoirs.
- Filing system of operating procedures and data files require attention.
- All staff should be registered as Process Controllers with DWS.
- 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.
- A First Aid kit should be available to staff on site.
- All personnel handling chlorine must undergo appropriate accredited chlorine handling training.
- The fence requires repairs.

*Preekstoel WTWs:* The WTW was upgraded from 24 MI/d to 28 MI/d during the 2011/2012 financial year. A new 10 MI/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 MI/d. 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 included in the 2015 Process Audit Report were as follows:

#### *Preekstoel WTW*

- The inflow and outflow meters should be calibrated annually and the Calibration Certificates should be displayed on site.
- The pH in the mixing race must be kept at 6.00 – 6.20 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 side.
- 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 and check coagulation chemical dosing rates.
- 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.

- Ensure adequate operation of the lime feeder.
- Maintain at least 0.40 mg/l Free Chlorine at all times.
- A Standard Operating Procedure for cleaning of reservoirs should be available.
- A First Aid kit sign should be erected.
- Initiate a Visitors Register.

#### *Biofiltration WTW*

- The flow meters must be calibrated annually and a Calibration Certificate must be available on site.
- Calibrate Dissolved Oxygen probes annually.
- Calibrate pH probes annually.
- The iron concentration in the water from the filters must be monitored daily.
- Record pH and Dissolved Oxygen from filters daily.
- Maintain the pH at 5.90 and the Dissolved Oxygen in the range 1 – 1.0 mg/l O<sub>2</sub>.
- Measure Manganese concentrations daily.
- Record pH and Dissolved Oxygen from the Manganese biofilters daily.
- The quality of sludge being disposed should be recorded.
- The sludge should be analysed annually.
- All safety signs are not visible and more safety signs should be erected.
- Access to site is not controlled. Visitors Log book should be implemented.

Stanford WTW: The raw water complies with SANS 0241:2011 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 included in the 2015 Process Audit Report were as follows:

- The dosing rate should be monitored and recorded daily.
- Maintain at least 0.40 mg/l Free Chlorine at all times.
- Chlorine residuals should be measured daily.
- Chlorine dosing rate should be recorded daily.
- All staff should be registered as Process Controllers with DWS.
- 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.

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 included in the 2015 Process Audit Report were as follows:

- The inflow and outflow meter should be calibrated annually and a Calibration Certificate should be kept on site.
- The pH in the mixing race must be kept at 6.00 – 6.20 at all times to ensure complete metal precipitation.
- 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.
- All staff should be registered as Process Controllers with DWS.
- 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 included in the 2015 Process Audit Report were as follows:

- Daily integrated flow meter readings should be readily available on site in a file dedicated for this purpose.
- Chlorine dosing rates and residual chlorine readings should be kept on site.
- All records should be readily available on site.
- All staff should be registered as Process Controllers with DWS.

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 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 included in the 2015 Process Audit Report were as follows:

- All flow meters should be calibrated annually and the Calibration Certificate should be kept on site.
- Maintain at least 0.40 mg/l Free Chlorine at all times.
- The reservoir level should be monitored and recorded daily.
- 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.
- An emergency eye wash 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 included in the 2015 Process Audit Report were as follows:

- The flow meters should be calibrated annual and a Calibration Certificate should be kept on site.
- Maintain 0.40 mg/l Free Chlorine at all times.
- All staff should be registered as Process Controllers with DWS.

Buffeljags Bay WTW: The chlorine installation is new and care was taken to ensure that all the safety requirements are met. 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%.

## **BULK WATER INFRASTRUCTURE**

The Water Master Plan (July 2012) 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.

- Upgrading of the 300mm dia. bulk pipeline from Buffels River WTW to Betty's Bay Voorberg reservoir (The upgrading of this pipeline can be postponed if a booster pump station is constructed on the pipeline before the draw-off point to the Pringle Bay reservoir).

*Kleinmond:* The existing bulk water supply system has sufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas. No future feeder mains are required.

*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.

- Replace the existing 300mm dia. bulk pipeline with a 500mm dia. pipeline when the existing 300 and 400mm dia. bulk pipes reaches capacity.
- New 200mm dia. parallel reinforcement of the existing 160mm dia. bulk supply pipeline to the Onrus reservoir in order to augment supply to the reservoir.
- Replace the existing 300mm dia. bulk pipeline with a 500mm dia. pipeline when the existing 300 and 350mm dia. bulk pipes reaches capacity.
- New 550mm dia. parallel reinforcement of the existing 250mm dia. pipeline when the existing 250mm dia. bulk pipe reaches capacity.
- New 500mm dia. parallel reinforcement of the existing 150mm dia. bulk supply pipeline to the Hawston LL reservoir in order to augment supply to the reservoir.
- New 200mm dia. parallel reinforcement of the existing 250mm dia. bulk supply pipeline to the Fisherhaven LL reservoir in order to augment supply to the reservoir.
- New 250mm dia. parallel reinforcement of the existing 200mm dia. bulk supply pipeline to the Fisherhaven LL 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.

The following new feeder mains will be required in future.

- New 335mm dia. bulk supply pipeline from the Hawston LL reservoir to the proposed Hawston HL reservoir when it is constructed.



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: The existing bulk water supply system has sufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas. No 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.

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 315mm dia. pipeline when the existing 200mm and 355mm dia. bulk pipes reaches capacity.
- New 200mm dia. parallel reinforcement of the existing 150mm dia. bulk supply pipeline to the Kleinbaai reservoir in order to augment supply to the reservoir.
- New 315mm dia. parallel reinforcement of the existing 250mm dia. bulk supply pipeline in order to augment supply to the Gansbaai and De Kelders reservoirs.
- 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 a bulk supply pipeline to the De Kelders reservoirs. This item is 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 450mm dia. bulk supply pipeline from the Franskraal WTW to the Franskraal reservoirs.

Pearly Beach: The existing bulk water supply system has sufficient capacity to supply the future water demands for the fully occupied scenario and the additional future development areas. No future feeder mains are required.

## WATER PUMP STATIONS

The Water Master Plan (July 2012) has indicated that based on the most likely land-use development scenario, it will be necessary for the following water pump stations:

Distribution System	Recommendations included in the Water Master Plan	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	10	25	0.559
	Required to augment bulk supply to Voorberg reservoir	70	10	0.655
	Required to sustain pressure in the Voorberg reservoir zone network	15	150	0.154
Kleinmond	Verify duty point of PS for modelling purposes	3	45	-
	Verify duty point of PS for modelling purposes	7	30	-
	Required when future area KM4 develops	15	30	0.596
Greater Hermanus	When Hawston High level reservoir is constructed	130	57	2.050
	When supply problems to Fisherhaven HL reservoir occur, investigate existing capacity first	20	50	0.707
	To augment bulk water supply when existing supply reaches capacity (upgrade PS)	310	20	0.756
	To augment bulk water supply when existing supply reaches capacity	100	20	0.920
Stanford	No future pump stations are required	-	-	-
Greater Gansbaai	New bulk PS to supply bulk water to Kleinbaai, Gansbaai and De Kelder reservoirs	55	35	0.906
	When Franskraal PS reaches capacity, after MP items OGW.B4 & OGW.B5 is implemented	140	40	0.657
	When Franskraal PS reaches capacity, after MP items OGW.B2 & OGW.B3 is implemented	210	45	0.731
	New bulk PS to supply bulk water to De Kelders reservoirs	40	60	0.993
	Required when Franskraal HL reservoir is constructed	70	65	1.443
Pearly Beach	No future pump stations are required	-	-	-
<b>Total</b>				<b>11.127</b>

## RESERVOIR INFRASTRUCTURE

Overstrand Municipality's overall storage factors of the reservoirs for the various towns for 2014/2015, based on 1 x PDD (24 hours storage capacity), are 1.39 for Buffels River, 2.01 for Kleinmond, 1.66 for Greater Hermanus, 1.64 for Stanford, 1.37 for Greater Gansbaai, 2.00 for Pearly Beach, 1.43 for Baardskeerdersbos and 3.69 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 (July 2012) and indicated in the table below:

Distribution System	Recommendations included in the Water Master Plan	Capacity (MI)	Cost (R Million)
Buffels River	Required to increase reservoir storage for Rooi Els (Implemented)	-	-
	Required to increase reservoir storage for Pringle Bay (TWL = 67m).	2.500	5.478
	Required to increase reservoir storage for Betty's Bay (TWL = 66m).	3.000	6.132
Kleinmond	No future reservoirs are required	-	-
Greater Hermanus	Required to increase reservoir storage for Fisherhaven (TWL = 60m).	2.500	5.478
	Required to increase reservoir storage for Hawston (TWL = 66m).	3.000	6.132
	New reservoir for higher lying future development areas in Hawston (TWL = 120m).	5.000	8.820
	Required to increase reservoir storage for Hawston HL Zone (TWL = 120m).	5.000	8.820
	Required to increase reservoir storage for Onrus (TWL = 78m).	1.500	3.872
	Required to increase reservoir storage for Kidbrooke Place (Cost to developer) (TWL = 85m).	0.300	0.000

Table C.12: Future reservoirs required			
Distribution System	Recommendations included in the Water Master Plan	Capacity (MI)	Cost (R Million)
	Required to increase reservoir storage for Sandbaai (TWL = 65m).	3.000	6.132
	Required to increase reservoir storage for Northcliff zone (TWL = 75m).	0.300	1.361
	Required when future areas GH25 & GH26 develop (TWL = 144m).	0.500	1.884
	Required when future area GH1 develops (TWL = 108m).	1.000	2.954
	Required to increase reservoir storage for Mount Pleasant (TWL = 87m).	0.500	1.884
Stanford	A new reservoir is proposed at the existing Stanford reservoir site to augment reservoir storage for Stanford in order to accommodate anticipated future development areas (TWL = 85m)	1.500	3.872
Greater Gansbaai	Required to increase reservoir storage for Franskraal (TWL = 59m)	1.500	3.872
	Abandon existing 0.300 MI reservoir when new Franskraal 1.500 MI reservoir is constructed (TWL = 59m)	-	-
	Abandon existing 0.225 MI reservoir when new Franskraal 1.500 MI reservoir is constructed (TWL = 59m)	-	-
	Required to increase reservoir storage for Kleinbaai (TWL = 61m)	4.000	7.616
	Required to increase reservoir storage for Gansbaai (TWL = 63m)	5.000	8.820
	Required to increase reservoir storage for De Kelders (TWL = 98m)	0.500	1.884
	Additional reservoir storage capacity for Franskraal LL zone when future areas GC31 & GC33 develop (TWL = 59m)	7.000	11.368
	New Franskraal HL reservoir when future areas GG32 and higher lying erven of GG33 develop (TWL = 120m)	5.500	9.472
Pearly Beach	No new reservoirs are required	-	-
<b>Total</b>		<b>53.100</b>	<b>105.851</b>

## WATER AND SEWER RETICULATION INFRASTRUCTURE

The Water Master Plan (July 2012) has indicated that based on the most likely land-use development scenario, the following future water reticulation infrastructure components will be necessary.

Table C.13: Future water reticulation infrastructure required	
<b>BUFFELS RIVER</b>	
<b>Proposed distribution zones</b>	
<ul style="list-style-type: none"> <li>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.</li> </ul>	
<b>Proposed future system and required works</b>	
<p>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.</p> <ul style="list-style-type: none"> <li>A few distribution pipelines are required to reinforce water supply within the Pringle Bay reservoir, Voorberg reservoir and Sunny Seas reservoir distribution networks.</li> <li>A few pipelines and valves are proposed in order to implement the Betty's Bay booster zone.</li> </ul>	
<b>KLEINMOND</b>	
<b>Proposed distribution zones</b>	
<ul style="list-style-type: none"> <li>The Protearand reservoir zone is increased to accommodate future development areas within the zone.</li> <li>A new PRV zone is proposed in order to reduce the high static pressures of the lower lying erven within the existing Protearand reservoir zone (<b>Was implemented</b>).</li> <li>Three new booster pumping zones are proposed for higher lying future development areas KM-1, KM-2 and KM-4.</li> <li>The existing Protearand reservoir zone is rezoned in order to accommodate the higher lying erven within the Over Hills suburb in the proposed booster pumping zone No.3.</li> </ul>	
<b>Proposed future system and required works</b>	
<p>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.</p> <ul style="list-style-type: none"> <li>A few distribution pipelines are required to reinforce water supply within the Kleinmond distribution networks.</li> <li>New distribution pipelines are proposed for when future development areas KM-2, 3 and 4 develop.</li> <li>A new pipeline and valves are proposed in order to implement the Kleinmond booster zone No.3</li> </ul>	

<b>Table C.13: Future water reticulation infrastructure required</b>
<b>GREATER HERMANUS</b>
<p><b>Proposed distribution zones</b></p> <ul style="list-style-type: none"> <li>• A new Hawston HL reservoir zone is proposed to accommodate future development area GH-5.1 as well as the existing higher lying erven in Hawston that are currently supplied from the Fisherhaven HL reservoir. This zone should be supplied from a new reservoir with a TWL of 120m.</li> <li>• A new Hawston HL PRV zone (supplied from the proposed Hawston HL reservoir zone via a PRV) is proposed to accommodate future development areas GH-6.1 and 6.3. The setting of the PRV should be set at 63m.</li> <li>• The boundaries of the Northcliff reservoir zone are increased to accommodate some of the higher lying erven of the Hermanus reservoir zone.</li> <li>• The boundaries of the Hermanus Heights reservoir zone are increased to accommodate erven that are currently supplied directly from the Hermanus bulk pipeline as well as the higher lying erven in the North Western part of Voëlklip that are currently supplied from the Voëlklip LL reservoir.</li> <li>• The boundaries of the existing reservoir zones are increased to accommodate future development areas in Greater Hermanus.</li> </ul>
<p><b>Proposed future system and required works</b></p> <p>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.</p> <ul style="list-style-type: none"> <li>• A few distribution pipelines are required to reinforce water supply within the Greater Hermanus distribution network.</li> <li>• New distribution pipelines are proposed to supply future development areas with water when they develop.</li> <li>• A new inter-connection pipeline between the Fisherhaven LL reservoir zone and the Hawston LL reservoir is proposed as an emergency connection when future development area GH-3 develops.</li> <li>• A new non-return valve on the 200mm dia. supply pipeline from the Fisherhaven HL reservoir to the proposed Hawston HL reservoir zone is proposed in order to prevent inflow during the night from the Hawston HL reservoir zone into the Fisherhaven HL reservoir.</li> <li>• A new PRV in the future Hawston HL reservoir zone is proposed in order to manage static pressures in this future zone.</li> <li>• Rezoning between the Northcliff reservoir and Hermanus reservoir zones and between the Hermanus Heights reservoir, Direct Feed and Voëlklip LL reservoir zones is proposed.</li> </ul>
<b>STANFORD</b>
<p><b>Proposed distribution zones</b></p> <ul style="list-style-type: none"> <li>• The existing Stanford PRV zone is increased to accommodate a larger portion of the existing Stanford reservoir zone (<b>Was implemented</b>).</li> <li>• The boundaries of the existing zones are increased to accommodate future development areas in Stanford.</li> </ul>
<p><b>Proposed future system and required works</b></p> <ul style="list-style-type: none"> <li>• A few distribution pipelines are required to reinforce water supply within the Stanford distribution network.</li> <li>• New distribution pipelines are proposed for when future development areas SF-1 to 3 and SF-7 to 9 develop.</li> </ul>
<b>GREATER GANSBAAI</b>
<p><b>Proposed distribution zones</b></p> <ul style="list-style-type: none"> <li>• A new De Kelders booster zone is proposed to accommodate the higher lying erven of future development area GG-1.</li> <li>• The boundaries of the existing reservoir zones are increased to accommodate future development areas in Greater Gansbaai.</li> </ul>
<p><b>Proposed future system and required works</b></p> <p>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.</p> <ul style="list-style-type: none"> <li>• A few distribution pipelines are required to reinforce water supply within the Greater Gansbaai distribution network.</li> <li>• New distribution pipelines are proposed to supply future development areas with water when they develop.</li> <li>• In De Kelders a dedicated supply pipeline from the reservoirs to the network is proposed.</li> <li>• 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 coast line in order to improve network redundancy and conveyance in the area.</li> </ul>
<b>PEARLY BEACH</b>
<p><b>Proposed distribution zones</b></p> <ul style="list-style-type: none"> <li>• The boundaries of the existing distribution zones are increased to accommodate future development areas in Pearly Beach.</li> </ul>
<p><b>Proposed future system and required works</b></p> <p>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.</p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>

The Sewer Master Plan (July 2012) has indicated that based on the most likely land-use development scenario, the following future sewer reticulation infrastructure components will be necessary.

<b>Table C.14: Future sewer reticulation infrastructure required</b>
<b>BUFFELS RIVER</b>
<ul style="list-style-type: none"> <li>• 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.</li> <li>• In Rooi Els four new future pumping station drainage areas are proposed that pumps the sewage of Rooi Els locally and eventually to a proposed Pringle Bay Main bulk pumping station.</li> <li>• In Pringle Bay three new future pumping station drainage areas are proposed that pumps the sewage of Pringle Bay locally and eventually to a proposed Pringle Bay Main bulk pumping station.</li> <li>• In Betty's Bay eight new future pumping station drainage areas are proposed that pumps the sewage of Betty's Bay locally and eventually to three proposed Betty's Bay Main bulk pumping stations.</li> </ul> <p>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 WWTW.</p>
<b>KLEINMOND</b>
<ul style="list-style-type: none"> <li>• The boundaries of the existing drainage areas in Kleinmond are increased to accommodate proposed future development and existing unserviced erven that fall within these drainage areas.</li> <li>• A new future pumping station K1 drainage area is proposed for the existing unserviced erven in the south western areas of Kleinmond areas and future development areas KM-6 and KM-7. A new pumping station and rising main should be constructed for this new drainage area that discharges into the existing Kleinmond PS4 drainage area.</li> <li>• Upgrading of the Kleinmond PS No.4 is proposed when the existing pumping station reaches capacity.</li> <li>• A few existing outfall sewers require upgrading by replacement with larger sized future sewers.</li> <li>• New outfall sewers are proposed to accommodate future development areas and to service the existing unserviced erven in Kleinmond.</li> </ul>
<b>GREATER HERMANUS</b>
<ul style="list-style-type: none"> <li>• The boundaries of the existing drainage areas in the Hermanus WWTW and Hawston WWTW sewer systems are increased to accommodate proposed future development areas and existing unserviced erven that fall within these drainage areas.</li> <li>• In Fisherhaven new future pumping station drainage areas GH1 and GH2 are proposed for the areas in Fisherhaven that cannot gravitate to the existing Fisherhaven PS. New pumping stations and rising mains should be constructed for these new drainage areas that discharge into the existing Fisherhaven PS drainage area.</li> <li>• New future pumping station GH3, GH4, GH5, GH6, GH7 and GH8 drainage areas and proposed for future development areas GH-4, GH-6.1, GH-6.2, GH-6.3, GH-24, a small portion of GH-5.1 and the existing unserviced erven in Hawston that cannot gravitate to the existing Hawston WWTW drainage area. New pumping stations and rising mains should be constructed for these new drainage areas. Future pumping stations GH5 and GH7 should discharge into the proposed future PS GH4 drainage area. Future pumping stations GH4 and GH8 should discharge into the existing Hawston WWTW drainage area and future pumping stations GH3 and GH6 should pump directly into the existing Hawston WWTW.</li> <li>• A new future pumping station GH11 drainage area is proposed for the lower lying erven of future development area GH-1 that cannot gravitate to the existing Hawston WWTW drainage area. A new pumping station and rising main should be constructed for this new drainage area that discharges into the existing Hawston WWTW drainage area.</li> <li>• In Hermanus new future pumping station 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 pumping stations and rising mains should be constructed for these 2 new drainage areas. Future pumping station GH10 should discharge into the proposed future PS GH9 drainage area and future pumping station GH9 should discharge into the existing Whale Rock PS drainage area.</li> <li>• Upgrading of the Fisherhaven, Onrus Main, Sandbaai, Mosselrivier, Hermanus No.1 and Hermanus No.4 pumping stations are proposed when the existing pumping stations reaches capacity.</li> <li>• A few existing outfall sewers require upgrading by replacement with larger sized future sewers.</li> <li>• New outfall sewers are proposed to accommodate future development areas and to service the existing unserviced erven in the Greater Hermanus area.</li> </ul>
<b>STANFORD</b>
<ul style="list-style-type: none"> <li>• 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.</li> <li>• New future pumping station S1 and S2 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 pumping stations and rising mains should be constructed for these 2 new drainage areas. Future pumping station S1 should discharge into the existing Stanford Gravity drainage area and future pumping station S2 should discharge into the existing Stanford PS drainage area.</li> <li>• A new future pumping station S3 drainage area is proposed for future development area SF-2 and a portion of future development area SF-3. A new pumping station and rising main should be constructed for this new drainage area that discharges into the existing Stanford PS drainage area.</li> </ul>

<b>Table C.14: Future sewer reticulation infrastructure required</b>
<ul style="list-style-type: none"> <li>Upgrading of the existing Stanford pumping station is proposed when the existing pumping station reaches capacity.</li> <li>A few existing outfall sewers require upgrading by replacement with larger sized future sewers.</li> <li>New outfall sewers are proposed to accommodate future development areas and to service the existing unserved erven in Stanford.</li> </ul>
<b>GREATER GANSBAAI</b>
<ul style="list-style-type: none"> <li>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.</li> <li>In De Kelders five new future pumping station drainage areas are proposed that pumps the sewerage of De Kelders locally and eventually to a proposed De Kelders Main bulk pumping station.</li> <li>In Gansbaai new future pumping station GB1 and GB4 drainage areas are proposed for the existing unserved erven in Gansbaai that cannot gravitate to the existing infrastructure of the existing Gansbaai sewer reticulation system. New pumping stations and rising mains should be constructed for these two new drainage areas. Future pumping station GB1 should discharge into the existing Gansbaai Hawe PS drainage area and future pumping station GB4 should discharge into the existing Gansbaai WWTW gravity drainage area.</li> <li>A new future pumping station GB2 drainage area is proposed for future development area GG-9. A new pumping station and rising main should be constructed for this new drainage area that discharges directly into the existing Kolgans No.2 pumping station.</li> <li>A new future pumping station GB3 drainage area is proposed for future development area GG-10 and GG-11. A new pumping station and rising main should be constructed for this new drainage area that discharges into the existing Gansbaai WWTW gravity drainage area.</li> <li>In Kleinbaai new future pumping station KB1, KB2 and KB3 drainage areas are proposed. It is proposed that the existing conservancy tanks are decommissioned in the future. Conservancy tank No.1 should be accommodated in the future pumping station KB1 drainage area and conservancy tanks No.2 and 3 in future pumping station KB2 drainage area. New pumping stations and rising mains should be constructed for these new drainage areas. Future pumping stations KB1 and KB3 should discharge into the future pumping station KV2 drainage area and future pumping station KB2 should pump the sewage of Kleinbaai to a proposed Kleinbaai Main bulk pumping station.</li> </ul>
<b>GREATER GANSBAAI</b>
<ul style="list-style-type: none"> <li>New future pumping station KB4 and KB5 drainage areas are proposed for future development area GG-25 (Birkenhead area). New pumping stations and rising mains should be constructed for these new drainage areas. Future pumping station KB5 should discharge into the future pumping station KB4 drainage area and future pumping station KB4 should discharge into the future pumping station KB1 drainage area in Kleinbaai.</li> <li>In Franskraal three new future pumping station drainage areas are proposed that pumps the sewage of Franskraal locally and eventually to the proposed Kleinbaai Main bulk pumping station.</li> <li>The boundaries of the existing drainage areas in Gansbaai and Kleinbaai are increased to accommodate proposed future development areas and existing unserved erven that fall within these drainage areas.</li> <li>Upgrading of the existing Kolgans No.2 pumping station is proposed when the existing pumping station reaches capacity.</li> <li>A few existing outfall sewers in Gansbaai require upgrading by replacement with larger sized future sewers.</li> <li>New outfall sewers are proposed to accommodate future development areas and to service the existing unserved erven in the Greater Gansbaai area.</li> <li>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 WWTW. Upgrading of the Gansbaai Hawe pumping station is proposed when sewage is pumped from De Kelders to Gansbaai.</li> </ul>
<b>PEARLY BEACH</b>
<ul style="list-style-type: none"> <li>The boundaries of the existing Pearly Beach PS drainage area are increased to accommodate future development area PB-2.</li> <li>New future pumping station P1, P2 and P3 drainage areas are proposed for the existing unserved erven in Pearly Beach and future development areas PB-1, PB-3 and PB-4. New pumping stations and rising mains should be constructed for these new drainage areas. Future pumping station P1 should discharge into the future PS P2 drainage area, future pumping station P2 should discharge into the future PS P3 drainage area and future pumping station P3 should discharge into the existing Pearly Beach conservancy tank.</li> <li>New outfall sewers are proposed to accommodate future development areas and to service the existing unserved erven in Pearly Beach.</li> </ul>

**SEWER PUMP STATIONS**

The Sewer Master Plan (July 2012) 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:

<b>Table C.15: Future sewer pump stations required</b>			
<b>Drainage System</b>	<b>Recommendations included in the Sewer Master Plan</b>	<b>Capacity (l/s)</b>	<b>Cost (R Million)</b>
Buffels River	New Future Rooi Els No.1 pump station	5	0.343
	New Future Rooi Els No.2 pump station	8	0.399
	New Future Rooi Els No.3 pump station	15	0.516
	New Future Rooi Els No.4 pump station	5	0.343
	New Future Pringle Bay No.1 pump station	35	0.785
	New Future Pringle Bay No.2 pump station	17	0.546
	New Future Pringle Bay No.3 pump station	5	0.343
	New Future Betty's Bay No.1 pump station	5	0.343
	New Future Betty's Bay No.2 pump station	45	0.907
	New Future Betty's Bay No.3 pump station	20	0.590
	New Future Betty's Bay No.4 pump station	8	0.399
	New Future Betty's Bay No.5 pump station	5	0.343
	New Future Betty's Bay No.6 pump station	5	0.343
	New Future Betty's Bay No.7 pump station	20	0.590
	New Future Betty's Bay No.8 pump station	5	0.343
	New Rooi Els Main pump station (Pump to Pringle Bay)	20	0.590
	New Pringle Bay Main pump station (Pump to Betty's Bay)	55	1.020
	New Betty's Bay Main pump station No.1 (Pump to Kleinmond WWTW)	100	1.402
	New Betty's Bay Main pump station No.2 (Pump to Kleinmond WWTW)	115	1.522
	New Betty's Bay Main pump station No.3 (Pump to Kleinmond WWTW)	140	1.710
Kleinmond	Upgrade existing Harbour PS when it reaches capacity	10	0.144
	Upgrade Kleinmond 4 PS	95	0.434
	Upgrade Kleinmond 5 PS	10	0.130
Greater Hermanus	New PS when existing Fisherhaven PS reaches capacity	18	0.165
	New PS for Fisherhaven	5	0.343
	New PS for Fisherhaven	9	0.417
	New PS when future area GH49 develops (Cost for Developer)		-
	New PS when future area GH4 develops	30	0.724
	New PS for Hawston	10	0.436
	New PS for Hawston	5	0.343
	New PS when future area GH6.2 develops	4	0.343
	New PS when future areas GH6.1 and HG6.4 develop	55	1.020
	Upgrade existing Onrus Main PS when it reaches capacity	60	0.334
	Upgrade existing Sandbaai PS when it reaches capacity	32	0.109
	Upgrade existing Mossel River PS when it reaches capacity	28	0.206
	Upgrade existing Hermanus No.1 PS when it reaches capacity	14	0.148
	Upgrade existing Hermanus No.2 PS to reach scouring velocity through rising main	11	0.149
	New PS for Hermanus	7	0.380
	New PS for Hermanus		0.343
	Upgrade existing WWTP Main PS when it reaches capacity. Investigate existing capacity and operation of system from WWTW Main PS to Hermanus WWTW first.	78	0.391
	New PS when lower lying erven of future area GH1 develops (Cost for Developer)		-
	Upgrade existing Hermanus No.4 PS when it reaches capacity. Verify existing capacity first	65	0.368
	Upgrade existing Meerensee No.3 PS when it reaches capacity. Investigate existing capacity first.	8	0.136
Upgrade existing Whale Rock PS in order to reach scouring velocity through rising main.	38	0.261	
New PS when future areas GH43 and GH44 develop	15	0.516	

<b>Table C.15: Future sewer pump stations required</b>			
<b>Drainage System</b>	<b>Recommendations included in the Sewer Master Plan</b>	<b>Capacity (l/s)</b>	<b>Cost (R Million)</b>
	New PS when future area GH43 develop	5	-
	New PS when future areas GH43 and GH44 develop	5	0.343
	Refurbish and upgrade all Hermanus sewer pump stations in phases (R2 million/a)		
Stanford	New PS for Stanford South	5	0.343
	New PS for Stanford North	9	0.417
	New PS for Stanford North	5	0.343
	New PS for Stanford North	5	0.343
	New PS for Stanford North	5	0.343
Greater Gansbaai	New PS for De Kelders	4	0.343
	New PS for De Kelders	15	0.516
	New PS for De Kelders	25	0.659
	New PS for De Kelders	30	0.724
	New PS for De Kelders	5	0.343
	New PS for Gansbaai	5	0.343
	New PS for Gansbaai	4	0.343
	Upgrade existing Kogans No.2 PS when it reaches capacity, verify existing pump capacity first.	15	0.166
	New PS when future areas GG10 and GG11 develop	15	0.516
	New PS for Gansbaai	5	0.343
	New PS for Kleinbaai	20	0.590
	New PS for Kleinbaai	50	0.964
	New PS for Franskraal	35	0.785
	New PS for Franskraal	25	0.659
	New PS for Franskraal	15	0.516
	New PS for Birkenhead drainage area	7	0.380
	New PS for Birkenhead drainage area	4	0.343
	New PS when lower lying erven of Perlemoenpunt develop	10	0.436
	New PS when future areas GG10.2 and GG11.2 develop	7	0.380
	New PS for Franskraal	10	0.436
	New PS for Franskraal	5	0.343
	New PS when future area GG31 develops	20	0.590
	New PS when future area GG31 develops	10	0.436
	New PS when future area GG32 and GG33 develop	85	1.278
	New PS when future area GG33 develops	80	1.235
	New PS required to pump sewage from Kleinbaai and Franskraal to Gansbaai WWTP	140	1.710
	New PS required to pump sewage from De Kelders to Gansbaai Hawe PS	50	0.964
Upgrade existing PS when sewage from De Kelders is pumped to Gansbaai	85	0.392	
Pearly Beach	New PS for Pearly Beach	5	0.343
	New PS for Pearly Beach	20	0.590
	New PS for Pearly Beach	30	0.724
	New PS for Pearly Beach	35	0.785
	New PS for Pearly Beach	5	0.343
<b>Total</b>			<b>42.867</b>



## WASTE WATER TREATMENT INFRASTRUCTURE

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

WWTW	Existing Hydraulic Capacity	Peak Month Average Daily Flow	Average Daily Flow (July 2014 – June 2015)	Average Wet Weather Flow (Jun'15, Jul'14, Aug'14)
Kleinmond	2.000	2.082 (Jul'14)	1.215	1.616
Hawston	1.000	0.455 (Jul'14)	0.300	0.371
Hermanus	12.000	9.205 (Jul'14)	6.271	7.710
Stanford	0.500	0.630 (Jun'15)	0.479	0.503
Gansbaai	2.000	1.848 (Mar'15)	1.493	1.317

The capacity of the Hermanus WWTW was upgraded from 7.3 MI/d to 12 MI/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 capacity of the Stanford WWTW will be upgraded during 2017/2018.

*Kleinmond WWTW:* The 2013 Green Drop score for the WWTW was 77.61% and the wastewater risk rating increased from 44.40% in 2012 to 47.06% in 2013. The recommendations included in the 2015 Process Audit Report for the Kleinmond WWTW were as follows:

- The flow meter should be calibrated annually.
- The flow meter readings should be evaluated regularly.
- Install an outflow flow meter.
- Maintain an adequate sludge wastage programme.
- Oxygen transfer tests should be conducted to establish the delivery of the aerators.
- Staff should be registered with DWA as Process Controllers.
- Create a Visitors Log Book in order to keep a record of all visitors entering the WWTW.
- Maintain at least 0.40 mg/l Free Chlorine.
- Operate all available aerators during peak holiday seasons.
- Install fire extinguishers in main buildings.

*Hawston WWTW:* The WWTW received a Green Drop award in 2013. The wastewater risk rating decreased from 33.30% in 2012 to 29.41% in 2013. The recommendations included in the 2015 Process Audit Report for the Hawston WWTW were as follows:

- The flow meters at the inlet and the outlet should be calibrated.
- The flow meter readings should be evaluated relative to the raw sewage pump hours and pump capacities.
- Investigate the origin of the influent with high Conductivity.
- Consider Ferric Chloride dosing for Phosphate removal.
- The raw sewage pump levels switch should be investigated and flooding of the sump should be prevented at all times.
- The sludge return rate should be increased.
- Increase sludge wastage and maintain an adequate sludge wastage programme.
- Oxygen transfer tests should be conducted to establish the delivery of the aerators.

- Staff should be registered with DWS as Process Controllers.
- Create a Visitors Log Book in order to keep a record of all visitors entering the WWTW.
- No livestock should be allowed on site.
- Construct a car port over the grit channels.

Hermanus WWTW: The WWTW received two consecutive Green Drop awards in 2012 and 2013. The wastewater risk rating increased from 34.70% in 2012 to 45.45% in 2013. The recommendations included in the 2015 Process Audit Report for the Hermanus WWTW were as follows:

- The flow meters at the inlet and the outlet should be calibrated annually.
- Investigate the origin of the influent with high conductivity.
- Sludge management should receive attention.
- Excess sludge should be wasted regularly in order to control the MLSS concentration in the range 4000 – 6000 mg TSS/l.
- The Operator should monitor the sludge settleability daily and maintain a constant mixed liquor suspended solids concentration.
- Increase sludge wastage and maintain an adequate sludge wastage programme.
- Replace sand on drying beds.
- Records should be kept of the quantity of sludge wasted.
- Maintain 0.40 mg/l Free Chlorine at all times.
- All Process Controllers must be registered with DWS.
- All visitors should sign in on a Visitors Log book.
- Refill First Aid box and keep a register of all contents.

Stanford WWTW: The WWTW received a Green Drop award in 2013. The wastewater risk rating decreased from 44.40% in 2012 to 29.41% in 2013. The recommendations included in the 2015 Process Audit Report for the Stanford WWTW were as follows:

- The flow meters should be calibrated yearly and a Calibration Certificate should be kept on site.
- Investigate the origin of the influent containing high conductivities.
- Grit should be removed from the grit channels daily and disposed of at the landfill site.
- Repair hour meters of all three mixers.
- Oxygen transfer tests should be conducted to establish the delivery of the aerators.
- Repair aerator hour meters and record meter readings.
- Repair the aerator ammeters.
- Repair leak on RAS sludge pump as a matter of urgency.
- Clean out the two sludge lagoons.
- Repair the poly dosing pump at the belt press.
- Repair the sludge feed meter.
- Improve record-keeping at belt press. Daily sludge production and poly usage should be recorded daily.
- Revamp the office / control room and ensure proper space / shelving for records.
- Repair aerator hour meters and record readings daily.
- AL Abbott & Associates monthly reports should be filed on site.

- No daily maintenance or incident report file visible on site. This should be readily available.
- Register staff as Process Controllers with DWS.
- Ensure that a classified Process Controller is on site.
- Implement a Visitors Register in order to control access to the WWTW.
- Keep safety minutes on site.
- Install an eye wash / shower facility.
- Ensure that there is a First Aid kit on site.

Gansbaai WWTW: The WWTW received a Green Drop award in 2013. The wastewater risk rating decreased from 38.90% in 2012 to 35.29% in 2013. The recommendations included in the 2015 Process Audit Report for the Stanford WWTW were as follows:

- The plant is well maintained and plant performance is excellent.
- It is therefore recommended that all the present mode of operation remain unchanged.
- The inlet flow meter should be calibrated annually and the calibration certificate should be kept on site.
- Install an outflow flow meter.
- Investigate the origin of the periodic high inlet conductivity.
- Clear and clean the banks of the maturation pond.
- Maintain 0.25 mg/l free chlorine at all times.

Overstrand Municipality revises 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.

### **ASSET MANAGEMENT ASSESSMENT**

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

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.

**Business Element 6: Water Services Infrastructure Management (O&M)**

Table C.17: Business Element 6: Operation and Maintenance (Topic 6)					
Overview of Topic		Status Quo and Knowledge Interpretation Statistics			
This topic provides an overview of the sufficiency of resources and processes in place to effectively operate and maintain the water services. It reflects whether the municipality has an Operation and Maintenance Plan in place. The topic also illustrates whether the WSA has implemented good practice as directed in the Blue- and Green Drop certification processes	Item	Quality (%) assessment of current status against compliance requirements	Quantity (%) an indication of the representation of the total area to address the issue	Future Plan Assessment	Strategy Assessment
	Operation & Maintenance Plan	Scores will be finalised once the new eWSDP website is fully populated.			
	Resources				
	Information				
	Activity Control & Management				
	Water Supply & Quality				
Waste Water Supply & Quality					
<b>TOTAL for Topic</b>					
Problem Definition Statements					
Nr	Statements - Short Comings	Possible Improvement / Project			
1	It is important for Overstrand Municipality to classify all 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.	Establish a mentoring role for operators ensuring an adequately trained and classified workforce with dedicated training programmes for supervisors and operators. Establish budgets to address the shortfall of skilled staff, rethink methods to retain qualified personnel and plan for succession and clear career paths for experienced staff. With such a program a source of specific resources of skilled operators, technicians and managers will be established.			
2	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 Overstrand Municipality to compile a Legal Compliance Audit of their WTWs and WWTWs, which will provide the management of Overstrand Municipality with the necessary information to establish whether the Municipality is in compliance with the legislation or not.	Compile an Occupational Health and Safety Audit at all the WTWs and WWTWs.			
3	Shortcomings were identified as part of the Water Safety Plans and W <sub>2</sub> RAPs.	Implement Improvement / Upgrade Plans of Water Safety Plans and W <sub>2</sub> RAPs			
4	Shortcomings were identified as part of the WTW and WWTW Process Audits.	Implement recommendations from detail WTW and WWTW Process Audits			
5	Ensure proper asset management, operation and maintenance of the existing bulk water and sewerage infrastructure and the training of staff involved in the operation and maintenance of the infrastructure.	Asset management, the operation and maintenance of the existing bulk water and sewerage infrastructure and the training of staff involved in the operation and maintenance of the infrastructure forms part of the Veolia Contract.			

The Water Safety Plan and W<sub>2</sub>RAP Teams of Overstrand Municipality are committed to meet regularly to review the implementation of all the aspects of the Water Safety Plan and W<sub>2</sub>RAP 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<sub>2</sub>RAP 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 Municipality needs to establish a mentoring role for operators ensuring an adequately trained and classified workforce with dedicated training programmes for supervisors and operators. Establish budgets to address the shortfall of skilled staff, rethink methods to retain qualified personnel and plan for succession and clear career paths for experienced staff. With such a program a source of specific resources of skilled operators, technicians and managers will be established.

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 Overstrand Municipality to compile a Legal Compliance Audit of their WTWs and WWTW, which will provide the management of Overstrand Municipality with the necessary information to establish whether the Municipality is in compliance with the legislation or not.

Overstrand Municipality is committed to work with the DWS and the other role-players in order to further improve on their 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 Overstrand Municipality to comply with the permitted standards and in so doing intends to work towards green drop status for their other WWTWs as well.

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 Wastewater Risk Ratings for the various WWTWs and to get the Municipality ready for the next round of assessments. The W<sub>2</sub>RAP 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 bulk O&M contract with Veolia;
- 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.

**Business Element 7: Associated Services**

Table C.18: Business Element 7: Associated Services (Topic 7)					
Overview of Topic	Status Quo and Knowledge Interpretation Statistics				
This topic has been established to ensure adequate focus on the water services levels and needs of educational and health facilities. The water services planner will use this information to establish short-term solutions and to prioritize water services infrastructure projects to educational- and health facilities.	<b>Item</b>	<b>Quality (%)</b> assessment of current status against compliancy requirements	<b>Quantity (%)</b> an indication of the representation of the total area to address the issue	<b>Future Plan Assessment</b>	<b>Strategy Assessment</b>
	Water services – Education	Scores will be finalised once the new eWSDP website is fully populated.			
	Water services - Hospitals				
	Water services – Health Centers				
	Water services - Clinics				
	Sanitation - Education				
	Sanitation - Hospitals				
	Sanitation – Health Centers				
	Sanitation - Clinics				
	<b>TOTAL for Topic</b>				
Problem Definition Statements					
Nr	Statements - Short Comings	Possible Improvement / Project			
1	-	-			

The environmental health function is currently with the Overberg District Municipality. Typical functions of the Overberg District Municipality, with regard to health services, include the following:

- Households to meet the minimal health and safety requirements
- Monitoring water quality (Including recreational waters)
- Waste management
- Food control
- Schools to meet health requirements
- Contagious disease control
- Community development: Making communities aware of environmental health issues and communicates with farm workers regarding sanitation services.

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.

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.

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 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.

**Business Element 8: Conservation and Demand Management**

<b>Table C.19: Business Element 8: Conservation and Demand Management (Topic 8.1)</b>					
<b>Overview of Topic</b>		<b>Status Quo and Knowledge Interpretation Statistics</b>			
The topic provides an overview of the activities pursued by the WSA in the past financial year towards water conservation and demand management. It also contains an overview of the water sources of the WSA.	<b>Item</b>	<b>Quality (%)</b> assessment of current status against compliancy requirements	<b>Quantity (%)</b> an indication of the representation of the total area to address the issue	<b>Future Plan Assessment</b>	<b>Strategy Assessment</b>
	Reducing unaccounted water and water inefficiencies	Scores will be finalised once the new eWSDP website is fully populated.			
	Reducing high pressures for residential consumers				
	Leak and meter repair programmes				
	Consumer/end-use demand management				
	<b>TOTAL for Topic</b>				
<b>Problem Definition Statements</b>					
<b>Nr</b>	<b>Statements - Short Comings</b>	<b>Possible Improvement / Project</b>			
1	Further reduce the percentage of Non-Revenue Water.	Continue with the implementation of the WDM Strategy and Action Plan to reduce the non-revenue water for the various distribution systems to 17% by June 2017 (SDBIP).			
2	Repair leaks at all the indigent households	Continue with the repairing of leaks at all the indigent households.			
3	Old meters and meters that are not accurate should be replaced.	Continue with the phased pro-active replacement of the old water meters, as identified through the detail water meter audit.			
4	Implement an extensive schools WDM programme, which might also include annual competitions between schools (say with a prize for the lowest consumption, the lowest per capita consumption and for the best WDM-strategy poster design, etc.) Schools should be encouraged to make WDM programmes part of a long term project, where learners should be actively involved. A schools WDM programme should receive a high priority.	Support schools with WDM initiatives (Especially during Water Week)			
5	Overstrand Municipality needs to continue to focus on the installation of water saving devices (specific water efficient toilets). The Municipality also needs to focus on raising awareness regarding conservation projects and the installation of water efficient devices in order to reduce the water demand and their percentage of non-revenue water.	Raise awareness under the public of water efficient devices and water conservation projects.			



Table C.20: Business Element 8: Conservation and Demand Management - Water Balance (Topic 8.2 & 8.3)					
Overview of Topic		Status Quo and Knowledge Interpretation Statistics			
The topic provides an overview of the activities pursued by the WSA in the past financial year towards water conservation and demand management. It also contains an overview of the water sources of the WSA.	<b>Item</b>	<b>Quality (%)</b> assessment of current status against compliancy requirements	<b>Quantity (%)</b> an indication of the representation of the total area to address the issue	<b>Future Plan Assessment</b>	<b>Strategy Assessment</b>
	Surface water purchased	Scores will be finalised once the new eWSDP website is fully populated.			
	Surface water abstraction				
	Ground water abstraction				
	Raw water supplied				
	Total Influent				
	Total treated TW				
	Potable water to other Neighbours				
	Purchased Treated water				
	Ground water not treated				
	Authorised consumption				
	Total losses				
	Billed unmetered				
	Apparent losses				
	Waste water treatment works				
	Recycled				
<b>TOTAL for Topic</b>					
Problem Definition Statements					
Nr	Statements - Short Comings	Possible Improvement / Project			
1	-	-			

Overstrand Municipality is committed to continue with the active implementation of their WDM Strategy in order to reduce the non-revenue water within the various distribution systems as follows:

Table C.21: Committed reduction in total NRW (Include bulk distribution, treatment and internal distribution)			
Distribution System	14/15 (%/a)	2019 (%/a)	2039 (%/a)
Buffels River	53.4%	40.0%	30.0%
Kleinmond	33.9%	25.0%	15.0%
Greater Hermanus	22.4%	15.0%	15.0%
Stanford	30.0%	20.0%	15.0%
Greater Gansbaai	37.7%	25.0%	20.0%
Pearly Beach	36.3%	25.0%	15.0%
Baardskeerdersbos	58.4%	30.0%	15.0%
Buffeljags Bay	15.5%	15.0%	15.0%

PRVs were installed in Kleinmond, Stanford and Bettys Bay. A phased approach was followed for the investigation / implementation of pressure management in selected areas in the Overstrand Municipality's Management Area. The phases were as follows:

- Investigation and Logging (Desktop Study, Logging of pressures and flows, Analysis of data)
- Implementation (Design PRV Chambers, Pressure Management Implementation of new PRVs, Supply and installation of smart electronic pressure controllers for existing PRVs)
- Impact Assessment (Post pressure management logging to determine impact of new PRVs and / or installation of smart pressure controllers on existing PRVs)

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.

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.

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. 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 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.

**Business Element 9: Water Resources**

Table C.22: Business Element 9: Water Resources (Topic 9)					
Overview of Topic	Status Quo and Knowledge Interpretation Statistics				
The volumes and sources of raw water supply to the WSA are presented in this topic, which also presents the status of the WSA's abstraction licenses and future needs. An overview of the WSA's monitoring programme for its raw water sources is presented. The topic also outlines the degree of industrial and 'raw' water use and effluent discharge within the WSA.	<b>Item</b>	<b>Quality (%)</b> assessment of current status against compliancy requirements	<b>Quantity (%)</b> an indication of the representation of the total area to address the issue	<b>Future Plan Assessment</b>	<b>Strategy Assessment</b>
	Sources and Volumes	Scores will be finalised once the new eWSDP website is fully populated.			
	Monitoring				
	Water Quality				
	Wet Industries				
	Raw Water consumers				
	Industrial Consumer Units				
	Permitted effluent releases				
<b>TOTAL for Topic</b>					
Problem Definition Statements					
Nr	Statements - Short Comings	Possible Improvement / Project			
1	Registration of water use with the DWS.	Ensure all bulk water abstraction from the various sources is registered with the DWS and legalised.			
2	The safe yield of the existing resources supplying the Greater Hermanus with water will be exceeded in the nearby future.	Continue with the further augmentation of the Greater Hermanus water resources.			
3	The industrial consumers in Overstrand Municipality's Management Area are not yet monitored, with regard to the quality and volume of effluent discharged by them.	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.			

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.

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 2039 and were calibrated by using historic consumption data and bulk abstraction data. The percentage NRW was determined for each of the distribution systems and growth in demand was based on agreed population and growth figures.

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

Table C.23: Projected future water requirements and yield/licence surplus (+) / shortfall (-) based on WSDP model						
Distribution System	Model	PROJECTED FUTURE WATER REQUIREMENTS (Ml/a)				
		2019	2024	2029	2034	2039
Buffels River	3% Annual Growth	964.611	1 118.249	1 296.357	1 502.833	1 742.195
	5% Annual Growth	1 061.971	1 355.374	1 729.839	2 207.761	2 817.725
	<b>WSDP Model</b>	<b>777.670</b>	<b>901.163</b>	<b>1 049.937</b>	<b>1 229.635</b>	<b>1 447.238</b>
	<b>Yield surplus (+) / shortfall (-)</b>	<b>939.330</b>	<b>815.837</b>	<b>667.063</b>	<b>487.365</b>	<b>269.762</b>
Kleinmond	3% Annual Growth	892.952	1 035.176	1 200.052	1 391.190	1 612.770
	5% Annual Growth	983.079	1 254.685	1 601.332	2 043.750	2 608.401
	<b>WSDP Model</b>	<b>769.679</b>	<b>847.823</b>	<b>937.551</b>	<b>1 040.802</b>	<b>1 159.893</b>
	<b>Yield surplus (+) / shortfall (-)</b>	<b>1 819.691</b>	<b>1 741.547</b>	<b>1 651.819</b>	<b>1 548.568</b>	<b>1 429.477</b>
Greater Hermanus	4% Annual Growth	5 611.187	6 826.867	8 305.928	10 105.431	12 294.803
	6% Annual Growth	6 171.879	8 259.366	11 052.895	14 791.267	19 794.052
	<b>WSDP Model</b>	<b>5 175.122</b>	<b>6 363.918</b>	<b>7 863.899</b>	<b>9 762.759</b>	<b>12 173.858</b>
	<b>Licence surplus (+) / shortfall (-)</b>	<b>824.878</b>	<b>-363.918</b>	<b>-1 863.899</b>	<b>-3 762.759</b>	<b>-6 173.858</b>
Stanford	3% Annual Growth	345.401	400.415	464.190	538.124	623.833
	5% Annual Growth	380.263	485.323	619.408	790.539	1 008.951
	<b>WSDP Model</b>	<b>327.939</b>	<b>396.118</b>	<b>479.537</b>	<b>581.688</b>	<b>706.878</b>
	<b>Licence surplus (+) / shortfall (-)</b>	<b>1 272.061</b>	<b>1 203.882</b>	<b>1 120.463</b>	<b>1 018.312</b>	<b>893.122</b>
Greater Gansbaai	4% Annual Growth	1 826.635	2 222.381	2 703.866	3 289.667	4 002.383
	6% Annual Growth	2 009.160	2 688.709	3 598.099	4 815.068	6 443.647
	<b>WSDP Model</b>	<b>1 563.718</b>	<b>1 923.627</b>	<b>2 375.203</b>	<b>2 943.048</b>	<b>3 658.555</b>
	<b>Yield surplus (+) / shortfall (-)</b>	<b>1 204.263</b>	<b>844.354</b>	<b>392.778</b>	<b>-175.067</b>	<b>-890.574</b>
Pearly Beach	3% Annual Growth	188.667	218.717	253.553	293.937	340.754
	5% Annual Growth	207.710	265.096	338.337	431.814	551.116
	<b>WSDP Model</b>	<b>172.314</b>	<b>208.637</b>	<b>254.155</b>	<b>311.415</b>	<b>383.705</b>
	<b>Yield surplus (+) / shortfall (-)</b>	<b>134.586</b>	<b>98.263</b>	<b>52.745</b>	<b>-4.515</b>	<b>-76.805</b>
Baardskeerdersbos	2% Annual Growth	19.284	21.291	23.507	25.954	28.655
	4% Annual Growth	21.250	25.854	31.455	38.270	46.561
	<b>WSDP Model</b>	<b>10.717</b>	<b>10.397</b>	<b>10.114</b>	<b>9.863</b>	<b>9.639</b>
	<b>Yield surplus (+) / shortfall (-)</b>	<b>79.283</b>	<b>79.603</b>	<b>79.886</b>	<b>80.137</b>	<b>80.361</b>
Buffeljags Bay	2% Annual Growth	4.374	4.830	5.332	5.887	6.500
	4% Annual Growth	4.820	5.865	7.135	8.681	10.562
	<b>WSDP Model</b>	<b>4.058</b>	<b>4.157</b>	<b>4.260</b>	<b>4.366</b>	<b>4.476</b>
	<b>Yield surplus (+) / shortfall (-)</b>	<b>24.325</b>	<b>24.225</b>	<b>24.122</b>	<b>24.016</b>	<b>23.907</b>

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

Table C.24: Years in which the annual water requirement will exceed the sustainable yield from the various resources				
Distribution System	Total sustainable Yield (x 10 <sup>6</sup> m <sup>3</sup> /a)	Annual Growth on 2014/2015 Demand (2%, 3% or 4%)	Annual Growth on 2014/2015 Demand (4%, 5% or 6%)	WSDP Projection Model
Buffels River	1.717	2038 (3%)	2028 (5%)	> 2039
Kleinmond	2.589	> 2039 (3%)	2038 (5%)	> 2039
Greater Hermanus	5.200*	2017 (4%)	2016 (6%)	2019
Stanford	1.600	> 2039 (3%)	> 2039 (5%)	> 2039
Greater Gansbaai	2.768	2029 (4%)	2024 (6%)	2032
Pearly Beach	0.307	2035 (3%)	2027 (5%)	2033
Baardskeerdersbos	0.405	> 2039 (2%)	> 2039 (4%)	> 2039
Buffeljags Bay	0.028	> 2039 (2%)	> 2039 (4%)	> 2039

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 Baardskeedersbos. 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 (**Comments by Mun.**):

Table C.25: 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	<ul style="list-style-type: none"> <li>The Buffels River area does not have its own WWTW and therefore the re-use water is not a feasible option for the area.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>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 m<sup>3</sup>/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 m<sup>3</sup>/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.</li> </ul>
	Surface Water	<ul style="list-style-type: none"> <li>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 m<sup>3</sup>/a, which is sufficient for the current population as the current water requirement is only 0.925 million m<sup>3</sup>/a for the low-growth scenario and 0.943 million m<sup>3</sup>/a for the high-growth scenario.</li> <li>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.</li> </ul>
	Other Sources	<ul style="list-style-type: none"> <li>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.</li> </ul>
	Summary	<p><b>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):</b></p> <ul style="list-style-type: none"> <li>Continue with the implementation of the WC/WDM Strategy and measures.</li> <li>Groundwater development in the TMG Aquifer.</li> <li>Raising of Buffels River dam wall</li> <li>Abstraction from the Palmiet River</li> <li>Abstraction from the Rooi Els River</li> </ul>
Kleinmond	Re-use of water	<ul style="list-style-type: none"> <li>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.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>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.</li> </ul>
	Surface Water	<p>A study was carried out on the Palmiet River by DWS for further development of the surface water resources with the following recommendations:</p> <ul style="list-style-type: none"> <li>Transferring water from the Kogelberg Dam to the Steenbras Dams and this was implemented the same year and provided 22.5 Mm<sup>3</sup>/a at 1:50 year assurance.</li> <li>Raising of the current Eikenhof Dam to increase its capacity from 22.5 Mm<sup>3</sup>/a to 30 Mm<sup>3</sup>/a and this would provide additional yields of 4.5 Mm<sup>3</sup>/a for the Palmiet River area.</li> </ul> <p>The total storage would be only 27% of the MAR of 301.8 Mm<sup>3</sup>, but the ecological freshwater flow requirements of the Palmiet River would limit further development.</p> <p><b>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.</b></p>
	Other Sources	<ul style="list-style-type: none"> <li>Rainwater harvesting can be a suitable option for the area, considering the mean annual precipitation is acceptable for rainwater harvesting.</li> </ul>
	Summary	<p><b>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):</b></p>

Table C.25: Potential future water resources for the various towns (DWS's All Towns Reconciliation Strategies)		
Distribution System	Option	Potential
		<ul style="list-style-type: none"> <li>Continue with the implementation of the WC/WDM Strategy and measures.</li> <li>Increase allocation from the Palmiet River, when required.</li> <li><b>Regional scheme with Overberg Water for possible bulk supply from the Theewaterskloof Dam.</b></li> </ul>
Hermanus	Re-use of water	<ul style="list-style-type: none"> <li>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.</li> <li>Water users could be supplied with up to 4 million m<sup>3</sup>/a by 2030, assuming that 50% of the bulk water consumption is available for re-use.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>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)</li> <li>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.</li> <li>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 m<sup>3</sup> and 1 882 million m<sup>3</sup> respectively. Base on the resource potential, an unexploited additional resource of 3.09 million m<sup>3</sup>/a is available from the Peninsula aquifer alone in the area.</li> </ul>
	Surface Water	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>
	Other Sources	<ul style="list-style-type: none"> <li>Desalination of seawater is seen as a potential future supply source for Hermanus. A feasibility study was undertaken and the design for a pilot plant is available for implementation when required.</li> </ul>
	Summary	<p><b>Hermanus will experience a shortfall by 2030 in water supply under all growth scenarios. This will increase to 2.874 million m/a by 2040 under the low-growth scenario and to 8.632 million m/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):</b></p> <ul style="list-style-type: none"> <li>Full implementation of the WC/WDM Strategy and measures.</li> <li><b>Develop groundwater to its full potential (Licenced volumes).</b></li> <li>Regional scheme with Overberg Water for possible bulk supply from the Theewaterskloof Dam or the Palmiet River.</li> <li>Direct and indirect potable water re-use.</li> <li>Desalination of seawater.</li> </ul>
Stanford	Re-use of water	<ul style="list-style-type: none"> <li>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.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>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 m<sup>3</sup>/a groundwater from the Stanford Aquifer.</li> </ul>
	Surface Water	<ul style="list-style-type: none"> <li>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.</li> </ul>
	Other Sources	<ul style="list-style-type: none"> <li>Rainwater harvesting cannot be a suitable option for Stanford, considering the mean annual precipitation is too low for rainwater harvesting.</li> </ul>
	Summary	<p><b>The current water sources have adequate supply to cater for the medium and longer term</b></p>

Table C.25: Potential future water resources for the various towns (DWS's All Towns Reconciliation Strategies)		
Distribution System	Option	Potential
		<p><b>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):</b></p> <ul style="list-style-type: none"> <li>Continue with the implementation of the WC/WDM Strategy and measures.</li> <li>Further Kouevlakte Wellfield development, if required.</li> </ul>
Greater Gansbaai	Re-use of water	<ul style="list-style-type: none"> <li>The existing WWTW is in a good physical condition, but the waste water will need further treatment to meet potable standards.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>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).</li> <li>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.</li> <li>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.</li> </ul>
	Surface Water	<ul style="list-style-type: none"> <li>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.</li> <li>Other current water sources for the town include the Franskraal Dam and the Klipgat and De Kelders springs.</li> <li>The new 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.</li> </ul>
	Other Sources	<ul style="list-style-type: none"> <li>Rainwater harvesting can be a suitable option for the area, considering the mean annual precipitation is acceptable for rainwater harvesting.</li> </ul>
	Summary	<p><b>The current water sources have adequate supply to cater for the medium and longer term future water requirements. The new Kraaibosch Dam will also 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):</b></p> <ul style="list-style-type: none"> <li>Continue with the implementation of the WC/WDM Strategy and measures.</li> <li>Groundwater development in the TMG Aquifer.</li> <li>Re-use of water</li> </ul>
Pearly Beach	Re-use of water	<ul style="list-style-type: none"> <li>The treated effluent from the oxidation pond system can be used for the irrigation of the sports fields in the future.</li> <li>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.</li> </ul>
	Groundwater	<p>Three groundwater options exist for Pearly Beach to meet future annual shortfalls.</p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> </ul>
	Surface Water	<ul style="list-style-type: none"> <li>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.</li> <li>A Service Level Agreement is also in place for the supply of 0.26 Ml/day from the</li> </ul>

Table C.25: Potential future water resources for the various towns (DWS's All Towns Reconciliation Strategies)		
Distribution System	Option	Potential
		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	<ul style="list-style-type: none"> <li>Rainwater harvesting cannot be a suitable option for Pearly Beach, considering the mean annual precipitation is too low for rainwater harvesting.</li> </ul>
	Summary	<p><b>The current water sources have adequate supply to cater for the medium and longer term future water requirements up to 2030. The following sources are identified as potential sources to augment the water supply in the future if required (In order of priority and implementation sequence):</b></p> <ul style="list-style-type: none"> <li>Continue with the full implementation of the WC/WDM Strategy and measures.</li> <li>Groundwater development, if required.</li> </ul>
Baardskeerdersbos	Re-use of water	<ul style="list-style-type: none"> <li>The re-use of water is not a suitable supply option for Baardskeerdersbos, as there is no formal sewerage system and WWTW available.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>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.</li> </ul>
	Surface Water	<p>Potential future surface water sources for the town, as identified in the Breede WMA ISP (DWS, 2004), are the utilisation of:</p> <ul style="list-style-type: none"> <li>A tributary of the Boesmans River, and</li> <li>The Uilkraals River</li> </ul>
	Other Sources	<ul style="list-style-type: none"> <li>Rainwater harvesting is an appropriate option for the area, considering that the MAP is acceptable for rainwater harvesting to be feasible.</li> </ul>
	Summary	<p><b>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):</b></p> <ul style="list-style-type: none"> <li>Continue with the full implementation of the WC/WDM Strategy and measures.</li> <li>Further groundwater development, if required.</li> </ul>
Buffeljags Bay	Re-use of water	<ul style="list-style-type: none"> <li>The re-use of water is not a suitable option for the town, as there is no formal sewerage system and WWTW available.</li> </ul>
	Groundwater	<ul style="list-style-type: none"> <li>The town is currently supplied by one borehole, with a sustainably supply 0.028 million m<sup>3</sup>/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.</li> <li>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.</li> <li>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.</li> </ul>
	Surface Water	<ul style="list-style-type: none"> <li>There are no surface water sources in close proximity to Buffeljags Bay</li> </ul>
	Other Sources	<ul style="list-style-type: none"> <li>Rainwater harvesting is not a feasible option due to the low annual rainfall.</li> <li>Desalination of seawater or brackish groundwater could be an option, if no other sources are available.</li> </ul>
	Summary	<p><b>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):</b></p> <ul style="list-style-type: none"> <li>Continue with the full implementation of the WC/WDM Strategy and measures.</li> <li>Further groundwater development, if required.</li> </ul>



**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 keep on implementing their Groundwater Monitoring Programmes for all their wellfields, in order to comply with the License conditions. The Municipality further applied for a License review to the DWS which may include amended license conditions for the Gateway Wellfield.

A detail feasibility study was also completed during the 2010/2011 financial year for the re-use of treated effluent from the Hermanus WWTWs. A RBIG application was prepared and submitted for the Hermanus Reclamation Project. The Municipality will also start investigating various desalination options in the future.

The Municipality is also investigating the possibility of a regional scheme with Overberg Water for bulk water supply to Hermanus from the Theewaterskloof Dam or the Palmiet River.

**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 new boreholes were recently commissioned and the supply 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 source is adequate to supply the medium- and long-term future water requirements. A new electricity connection to the borehole was completed by Eskom.

**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 following gaps with regard to industrial consumers and their discharge of effluent into Overstrand Municipality’s sewer system were identified (although there are not many industries connected to Overstrand Municipality’s sewer systems):

- Industrial effluent discharge into the sewer system needs to be quantified.
- All industries need to formally apply for the discharge of industrial effluent into the sewer system.
- Regular sampling of the quality of industrial effluent discharged into the sewer system is necessary.
- Any returns from the industries direct to the Water Resource System needs to be metered.

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

The industrial consumers in Overstrand Municipality’s Management Area are not yet monitored, with regard to the quality and volume of effluent discharged by them. 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.

**Business Element 10: Financial**

Table C.26: Business Element 10: Financial Profile (Topic 10)					
Overview of Topic		Status Quo and Knowledge Interpretation Statistics			
The financial profile is aligned with the Water Services Standard Chart of Accounts [SCOA] which addresses the expenditure, revenue & capex for the water services function.	Item	Quality (%) assessment of current status against compliance requirements	Quantity (%) an indication of the representation of the total area to address the issue	Future Plan Assessment	Strategy Assessment
	Capital Expenditure	Scores will be finalised once the new eWSDP website is fully populated.			
	Operation and Maintenance Budget				
	Tariff & Charges				
	Free Basic Services				
	Metering, Billing, Income and Sales				
	<b>TOTAL for Topic</b>				
Problem Definition Statements					
Nr	Statements - Short Comings	Possible Improvement / Project			
1	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. The maintenance management system will 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.			
2	Monitoring of effluent discharged by industrial consumers and the billing of industrial consumers according to the quality of effluent discharged by them.	The quantity of wastewater discharged by the industrial consumers into Overstrand Municipality's sewer system needs to be metered and the quality needs to be monitored regularly by Overstrand Municipality. Industrial consumers need to be billed according to the quality of effluent discharged by them.			

**Capital Budget:** 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 66.9% of the water infrastructure and 47.9% 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 20 years is around R963.1 million (an average of R48.2 million per year) and for sewerage infrastructure the value is R324.2 million (an average of R16.2million 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 about R820.4 million and R265.5 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 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 IAMPs 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.

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.

An IAMP 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.

It is important to note that the maintenance budget requirements are going to increase over the next twenty years in real terms, in line with the envisaged pace of development and the upgrading of the bulk infrastructure. It is estimated that the budget requirements will double over this period.

The recommended implementation strategies with regard to operational budgets are as follows:

- Develop an IAMP, 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.
- 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.

Block (Kl / month)	14/15	13/14	12/13	11/12	Comments
0 - 6	R3-25 *	R3-07 *	R0-00	R0-00	Free Basic Water
7 - 18	R8-60	R8-11	R7-46	R7-02	Low volume use
19 - 20	R13-95	R13-16	R12-00		Typical use volume, including garden irrigation
21 - 30			R21-48	R20-26	R18-60
31 - 45	R27-90	R26-32	R25-18	R23-69	Wasteful use and / or severe garden irrigation
46 - 60	R37-20	R35-09			Significant waste and / or unnecessary garden irrigation
61 - 100					
> 100					

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

Overstrand Municipality will continue with their step block tariff system for water services. Wasteful or inefficient use of water is discouraged through increased tariffs. Overstrand Municipality also started in 2010/2011 with the implementation of volumetric sewerage tariffs. The quantity of wastewater discharged from the industrial consumers into Overstrand Municipality's sewer system needs to be metered and the quality needs to be monitored regularly by Overstrand Municipality.

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.

## Business Element 11: Water Services Institutional Arrangements

Table C.28: Business Element 11: Water Services Institutional Arrangements (Topic 11)					
Overview of Topic		Status Quo and Knowledge Interpretation Statistics			
The institutional arrangements profiles presents an overview of the WSA's compliance with respect to water services regulations and policy and as aligned also with the Regulatory Performance Monitoring System. It also provides an overview of the water services provider arrangements which are in place, including the WSA's perception of the sufficiency of WSP staffing levels.	<b>Item</b>	<b>Quality (%)</b> assessment of current status against compliancy requirements	<b>Quantity (%)</b> an indication of the representation of the total area to address the issue	<b>Future Plan Assessment</b>	<b>Strategy Assessment</b>
	Policy development	Scores will be finalised once the new eWSDP website is fully populated.			
	Regulation and tariffs				
	Infrastructure development (projects)				
	Performance management and monitoring				
	WSDP				
	Bulk and Retail functions				
<b>TOTAL for Topic</b>					
Problem Definition Statements					
Nr	Statements - Short Comings	Possible Improvement / Project			
1	External Contractor was appointed on the 1st of November 2015 to effectively and efficiently operate and maintain the Municipality's bulk water and sewerage infrastructure. It is critical that the operation and maintenance work to be carried out by the Contractor, as well as the compliance of the Contractor with the set of KPIs be closely monitored by Overstrand Municipality.	Ensure adequate management and monitoring of Contractor appointed for the Water and Wastewater Treatment Operation Management Contract.			
2	All critical vacant water and sanitation positions as indicated on the approved Organogram for the internal water reticulation networks and sewer drainage networks needs to be filled as soon as possible.	Filling the vacant positions will ensure the adequate operation and maintenance of the existing infrastructure. Aligning the career paths to the occupational categories will assist the personnel to understand levels within across teams. Simplification of job titles to conform to respective occupational categories will assist in developing compatible and comparable career paths within the different Departments. Occupational categories will provide differentiation between levels. This approach will allow for more specific job designations in organograms with explicit career path connotations.			
3	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. Budgets need to be established to address the shortfall of skilled personnel, rethink methods to retain qualified personnel and plan for succession and clear career paths for experienced staff.	Ensure all required water and sanitation training is included in the Municipality's Workplace Skills Plan. Establish budgets to address the shortfall of skilled personnel, rethink methods to retain qualified personnel and plan for clear career paths. With such a program a source of specific resources of skilled operational personnel, technicians and managers will be established.			
4	Overstrand Municipality can also continue to actively focus on in-house 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, Wastewater Risk Abatement Plan and this WSDP have the necessary information on which the in-house 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 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 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. Budgets need to be established to address the shortfall of skilled personnel, rethink methods to retain qualified personnel and plan for succession and clear career paths for experienced staff. With such a program a source of specific resources of skilled operational personnel, technicians and managers will be established.

The effective management and monitoring of the external Contractor appointed for the Water and Wastewater Treatment Operation Contract is the most important factor that will determine 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<sub>2</sub>RAP 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.

**Business Element 12: Social and Customer Service Requirements**

Table C.29: Business Element 12: Social and Customer Service Requirements (Topic 12)					
Overview of Topic	Status Quo and Knowledge Interpretation Statistics				
This topic provides an overview of the quality of the water services provision function when considered from a customer perspective including the summary of the WSA’s responsiveness to customer complaints and queries.	Item	Quality (%) assessment of current status against compliancy requirements	Quantity (%) an indication of the representation of the total area to address the issue	Future Plan Assessment	Strategy Assessment
	Resources available to perform this function	Scores will be finalised once the new eWSDP website is fully populated.			
	Attending to complaints for water				
	Attending to complaints for Sanitation: Discharge to treatment works				
	Attending to complaints for Sanitation: Pit/ tank pumping				
TOTAL for Topic					
Problem Definition Statements					
Nr	Statements - Short Comings	Possible Improvement / Project			
1	All critical water and sanitation stats need to be kept up to date and monitored on a monthly basis (Number of complaints; pipe breakages; sewer blockages; meters tested, replaced and repaired; septic tanks pumped, etc.)	Ensure all water and sanitation stats are kept up to date and included in the Monthly Reports.			

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 specifications do 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 Plan 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).
- External Contractor was appointed to ensure the correct operation and maintenance of all the WTWs and adequately skilled and experienced staff at each of the plants.
- 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 municipal managers that understand 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 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 recommended objectives, strategies and projects for each of the WSDP Business Elements were also discussed under Section C “Water Services Existing Needs Perspective” of this WSDP-IDP Water Sector Input Report and are therefore not repeated under this Section D.

The water services objectives and strategies presented below are however a summary of the KPIs developed from the water services situational analysis as summarised under Section C “Water Services Existing Needs Perspective” and as taken from the Municipality’s approved SDBIP and presents the 5-year Water Services Objectives and Strategies as established in the WSA’s WSDP.

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Table D.1: WSDP FY2016/17: Water Services Objectives and Strategies

Nr	Objective Strategy	Key Performance Indicator	Baseline (FY2014/15 Target)	WSDP Year 1	WSDP Year 2	WSDP Year 3	WSDP Year 4	WSDP Year 5
				FY2015/16	FY2016/17	FY2017/18	FY2018/19	FY2019/20
				Target	Target	Target	Target	Target
<b>WSDP Topic 1: Administration</b>								
<i>Ensure integrated development and implementation of water services plans</i>								
29	The provision and maintenance of municipal services	Report on the implementation of the WSDP annually by the end of October.	<ul style="list-style-type: none"> <li>• Compile Annual WSDP Performance- and Water Services Audit Report by October</li> <li>• Take Annual WSDP Performance- and Water Services Audit Report to Council for approval</li> </ul>	<ul style="list-style-type: none"> <li>• Compile Annual WSDP Performance- and Water Services Audit Report by October</li> <li>• Take Annual WSDP Performance- and Water Services Audit Report to Council for approval</li> </ul>	<ul style="list-style-type: none"> <li>• Compile Annual WSDP Performance- and Water Services Audit Report by October</li> <li>• Take Annual WSDP Performance- and Water Services Audit Report to Council for approval</li> </ul>	<ul style="list-style-type: none"> <li>• Compile Annual WSDP Performance- and Water Services Audit Report by October</li> <li>• Take Annual WSDP Performance- and Water Services Audit Report to Council for approval</li> </ul>	<ul style="list-style-type: none"> <li>• Compile Annual WSDP Performance- and Water Services Audit Report by October</li> <li>• Take Annual WSDP Performance- and Water Services Audit Report to Council for approval</li> </ul>	<ul style="list-style-type: none"> <li>• Compile Annual WSDP Performance- and Water Services Audit Report by October</li> <li>• Take Annual WSDP Performance- and Water Services Audit Report to Council for approval</li> </ul>
New	Elicit ownership of the WSDP	• Update WSDP every two to three years	<ul style="list-style-type: none"> <li>• Compile 2015/2016 updated WSDP.</li> <li>• Advertise for public comment.</li> <li>• Take WSDP to Council for approval (WSDP-IDP Water Sector Input Report)</li> </ul>	-	<ul style="list-style-type: none"> <li>• Compile 2017/2018 updated WSDP.</li> <li>• Advertise for public comment.</li> <li>• Take WSDP to Council for approval (WSDP-IDP Water Sector Input Report)</li> </ul>	-	<ul style="list-style-type: none"> <li>• Compile 2019/2020 updated WSDP.</li> <li>• Advertise for public comment.</li> <li>• Take WSDP to Council for approval (WSDP-IDP Water Sector Input Report)</li> </ul>	-
<b>WSDP Topic 2: Demographics</b>								
<b>WSDP Topic 3: Service levels</b>								
43	The provision and maintenance of municipal services	Provision of water to informal households with access within a 200 m radius	3406 Households with access within a 200m radius	3406 Households with access within a 200m radius	3406 Households with access within a 200m radius	3406 Households with access within a 200m radius	3406 Households with access within a 200m radius	3406 Households with access within a 200m radius
44	The provision and maintenance of municipal services	Provision of cleaned piped water to all formal households within 200 m from households	28077 Formal households provided with cleaned piped water	28077 Formal households provided with cleaned piped water	28077 Formal households provided with cleaned piped water	28077 Formal households provided with cleaned piped water	28077 Formal households provided with cleaned piped water	28077 Formal households provided with cleaned piped water
48	The provision and maintenance of municipal services	Provision of free basic electricity, refuse removal, sanitation and water in terms of the equitable share requirements	6580 Households supported with free basic services	6580 Households supported with free basic services	6580 Households supported with free basic services	6580 Households supported with free basic services	6580 Households supported with free basic services	6580 Households supported with free basic services
50	The provision and maintenance of municipal services	The provision of sanitation services to informal households based on the standard of 1 toilet to 5 households	3406 Informal households provided with communal services at a ratio of 1 toilet to 5 households	3406 Informal households provided with communal services at a ratio of 1 toilet to 5 households	3406 Informal households provided with communal services at a ratio of 1 toilet to 5 households	3406 Informal households provided with communal services at a ratio of 1 toilet to 5 households	3406 Informal households provided with communal services at a ratio of 1 toilet to 5 households	3406 Informal households provided with communal services at a ratio of 1 toilet to 5 households
51	The provision and maintenance of municipal services	Provision of sanitation services to formal residential households	31202 Formal residential households provided with sanitation services	31202 Formal residential households provided with sanitation services	31202 Formal residential households provided with sanitation services	31202 Formal residential households provided with sanitation services	31202 Formal residential households provided with sanitation services	31202 Formal residential households provided with sanitation services



**Table D.1: WSDP FY2016/17: Water Services Objectives and Strategies**

Nr	Objective Strategy	Key Performance Indicator	Baseline (FY2014/15 Target)	WSDP Year 1	WSDP Year 2	WSDP Year 3	WSDP Year 4	WSDP Year 5
				FY2015/16	FY2016/17	FY2017/18	FY2018/19	FY2019/20
				Target	Target	Target	Target	Target
New	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)	100% of applications received are supported (Subject to availability of funding and sustainability of type of service)
New	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)	100% of applications received are supported (Subject to availability of funding and sustainability of type of service)
<b>WSDP Topic 4: Socio economic</b>								
10	The promotion of tourism, economic and social development	Report quarterly to Portfolio Committee on the dev. And impl. of tourism marketing tools.	4 Reports to Portfolio Committee	4 Reports to Portfolio Committee	4 Reports to Portfolio Committee	4 Reports to Portfolio Committee	4 Reports to Portfolio Committee	4 Reports to Portfolio Committee
11	The promotion of tourism, economic and social development	Report bi-annually to LED Director on the support to festivals that make an impact on local economic development	2 Reports to LED Director	2 Reports to LED Director	2 Reports to LED Director	2 Reports to LED Director	2 Reports to LED Director	2 Reports to LED Director
12	The promotion of tourism, economic and social development	Identify and support thirty (30) SMME's Businesses	30 SMME's Businesses supported	30 SMME's Businesses supported	30 SMME's Businesses supported	30 SMME's Businesses supported	30 SMME's Businesses supported	30 SMME's Businesses supported
13	The promotion of tourism, economic and social development	Conduct resource mobilisation initiatives to support local business	3 Resource mobilisation initiatives	3 Resource mobilisation initiatives	3 Resource mobilisation initiatives	3 Resource mobilisation initiatives	3 Resource mobilisation initiatives	3 Resource mobilisation initiatives
14	The promotion of tourism, economic and social development	Report quarterly to LED Director on linkages established with other spheres of government, agencies, donors, SALGA and other relevant bodies for benefit of local area	4 Reports to LED Director on linkages established.	4 Reports to LED Director on linkages established.	4 Reports to LED Director on linkages established.	4 Reports to LED Director on linkages established.	4 Reports to LED Director on linkages established.	4 Reports to LED Director on linkages established.
15	The promotion of tourism, economic and social development	The number of job opportunities created through the EPWP programme and as per set targets.	287 Job opportunities created	287 Job opportunities created	287 Job opportunities created	287 Job opportunities created	287 Job opportunities created	287 Job opportunities created
16	The promotion of tourism, economic and social development	Develop two policies aimed at increasing participation in local economy	Develop 2 Policies	Develop 2 Policies	Develop 2 Policies	Develop 2 Policies	Develop 2 Policies	Develop 2 Policies
17	The promotion of tourism, economic and social development	Review the LED Strategy by the end of February	Policy reviewed by end of February	Policy reviewed by end of February	Policy reviewed by end of February	Policy reviewed by end of February	Policy reviewed by end of February	Policy reviewed by end of February
18	The promotion of tourism, economic and social development	Improve the LED maturity assessment position by two basis points.	LED maturity assessment position improved by 2 basis points	LED maturity assessment position improved by 2 basis points	LED maturity assessment position improved by 2 basis points	LED maturity assessment position improved by 2 basis points	LED maturity assessment position improved by 2 basis points	LED maturity assessment position improved by 2 basis points
19	The promotion of tourism, economic and social development	Compile an action plan to improve on the LED maturity assessment	2 Action plans completed	2 Action plans completed	2 Action plans completed	2 Action plans completed	2 Action plans completed	2 Action plans completed

**Table D.1: WSDP FY2016/17: Water Services Objectives and Strategies**

Nr	Objective Strategy	Key Performance Indicator	Baseline (FY2014/15 Target)	WSDP Year 1	WSDP Year 2	WSDP Year 3	WSDP Year 4	WSDP Year 5
				FY2015/16	FY2016/17	FY2017/18	FY2018/19	FY2019/20
				Target	Target	Target	Target	Target
<b>WSDP Topic 5: Water Services Infrastructure</b>								
New	The provision and maintenance of municipal services	% Of recommendations, as included in the WTW Process Audits, implemented.	-	50% of recommendations implemented	55% of recommendations implemented	60% of recommendations implemented	65% of recommendations implemented	70% of recommendations implemented
New	The provision and maintenance of municipal services	% Of recommendations, as included in the WWTW Process Audits, implemented.	-	50% of recommendations implemented	55% of recommendations implemented	60% of recommendations implemented	65% of recommendations implemented	70% of recommendations implemented
New	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	55% of recommendations implemented	60% of recommendations implemented	65% of recommendations implemented	70% of recommendations implemented
New	The provision and maintenance of municipal services	% Of recommendations, as included in the Improvement / Upgrade Plan of the W <sub>2</sub> RAP, implemented.	-	50% of recommendations implemented	55% of recommendations implemented	60% of recommendations implemented	65% of recommendations implemented	70% of recommendations implemented
New	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	All eight areas with an overall storage capacity above 48hrs AADD
New	The provision and maintenance of municipal services	Ensure all water and sewerage infrastructure assets are included in the Asset Register	-	Annual reporting to the Financial Department on water and sewerage assets not yet included in the Asset Register.	Annual reporting to the Financial Department on water and sewerage assets not yet included in the Asset Register.	Annual reporting to the Financial Department on water and sewerage assets not yet included in the Asset Register.	Annual reporting to the Financial Department on water and sewerage assets not yet included in the Asset Register.	Annual reporting to the Financial Department on water and sewerage assets not yet included in the Asset Register.
New	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.	A budget of 2% or more of the value of the water and sewerage assets is allocated towards the replacement of existing infrastructure.
New	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.	A budget of 1% or more of the value of the water and sewerage assets is allocated towards the O&M of the systems.

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Table D.1: WSDP FY2016/17: Water Services Objectives and Strategies

Nr	Objective Strategy	Key Performance Indicator	Baseline (FY2014/15 Target)	WSDP Year 1	WSDP Year 2	WSDP Year 3	WSDP Year 4	WSDP Year 5
				FY2015/16	FY2016/17	FY2017/18	FY2018/19	FY2019/20
				Target	Target	Target	Target	Target
<b>WSDP Topic 6: Operation and Maintenance</b>								
3	The provision and maintenance of municipal services	Quality of effluent comply 90% with authorisation quality requirements.	90% final effluent quality compliance	90% final effluent quality compliance	90% final effluent quality compliance	90% final effluent quality compliance	90% final effluent quality compliance	90% final effluent quality compliance
4	The provision and maintenance of municipal services	Quality of potable water comply 95% with SANS 241	95% water quality compliance	95% water quality compliance	95% water quality compliance	95% water quality compliance	95% water quality compliance	95% water quality compliance
27	The provision and maintenance of municipal services	Achieve two Green Drop awards	2 Green Drop awards	2 Green Drop awards	3 Green Drop awards	3 Green Drop awards	4 Green Drop awards	4 Green Drop awards
28	The provision and maintenance of municipal services	Achieve 6 Blue Drop awards	6 Blue Drop awards	6 Blue Drop awards	6 Blue Drop awards	6 Blue Drop awards	6 Blue Drop awards	6 Blue Drop awards
<b>WSDP Topic 7: Associated services</b>								
<b>WSDP Topic 8.1: Conservation and Demand management - Water Resource Management</b>								
5	The provision and maintenance of municipal services	Limit unaccounted for water to less than 25%	Unaccounted for water less than 25%	Unaccounted for water less than 25%	Unaccounted for water less than 25%	Unaccounted for water less than 25%	Unaccounted for water less than 25%	Unaccounted for water less than 25%
<b>WSDP Topic 8.2 &amp; 8.3: Conservation and Demand management - Water Balance</b>								
New	The provision and maintenance of municipal services	Ensure all bulk water is metered at source, at WWTW (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	95% Of all sources metered and bulk water meters read and recorded at least monthly	95% Of all sources metered and bulk water meters read and recorded at least monthly	95% Of all sources metered and bulk water meters read and recorded at least monthly	95% Of all sources metered and bulk water meters read and recorded at least monthly
New	The provision and maintenance of municipal services	Ensure all incoming and outgoing flow 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 WWTW metered and meters read and recorded at least monthly	95% of all flows at WWTW metered and meters read and recorded at least monthly	95% of all flows at WWTW metered and meters read and recorded at least monthly	95% of all flows at WWTW metered and meters read and recorded at least monthly	95% of all flows at WWTW metered and meters read and recorded at least monthly
<b>WSDP Topic 9: Water Resources</b>								
New	The provision and maintenance of municipal services	% of Abstraction from sources registered and authorised by the DWS	-	70% Compliance	75% Compliance	80% Compliance	85% Compliance	90% Compliance
New	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	100% Adequate supply to meet water requirements for all eight areas
New	The provision and maintenance of municipal services	% Monitoring of effluent discharged by industrial consumers (Quantity and Quality)	-	10% Of all industrial consumers monitored wrt quality and quantity of effluent discharged by them	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

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Table D.1: WSDP FY2015/16: Water Services Objectives and Strategies

Nr	Objective Strategy	Key Performance Indicator	Baseline (FY2014/15 Target)	WSDP Year 1	WSDP Year 2	WSDP Year 3	WSDP Year 4	WSDP Year 5
				FY2015/16	FY2016/17	FY2017/18	FY2018/19	FY2019/20
				Target	Target	Target	Target	Target
<b>WSDP Topic 10: Financial profile</b>								
1	The provision of democratic accountable and ethical governance	98% of the operational conditional grant spent (Community Services)	98% of the operational conditional grant spent	98% of the operational conditional grant spent	98% of the operational conditional grant spent	98% of the operational conditional grant spent	98% of the operational conditional grant spent	98% of the operational conditional grant spent
20	Financial viability measured in terms of the available cash to cover fixed operating expenditure.	Ratio of 1.2 achieved	Ratio of 1.2 achieved	Ratio of 1.2 achieved	Ratio of 1.2 achieved	Ratio of 1.2 achieved	Ratio of 1.2 achieved	Ratio of 1.2 achieved
21	Financial viability measured in terms of the municipality's ability to meet its service debt obligations	Ratio of 17 achieved	Ratio of 17 achieved	Ratio of 17 achieved	Ratio of 17 achieved	Ratio of 17 achieved	Ratio of 17 achieved	Ratio of 17 achieved
22	Financial viability measured in terms of the outstanding service debtors.	12% Achieved	12% Achieved	12% Achieved	12% Achieved	12% Achieved	12% Achieved	12% Achieved
23	Achieve a debt recovery rate not less than 95%	95% Recovered	95% Recovered	95% Recovered	95% Recovered	95% Recovered	95% Recovered	95% Recovered
24	Financial statements submitted to the AG by 31 August	1 Financial Statement submitted	1 Financial Statement submitted	1 Financial Statement submitted	1 Financial Statement submitted	1 Financial Statement submitted	1 Financial Statement submitted	1 Financial Statement submitted
25	Review and submit a long term financial plan by the end of June	1 Reviewed Plan approved	1 Reviewed Plan approved	1 Reviewed Plan approved	1 Reviewed Plan approved	1 Reviewed Plan approved	1 Reviewed Plan approved	1 Reviewed Plan approved
49	The provision and maintenance of municipal services	Percentage of the municipality's capital budget actually spent on capital projects identified for a particular financial year in terms of the municipality's IDP.	98% of Capital Budget spent	98% of Capital Budget spent	98% of Capital Budget spent	98% of Capital Budget spent	98% of Capital Budget spent	98% of Capital Budget spent
<b>WSDP Topic 11: Institutional Arrangements profile</b>								
30	The provision of democratic accountable and ethical governance	The percentage of a municipality's budget (training budget) actually spent on implementing its workplace skills plan	100% Of the training budget spent on impl. of WSP	100% Of the training budget spent on impl. of WSP	100% Of the training budget spent on impl. of WSP	100% Of the training budget spent on impl. of WSP	100% Of the training budget spent on impl. of WSP	100% Of the training budget spent on impl. of WSP
31	The provision of democratic accountable and ethical governance	Review the Municipal Organisational Staff Structure by the end of June	1 Review of the Municipal Organisational Staff Structure	1 Review of the Municipal Organisational Staff Structure	1 Review of the Municipal Organisational Staff Structure	1 Review of the Municipal Organisational Staff Structure	1 Review of the Municipal Organisational Staff Structure	1 Review of the Municipal Organisational Staff Structure
33	The provision of democratic accountable and ethical governance	90% Of the approved and funded organogram filled	90% Of the approved and funded organogram filled	90% Of the approved and funded organogram filled	90% Of the approved and funded organogram filled	90% Of the approved and funded organogram filled	90% Of the approved and funded organogram filled	90% Of the approved and funded organogram filled
34	The provision of democratic accountable and ethical governance	Review identified HR Policies by the end of June	4 HR Policies reviewed	4 HR Policies reviewed	4 HR Policies reviewed	4 HR Policies reviewed	4 HR Policies reviewed	4 HR Policies reviewed
<b>WSDP Topic 12: Customer service requirements</b>								

Note: All new KPIs in the above table refer to potential new KPIs and first need to be simplified and discussed further.

**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 years. Table E.2a provides the projects identified for implementation in FY2016/17, Table E.2b provides the projects identified for implementation in FY 2017/18 and Table E.2c provides the projects identified for implementation in FY2018/19. The table below gives an overview of the water services projects, as included in the MTEF.

<b>Project Main Category</b>	<b>FY2016/17</b>		<b>FY2017/18</b>		<b>FY2018/19</b>		<b>MTEF Total</b>	
	<b>Nr</b>	<b>Value (R'000)</b>	<b>Nr</b>	<b>Value (R'000)</b>	<b>Nr</b>	<b>Value (R'000)</b>	<b>Nr</b>	<b>Value (R'000)</b>
Water Projects	4	R12,429	4	R12,800	8	R16,226	<b>10</b>	<b>R41,455</b>
Sanitation Projects	5	R17,000	5	R10,687	7	R12,600	<b>10</b>	<b>R40,287</b>
<b>Combined Water &amp; Sanitation Projects</b>	<b>9</b>	<b>R29,429</b>	<b>9</b>	<b>R23,487</b>	<b>15</b>	<b>R28,826</b>	<b>20</b>	<b>R81,742</b>

Table E.2a: Water Services MTEF Projects - FY2016/17 (1 <sup>st</sup> 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 FY2015/16	Budget	FY2016/17								
										Own	MIG	RBIG	ACIP	DR	MMWIG	Other		
<b>1. Infrastructure Projects</b>								R0	R28,729								R28,729	
1.1		Upgrading of Franskraal-Kleinbaai-Gansbaai Pipelines	Upgrade bulk pipeline capacity	Bulk Pipeline Capacity	Water	Bulk	Bulk Pipeline		R8,800	R8,800							R8,800	Water Master Plan
1.2		New 1 Ml reservoir for Mount Pleasant (OHW.B31)	Additional reservoir storage capacity for Sandbaai	Storage Capacity	Water	Bulk	Reservoir		R2,929	R500	R2,429						R2,929	WSDP and Water Master Plan
1.3		Bulk water upgrade for housing project Hawston	Upgrade bulk pipeline capacity	Water Requirement	Water	Bulk	Bulk Pipeline		R500		R500						R500	Water Master Plan
1.4		Upgrade Stanford WWTW	Upgrade capacity of WWTW	Treatment Capacity	Sanitation	Bulk	WWTW		R3,500				R3,500				R3,500	WWTW Process Audits
1.5		Upgrading of pump stations	Upgrading of sewer pump stations capacities	Pump Capacity	Sanitation	Bulk	Pump Station		R4,500	R4,500							R4,500	Sewer Master Plan
1.6		Sewer network extension for Stanford	Sewer network extensions	Waterborne Sanitation	Sanitation	Drainage Network	Drainage Network		R5,500	R5,500							R5,500	Sewer Master Plan
1.7		Bulk sewerage outfall line 525mm dia OHS13.2	Upgrade bulk pipeline capacity	Waterborne Sanitation	Sanitation	Bulk	Bulk Pipeline		R3,000		R3,000						R3,000	Sewer Master Plan
<b>2. Source Development Projects</b>								R0	R0								R0	
									R0								R0	
<b>3. Demand Management projects</b>								R0	R0								R0	
									R0								R0	
<b>4. O&amp;M Commitments</b>								R0	R700								R700	
<b>Operations</b>																		
4.1		Water Pumps (Contingency)	Replace or additional Pumps	Operation	Water	Other	Operations		R200	R200							R200	Operation
4.2		Sewerage Pumps (Contingency)	Replace or additional Pumps	Operation	Sanitation	Other	Operations		R500	R500							R500	Operation
<b>Maintenance</b>																		
									R0								R0	
<b>5. Institutional</b>								R0	R0								R0	
									R0								R0	
<b>6. Water Services Programmes</b>								R0	R0								R0	
<b>Awareness Programs</b>																		
									R0								R0	
<b>WASH Programs</b>																		
									R0								R0	
<b>Total</b>								R0	R29,429								R29,429	

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Table E.2b: Water Services MTEF Projects - FY2017/18 (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 FY2015/16	Budget	FY2017/18									Total Cost
										Own	MIG	RBIG	ACIP	DR	MMWIG	Other			
<b>1. Infrastructure Projects</b>								R0	<b>R18,987</b>									<b>R18,987</b>	
1.1		New bulk reservoir for Sandbaai	Additional reservoir storage capacity for Sandbaai	Storage Capacity	Water	Bulk	Reservoir		R6,000	R6,000							R6,000	WSDP and Water Master Plan	
1.2		Bulk water upgrade for housing project Hawston	Upgrade bulk pipeline capacity	Water Requirement	Water	Bulk	Bulk Pipeline		R2,800		R2,800						R2,800	Water Master Plan	
1.3		Sewer network extension for Kleinmond	Sewer network extensions	Waterborne Sanitation	Sanitation	Drainage Network	Drainage Network		R3,600	R3,600							R3,600	Sewer Master Plan	
1.4		CBD Sewer network extension for Gansbaai and completion of Stanford sewer network	Sewer network extensions	Waterborne Sanitation	Sanitation	Drainage Network	Drainage Network		R3,560	R3,560							R3,560	Sewer Master Plan	
1.5		Upgrade Stanford WWTW	Upgrade capacity of WWTW	Treatment Capacity	Sanitation	Bulk	WWTW		R2,000	R2,000							R2,000	WWTW Process Audits	
1.6		Bulk sewerage outfall line 525mm dia OHS13.2	Upgrade bulk pipeline capacity	Waterborne Sanitation	Sanitation	Bulk	Bulk Pipeline		R1,027	R340	R687						R1,027	Sewer Master Plan	
<b>2. Source Development Projects</b>								R0	<b>R0</b>									<b>R0</b>	
<b>3. Demand Management projects</b>								R0	<b>R3,800</b>									<b>R3,800</b>	
3.1		Replacement of Overstrand water pipes	Replacement of Reticulation Network	WC/WDM	Water	Reticulation	Reticulation		R3,800	R3,800							R3,800	WSDP	
<b>4. O&amp;M Commitments</b>								R0	<b>R700</b>									<b>R700</b>	
<b>Operations</b>																			
4.1		Water Pumps (Contingency)	Replace or additional Pumps	Operation	Water	Other	Operations		R200	R200							R200	Operation	
4.2		Sewerage Pumps (Contingency)	Replace or additional Pumps	Operation	Sanitation	Other	Operations		R500	R500							R500	Operation	
<b>Maintenance</b>																			
								R0										<b>R0</b>	
<b>5. Institutional</b>								R0	<b>R0</b>									<b>R0</b>	
<b>6. Water Services Programmes</b>								R0	<b>R0</b>									<b>R0</b>	
<b>Awareness Programs</b>																			
								R0										<b>R0</b>	
<b>WASH Programs</b>																			
								R0										<b>R0</b>	
<b>Total</b>								R0	<b>R23,487</b>									<b>R23,487</b>	

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Table E.2c: Water Services MTEF Projects - FY2018/19 (3 <sup>rd</sup> 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 FY2015/16	Budget	FY2018/19							Total Cost	
										Own	MIG	RBIG	ACIP	DR	MW/G	Other		
<b>1. Infrastructure Projects</b>								<b>R0</b>	<b>R19,126</b>								<b>R19,126</b>	
1.1		New bulk reservoir for Sandbaai	Additional reservoir storage capacity for Sandbaai	Storage Capacity	Water	Bulk	Reservoir		R3,500	R3,500							R3,500	WSDP and Water Master Plan
1.2		160mm dia link watermain (OHW9.10), Zwelihle	Upgrade reticulation network	Water Requirement	Water	Reticulation	Link Pipeline		R200		R200						R200	Water Master Plan
1.3		Bulk water upgrade for housing project Hawston	Upgrade bulk pipeline capacity	Water Requirement	Water	Bulk	Bulk Pipeline		R2,526		R2,526						R2,526	Water Master Plan
1.4		New Voorberg booster pump station	Booster pump station to provide adequate pressure	Water Requirement	Water	Reticulation	Pump Station		R800	R800							R800	Water Master Plan
1.5		Upgrading of pump stations	Upgrading of sewer pump stations capacities	Pump Capacity	Sanitation	Bulk	Pump Station		R4,000	R4,000							R4,000	Sewer Master Plan
1.6		Sewer network extension for Kleinmond	Sewer network extensions	Waterborne Sanitation	Sanitation	Drainage Network	Drainage Network		R1,500	R1,500							R1,500	Sewer Master Plan
1.7		Upgrading of Kidbrooke Pipeline	Upgrade bulk pipeline capacity	Waterborne Sanitation	Sanitation	Drainage Network	Bulk Pipeline		R1,800	R1,800							R1,800	Sewer Master Plan
1.8		Bulk sewerage outfall line 525mm dia OHS13.2	Upgrade bulk pipeline capacity	Waterborne Sanitation	Sanitation	Bulk	Bulk Pipeline		R600		R600						R600	Sewer Master Plan
1.9		Peach house & Whale Rock PS link with generators	Upgrade capacity of drainage network	Waterborne Sanitation	Sanitation	Drainage Network	Drainage Network		R430	R430							R430	Sewer Master Plan
1.10		Rehabilitate main bulk sewer to WWTW: Phase 1	Upgrade bulk pipeline capacity	Waterborne Sanitation	Sanitation	Bulk	Bulk Pipeline		R3,770	R3,770							R3,770	Sewer Master Plan
<b>2. Source Development Projects</b>								<b>R0</b>	<b>R4,000</b>								<b>R4,000</b>	
2.1		Upgrade Hermanus Well Fields Phase 1	Groundwater Augmentation	Water Requirement	Water	Source	Source Development		R4,000	R4,000							R4,000	WSDP
<b>3. Demand Management projects</b>								<b>R0</b>	<b>R3,800</b>								<b>R3,800</b>	
3.1		Replacement of Overstrand water pipes	Replacement of Reticulation Network	WC/WDM	Water	Reticulation	Reticulation		R3,800	R3,800							R3,800	WSDP
<b>4. O&amp;M Commitments</b>								<b>R0</b>	<b>R1,900</b>								<b>R1,900</b>	
<b>Operations</b>																		
4.1		Water Pumps (Contingency)	Replace or additional Pumps	Operation	Water	Other	Operations		R200	R200							R200	Operation
4.2		Sewerage Pumps (Contingency)	Replace or additional Pumps	Operation	Sanitation	Other	Operations		R500	R500							R500	Operation
<b>Maintenance</b>																		
4.2		Refurbish Buffels River Dam Tower	Refurbishment Work	Refurbishment	Water	Bulk	Source Infrastructure		R1,200	R1,200							R1,200	Refurbishment
<b>5. Institutional</b>								<b>R0</b>	<b>R0</b>								<b>R0</b>	
									<b>R0</b>								<b>R0</b>	
<b>6. Water Services Programmes</b>								<b>R0</b>	<b>R0</b>								<b>R0</b>	
<b>Awareness Programs</b>																		
									<b>R0</b>								<b>R0</b>	
<b>WASH Programs</b>																		
									<b>R0</b>								<b>R0</b>	
<b>Total</b>								<b>R0</b>	<b>R28,826</b>								<b>R28,826</b>	



## 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, in consultation with the Municipality's town planning department. 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. Overstrand Municipality is currently busy with the updating of their 2012 Water and Sewer Master Plans. The recommended projects from the 2012 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 (Mount Pleasant, Zwelihle, Kleinbaai and Hawston). New Voorberg booster pump station and replacement of various pumps.
- Construction of new reservoirs for Mount Pleasant and Sandbaai.
- The refurbishment of the Buffels River Dam Bridge and Tower and Palmiet River Weir.
- 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.
- Upgrade of the Stanford 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.
- To update the existing Water Master Plans and to 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 sewer infrastructure.
- 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.
- 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 R84.835 million of which 96% are funded, as included in the MTEF project list. It should however be emphasised that additional funding will be required to address the full achievement of the water services strategies as outlined in Section D, but that the extent of such additional funding can only be determined, once initial investigations and activities have been concluded.

Table F.1: WSDP FY2016/17: 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			
<b>CURRENT NEEDS</b>										
<b>Water Services Development Planning</b>										
1.1	WSDP Performance and Water Services Audit Report needs to be drafted annually	Compile annual WSDP Performance and Water Services Audit Report	WSDP	Yes	O&M	Compile annual WSDP Performance and Water Services Audit Report	R175	Yes	Yes	Yes
1.2	Regular updating of WSDP	Update WSDP every two to three years	WSDP	Yes	O&M	Regular updating of WSDP	R300	Yes	Yes	Yes
<b>Business Element 2: Demographics (Topic 2)</b>										
	Done by other Department									
<b>Business Element 3: Service Levels (Topic 3)</b>										
3.1	Some households on the farms without basic water services.	Ensure all households on farms are provided with at least basic water services, subject to DWS guidance.	WSDP	No	WSDP	Provide basic water services on the farms in the rural areas without basic water services.	R498	Yes	No	No
3.2	Some households on the farms without basic sanitation services.	Ensure all households on farms are provided with at least basic sanitation services, subject to DWS guidance.	WSDP	No	WSDP	Provide basic sanitation services on the farms in the rural areas without basic sanitation services.	R1,620	Yes	No	No
<b>Business Element 4: Socio-Economic Background (Topic 4)</b>										
	Done by other Department									
<b>Business Element 5: Water Services Infrastructure Management (Topic 5)</b>										
5.1	Inadequate reservoir storage capacity	Additional reservoir storage capacity for Mount Pleasant	MTEF Project	Yes		New 1 Ml reservoir for Mount Pleasant (OHW.B31)	R2,929	Yes	Yes	Yes
5.2	Capacity of existing reticulation network is inadequate	Upgrade reticulation network	MTEF Project	Yes		160mm dia link watermain (OHW9.10), Zwelihle	R200	Yes	Yes	Yes
5.3	Inadequate pressure and supply	Ensure adequate pressure and supply	MTEF Project	Yes		New Voorberg Booster Pump Station	R800	Yes	Yes	Yes
5.4	Capacities of existing sewer pump stations are inadequate	Upgrading of sewer pump stations capacities	MTEF Project	Yes		Upgrading of pump stations	R8,500	Yes	Yes	Yes
5.5	Not all areas connected to waterborne sewer network	Sewer network extensions	MTEF Project	Yes		Sewer network extension for Stanford	R5,500	Yes	Yes	Yes
5.6	Ensure pump capacity during power failures	Link sewer pump station with generators	MTEF Project	Yes		Peach House and Whale Rock PS link with Generators	R430	Yes	Yes	Yes
5.7	Bulk pipeline capacity is inadequate	Upgrade bulk pipeline capacity	MTEF Project	Yes		Rehabilitate main bulk sewer to Kleinmond WWTW Phase 1	R3,770	Yes	Yes	Yes
5.8	Bulk pipeline capacity is inadequate	Upgrade bulk pipeline capacity	MTEF Project	Yes		Bulk sewerage outfall line 525mm dia OHS13.2	R4,627	Yes	Yes	Yes
5.9	Bulk pipeline capacity is inadequate	Upgrade bulk pipeline capacity	MTEF Project	Yes		Upgrading of Franskraal-Kleinbaai-Gansbaai Pipelines	R8,800	Yes	Yes	Yes
5.10	Bulk pipeline capacity is inadequate	Upgrade bulk pipeline capacity	MTEF Project	Yes		Bulk water upgrade for housing project Hawston	R5,826	Yes	Yes	Yes
5.11	Capacity of WWTW is inadequate	Upgrade capacity of WWTW	MTEF Project	Yes		Upgrade Stanford WWTW	R5,500	Yes	Yes	Yes
5.12	Bulk pipeline capacity is inadequate	Upgrade bulk pipeline capacity, new PS and Rising Main.	MTEF Project	Yes		Upgrading of Kidbrooke Sewer Pipeline	R1,800	Yes	Yes	Yes
5.13	Existing storage capacity is inadequate	Additional reservoir storage capacity for Sandbaai	MTEF Project	Yes		New bulk reservoir for Sandbaai	R9,500	Yes	Yes	Yes
5.14	Not all areas connected to waterborne sewer network	Sewer network extensions	MTEF Project	Yes		Sewer network extension for Kleinmond	R5,100	Yes	Yes	Yes
5.15	Not all areas connected to waterborne sewer network	Sewer network extensions	MTEF Project	Yes		CBD Sewer network extension for Gansbaai and completion of Stanford sewer network	R3,560	Yes	Yes	Yes
5.16	Existing bridge, tower and weir need to be refurbished	Refurbishment of existing infrastructure	MTEF Project	Yes		Refurbish Buffels River Dam Tower	R1,200	Yes	Yes	Yes
<b>Business Element 6: Operation and Maintenance (Topic 6)</b>										
6.1	Inadequate pump capacity	Sustainable operation	MTEF Project	Yes		Water Pumps Contingency	R600	Yes	Yes	Yes
6.2	Inadequate pump capacity	Sustainable operation	MTEF Project	Yes		Sewer Pumps Contingency	R1,500	Yes	Yes	Yes
6.3	WTW Process Audits need to be done annually	Sustainable operation	WSDP	Yes	O&M	Annual WTW Process Audits	R150	Yes	No	No
6.4	WWTW Process Audits need to be done annually	Sustainable operation	WSDP	Yes	O&M	Annual WWTW Process Audits	R150	Yes	No	No

**Table F.1: WSDP FY2016/17: 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			
<b>CURRENT NEEDS</b>										
<b>Business Element 7: Associated Services (Topic 7)</b>										
	None									
<b>Business Element 8: Conservation and Demand Management - Water Resource (Topic 8.1)</b>										
8.1.1	Regular pipe bursts	Replacement of Reticulation Network to reduce NRW	MTEF Project	Yes		Replacement of Overstrand water pipes	R7,600	Yes	Yes	Yes
<b>Business Element 8: Conservation and Demand Management - Water Balance (Topic 8.2 &amp; 8.3)</b>										
	Done internally									
<b>Business Element 9: Water Resources (Topic 9)</b>										
9.1	Yield of existing Hermanus resources is inadequate to meet future requirements.	Augmentation of Hermanus groundwater resources	MTEF Project	Yes		Upgrade Hermanus Well Fields Phase 1	R4,000	Yes	Yes	Yes
9.2	Industrial consumers not yet monitored wrt quality and quantity of effluent discharged	Ensure that all industrial consumers are monitored wrt the quality and quantity of effluent discharged by	WSDP	No	WSDP	Monthly monitoring of industrial effluent	R200	Yes	No	No
<b>Business Element 10: Financial Profile (Topic 10)</b>										
	Done by other Department									
<b>Business Element 11: Water Services Institutional Arrangements (Topic 11)</b>										
	Done internally									
<b>Business Element 12: Social and Customer Service Requirements (Topic 12)</b>										
	Done internally									
<b>TOTAL: CURRENT NEEDS</b>							<b>R84,835</b>			
	Funded						R81,742			
	% funded						96%			
<b>FUTURE NEEDS</b>										
<b>Infrastructure</b>										
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	R8,594	Yes	No	No
F.2			Water Master Plan	No	Various	Future internal reticulation network items for Kleinmond	R6,390	Yes	No	No
F.3			Water Master Plan	No	Various	Future internal reticulation network items for Greater Hermanus	R65,021	Yes	No	No
F.4			Water Master Plan	No	Various	Future internal reticulation network items for Stanford	R1,924	Yes	No	No
F.5			Water Master Plan	No	Various	Future internal reticulation network items for Greater Gansbaai	R46,569	Yes	No	No
F.6			Water Master Plan	No	Various	Future internal reticulation network items for Pearly Beach	R3,631	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	R12,978	Yes	No	No
F.8			Water Master Plan	No	Various	Future reservoirs and pump stations for Kleinmond	R596	Yes	No	No
F.9			Water Master Plan	No	Various	Future reservoirs and pump stations for Greater Hermanus	R51,770	Yes	No	No
F.10			Water Master Plan	No	Various	Future reservoirs and pump stations for Stanford	R3,872	Yes	No	No
F.11			Water Master Plan	No	Various	Future reservoirs and pump stations for Greater Gansbaai	R47,762	Yes	No	No
F.12	Reduce NRW	Implementation of WDM measures	Water Master Plan	No	Various	Future WDM items for Overstrand	R4,023	Yes	No	No
F.13	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	R132,957	Yes	No	No
F.14			Sewer Master Plan	No	Various	Future internal sewer drainage network items for Kleinmond	R31,103	Yes	No	No
F.15			Sewer Master Plan	No	Various	Future internal sewer drainage network items for Greater Hermanus	R68,832	Yes	No	No
F.16			Sewer Master Plan	No	Various	Future internal sewer drainage network items for Stanford	R11,897	Yes	No	No
F.17			Sewer Master Plan	No	Various	Future internal sewer drainage network items for Greater Gansbaai	R113,634	Yes	No	No
F.18			Sewer Master Plan	No	Various	Future internal sewer drainage network items for Pearly Beach	R20,713	Yes	No	No
F.19	Inadequate capacity of existing sewer pump stations	Ensure adequate sewer pump capacity	Sewer Master Plan	No	Various	Future sewer pump stations for Buffels River	R13,377	Yes	No	No
F.20			Sewer Master Plan	No	Various	Future sewer pump stations for Kleinmond	R708	Yes	No	No
F.21			Sewer Master Plan	No	Various	Future sewer pump stations for Greater Hermanus	R7,475	Yes	No	No
F.22			Sewer Master Plan	No	Various	Future sewer pump stations for Stanford	R1,789	Yes	No	No
F.23			Sewer Master Plan	No	Various	Future sewer pump stations for Greater Gansbaai	R16,733	Yes	No	No
F.24			Sewer Master Plan	No	Various	Future sewer pump stations for Pearly Beach	R2,785	Yes	No	No
F.25	Capacity of existing WWTW is inadequate	Ensure adequate treatment capacity	WSDP	No	OS1415085	Hawston WWTW Upgrading	R6,500	Yes	No	No
F.26	Capacity of existing WWTW is inadequate	Ensure adequate treatment capacity	WSDP	No	OS1415037	Expand Gansbaai WWTW	R10,000	Yes	No	No
F.27	Capacity of existing WWTW is inadequate	Ensure adequate treatment capacity	WSDP	No	OS1415098	Upgrade Kleinmond WWTW	R8,000	Yes	No	No
F.28	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

Table F.1: WSDP FY2016/17: 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			
<b>FUTURE NEEDS</b>										
F.29	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.30	Existing WTW needs to be refurbished	Ensure WTW remains fully operational	WSDP	No	OS1415097	Refurbishment of Kleinmond WTW	R5,000	Yes	No	No
F.31	Lack of adequate treatment of raw water	Ensure adequate treatment capacity	WSDP	No	OS1415131	New WTW for Buffeljags Bay	R1,500	Yes	No	No
F.32	Capacity of bulk supply pipeline is inadequate to meet future water requirements.	Ensure adequate bulk water supply capacity	WSDP	No	OS1415041	Upgrade bulk supply from Kraaibosch Dam to Franskraal Dam	R44,000	Yes	No	No
F.33	Existing WTW needs to be refurbished	Ensure WTW remains fully operational	WSDP	No	OS1415111	Refurbishment of Buffels River WTW	R5,000	Yes	No	No
F.34	Existing WTW needs to be refurbished	Ensure WTW remains fully operational	WSDP	No	OS1415117	Refurbishment of Pearly Beach WTW	R5,000	Yes	No	No
<b>Resources</b>										
F.35	Capacity of existing water resources is inadequate to meet projected future water requirements	Ensure yields of existing sources are adequate to meet future water requirements	WSDP	No	OS1415042	Augmentation of Greater Gansbaai existing sources	R30,000	Yes	No	No
F.36	Capacity of existing water resources is inadequate to meet projected future water requirements	Ensure yields of existing sources are adequate to meet future water requirements	WSDP	No	OS1415067	Re-use of treated effluent for potable use (3MI/day)	R60,000	Yes	No	No
F.37	Capacity of existing water resources is inadequate to meet projected future water requirements	Ensure yields of existing sources are adequate to meet future water requirements	WSDP	No	OS1415068	5MI/day Seawater desalination plant	R60,000	Yes	No	No
F.38	Capacity of existing water resources is inadequate to meet projected future water requirements	Ensure yields of existing sources are adequate to meet future water requirements	WSDP	No	OS1415116	Augmentation of Pearly Beach existing sources	R15,000	Yes	No	No
F.39	Capacity of existing water resources is inadequate to meet projected future water requirements	Ensure yields of existing sources are adequate to meet future water requirements	WSDP	No	OS1415087	Upgrading of Gateway, Camphill and Volmoed Well Fields	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
<b>TOTAL: FUTURE NEEDS</b>							<b>R1,080,092</b>			