OVERSTRAND MUNICIPALITY

Annual Water Services Development Plan Performance- and Water Services Audit Report

as directed by the Water Services Act (Act 108 of 1997) and the Regulations relating to Compulsory National Standards and Measures to Conserve Water

FY 2024/2025

23 OCTOBER 2025

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Draft	Draft 2024/2025 Annual WSDP Performance- and Water Services Audit Report	14 October 2025	Project No. P10376
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PROJECT P10376 - OVERSTRAND MUNICIPALITY: ANNUAL WSDP PERFORMANCE AND WATER SERVICES AUDIT REPORT FOR 2024/2025

REV	DESCRIPTION	ORIG	REVIEW	IX ENGINEERS	DATE	CLIENT APPROVAL	DATE
Draft	Draft issued for external review	R Kuffner Author	JT Human A Reviewer	Approval	14/10/25	Approval	14/10/2025
Final	Final for approval by Council	R Kuffner Author	JT Human A Reviewer	Approval	20/10/2025	Approval	20/10/2025

FOREWORD:

Overstrand Municipality is required in terms of Section 18 of the Water Services Act, 1997 (Act No.108 of 1997), as well as the "Regulations relating to compulsory national standards and measures to conserve water", as issued in terms of sections 9(1) and 73(1)(j) of the Water Services Act, to report on the implementation of its WSDP during each financial year and to include a water services audit in such an annual report.

The WSDP Performance- and Water Services Audit is designed to monitor the compliance of Overstrand Municipality with these regulations. It also assists the communities within Overstrand Municipality's Management Area and the DWS to assess how well the Municipality is performing relative to their stated intentions and their capacity. The WSDP Performance- and Water Services Audit Report can be seen as an annexure to the Municipality's Annual Report. The Annual Report is compiled as required by the Local Government Municipal Systems Act, Act no 32 of 2000 (Section 46) and the Local Government: Municipal Finance Management Act, Act no 56 of 2003 (Section 121).

Overstrand Municipality's Vulnerability Index was indicated as 0.21 "Low Vulnerability" in the 2025 Municipal Strategic Self-Assessment Report. The vulnerability of all the KPIs for the 2025 assessment were either low or moderate, except for Financial Asset Management, which was indicated as high vulnerability.

A Water and Wastewater Bulk Works Contract between Overstrand Municipality and Veolia Services Southern Africa (Pty) Ltd is in place to operate and maintain the bulk infrastructure in Overstrand Municipality's Management Area for a period of fifteen (15) years (Signed on the 8th of December 2018). The Municipality also has the right to extend the contract for a further five (5) years.

The water and sanitation services of Overstrand Municipality is managed in a financially sustainable manner, with a surplus generated on the operation and maintenance budgets for these two services for the last financial year. The current operational cost for water services was R20-24 / Kl and for sanitation services it was R26-14 / Kl for the 2024/2025 financial year.

The current budgets allocated towards the refurbishment / replacement of the existing old water and sewerage infrastructure can be increased. The total CRC of the water and sewerage infrastructure is R5 035 784 878 and an annual budget of at least R100 715 698 is required for the refurbishment / replacement of the old water and sewerage infrastructure. A budget of approximately 2% of the CRC of the water and sewerage infrastructure per annum should be allocated towards the refurbishment / replacement of the old existing infrastructure. In the case of the operations and maintenance of the systems, a budget of approximately 1% to 2% of the value of the system is typically required to ensure that the systems remain in good condition.

Overstrand Municipality successfully completed various capital projects over the last financial year. The capital budget expenditure, for the 2024/2025 financial year, was R33.097 million (81.3% of the budget) for the water infrastructure projects and R43.628 million (98.7% of the budget) for the sewerage infrastructure projects.

The raw water requirements for all the systems decreased from 9 206 Ml in 2008/2009 to 7 028 Ml in 2011/2012 (annual decrease of -8.6% over three-year period), due to the severe drought in 2010 and 2011. There was a steady increase in raw water requirements over the last thirteen years from the 7 028 Ml in 2011/2012 to 9.879 Ml in 2024/2025 (average annual increase of 2.65% over last thirteen years).

The Municipality continued with the implementation of their WDM Strategy and Action Plan to keep the NRW and Water Losses as low as possible. The overall NRW for all the systems for the 2024/2025 financial year was 2 864 Ml (31.21%) and the overall water losses were 2 766 Ml (30.15%).

The droughts over the periods 2010 to 2011 and 2015 to 2017 reduced the safe yield of the Municipality's own existing surface and groundwater resources. The Municipality therefore continued with the implementation of various WC/WDM measures to lower the current and future water requirements and investigations of augmentation options for the existing water resources.

Comprehensive Operational and Compliance Water and Wastewater Quality Monitoring Programmes are implemented by Overstrand Municipality. The water quality of all the water distribution systems in Overstrand Municipality was categorised as "Excellent" for the 2024/2025 financial year, except for the Operational Efficiency indicator for Baardskeerdersbos, which was categorised as "Unacceptable" (According to the SANS 241:2015 classification).

The overall percentage compliance of the water quality samples taken over the period July to June for the last three financial years are indicated in the table below.

Overall Percentage Compliance of the Water Quality Samples Taken Over the Period July to June for the Last Three Financial Years															
Distribution System	Acute Health (%)						Chronic Health (%)			Aesthetic (%)			Operational Efficiency (%)		
	Microbiological			Chemical											
	24/25	23/24	22/23	24/25	23/24	22/23	24/25	23/24	22/23	24/25	23/24	22/23	24/25	23/24	22/23
All Systems	99.9	99.2	99.4	100.0	100.0	100.0	99.6	99.5	99.6	99.6	98.8	98.6	95.9	94.0	96.0

The overall percentage compliance of the final effluent samples taken over the last three financial years are summarised in the table below.

Overall Percentage Compliance of the Final Effluent Samples Taken Over the Last Three Financial Years									
WWTW	Microbiological (%)			Chemical (%)			Physical (%)		
	24/25	23/24	22/23	24/25	23/24	22/23	24/25	23/24	22/23
All WWTWs	70.9	72.2	69.4	73.4	75.7	72.6	85.6	78.7	77.3

A comprehensive Performance Management System and Customer Services and Complaints system are also in place. The SDBIP is the process plan and performance indicator / evaluation process for the execution of the budget. The SDBIP is being used as a management, implementation and monitoring tool that assists and guide the Executive Mayor, Councillors, Municipal Manager, Senior Managers and the community. The plan serves as an input to the performance agreements of the Municipal Manager and Directors. It also forms the basis for the monthly, quarterly, mid-year and the annual assessment report and performance assessments of the Municipal Manager and Directors.

The Municipality has maintained a high and consistent level of service to its urban water consumers. After hours emergency requests are being dealt with by the control room on a twenty-four hour per day basis. Requests are furthermore captured on an electronic mail or works-order system to ensure the execution thereof.

An approved WSDP for the 2022-2027 WSDP cycle is in place and the Municipality compile annual WSDP Performance and Water Services Audit Reports, as required by the Water Services Act. An updated Water Supply and Sanitation Services Bylaw is also in place. Detail Plant and Process Audits were completed for all the WTWs and WWTWs during the last financial year.

The 2025 Green-, Blue- and No Drop assessment results from the DWS are not yet available. Overstrand Municipality was however previously awarded first place in the 2023 Blue Drop Best Performing Water Services Institution category in South Africa. All eight water supply systems were awarded Blue Drop Status. The Buffels River, Greater Gansbaai, Greater Hermanus, Kleinmond, Pearly Beach and Stanford systems were also awarded a joint first place in the 2023 Blue Drop Best Performing Water Supply System category.

Overstrand Municipality performed above average with regard to wastewater quality management, with an overall Green Drop Score of 89% for DWS's 2021 assessment. The Green Drop Scores for all six WWTWs were between 88% and 96% (Six potential Green Drop Certified Systems). Overstrand Municipality also received their 2023 Green Drop Risk Ratings, as included in the 2023 Green Drop Progress Report. The overall Cumulative Risk Ration of Overstrand Municipality was 51.3%. The Wastewater Risk Ratings were at low risk (<50%) for the Gansbaai-, Kleinmond- and Stanford WWTW and at medium risk for the Hermanus-, Pearly Beach- and Hawston WWTW (50% - <70%).

Overstrand Municipality achieved an "Excellent" score of 101% for the 2023 No Drop Assessment and was acknowledged as the top performing WSA in the country with regard to the No Drop Assessment.

OVERSTRAND MUNICIPALITY

WATER SERVICES AUDIT FOR 2024/2025

ITEM **DESCRIPTION** **PAGE**

FOREWORD ii
LIST OF TABLES AND FIGURES vi
ABBREVIATIONS AND DEFINITIONS xi
KEY TERMS AND INTERPRETATIONS xiv
EXECUTIVE SUMMARY xvii
BACKGROUND 1
Appointment 1
Purpose 1

A. WATER SERVICES AUTHORITY PROFILE 4
A.1. Map of Water Services Authority Area of Jurisdiction 4
A.2. Water Services Administration and Organization 5
A.3. Water Services Overview 6

B. WSDP PERFORMANCE REPORT 14
B.1. WSDP Reference and Status 14
B.2. Performance on Water Services Objectives and Strategies 14
B.3. Status of Water Services Projects 18
B.4. Past Financial Year Water Services Projects Impact Declaration 20

C. WATER SERVICES AUDIT REPORT 21
C.1. Quantity of Water Services Provided (Water Balance) 21
C.2. Water Services Delivery Profile 27
C.2.1. User Connection Profile 27
C.2.2. Residential Water Services Delivery Access Profile 34
C.2.3. Residential Water Services Delivery Adequacy Profile 43
C.3. Cost Recovery and Free Basic Services 45
C.3.1. Tariffs 45
C.3.2. Metering, Billing and Free Basic Services 51
C.3.3. Revenue Collection and Cost Recovery 52
C.4. Water Quality 56
C.4.1. Sampling Programme 56
C.4.2. Water Quality Compliance 71

C.4.3. Incident Management 79
C.5. Water Conservation and Water Demand Management 88
C.6. Water Services Asset Management 96
C.7. Water Services Operation and Maintenance 105
C.8. Water Resources 109
C.9. Water Services Institutional Arrangements and Customer Services 116

D. APPROVAL AND PUBLICATION RECORD 127

REFERENCES

ATTENDANCE REGISTER (DISCUSSION OF DRAFT DOCUMENT)

ANNEXURES:

Annexure A: Number of Billed Metered Consumers per Category (Water)
Number of Billed Metered Consumers per Category (Sanitation)
IWA Water balances for the various distribution systems
WTW flows and capacities
WTW peak flows (December and January 22/23, 23/24 and 24/25)
Rainfall and WWTWs flows and capacities
WWTW peak flows (December and January 22/23, 23/24 and 24/25)

Annexure B: No Drop Spreadsheets and ILIs

Annexure C: Future Water Requirement Projections for the various distribution systems

Annexure D: Water Quality Compliance Sample Results for 2024/2025
Final Effluent Quality Compliance Sample Results for 2024/2025

Annexure E: DWS's scorecard for assessing the potential for WC/WDM efforts

Annexure F: Overstrand Municipality's Organogram

LIST OF TABLES AND FIGURES

TABLES

Table A.2.1 Water Services Administrative Structure 5
Table A.3.1 Existing Water Infrastructure (Resources and WTWs) 7
Table A.3.2 Existing Capacities, Flows and Water Quality Failures at each of the WTWs 8
Table A.3.3 Existing Water Infrastructure (Reticulation, Pump Stations and Reservoirs) 8
Table A.3.4 Existing Sewerage Infrastructure 9
Table A.3.5 Existing Hydraulic Design Capacities, Flows and Final Effluent Compliance percentages at each of the WWTWs (Ml/d) 9
Table A.3.6 Existing Organic Design Capacities and Loadings at the WWTWs 10
Table A.3.7 Estimated Future Annual Population Growth Percentages, Population and Households per Distribution System 11
Table A.3.8 Water Services Overview (Water) 12
Table A.3.9 Water Services Overview (Sanitation) 13
Table B.1.1 WSDP and Reporting Reference 14
Table B.2.1 Performance on Water Services Objectives and Strategies per WSDP Topic 15
Table B.3.1 Water Services Projects Status and Performance 19
Table B.4.1 Past Financial Year Project Impact Declaration 20
Table C.1.1 Annual Bulk Raw Water Volume Supplied to the Various Towns 22
Table C.1.2 Quantity of Water Services Provided / Water Balance 23
Table C.1.3 Quantity of Water Used by each User Sector (Ml/a) 24
Table C.1.4 Quantity of Effluent Received at the Various WWTWs 26
Table C.1.5 Total Returns to the Water Resource System and Treated Effluent re-used for Irrigation Purposes 26
Table C.1.6 Current Effluent re-use Practices at the Various WWTWs 26
Table C.2.1.1 User Connection Profile (Water Services) 27
Table C.2.1.2 User Connection Profile (Wastewater Services) 29
Table C.2.1.3 Number of Billed Metered Consumers in each User Sector for the Last Nine Financial Years 31
Table C.2.1.4 Number of Billed Metered Consumers per Water Distribution System and Annual Percentage Growth over the period 2016/2017 to 2024/2025 32
Table C.2.2.1 Basic Water Supply Services 34
Table C.2.2.2 Residential Water Services Delivery Access Profile: Water 35
Table C.2.2.3 Residential Water Service Levels (Residential Consumer Units) 36
Table C.2.2.4 Basic Sanitation Supply Services 37
Table C.2.2.5 Residential Water Services Delivery Access Profile: Sanitation 38
Table C.2.2.6 Residential Sanitation Service Levels (Residential Consumer Units) 39
Table C.2.2.7 Interim Water and Sanitation Supply Services 40
Table C.2.2.8 Communal Service Levels in the Informal Areas 41
Table C.2.2.9 Communal Service Levels Provided During Land Invasion 41

LIST OF TABLES AND FIGURES / CONTINUE

TABLES

Table C.2.2.10 Service Levels at Schools 42
Table C.2.2.11 Service Levels at Medical Facilities 42
Table C.2.3.1 Residential Water Services Delivery Adequacy Profile (Water) 43
Table C.2.3.2 Residential Water Services Delivery Adequacy Profile (Sanitation) 44
Table C.3.1.1 Water Tariffs 45
Table C.3.1.2 Sewerage Tariffs 48
Table C.3.2.1 Overview of Metering, Billing and Free Basic Services 51
Table C.3.3.1 Overview of Water Services Revenue Collection and Cost Recovery 52
Table C.3.3.2 Operational Budget for Water Services for the Last Four Financial Years 54
Table C.3.3.3 Operational Budget for Sanitation Services for the Last Four Financial Years 54
Table C.3.3.4 Consumer Debtors for 30, 60 and 90 days for the Last Ten Financial Years (end of June) 55
Table C.4.1.1 Sampling Programme for Potable Water Quality 56
Table C.4.1.2 Overstrand Municipality's Compliance of the Monthly E.Coli Monitoring Frequency in the Water Distribution Systems in Terms of the Minimum Requirements of SANS 241-2:2015 (Table 2). 59
Table C.4.1.3 Sampling Programme for Wastewater Effluent Quality 59
Table C.4.1.4 Compliance to the Sampling Programme(s) 60
Table C.4.1.5 Water Quality Monitoring Overview from WSDP Guide Framework Perspective 60
Table C.4.1.6 Wastewater Quality Monitoring Overview from WSDP Guide Framework Perspective 61
Table C.4.1.7 Blue Drop Performance of the Municipality (DWS's 2023 Blue Drop Report) 62
Table C.4.1.8 Average Residential Daily Consumption (l/p/d) for the Last Four Financial Years. 65
Table C.4.1.9 Green Drop Performance of the Municipality (DWS's 2022 Green Drop Report) 66
Table C.4.1.10 Green Drop Risk Rating of the Overstrand Municipality (DWS's 2023 Green Drop Progress Report) 69
Table C.4.2.1 Overview of Water Quality Compliance 71
Table C.4.2.2 Number of Water Quality Compliance Samples Taken Throughout the Various Water Distribution Systems Over the Period July to June for the Last Two Financial Years 71
Table C.4.2.3 Percentage Compliance of the Water Quality Samples for the Last Two Financial Years 73
Table C.4.2.4 Four Categories under which the Risks Posed by Micro-organism, Physical or Aesthetic Property or Chemical Substance of Potable Water is Normally Classified 74
Table C.4.2.5 Recommendations from the detail WTW Process Audits 74
Table C.4.2.6 Overview of Wastewater Quality Compliance 76
Table C.4.2.7 Percentage Microbiological (Faecal Coliforms) Compliance of the Compliance Samples Taken at the Various WWTWs for the Last Three Financial Years 76
Table C.4.2.8 Percentage Chemical Compliance of the Compliance Samples Taken at the Various WWTWs for the Last Three Financial Years. 76
Table C.4.2.9 Percentage Physical Compliance of the Compliance Samples Taken at the Various WWTWs for the Last Three Financial Years 77
Table C.4.2.10 Recommendations from the detail WWTW Process Audits 77

LIST OF TABLES AND FIGURES / CONTINUE

TABLES

Table C.4.3.1 Medium and High Risks for the various water distribution systems (Water Safety Plan) 79

Table C.4.3.2 Medium and High Risks for the various sewer drainage systems (W_2RAP) 82

Table C.4.3.3 Incident Management and Reporting Overview 86

Table C.4.3.4 Water Quality Incident Reporting Compliance (Health Oriented) 87

Table C.5.1 Overview of WC/WDM Activities 88

Table C.5.2 Overstrand Municipality's performance with regard to the WC/WDM KPIs for 2024/2025 ... 89

Table C.5.3 Treatment Losses, NRW, Water Losses and ILIs for the Various Water Distribution Systems 89

Table C.5.4 System Input Volume, Average Billed Metered Consumption and NRW in Litre per Connection per Day for the various Water Distribution Systems for 2024/2025 92

Table C.5.5 Description of No Drop Criteria 92

Table C.5.6 No Drop Performance of the Municipality (DWS's 2023 No Drop Report) 92

Table C.5.7 Potential Savings on Bulk Water Supply through the Implementation of Pressure Management 93

Table C.5.8 Length and Average Head of Water Pipelines 93

Table C.6.1 Current Replacement Cost and Carrying Value of the Water Infrastructure (June 2025) 97

Table C.6.2 Overview of the Remaining Useful Life by Facility Type for the Water Infrastructure – June 2025 (CRC) 98

Table C.6.3 Overview of the Age Distribution by Facility Type for the Water Infrastructure – June 2025 (CRC) 99

Table C.6.4 Overview of the Condition Grading by Facility Type for the Water Infrastructure – June 2025 (CRC) 100

Table C.6.5 Current Replacement Cost and Carrying Value of the Sewerage Infrastructure (June 2025) 101

Table C.6.6 Overview of the Remaining Useful Life by Facility Type for the Sewerage Infrastructure – June 2025 (CRC) 101

Table C.6.7 Overview of the Age Distribution by Facility Type for the Sewerage Infrastructure – June 2025 (CRC) 102

Table C.6.8 Overview of the Condition Grading by Facility Type for the Sewerage Infrastructure – June 2025 (CRC) 103

Table C.7.1 Types of Planned and Unplanned Preventative and Corrective Maintenance Implemented by Overstrand Municipality 105

Table C.7.2 Overstrand Municipality's Operation and Maintenance Assessments and Plans 105

Table C.7.3 Recommended Budgets for the Replacement and the Operation and Maintenance of the existing Water and Sewerage Infrastructure 107

Table C.7.4 Historical Water and Sewerage Capital Expenditure 108

Table C.7.5 The Independent Factors and the Weight Factors used to determine the Water Pipe Replacement Potential 108

Table C.7.6 Top Two Hundred Water Pipes in Overstrand Municipality's Water Distribution Systems to be Replaced based on PRP (Pipes with PRP > 98.99%) 108

Table C.8.1 Projected Future Water Requirements and Yield / Licence Surplus / Shortfall based on WSDP Model 109

LIST OF TABLES AND FIGURES / CONTINUE

TABLES

Table C.8.2 Years in which the Annual Water Requirement will Exceed the Sustainable Yields / License Volumes from the Various Resources 110

Table C.8.3 Potential Future Water Resources for the Various Towns (Summary of DWS's All Towns Reconciliation Strategies) 114

Table C.9.1 Positions Filled and Vacancy Rates of Overstrand Municipality for the Last Three Financial Years 116

Table C.9.2 Municipal Strategic Self-Assessment (MuSSA) of Water Services for Overstrand Municipality 117

Table C.9.3 Training Provided during the 2024/2025 Financial Year (Workplace Skills Plan) 121

Table C.9.4 Queries/Complaints Responded within 24 Hours by the Various Departments for the last three financial years 123

Table C.9.5 Water and Sanitation Indicators Monitored by Overstrand Municipality with regard to Customer Services and Maintenance Work 125

FIGURES

Figure A.1.1 Location of Overstrand Municipality in the Western Cape 4

Figure A.1.2 Overstrand Municipality's Management Area 4

Figure C.1.1 Average Daily Bulk Raw Water Supply Volume to all the Towns in Overstrand Municipality 21

Figure C.1.2 System Input Volume and Non-Revenue Water for the Various Water Distribution Systems 21

Figure C.1.3 Percentage Raw Water Distribution between the Systems for the 2024/2025 financial year 22

Figure C.1.4 Quantity of Water Services Provided / Water Balance 24

Figure C.2.1.1 User Connection Profile for Water 28

Figure C.2.1.2 User Connection Distribution for Water – Year 2024/2025 28

Figure C.2.1.3 Number of New Water Connections Provided during 2024/2025 28

Figure C.2.1.4 User Connection Profile for Wastewater 30

Figure C.2.1.5 User Connection Distribution for Wastewater – Year 2024/2025 30

Figure C.2.1.6 Number of New Wastewater Connections Provided during 2024/2025 30

Figure C.2.1.7 Number of Billed Metered Consumers per System 33

Figure C.2.1.8 Overstrand Municipality's Billed Metered Consumers per Category Type 33

Figure C.2.2.1 Household Water Access Profile 35

Figure C.2.2.2 Household Sanitation Access Profile 38

Figure C.3.3.1 Revenue Collection and Cost Recovery Profile (Water) 53

Figure C.3.3.2 Revenue Collection and Cost Recovery Profile (Wastewater) 53

Figure C.3.3.3 Debtors for the last Ten Financial Years at the end of June 55

Figure C.6.1 CV and CRC of the Water Infrastructure 97

Figure C.6.2 Remaining Useful Life of the Water Infrastructure 98

Figure C.6.3 Age Distribution of the Water Infrastructure 99

Figure C.6.4 Condition Grading of the Water Infrastructure 100

LIST OF TABLES AND FIGURES / CONTINUE

FIGURES

Figure C.6.5 CV and CRC of the Sewerage Infrastructure 101
Figure C.6.6 Remaining Useful Life of the Sewerage Infrastructure 102
Figure C.6.7 Age Distribution of the Sewerage Infrastructure 103
Figure C.6.8 Condition Grading of the Sewerage Infrastructure 104
Figure C.9.1 Spider Diagram of the Vulnerability Levels of Overstrand Municipality for 2025 117
Figure C.9.2 Water Indicators Monitored by Overstrand Municipality 123
Figure C.9.3 Sanitation Indicators Monitored by Overstrand Municipality 124

ABBREVIATIONS AND DEFINITIONS

AADD	Average Annual Daily Demand
BDRR	Blue Drop Risk Rating
C	Chemical
CAH	Chemical Acute Health
CAP	Corrective Action Plan
CBD	Central Business District
CCH	Chemical Chronic Health
CF	Consequence of Failure
CNA	Chemical Non Health Aesthetic
COD	Chemical Oxygen Demand
CRC	Current Replacement Cost
CRR	Cumulative Risk Ratio
CV	Carrying Value
CWDP	Coastal Water Discharge Permit
D	Disinfectant
DAFF	Dissolved Air Flotation and Filtration
DEA & DP	Department of Environmental Affairs and Development Planning
DLG	Department of Local Government
DO	Dissolved Oxygen
DRC	Depreciated Replacement Cost
DWQ	Drinking Water Quality
DWS	Department of Water and Sanitation
EC	Electrical Conductivity
EHP	Emergency Housing Project
EL	External Loan
ESKOM	Electricity Supply Commission
GAMAP	Generally Accepted Municipal Accounting Policies
GD	Green Drop
GDIP	Green Drop Improvement Plan
HH	Household
HL	High Level
IAM	Infrastructure Asset Management
ICT	Information and Communications Technology
IDP	Integrated Development Plan
ILI	Infrastructure Leakage Index
IMQS	Infrastructure Management Query System
IRIS	Integrated Regulatory Information System
IT	Information Technology
IWA	International Water Association
kl	Kilolitre
KPA	Key Performance Area
KPI	Key Performance Indicator
L	Licence
l/c/d	Litre per Capita per Day
LF	Likelihood of Failure

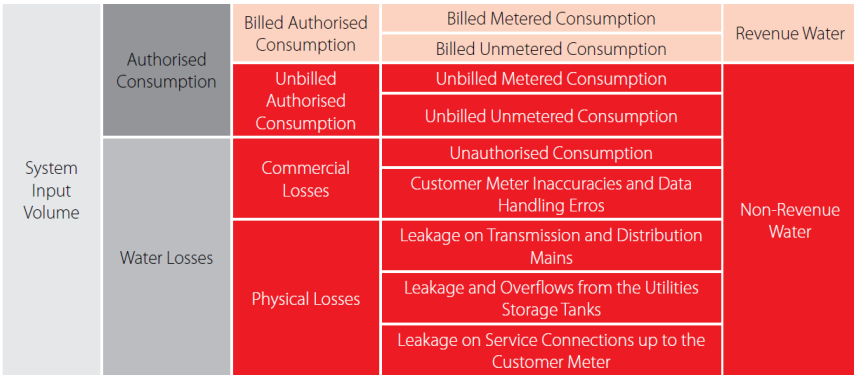
ABBREVIATIONS AND DEFINITIONS / CONTINUE

LGSETA	Local Government Sector Education and Training Authority
LL	Low Level
LM	Local Municipality
l/p/d	Litre per Person per Day
M	Microbiological
m³/a	Cubic Metre per Annum
MAH	Microbiological Acute Health
MCC	Motor Control Centre
MFMA	Municipal Finance Management Act
MIG	Municipal Infrastructure Grant
MISA	Municipal Infrastructure Support Agent
Ml	Mega Litre
Ml/a	Mega Litre per Annum
Ml/d	Mega Litre per Day
MLSS	Mixed Liquor Suspended Solids
MTREF	Medium Term Revenue Expenditure Framework
MuSSA	Municipal Strategic Self-Assessment
NRW	Non-Revenue Water
O	Operational
O&M	Operation and Maintenance
OLM	Overstrand Local Municipality
P	Physical
PAT	Progress Assessment Tool
PC	Process Controller
PDA	Previously Disadvantaged Areas
PFD	Process Flow Diagram
PPE	Personal Protective Equipment
PRP	Pipe Replacement Potential
PRV	Pressure Reducing Valve
PS	Pump Station
PV	Photovoltaics
RAS	Return Activated Sludge
RDP	Reconstruction and Development Programme
RO	Reverse Osmosis
RUL	Remaining Useful Life
SALGA	South African Local Government Association
SANS	South African National Standard
SCADA	Supervisory Control and Data Acquisition
SDBIP	Service Delivery and Budget Implementation Plan
SDF	Spatial Development Framework
SIV	System Input Volume
SWRO	Sea Water Reverse Osmosis
TDS	Total Dissolved Solids
TMG	Table Mountain Group

ABBREVIATIONS AND DEFINITIONS / CONTINUE

VIP	Ventilated Improved Pit
WAS	Waste Activated Sludge
WaSP	Water Safety Plan
WC/WDM	Water Conservation / Water Demand Management
WDM	Water Demand Management
WMA	Water Management Area
WRC	Water Research Commission
WSA	Water Services Authority
WSDP	Water Services Development Plan
WSI	Water Services Institution
WSIG	Water Services Infrastructure Grant
WSP	Water Services Provider
WSS	Water Supply System
WTP	Water Treatment Plant
WTW	Water Treatment Works
WULA	Water Use Licence Application
W_2RAP	Wastewater Risk Abatement Plan
WWTW	Wastewater Treatment Works
Y	Yield

KEY TERMS AND INTERPRETATIONS

KEY TERMS	INTERPRETATIONS
Current replacement cost (CRC)	The cost of replacing the service potential of an existing asset, by reference to some measure of capacity, with an appropriate modern equivalent asset. GAMAP defines CRC as the cost the entity would incur to acquire the asset on the reporting date.
Depreciated Replacement Cost (DRC)	The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset.
Financial Year	Financial year means in relation to- • a national or provincial department, the year ending 31 March; or • a municipality, the year ending 30 June.
Integrated Development Plan (IDP)	An IDP is a legislative requirement for municipalities, which identifies the municipality's key development priorities; formulates a clear vision, mission and values; formulates appropriate strategies; shows the appropriate organisational structure and systems to realise the vision and the mission and aligns resources with the development priorities.
International Water Association (IWA) Water Balance	
System Input Volume	The volume of treated water input to that part of the water supply system to which the water balance calculation relates.
Authorised Consumption	The volume of metered and/or un-metered water taken by registered customers, the water supplier and others who are implicitly or explicitly authorised to do so by the water supplier, for residential, commercial and industrial purposes. It also includes water exported across operational boundaries. Authorised consumption may include items such as firefighting and training, flushing of mains and sewers, street cleaning, watering of municipal gardens, public fountains, frost protection, building water, etc. These may be billed or unbilled, metered or unmetered.
Water Losses	The difference between System Input and Authorised Consumption. Water losses can be considered as a total volume for the whole system, or for partial systems such as transmission or distribution schemes, or individual zones. Water Losses consist of Physical Losses and Commercial Losses (also known as Real Losses and Apparent Losses).
Billed Authorised Consumption	Those components of Authorised Consumption which are billed and produce revenue (also known as Revenue Water). Equal to Billed Metered Consumption plus Billed Unmetered Consumption.
Unbilled Authorised Consumption	Those components of Authorised Consumption which are legitimate but not billed and therefore do not produce revenue. Equal to Unbilled Metered Consumption plus Unbilled Unmetered Consumption.
Commercial Losses	Includes all types of inaccuracies associated with customer metering as well as data handling errors (meter reading and billing), plus unauthorised consumption (theft or illegal use). Commercial losses are called "Apparent Losses" by the International Water Association and in some countries the misleading term "Non-Technical Losses" is used.
Physical Losses	Physical water losses from the pressurized system and the utility's storage tanks, up to the point of customer use. In metered systems this is the customer meter, in unmetered situations this is the first point of use (stop tap/tap) within the property. Physical losses are called "Real Losses" by the International Water Association and in some countries the misleading term "Technical Losses" is used.
Billed Metered Consumption	All metered consumption which is also billed. This includes all groups of customers such as domestic, commercial, industrial or institutional and also includes water transferred

KEY TERMS	INTERPRETATIONS
	across operational boundaries (water exported) which is metered and billed.
Billed Unmetered Consumption	All billed consumption which is calculated based on estimates or norms but is not metered. This might be a very small component in fully metered systems (for example billing based on estimates for the period a customer meter is out of order) but can be the key consumption component in systems without universal metering. This component might also include water transferred across operational boundaries (water exported) which is unmetered but billed.
Unbilled Metered Consumption	Metered Consumption which is for any reason unbilled. This might for example include metered consumption by the utility itself or water provided to institutions free of charge, including water transferred across operational boundaries (water exported) which is metered but unbilled.
Unbilled Unmetered Consumption	Any kind of Authorised Consumption which is neither billed nor metered. This component typically includes items such as fire-fighting, flushing of mains and sewers, street cleaning, frost protection, etc. In a well-run utility it is a small component which is very often substantially overestimated. Theoretically this might also include water transferred across operational boundaries (water exported) which is unmetered and unbilled – although this is an unlikely case.
Unauthorised Consumption	Any unauthorised use of water. This may include illegal water withdrawal from hydrants (for example for construction purposes), illegal connections, bypasses to consumption meters or meter tampering.
Customer Metering Inaccuracies and Data Handling Errors	Commercial water losses caused by customer meter inaccuracies and data handling errors in the meter reading and billing system.
Leakage on Transmission and /or Distribution Mains	Water lost from leaks and breaks on transmission and distribution pipelines. These might either be small leaks which are still unreported (e.g., leaking joints) or large bursts which were reported and repaired but did obviously leak for a certain period before that.
Leakage and Overflows at Utility's Storage Tanks	Water lost from leaking storage tank structures or overflows of such tanks caused by e.g. operational or technical problems.
Leakage on Service Connections up to point of Customer Metering	Water lost from leaks and breaks of service connections from (and including) the tapping point until the point of customer use. In metered systems this is the customer meter, in unmetered situations this is the first point of use (stop tap/tap) within the property. Leakage on service connections might be reported breaks but will predominately be small leaks which do not surface and which run for long periods (often years).
Revenue Water	Those components of Authorised Consumption which are billed and produce revenue (also known as Billed Authorised Consumption). Equal to Billed Metered Consumption plus Billed Unmetered Consumption.
Non-Revenue Water	Those components of System Input which are not billed and do not produce revenue. Equal to Unbilled Authorised Consumption plus Physical and Commercial Water Losses.
Municipal Finance Management Act (MFMA)	Municipal Finance Management Act, 2003 (Act No. 56 of 2003)
MIG	A conditional grant from national government to support investment in basic municipal infrastructure.
Remaining useful life (RUL)	The time remaining over which an asset is expected to be used.
Service Delivery Budget Implementation Plan (SDBIP)	The SDBIP is a management, implementation and monitoring tool that enable the Municipal Manager to monitor the performance of senior managers, the Mayor to monitor the performance of the Municipal Manager, and for the community to monitor the performance of the municipality.
Strategic Framework for Water Services	The Strategic Framework provides a comprehensive summary of policy with respect to the water services sector in South Africa and sets out a strategic framework for its implementation over the next ten years.
Water Conservation	The minimisation of loss or waste, the care and protection of water resources and the efficient and effective use of water.
Water Demand Management	The adaptation and implementation of a strategy by a water institution or consumer to influence the water demand and usage of water in order to meet any of the following objectives: economic efficiency, social development, social equity, environmental protection, sustainability of water supply and services, and political acceptability.
Water Services Authority (WSA)	A water services authority means a municipality with the executive authority and the right to administer water services as authorised in terms of the Municipal Structures Act, 1998 (Act No.117 of 1998). There can only be one water services authority in any specific area. Water services authority area boundaries cannot overlap. Water services authorities are

KEY TERMS	INTERPRETATIONS
	metropolitan municipalities, district municipalities and authorised local municipalities.
Water Services Development Plan (WSDP)	A plan to be developed and adopted by the WSA in terms of the Water Services Act, 1997 (Act No.108 of 1997)
WSDP Guide Framework	Modular tool which has been developed by the DWS to support WSAs in complying with the Water Services Act with respect to Water Services Development Planning and which is also used by the DWS to regulate such compliance.
Water Services Provider (WSP)	A WSP means any person or institution who provides water services to consumers or to another water services institution, but does not include a water services intermediary.

OVERSTRAND MUNICIPALITY

ANNUAL WSDP PERFORMANCE AND WATER SERVICES AUDIT REPORT FOR 2024/2025

EXECUTIVE SUMMARY

Overstrand Municipality is required in terms of Section 18 of the Water Services Act, 1997 (Act No.108 of 1997), as well as the "Regulations relating to compulsory national standards and measures to conserve water", as issued in terms of sections 9(1) and 73(1)(j) of the Water Services Act, to report on the implementation of its WSDP during each financial year and to include a water services audit in such an annual report.

Section 62 of the Water Services Act further requires the Minister to monitor every WSI in order to ensure compliance with the prescribed national standards. This regulation requires a WSA to complete and submit a WSDP Performance- and Water Services Audit Report every financial year.

The WSDP Performance- and Water Services Audit is designed to monitor the compliance of the WSA and other WSIs with these regulations. The Water Services Act allows the audit to be used as a tool to compare actual performance of the WSA against the targets and indicators set in their WSDP. The WSDP Performance- and Water Services Audit also assists local communities and DWS to assess how well WSAs are performing relative to their stated intentions and their capacity.

The WSDP Performance- and Water Services Audit Report will give an overview of the implementation of the Municipality's previous year's WSDP, for the 2024/2025 financial year, and can be seen as an annexure to Overstrand Municipality's Annual Report. The Annual Report is compiled as required by the Local Government: Municipal Systems Act, Act no 32 of 2000 (Section 46) and the Local Government: Municipal Finance Management Act, Act no 56 of 2003 (Section 121).

Availability of the Water Services Audit Report: The WSDP Performance- and Water Services Audit Report is a public document and must be made available within four months after the end of each financial year and must be available for inspection at the offices of the WSA. It is also recommended that the document be placed on the Municipality's website and that copies of the document be placed at the public libraries. The Water Services Audit Report also needs to be made available to the Minister of the DWS, the Minister of the Department of Cooperative Governance, the Province and to SALGA, as required by the Water Services Act, 1997.

The WSDP Performance- and Water Services Audit Report include the following detail information:

- The Municipality's performance with regard to their KPIs for water and sewerage services for the 2024/2025 financial year, as included in the Municipality's SDBIP.
- The Municipality's Performance with regard to DWS's Blue-, Green- and No Drop Assessments. Blue drop status is awarded to those water schemes that comply with 95% criteria on drinking water quality management. Green drop status is awarded to those WWTWs that comply with 90% criteria on key selected indicators on wastewater quality management. No drop status is awarded to those WSAs that comply with 90% criteria to water use efficiency (Acceptable performance in water demand management in the municipal sector).
- DWS's Scorecard for assessing the potential for WC/WDM efforts in the Municipality.
- Information to be included in a WSDP Performance- and Water Services Audit as stipulated in regulations under section 9 of the Water Services Act, "Guidelines for Compulsory National Standards" and also required by DWS's 2014 WSDP Performance- and Water Services Audit Report guidelines.
- Information on the implementation of the various WSDP activities, as included under the WSDP Business Elements in DWS's WSDP guidelines.

The Municipality has a comprehensive Performance Management System in place. The SDBIP is the process plan and performance indicator / evaluation for the execution of the budget. The SDBIP is being used as a management, implementation and monitoring tool that assists and guide the Executive Mayor, Councillors, Municipal Manager, Senior Managers and the community. The plan serves as an input to the performance agreements of the Municipal Manager and Directors. It also forms the basis for the monthly, quarterly, mid-year and the annual assessment report and performance assessments of the Municipal Manager and Directors.

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

- The Water Services Audit Report for 2023/2024 was finalised and approved by Council as part of the Annual Report. The NRW water balance models were updated for each of the distribution systems (Up to the end of June 2024) as part of the Water Services Audit Process.
- Overstrand Municipality continues with the implementation of their Drinking Water Quality and Effluent Quality Sampling Programmes (Both Operational and Compliance Monitoring). Sample results are loaded monthly onto DWS's IRIS. All the WTWs and WWTWs were registered on the IRIS website, according to the new Regulation 3630 requirements. The quality of the treated effluent re-used for irrigation purposes from the Hermanus- and Gansbaai WWTW is also sampled monthly.
- Overstrand Municipality is continuing with their Groundwater Monitoring and Management Programmes. The following Groundwater Monitoring Reports were compiled during the last financial year:
  - Gansbaai Groundwater Monitoring at the WWTW and Communal Sports Centre. Gansbaai Annual Groundwater Monitoring Report October 2023 to October 2024.
  - Water Source Development and Management Plan for the Hermanus Area. Gateway, Camphill and Volmoed Wellfields Annual Monitoring Report: October 2023 to September 2024.
  - Water Source Development and Management Plan for the Overstrand Local Municipality. Kouevlakte Wellfield Annual Monitoring Report October 2023 to September 2024.
  - Water Source Development and Management Plan for the Overstrand Local Municipality. Baardskeerdersbos Wellfield Annual Monitoring Report October 2023 to September 2024.
- Detail Plant and Process Audits were done for all the WTWs and WWTWs, Enviro Metsi, December 2024.
- The Asset Register was updated to include all the water and sewerage capital projects completed during the 2024/2025 financial year.
- The following Technical investigations were completed during the 2024/2025 financial year:
  - Upgrade of Hawston Wastewater Treatment Works: Preliminary Design Report. WEC Consult, July 2024.
  - Upgrade and Refurbishment of Buffels Rivier Water Treatment Works: Preliminary Design Repot, Bigen, March 2025.
  - Marine Ecological Monitoring Report for Hermanus Wastewater Treatment Works (WWTW), WEC Consult, May 2025.
  - Upgrade of Hawston Wastewater Treatment Works: WSIG Technical Report. WEC Consult, June 2025.
  - De Bos Dam: Dam Safety Report: Fifth Dam Safety Evaluation Report, Zutari, June 2025.

The Municipality also previously received the following awards / acknowledgements with regard to DWS's Blue-, Green- and No Drop assessments:

- **Overstrand Municipality was awarded first place in the 2023 Blue Drop Best Performing Water Services Institution category in South Africa.** All eight water supply systems were awarded Blue Drop Status. The Blue Drop Risk Ratings for all eight systems were also in the low-risk category (<50%). The Blue Drop scores were supported by an excellent technical site assessment score of 94% for the Preekstoel WTW. **The Buffels River, Greater Gansbaai, Greater Hermanus, Kleinmond, Pearly Beach and Stanford systems were awarded a joint first place in the 2023 Blue Drop Best Performing Water Supply System category.**

- **Overstrand Municipality performed above average with regard to wastewater quality management, with an overall Green Drop Score of 89% for DWS's 2021 assessment.** The Green Drop Scores for all six WWTWs were between 88% and 96% (Six potential Green Drop Certified Systems).

- Overstrand Municipality also received their 2023 Green Drop Risk Ratings, as included in the 2023 Green Drop Progress Report. The overall Cumulative Risk Rating of Overstrand Municipality was 51.3%. The Wastewater Risk Ratings were at low risk (<50%) for the Gansbaai-, Kleinmond- and Stanford WWTW and at medium risk for the Hermanus-, Pearly Beach- and Hawston WWTW (50% - <70%).

- **Overstrand Municipality achieved an "Excellent" score of 101% for the 2023 No Drop Assessment and was acknowledged as the top performing WSA in the country with regard to the No Drop Assessment.**

Overstrand Municipality completed or continued with the following key water and sewerage capital infrastructure projects during the 2024/2025 financial year (Capital expenditure above R1 000 000).

- Various sections of the water reticulation networks and sewer drainage networks and pump stations were upgraded as recommended in the Water and Sewer Master Plans. Sections of the old water reticulation networks were also replaced in Proteadorp (Implementation of the Pipeline Replacement Programme).

- Sections of the bulk raw water pipelines were replaced.

- The Municipality continued with the Hermanus Wellfield Phase 2 upgrade project, including the basic assessment process for the upgrade of the wellfields in the Hemel-en-Aarde valley and the successful drilling of two (2) new production boreholes.

- The Municipality started with the installation of a new disinfection system for the Preekstoel WTW and the refurbishment of the Buffels River WTW.

- The refurbishment of the Pearly Beach water tower was completed.

- The refurbishment / upgrade of the Kleinmond WWTW was completed.

- Disinfection facilities at some of the WWTWs were upgraded.

- Vehicles were purchased to improve service delivery for sewerage services.

- The Municipality continued with the upgrading work at the Hermanus WWTW (Screens, RAS and Sludge Dewatering facilities).

Quantity of Water Services Provided (IWA Water Balances)

Detail IWA water balance models are in place for each of the water distribution systems (towns) in Overstrand Municipality's Management Area. These models include the volume of raw water abstracted from the various resources, the treated volume supplied from the WTWs (System Input Volumes) and the Treatment Losses, NRW and Water Losses for each of the distribution systems. The flows at each of the WWTWs are also metered and recorded by the Municipality.

Water Services Delivery Profile

The number of billed metered consumers per category or user type is available for each of the water distribution systems. The 2024/2025 number of billed metered consumers in Overstrand Municipality was 43 322. The average annual growth in the number of billed metered consumers over the period 2016/2017 to 2024/2025 was 2.33%. All the formal households in the urban areas of Overstrand Municipality's Management Area are provided with water and sewer connections inside the erven.

Informal areas are supplied with communal shared services as an intermediary measure. The number of households in informal areas for June 2025 was 3 076. The average ratio of the number of households per communal tap was 7.8 (396 communal taps) and the ratio of the number of households per communal toilet facility was 4.2 (726 toilets). A total of 81 communal taps and 133 communal toilet facilities are also available to the 7 326 households on erven that was part of land invasions.

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. All schools and medical facilities in Overstrand Municipality's Management Area are supplied with adequate water and sanitation services.

Cost Recovery and Free Basic Services

A five-block step water tariff system is implemented by Overstrand Municipality. This tariff system discourages the wasteful or inefficient use of water. It is expected that this tariff structure will continue to be implemented in the future. The sustainable supply of potable water is however becoming an ever-increasing challenge.

The first ten (10) kl of water are provided free to all indigent registered consumers. The number of indigent registered households for June 2025 was 5 646. Overstrand Municipality's tariffs support the viability and sustainability of water supply services to the poor through cross-subsidies (where feasible). Free basic water and sanitation services are linked to the Municipality's Indigent Policy and all indigent registered households therefore receive free basic water and sanitation services. This implies that either the equitable share is used to cover this cost, or higher consumption blocks are charged at a rate greater than the cost in order to generate a surplus to cross-subsidise indigent consumers who use up to ten (10) kilolitres per month.

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

Operational and Maintenance Expenditure and Income for Water and Sanitation Services						
Service	**Expenditure / Income**	**24/25**	**23/24**	**22/23**	**21/22**	**20/21**
Water	Expenditure	R185 746 525	R177 529 628	R153 152 405	R145 142 796	R137 409 799
	Income	R219 425 768	R196 172 749	R173 298 233	R156 425 649	R153 115 215
	Surplus / Deficit	**R33 679 243**	**R18 643 121**	**R20 145 828**	**R11 282 853**	**R15 705 416**
Sanitation	Expenditure	R142 095 942	R146 961 935	R140 730 503	R112 745 218	R99 329 089
	Income	R143 832 722	R123 696 261	R117 561 435	R123 712 658	R109 567 538
	Surplus / Deficit	**R1 736 780**	**R23 265 674**	**R23 169 068**	**R10 967 440**	**R10 238 449**

Water Quality

Comprehensive Operational and Compliance Water and Wastewater Quality Monitoring Programmes are implemented by Overstrand Municipality. **The water quality of all the water distribution systems in Overstrand Municipality was categorised as "Excellent" for the 2024/2025 financial year, except for the Operational Efficiency indicator for Baardskeerdersbos, which was categorised as "Unacceptable" (According to the SANS 241:2015 classification).**

The percentage compliance of the water quality samples taken over the period July to June for the last three financial years for the various water distribution systems, with regard to the four SANS:241:2015 categories, are summarised in the table below.

Percentage Compliance of the Water Quality Samples Taken Over the Period July to June for the Last Three Financial Years															
Distribution System	Acute Health (%)						Chronic Health (%)			Aesthetic (%)			Operational Efficiency (%)		
	Microbiological			Chemical											
	24/25	23/24	22/23	24/25	23/24	22/23	24/25	23/24	22/23	24/25	23/24	22/23	24/25	23/24	22/23
Buffels River	100.0	99.4	99.3	100.0	100.0	100.0	99.7	100.0	100.0	99.8	99.8	99.8	91.3	94.4	89.7
Kleinmond	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.0	100.0	98.6	96.8	98.2
Greater Hermanus	100.0	100.0	100.0	100.0	100.0	100.0	99.8	100.0	100.0	99.7	99.2	99.5	97.2	93.7	98.4
Stanford	99.2	99.2	99.1	100.0	100.0	100.0	98.8	98.8	99.4	99.6	100.0	100.0	99.5	95.1	97.0
Greater Gansbaai	100.0	99.6	99.3	100.0	100.0	100.0	100.0	100.0	99.8	99.8	99.9	100.0	97.4	96.6	97.1
Pearly Beach	100.0	94.3	99.1	100.0	100.0	100.0	99.0	98.4	100.0	100.0	98.9	100.0	97.8	88.4	94.9
Baardskeerdersbos	100.0	100.0	99.1	100.0	100.0	100.0	99.4	97.8	97.3	98.0	94.9	94.9	85.1	87.9	93.3
Buffeljags Bay	100.0	98.8	97.6	100.0	100.0	100.0	98.6	100.0	100.0	100.0	95.7	87.0	98.1	95.8	97.8
All Systems	**99.9**	**99.2**	**99.4**	**100.0**	**100.0**	**100.0**	**99.6**	**99.5**	**99.6**	**99.6**	**98.8**	**98.6**	**95.9**	**94.0**	**96.0**

Note: *Unacceptable* (According to SANS241-2:2015, Table 4)

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

The table below indicates the compliance of the E.Coli monitoring frequency in the water distribution systems of Overstrand Municipality, in terms of the minimum requirements of SANS:241-2: 2015 (Table 2). The period assessed was for samples taken from July 2024 to June 2025.

Overstrand Municipality's Compliance of the Monthly E.Coli Monitoring Frequency in the Water Distribution Systems in Terms of the Minimum Requirements of SANS 241-2:2015 (Table 2)			
Distribution System	Population served	Required number of monthly samples (SANS 241-2:2015: Table 2)	Number of monthly E.Coli samples taken by Municipality during 2024/2025
Buffels River	3 897	2.0	12.5
Kleinmond	9 138	2.0	8.3
Greater Hermanus	83 361	16.7	25.0
Stanford	6 717	2.0	10.3
Greater Gansbaai	24 788	5.0	22.8
Pearly Beach	1 374	2.0	8.3
Baardskeerdersbos	130	2.0	8.3
Buffeljags Bay	157	2.0	6.4

It can be noted from the above table that the number of monthly E.Coli samples taken by the Municipality during the 2024/2025 financial year was far more than the required number of samples for all the water distribution systems.

The final effluent quality complies with the authorised Microbiological, Chemical and Physical limits for most of the WWTWs. The overall Microbiological, Chemical and Physical compliance percentages of the final effluent samples taken over the last three financial years at the Kleinmond-, Hawston-, Hermanus-, Stanford-, Gansbaai- and Pearly Beach WWTW are summarised in the tables below.

Overall Percentage Compliance of the Final Effluent Samples Taken Over the Last Three Financial Years									
WWTW	Microbiological (%)			Chemical (%)			Physical (%)		
	24/25	23/24	22/23	24/25	23/24	22/23	24/25	23/24	22/23
Kleinmond	75.0%	75.0%	91.7%	68.8%	45.8%	54.2%	94.4%	80.6%	83.3%
Hawston	85.7%	83.3%	100.0%	58.8%	68.8%	54.2%	80.6%	75.0%	72.2%
Hermanus	54.2%	41.7%	91.7%	74.4%	93.8%	89.6%	94.6%	97.2%	100.0%
Stanford	75.0%	75.0%	33.3%	98.0%	81.3%	97.9%	88.9%	88.9%	94.4%
Gansbaai	63.2%	66.7%	16.7%	73.4%	89.6%	66.7%	87.8%	97.2%	88.9%
Pearly Beach	85.7%	91.7%	83.3%	70.8%	75.0%	72.9%	66.7%	33.3%	25.0%

Overall Percentage Compliance of the Final Effluent Samples Taken Over the Last Three Financial Years									
WWTW	Microbiological (%)			Chemical (%)			Physical (%)		
All WWTWs	70.9%	72.2%	69.4%	73.4%	75.7%	72.6%	85.6%	78.7%	77.3%

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

Power outages through load shedding have been at the worst level ever during the 2022/2023 and 2023/2024 financial years, and had the following negative impacts on the treatment processes at the WWTWs and the compliance of the final effluent:

- Pumps and telemetry devices cannot be operated during load shedding periods if no backup power is available;
- Treatment stops and sewage flows cannot be controlled, which also negatively impact the compliance of the final effluent discharged from the WWTWs; and
- Equipment damage costs, back-up generators costs, including refuelling and more frequent maintenance, increased labour costs and increased pump start-up costs.

The floods and storms experienced over the last number of years also had a negative impact on the final effluent quality compliance for the Hermanus and Gansbaai WWTWs.

Water Conservation and Water Demand Management

The Municipality continued with the implementation of their WDM Strategy and Action Plan to keep the NRW and Water Losses as low as possible. The overall NRW for all the systems for the 2024/2025 financial year was 2 864 Ml (31.21%) and the overall water losses were 2 766 Ml (30.15%).

Treatment Losses, NRW, Water Losses and ILIs for the Various Water Distribution Systems								
Water Distribution System	Component	Unit	24/25	Record: Prior (Ml/a)				
				23/24	22/23	21/22	20/21	19/20
Buffels River	Treatment Losses	Volume	10.516	12.232	26.640	51.005	14.959	79.606
		Percentage	1.35%	1.56%	3.97%	6.47%	1.94%	10.37%
	NRW	Volume	285.971	345.377	232.091	358.678	383.457	335.271
		Percentage	37.33%	44.83%	35.99%	48.65%	50.60%	48.70%
	Water Losses	Volume	240.348	286.476	169.546	295.471	330.845	302.971
		Percentage	31.37%	37.19%	26.29%	40.08%	43.66%	44.01%
	ILI		2.36	2.83	1.73	3.04	3.44	3.00
	The current treatment losses of below 5% are at an excellent level. The NRW and Water Losses decreased over the last financial year, which are excellent. The NRW percentage is above the DWS's target of 30% and the Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards a NRW target below 30% and a water losses target below 25% for the Buffels River system. The ILI value of 2.36 indicates a good system and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							
Kleinmond	Treatment Losses	Volume	54.624	63.585	86.275	61.360	75.267	73.584
		Percentage	5.11%	6.29%	9.40%	7.04%	8.55%	8.19%
	NRW	Volume	433.103	392.380	287.316	281.074	289.372	276.922
		Percentage	42.67%	41.43%	34.54%	34.69%	35.94%	33.57%
	Water Losses	Volume	423.765	384.712	283.332	269.958	282.963	273.090
		Percentage	41.75%	40.62%	34.06%	33.32%	35.15%	33.11%
	ILI		4.58	4.17	3.09	2.96	3.11	3.30
	The current treatment losses of below 10% are at an acceptable level. The NRW and water losses increased slightly over the last financial year. The NRW percentage is above the DWS's target of 30% and the Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards a NRW target below 30% and a water losses target below 25% for Kleinmond. The current ILI value above 4.0 indicates a poor management system, which require specific NRW and water loss reduction interventions.							
Greater Hermanus	Treatment Losses	Volume	255.258	196.668	113.774	194.527	217.909	445.591
		Percentage	4.75%	4.12%	2.67%	4.56%	5.14%	10.79%
	NRW	Volume	1 380.614	1 186.105	816.989	753.296	960.986	430.532
		Percentage	27.00%	25.90%	19.67%	18.50%	23.88%	11.69%

Treatment Losses, NRW, Water Losses and ILIs for the Various Water Distribution Systems								
Water Distribution System	Component	Unit	24/25	Record: Prior (Ml/a)				
				23/24	22/23	21/22	20/21	19/20
	Water Losses	Volume	1 351.655	1 155.771	782.891	702.134	947.239	416.581
		Percentage	26.43%	25.23%	18.85%	17.25%	23.54%	11.31%
	ILI		3.14	2.70	1.77	1.62	2.23	0.98
	The current treatment losses of below 5% are at an excellent level. The NRW and water losses increased during the last financial year, but are still below DWS's target of 30% for NRW. The Municipality needs to work towards a NRW target below 25% and a water losses target below 20% for Hermanus. The ILI value between 2.0 and 4.0 indicates a good management system and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							
Stanford	Treatment Losses	Volume	115.904	134.894	235.534	197.305	143.545	40.381
		Percentage	18.36%	24.59%	47.26%	42.08%	32.15%	11.05%
	NRW	Volume	210.916	129.046	13.485	17.035	79.613	93.141
		Percentage	40.93%	31.19%	5.13%	6.27%	26.28%	28.65%
	Water Losses	Volume	208.328	126.448	11.884	13.758	78.036	91.463
		Percentage	40.43%	30.57%	4.52%	5.07%	25.76%	28.14%
	ILI		4.66	3.39	0.33	0.39	2.27	4.31
	The treatment losses of the RO plant is closely monitored by the Municipality to ensure that it is at acceptable levels. The NRW and water losses for the 21/22 and 22/23 financial years were very low for Stanford. The Municipality recently installed a new bulk water meter in order to ensure that readings for the calculation of the NRW and Water are accurate. The 23/24 NRW were just above DWS's target of 30%, but the NRW for the last financial year increased drastically, which is a concern. The Municipality needs to work towards a NRW target below 30% and a water losses target below 25% for Stanford. The current ILI value above 4.0 indicates a poor management system, which require specific NRW and water loss reduction interventions.							
Greater Gansbaai	Treatment Losses (Franskraal)	Volume	73.405	115.808	83.200	120.239	97.490	64.025
		Percentage	5.58%	9.17%	6.55%	10.64%	8.69%	5.45%
	Treatment Losses (De Kelders)	Volume	165.799	114.187	83.545	69.131	79.262	69.012
		Percentage	33.13%	25.11%	23.11%	19.71%	22.89%	19.68%
	NRW	Volume	499.286	454.827	455.188	308.847	308.492	390.657
		Percentage	31.68%	30.56%	31.08%	23.92%	23.89%	28.07%
	Water Losses	Volume	489.460	444.798	450.605	294.694	303.451	384.859
		Percentage	31.06%	29.89%	30.77%	22.82%	23.50%	27.66%
	ILI		3.23	2.90	3.16	2.13	2.26	3.03
	The treatment losses of the De Kelders RO plant are closely monitored by the Municipality to ensure that it is at acceptable levels. The current treatment losses of below 10% for the Franskraal plant are at an acceptable level. The NRW and water losses increased slightly during the last financial year and is just above the DWS's NRW target of 30%. The Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards a NRW target below 30% and a water losses target below 25% for the Greater Gansbaai system. The ILI value between 2.0 and 4.0 indicates a good management system and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							
Pearly Beach	Treatment Losses	Volume	26.221	18.823	7.263	-6.419	4.756	4.891
		Percentage	13.94%	10.93%	4.89%	-4.35%	3.10%	3.15%
	NRW	Volume	41.758	43.359	25.787	41.065	44.318	46.005
		Percentage	25.80%	28.28%	18.25%	26.65%	29.81%	30.57%
	Water Losses	Volume	40.864	42.463	25.284	39.415	43.574	45.166
		Percentage	25.25%	27.69%	17.89%	25.58%	29.31%	30.02%
	ILI		1.13	1.18	0.70	1.12	1.26	2.81
	The current treatment losses are between 10% and 15%, which are still at an acceptable level. The NRW and Water Losses decreased over the last financial year, which is excellent. The current NRW percentage is below DWS's target of 30% for NRW. The Municipality needs to work towards a NRW target below 25% and a water losses target below 20% for Pearly Beach. The ILI value indicates an excellent system, with no immediate intervention required and the Municipality needs to keep the ILI level below 2.							
Baardskeerdersbos	Treatment Losses	Volume	2.188	3.078	2.229	3.202	2.603	2.637
		Percentage	10.09%	13.45%	11.56%	19.02%	14.67%	14.40%
	NRW	Volume	6.771	8.546	8.125	5.883	7.918	6.941
		Percentage	34.71%	43.14%	47.67%	43.14%	52.31%	44.28%
	Water Losses	Volume	6.565	8.243	7.640	5.738	7.871	6.834
		Percentage	33.65%	41.61%	44.82%	42.08%	52.00%	43.60%

Treatment Losses, NRW, Water Losses and ILIs for the Various Water Distribution Systems								
Water Distribution System	**Component**	**Unit**	**24/25**	**Record: Prior (Ml/a)**				
				23/24	**22/23**	**21/22**	**20/21**	**19/20**
	ILI		**1.72**	**2.17**	**2.26**	**1.71**	**2.35**	**2.12**
	The current treatment losses are between 10% and 15%, which are still at an acceptable level. The NRW and water losses decreased during the last financial year, which are excellent. The current NRW and water losses are however still high. The NRW percentage is above the DWS's target of 30% and the Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards a NRW target below 30% and a water losses target below 25% for Baardskeerdersbos. The ILI value indicates an excellent system, with no immediate intervention required and the Municipality needs to keep the ILI level below 2.							
Buffeljags Bay	Bulk Distribution Losses	Volume	0.060	0.063	0.182	0.247	-0.220	-0.139
		Percentage	0.74%	0.89%	3.10%	4.49%	-3.89%	-2.77%
	NRW	Volume	5.467	3.417	1.998	2.299	3.156	0.930
		Percentage	68.17%	48.56%	35.11%	43.73%	53.68%	18.03%
	Water Losses	Volume	5.449	3.381	1.986	2.243	3.127	0.901
		Percentage	67.94%	48.05%	34.90%	42.67%	53.19%	17.46%
	ILI		**64.38**	**39.94**	**21.47**	**24.25**	**33.80**	**4.95**
	The bulk distribution losses of below 5% are at an excellent level. The NRW and Water Losses increased drastically over the last financial year, which is of concern. The current NRW and water losses are extremely high and above the DWS's NRW target of 30%. The Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards a NRW target below 40% and a water losses target below 30% for Buffeljags Bay. The current ILI value of 64.38 is extremely high, which requires immediate water loss reduction interventions.							
TOTAL	**NRW**	**Volume**	**2 863.886**	**2 563.057**	**1 840.979**	**1 768.177**	**2 077.312**	**1 580.399**
		Percentage	**31.21%**	**30.59%**	**24.48%**	**24.04%**	**28.26%**	**22.31%**
	Water Losses	**Volume**	**2 766.435**	**2 452.293**	**1 733.168**	**1 623.411**	**1 997.106**	**1 521.865**
		Percentage	**30.15%**	**29.27%**	**23.04%**	**22.07%**	**27.17%**	**21.48%**
	ILI		**3.05**	**2.73**	**1.94**	**1.85**	**2.32**	**1.83**
	The NRW and water losses for all the systems combined increased slightly during the last financial year. The overall NRW is just above DWS's target of 30%. The Municipality needs to work towards a NRW target below 30% and a water losses target below 25%. The ILI value between 2.0 and 4.0 indicates good management systems and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							

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

Category A = No specific intervention required.

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

Category C = Requires attention

Category D = Requires immediate water loss reduction interventions

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

Water Services Asset Management

A comprehensive Asset Register is in place for Overstrand Municipality, which include all the water and sewerage infrastructure. The CRC, CV, RUL, Age distribution and Condition of the water and sewerage infrastructure in Overstrand Municipality's Management Area is summarised in the table below (June 2025).

CRC, CV, RUL, Age Distribution and Condition of the Water and Sewerage Infrastructure					
Asset Type			**CRC**	**CV**	**% CV / CRC**
Water Infrastructure			R1 197 389 534	R500 219 337	41.8%
Sewerage Infrastructure			R620 790 870	R484 270 216	78.0%
Remaining Useful Life (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Water Infrastructure	R619 711 251	R27 589 780	R133 336 853	R32 783 817	R383 967 833
Sewerage Infrastructure	R141 087 987	R52 170 503	R54 038 202	R26 130 703	R347 363 475
Age Distribution (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Water Infrastructure	R0	R18 874 813	R199 286 594	R302 882 631	R676 345 496
Sewerage Infrastructure	R0	R23 609 427	R92 366 737	R97 621 921	R407 192 785
Condition grading by Facility Type (CRC)					
Asset Type	**Very Poor**	**Poor**	**Fair**	**Good**	**Very Good**
Water Infrastructure	R371 595 057	R40 565 806	R423 614 557	R159 767 690	R201 846 424
Sewerage Infrastructure	R13 363 793	R68 623 063	R288 660 882	R194 289 913	R55 853 219

The CRC of the water and sewerage infrastructure that will need to be replaced over the next five years (RUL <5 yrs) is R760.799 million. The asset renewal needs for the water infrastructure assets over the next ten years is R64.730 million per year. The reinvestment required is R619.711 million in the first five years and R27.590 million in the second five-year period. The age of 56.5% of the water infrastructure assets is greater than twenty years. The CRC of the water infrastructure with a condition grading of "Very Poor" is R371.595 million. The asset renewal needs for the sewerage infrastructure assets over the next ten years is R19.326 million per year. The reinvestment required is R141.088 million in the first five years and R52.171 million in the second five-year period. The age of 65.6% of the sewerage infrastructure assets is greater than twenty years. The CRC of the sewerage infrastructure with a condition grading of "Very Poor" is R13.364 million.

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

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

Water Services Operation and Maintenance

The existing Water and Wastewater Bulk Works Contract assists Overstrand Municipality with the operation and maintenance of their bulk water and sewerage infrastructure. Design-out Maintenance, Preventative Maintenance and Corrective or Breakdown Maintenance are practised by Overstrand Municipality (Planned and unplanned preventative and corrective maintenance). Adequate resources, information and activity control and management are in place to ensure proper operation and maintenance of the water and sewerage infrastructure.

A pipe replacement study was performed for Overstrand Municipality's entire water distribution system in October 2019. The replacement value for the top 200 pipes to be replaced in Overstrand Municipality is R19.849 million (20.697km).

Water Resources

Overstrand Municipality experienced severe droughts over the periods 2010 to 2011 and 2015 to 2017, with some relief during the winter months of the following years. The droughts reduced the safe yields of the Municipality's own existing surface and groundwater resources. The Municipality therefore continued with the implementation of various WC/WDM measures to lower the current and future water requirements and investigations of augmentation options for the existing water resources.

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

Years in which the Annual Water Requirement will Exceed the Sustainable Yields / License Volumes from the Various Resources

Distribution System	Total Sustainable Yield (Y) / License Volume (L) (x 10^6 m^3/a)	Annual Growth on 2024/2025 requirement (2.5% or 3.0%)	Annual Growth on 2024/2025 requirement (3.5% or 4.0%)	WSDP Projection Model
Buffels River	1.717 (Y)	>2049 (2.5%)	2047 (3.5%)	2048
Kleinmond	2.589 (Y)	>2049 (2.5%)	>2049 (3.5%)	>2049
Greater Hermanus	6.000 (L) *	2027 (3.0%)	2026 (4.0%)	2026
Stanford	1.600 (L)	>2049 (2.5%)	>2049 (3.5%)	>2049
Greater Gansbaai	2.768 (Y)	2038 (3.0%)	2034 (4.0%)	2038
Pearly Beach	0.307 (Y)	2043 (2.5%)	2038 (3.5%)	2037
Baardskeerdersbos	0.090 (Y)	>2049 (2.5%)	>2049 (3.5%)	>2049
Buffeljags Bay	0.028 (Y)	>2049 (2.5%)	>2049 (3.5%)	>2049

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

The augmentation of the Greater Hermanus existing water sources is currently the most critical. The Municipality obtained environmental authorisation for the augmentation of the Hemel & Aarde (Camphill and Volmoed well fields) boreholes. Two new production boreholes were subsequently drilled successfully and will be equipped in 2024/25. A Scoping Report "Augmentation of potable water supplies to Hermanus" was also completed during August 2018. The following augmentation schemes were considered:

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

The following additional work was completed during October 2019, after the completion of the above-mentioned Scoping Report.

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

Water Services Institutional Arrangements and Customer Services

Overstrand Municipality is the official WSA for the entire Municipal Management Area and also acts as the WSP for the whole area. Current water services are delivered by way of an internally operated and managed mechanism. The Municipal personnel is continuously exposed to training opportunities, skills development and capacity building at a technical, operations and management level in an effort to create a more efficient overall service to the users. A Workplace Skills Plan is compiled every year and the specific training needs of the personnel, with regard to water and wastewater management are determined annually.

The approved organogram for the municipality had 1 039 filled and 225 vacant posts at the end of June 2025, resulting in a vacancy rate of 17.8% for the 2024/2025 financial year.

Overstrand Municipality's Vulnerability Index was indicated as 0.21 "Low Vulnerability" in the 2025 Municipal Strategic Self-Assessment. The only area of concern evident from the 2024 assessment is Financial Asset Management (High Vulnerability, 50.0%).

A Water and Wastewater Bulk Works Contract commenced on the 8th of December 2018 between Overstrand Municipality and Veolia Services Southern Africa (Pty) Ltd to operate and maintain the bulk infrastructure in Overstrand Municipality's Management Area for a period of fifteen (15) years. The Municipality also has the right to extend the contract for a further five (5) years. The operation and maintenance of the following bulk infrastructure forms part of the Contract.

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

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

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

Access to safe drinking water is essential to health and is a human right. Safe drinking water that complies with the SANS:241 Drinking Water specification does not pose a significant risk to health over a lifetime of consumption, including different sensitivities that may occur between life stages. Overstrand Municipality is therefore committed to ensure that their water quality always complies with national safety standards.

The Water Safety Plans of Overstrand Municipality includes an Improvement / Upgrade Plan. The purpose of the Improvement / Upgrade Plan is to address the existing significant risks where the existing controls were not effective or absent. Barriers implemented by Overstrand Municipality against contamination and deteriorating water quality include the following:

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

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

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

OVERSTRAND MUNICIPALITY

ANNUAL WSDP PERFORMANCE AND WATER SERVICES AUDIT REPORT FOR 2024/2025

BACKGROUND

Appointment

iX Engineers was appointed by Overstrand Municipality to assist them with the compilation of their WSDP Performance- and Water Services Audit Report, which forms part of their annual report for the 2024/2025 financial year. The purpose of the WSDP Performance- and Water Services Audit Report is to report on the implementation of Overstrand Municipality's previous year's WSDP, for the 2024/2025 financial year.

The DWS developed the "Annual Water Services Development Plan Performance- and Water Services Audit Report" template during 2014, to assist Municipalities with the drafting of their reports. iX Engineers agreed with Overstrand Municipality to follow this template as far as possible.

Purpose

Overstrand Municipality is required in terms of Section 18 of the Water Services Act, 1997 (Act No.108 of 1997), as well as the "Regulations relating to compulsory national standards and measures to conserve water", as issued in terms of sections 9(1) and 73(1)(j) of the Water Services Act, to report on the implementation of its WSDP during each financial year and to include a water services audit in such an annual report.

Section 62 of the Water Services Act further requires the Minister to monitor every WSI in order to ensure compliance with the prescribed national standards. This regulation requires a WSA to complete and submit a WSDP Performance- and Water Services Audit every financial year. The WSDP Performance- and Water Services Audit is designed to monitor the compliance of the WSA and other WSIs with these regulations. The Water Services Act allows the audit to be used as a tool to compare actual performance of the WSA against the targets and indicators set in their WSDP. The purpose of the WSDP Performance- and Water Services Audit is as follows:

- To monitor compliance with the Act and these regulations.
- To compare actual performance against targets contained in the WSDPs.
- To identify possibilities for improving water conservation and water demand management.

The WSDP Performance- and Water Services Audit Report will give an overview of the implementation of the Municipality's previous year's WSDP, for the 2024/2025 financial year, and can be seen as an annexure to Overstrand Municipality's Annual Report. The Annual Report is compiled as required by the Local Government: Municipal Systems Act, Act no 32 of 2000 (Section 46) and the Local Government: Municipal Finance Management Act, Act no 56 of 2003 (Section 121). The WSDP Performance- and Water Services Audit Report contain the following detail information:

- The Municipality's performance with regard to their KPIs for water and sewerage services for the 2024/2025 financial year, as included in the Municipality's SDBIP.
- The Municipality's Performance with regard to DWS's Blue-, Green- and No Drop Assessments. Blue drop status is awarded to those water schemes that comply with 95% criteria on drinking water quality management. Green drop status is awarded to those WWTWs that comply with 90% criteria on key selected indicators on wastewater quality management. No drop status is awarded to those WSAs that comply with 90% criteria to water use efficiency (Acceptable performance in water demand management in the municipal sector).

- DWS's Scorecard for assessing the potential for WC/WDM efforts in the Municipality.
- Information to be included in a WSDP Performance- and Water Services Audit as stipulated in regulations under section 9 of the Water Services Act, "Guidelines for Compulsory National Standards" and also required by DWS's 2014 WSDP Performance- and Water Services Audit Report guidelines.
- Information on the implementation of the various WSDP activities, as included under the WSDP Business Elements in DWS's WSDP guidelines.

The Revised Compulsory National Water and Sanitation Standards, as published in Government Gazette No.52814 of 6 June 2025, include the following Water Services Audit, as a component in the WSDP, requirements (Section 26).

26 (1) A Water Services Institution must include a water services audit on its annual report on the implementation of its WSDP required in terms of section 18(1) and (2)(a) of the Act, which must also be submitted to the department, using the WSDP platform at www.ws.dws.gov.za/wsdp.aspx, on an annual basis, within four months after the end of each municipal financial year.

(2) A Water Services audit must access compliance to these compulsory Standards and must as a minimum, contain the following details:

(a) The quantity of water services provided which must include at least-

(i) the quantity of water used by each user sector.

(ii) the quantity of water provided to the Water Services Institution by another Water Services Institution.

(iii) the quantity of wastewater received at sewage treatment works.

(iv) the quantity of wastewater not discharged to wastewater treatment works and approved for use by the Water Services Institution.

(v) the quantity of faecal sludge received at faecal sludge treatment works and beneficiated.

(vi) the quantity of faecal sludge disposed and the coordinates on the disposal site.

(b) The levels of services rendered which must include at least-

(i) the number of user connections in each user sector.

(ii) the number of households provided with water through communal water services works.

(iii) the number of consumers connected to a water reticulation system where pressures rise above 90m at the consumer connection.

(iv) the number of households provided with sanitation services through consumer installations connected to the sewerage system.

(v) the number of households with access to basic sanitation services.

(vi) the number of new water supply connections.

(vii) the number of new sanitation connections.

(viii) the number of on-site sanitation systems in each user sector.

(ix) the number of households provided with onsite sanitation through communal facilities.

(x) the type of on-site sanitation systems.

(xi) the number of new onsite sanitation systems provided.

(xii) the number of sanitation systems with full containments (tanks or pits).

(c) The numbers provided in compliance with sub-regulation (2) (b) must be expressed as a percentage of the total number of connections or households.

(d) A record of all water measuring devices installed (including Bulk, Zonal, District, and Consumer meters) and water measuring devices tested must include at least-

(i) the number of new measuring devices installed.

(ii) the number of measuring devices tested (in-situ-verification).

(iii) the number of measuring devices replaced expressed as a percentage of the total number of meters installed on an annual basis.

(e) The water quality sampling programme required under regulation 5 (4), the results of the comparison set out in regulation 5 (5) and any non-compliance reported as required under regulation 5 (6).

(f) Water conservation and water demand management must include at least-

(i) the results of the water balance as set out in regulation 17.

(ii) the total quantity of water losses and non-revenue water.

(iii) the demand management activities undertaken.

(iv) measures implemented to reduce water losses and non-revenue water.

(v) the progress made in the installation of water efficient devices; and

(vi) performance measured against key performance indicators.

(g) A Water Services Institution's compliance status to regulation 20 (2) and 20 (3) and progress of implementation toward achieving compliance.

(h) The integrated response plan to mitigate the adverse impact of electricity supply on critical water services infrastructure.

(i) Evaluation of efficacy of measures implemented to address risk findings from the annual condition assessment and three-yearly process audits as required for water treatment works and the water supply network (sub-regulation 22) and the wastewater system (sub-regulation 23).

(j) A Water Services Institution must provide evidence of the operations and maintenance expenditure per annum which must be measured in relation to the original budget contemplated in regulation 24 (2).

A. WATER SERVICES AUTHORITY PROFILE

A.1. Map of Water Services Authority Area of Jurisdiction

Overstrand Municipality is located in the Overberg District of the Western Cape, as indicated in the figure below.



Figure A.1.1: Location of Overstrand Municipality in the Western Cape

The figure below gives an overview of Overstrand Municipality's Management Area and the settlements located in the area.

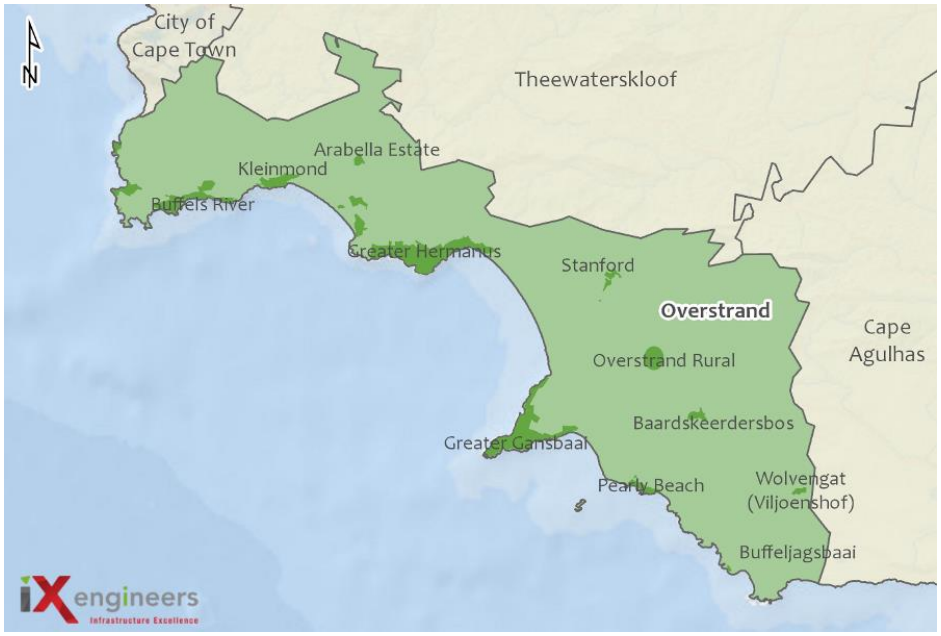


Figure A.1.2: Overstrand Municipality's Management Area

The various schemes supplied with bulk water/sewerage by Overstrand Municipality are discussed in more detail under Section A.3. The existing water and sewerage infrastructure of the various distribution systems are indicated on the Aerial Photos included in the Municipality's detail WSDP documents.

A.2. Water Services Administration and Organization

Overstrand Municipality is the WSA for the entire Municipal Management Area and act as the WSP for the whole area. The Municipality's current water services are delivered by way of an internally operated and managed mechanism.

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

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

The Western Cape Provincial Treasury indicated at the time that they have, in principle, no objection against the Municipality's intention to enter into such a contract, subject to the required Supply Chain Management processes being followed, the requirements of the MFMA being adhered to, and the carry through implications over the MTREF be taken into account within the budgets of each of the affected years with the required budgetary provision to ensure affordability and sustainability over new MTREF years.

Overstrand Municipality's latest approved Organogram is included in Annexure F. The table below gives the contact details of the persons responsible for water services management and planning within Overstrand Municipality.

Table A.2.1: Water Services Administrative Structure	
Accounting Officer	
Designation	Municipal Manager
Name	Dr. DGI O'Neill
Telephone Nr.	028 313 8909
Fax Nr.	028 313 8128
Cell Nr.	076 911 6497
Email	mm@overstrand.gov.za
WSA Manager	
Designation	Chief Engineer: Infrastructure Services
Name	Mr. S Müller
Telephone Nr.	028 313 8019
Fax Nr.	028 313 8128
Cell Nr.	082 495 1924
Email	smuller@overstrand.gov.za
WSP Manager	
Designation	Principal Engineer: Civil Engineering Services
Name	Mr. T Steenberg
Telephone Nr.	028 313 8982

Table A.2.1: Water Services Administrative Structure	
Fax Nr.	-
Cell Nr.	072 402 1019
Email	tsteenberg@overstrand.gov.za
WSDP Manager	
Designation	Principal Engineer: Civil Infrastructure Planning
Name	Mr. H Blignaut
Telephone Nr.	028 313 5047
Fax Nr.	-
Cell Nr.	082 497 9169
Email	hblignaut@overstrand.gov.za
IDP Manager	
Designation	Divisional Manager: Strategic Support Service
Name	Ms. R Louw
Telephone Nr.	028 313 8071
Fax Nr.	028 313 8128
Cell Nr.	083 568 9180
Email	rlouw@overstrand.gov.za

A.3. Water Services Overview

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

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

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

- Kleinmond – ***Kleinmond System***

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

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

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

- Stanford – ***Stanford System***

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

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

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

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

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

- Baardskeerdersbos – ***Baardskeerdersbos System***

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

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

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

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

Table A.3.1: Existing Water Infrastructure (Resources and WTWs)

Water Distribution System	Bulk Supply	WTWs and Treatment Processes	
	(Resources)	WTW (Capacity in Ml/d)	Processes
Buffels River	Buffels River Dam	Buffels River (5.500)	Chemical dosing (Aluminium Chlorohydrate), flocculation, sedimentation, filtration (Rapid gravity sand filters), stabilization (Soda Ash) and disinfection (Chlorine Gas)
Kleinmond	Palmiet River, Kleinmond Borehole and Dorpsfontein Spring	Kleinmond (5.800)	Chemical dosing (Aluminium Chlorohydrate and Soda Ash), flocculation, sedimentation, filtration (Rapid gravity sand filters), stabilization (Soda Ash) and disinfection (Chlorine Gas).
Greater Hermanus	De Bos Dam and Gateway, Camphill and Volmoed wellfields	Preekstoel (21.000)	Chemical dosing (Aluminium Sulphate and Sodium Aluminate), flocculation, sedimentation, filtration (Rapid gravity sand filters), stabilization (Lime) and Disinfection (Chlorine Gas)
		Groundwater Hemel & Aarde (10.000)	Biological WTW for iron and manganese removal by contact filtration, Caustic Soda dosing and Aeration (Hemel & Aarde wellfields of Camphill and Volmoed).
		Groundwater Gateway	Chemical oxidation treatment plant with Potassium

Table A.3.1: Existing Water Infrastructure (Resources and WTWs)			
Water Distribution System	**Bulk Supply**	**WTWs and Treatment Processes**	
	(Resources)	**WTW (Capacity in Ml/d)**	**Processes**
		(7.000)	Permanganate and Aeration (Gateway Wellfield).
Stanford	Stanford Spring and two Kouevlakte Boreholes	Stanford RO plant (1.000)	Ultrafiltration plus Reverse Osmosis Plant and disinfection (Sodium Hypochlorite)
Greater Gansbaai	Franskraal and Kraaibosch Dams	Franskraal (6.500)	Chemical dosing (Aluminium Chlorohydrate), flocculation, sedimentation, filtration (Rapid gravity sand filters), disinfection (Chlorine Gas) and stabilization (Soda Ash)
	Klipgat Fountain and De Kelders Caves Fountain.	De Kelders (1.600)	Ultrafiltration plus Reverse Osmosis Plant and disinfection (Sodium Hypochlorite)
Pearly Beach	Pearly Beach Springs and Koekemoer Dam	Pearly Beach (1.440)	Clarifier, Ultrafiltration Modules from Memcor, Chemical dosing (Sudfloc K300) and disinfection (Sodium Hypochlorite)
Baardskeerders -bos	Two Boreholes	Baardskeerdersbos (0.185)	pH adjustment, oxidation, settling, ultrafiltration and disinfection (Sodium Hypochlorite).
Buffeljags Bay	Borehole	-	Disinfection (Chlorine Tablets)

The existing hydraulic design capacities and current flows at each of the WTWs and water quality failures are summarised in the table below.

Table A.3.2: Existing Capacities, Flows and Water Quality Failures at each of the WTWs						
WTW	**Existing Hydraulic Capacity**	**Peak Month Average Daily Flow**	**Average Daily Flow (Jul 2024 – Jun 2025)**	**Average Daily Flow as a % of Capacity**	**Required Treatment Capacity (1.5 x AADD10yr)**	**2024/2025 Water Quality Failures at WTW (SANS0241:2015)**
	Ml/d	**Ml/d**	**Ml/d**	**%**	**Ml/d**	
Buffels River	5.500	2.687 (Dec)	2.128	38.7%	4.085	Turbidity (Operational)
Kleinmond	5.800	3.630 (Dec)	2.931	50.5%	5.628	-
Preekstoel	38.000	17.347 (Jan)	14.711	38.7%	29.655	-
Stanford	2.710 *	2.221 (Jan)	1.729	63.8%	3.320	Total Organic Carbon
Franskraal	6.500	4.152 (Dec)	3.601	55.4%	7.260	Turbidity (Operational)
De Kelders	1.600	1.761 (Apr)	1.371	85.7%	1.600	-
Pearly Beach	1.440	0.784 (Dec)	0.515	35.8%	0.989	-
Baardskeerdersbos	0.185	0.080 (Feb)	0.059	31.9%	0.114	Turbidity (Operational), Manganese (Aesthetic), Heterotrophic Plate Count

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

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

Table A.3.3: Existing Water Infrastructure (Reticulation, Pump Stations and Reservoirs)						
Water Distribution System	**Water Distribution Networks**		**Number of Water PS**		**Reservoirs and Water Towers**	
	Bulk	**Internal**	**Raw Water**	**Potable Water**	**Number of Reservoirs & Water Towers**	**Total Storage in Ml**
	km	**km**	**Number of PS**	**Number of PS**		
Buffels River	15.326	123.859	-	4	6	6.267
Kleinmond	5.400	75.053	3	1	3	8.100
Greater Hermanus	41.586	328.807	1	6	21	38.446
Stanford	5.564	34.501	-	2	2	2.750
Greater Gansbaai	35.299	140.970	3	3	10	13.050
Pearly Beach	12.404	30.969	-	2	2	2.300
Baardskeerdersbos	0.858	4.952	-	1	1	0.150
Buffeljags Bay	2.575	0.469	-	-	1	0.096
Total Overstrand	**119.012**	**739.580**	**7**	**19**	**46**	**72.544**

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

Table A.3.4: Existing Sewerage Infrastructure

Sewer Drainage Systems	WWTWs and Treatment Processes			Sewer Drainage Network		Number of Sewer PS	
	Hydraulic Capacity	Organic Capacity	Treatment Processes	Rising	Gravity	Mun	Private
	Ml/d	kg COD/d		km	km		
Buffels River	-	-	-	-	-	-	-
Kleinmond	2.000	2 906	Kleinmond Activated Sludge System	6.841	29.902	6	1
Greater Hermanus	0.700	968	Hawston Activated Sludge System	33.041	257.684	31	2
	12.000	9 000	Hermanus Activated Sludge System				
Stanford	1.200	1 200	Stanford Activated Sludge System	3.242	29.752	4	2
Greater Gansbaai	2.000	3 600	Gansbaai Nereda System	4.282	24.686	5	-
Pearly Beach	0.259	198	Eluxolweni Oxidation Pond System	0.941	5.245	1	1
Baardskeerdersbos	-	-	-	-	-	-	-
Buffeljags Bay	-	-	-	-	-	-	-
Total Overstrand				**48.347**	**347.269**	**47**	**6**

The table below gives a summary of the existing hydraulic design capacities and current flows at each of the WWTWs, as well as the final effluent quality compliance percentages for the 2024/2025 financial year.

Table A.3.5: Existing Hydraulic Design Capacities, Flows and Final Effluent Compliance percentages at each of the WWTWs

WWTW	Existing Hydraulic Capacity	Peak Month Average Daily Flow	Average Daily Flow (2024/2025)	Average Wet Weather Flow (Jul'24, Aug'24, Jun'25)	Average Daily Flow as a % of Design Capacity	Final Effluent Compliance for 2024/2025 against *Authorisation*
	Ml/d	Ml/d	Ml/d	Ml/d	%	
Kleinmond	2.000	2.766 (Aug)	1.776	2.358	88.8%	Microbiological: 75.0% Chemical: 68.8% Physical: 94.4% *General Limits*
Hawston	0.700	0.796 (Apr)	0.563	0.652	80.4%	Microbiological: 85.7% Chemical: 58.8% Physical: 80.6% *General Limits*
Hermanus	12.000	15.383 (Jul)	10.110	12.949	84.3%	Microbiological: 54.2% Chemical: 75.4% Physical: 94.6% *Licence 17 October 2016*
Stanford	1.200	1.405 (Feb)	1.108	1.131	92.3%	Microbiological: 75.0% Chemical: 98.0% Physical: 88.9% *General Limits*
Gansbaai	2.000	1.252 (Dec)	1.187	1.199	59.4%	Microbiological: 63.2% Chemical: 73.4% Physical: 87.8% *General Limits*
Eluxolweni	0.259	0.224 (Apr)	0.150	0.124	57.9%	Microbiological: 85.7% Chemical: 70.8% Physical: 66.7% *General Limits*

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

Table A.3.6: Existing Organic Design Capacities and Loadings at the WWTWs

WWTW	Organic Design Capacity	2024/2025		2023/2024		2022/2023	
		Average Load	% of Design Capacity	Average Load	% of Design Capacity	Average Load	% of Design Capacity
	kg COD/d	kg COD/d	%	kg COD/d	%	kg COD/d	%
Kleinmond	2 906	1 226	42.2%	1 015	120.4	1 050 *	124.6
Hawston	968	614	63.4%	1 107	114.4	850	87.8
Hermanus	9 000	7 016	78.0%	6 371	70.8	6 221	69.1
Stanford	1 200	641	53.4%	973	81.1	1 033	86.1
Gansbaai	3 600	1 174	32.6%	1 113	30.9	1 405	39.0
Eluxolweni	198	113	57.1%	107	54.0	267	134.8

Note: Extremely high COD readings of March 2023 for Kleinmond WWTW were not taken into account

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

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

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

The published 2022 Census population for Overstrand Municipality was 132 495 persons (Annual growth rate of 4.9% over the period 2011 to 2022) and the number of permanent households was 59 980. The 2022 Census data is not yet available per town and it was therefore not possible to update Overstrand Municipality's projected population and households per town at this stage.

The 2024 Socio-economic Profile for Overstrand Municipality, as compiled by the Western Cape Government, indicated the 2024 population at 120 422 persons and the households at 41 136 (With an annual population growth rate of 1.8% over the period 2023 to 2029). Overstrand Municipality's 2025/2026 IDP include an estimated 2025 population of 139 674 persons.

The 2024/2025 populations for the various water distribution systems were estimated by applying the annual growth rates as indicated in Table A.3.7. The current population figures and the annual population growth percentages used in the WSDP Performance- and Water Services Audit Report are aligned with the figures used in DWS's GeoDatabase.

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

Table A.3.7: Estimated Future Annual Population Growth Percentages, Population and Households per Distribution System

Town	Estimated future annual Population Growth %	Projected 2024/2025 Persons	Projected 2024/2025 Permanent Households
Buffels River	4.15%	3 897	1 965
Kleinmond	2.50%	9 138	3 767
Greater Hermanus	4.45%	83 361	27 506
Stanford	2.65%	6 717	2 098
Greater Gansbaai	4.89%	24 788	8 664
Pearly Beach	2.11%	1 374	636
Baardskeerdersbos	0.50%	130	42
Buffeljags Bay	0.50%	157	35
Farms	1.56%	5 781	2 194
Total	**4.09%**	**135 343**	**46 907**

Note: The number of permanent households in the above table include households in backyards and households in informal areas, but exclude holiday homes.

The on-going in-migration into the Overstrand Municipal area will place increasing demands on the infrastructure and available space for urban growth. The increased footprint in the Municipal area needs careful management if it is not to impact negatively on the natural environment of Overstrand. The increased population growth will place increased pressure on the municipal resources to develop new as well as maintain existing infrastructure.

Vandalism of the water and sewerage infrastructure is also becoming more widespread and problematic. The seriousness of such vandalism cannot be understated as it leads to increases in water losses, a loss of reliability of the systems and unfruitful expenditure of funds to replace such infrastructure, when it could have been better spent on new services.

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

Table A.3.8: Water Services Overview (Water)

Settlement Type	2011/2012 Households	2011/2012 Population	2024/2025 Households	2024/2025 Population	Water category: Adequate: Formal	Adequate: Informal	Adequate: Shared Services	Water resources needs only	O&M needs only	Infrastructure needs only	Infrastructure & O&M needs	Infrastructure, O&M & Resource need	No Services: Informal	No Services: Formal
URBAN														
Metropolitan Area					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Formal Town					Adequate			Below RDP					None	
Buffels River	1 158	2 297	1 965	3 897	P		P							
Kleinmond	2 351	5 101	2 659	4 706	P		P							
Greater Hermanus	14 256	41 884	19 163	49 989	P		P							
Stanford	1 379	4 325	1831	5 649	P		P							
Greater Gansbaai	3 251	7 698	8124	22 628	P		P							
Pearly Beach	314	363	508	862	P		P							
Baardskeerdersbos	39	122	42	130	P									
Buffeljags Bay	33	147	19	93	P		P							
Sub-Total	**22 781**	**61 937**	**34 311**	**87 954**										
Townships					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Informal Settlements					Adequate			Below RDP					None	
Greater Gansbaai	1 407	5 628	540	2 160		P								
Greater Hermanus	1 362	5 448	8 343	33 372		P								
Kleinmond	382	1 528	1 108	4 432		P								
Stanford	114	456	267	1 068		P								
Pearly Beach	171	684	128	512		P								
Buffeljags Bay			16	64		P								
Sub-Total	**3 436**	**13 744**	**10 402**	**41 608**										
Working towns & service centres					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Sub-Total: (Urban)	**26 217**	**75 681**	**44 713**	**129 562**										
RURAL														
Rural / Farming					Adequate			Below RDP					None	
Overstrand Rural	1 794	4 727	2 194	5 781	P		P							P
Sub-Total	**1 794**	**4 727**	**2 194**	**5 781**										
Informal Settlements					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Sub-Total (Rural)	**1 794**	**4 727**	**2 194**	**5 781**										
TOTAL	**28 011**	**80 408**	**46 907**	**135 343**										

Table A.3.9: Water Services Overview (Sanitation)																
	2011/2012		2024/2025		Sanitation category											
Settlement Type	Households	Population	Households	Population	Adequate: Formal	Adequate: Informal	Adequate: Shared Services	Water resources needs only	O&M needs only	Infrastructure needs only	Infrastructure & O&M needs	Infrastructure, O&M & Resource need	No Services: Informal	No Services: Formal
URBAN														
Metropolitan Area					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Formal Town					Adequate			Below RDP					None	
Buffels River	1 158	2 297	1 965	3 897	P		P							
Kleinmond	2 351	5 101	2 659	4 706	P		P							
Greater Hermanus	14 256	41 884	19 163	49 989	P		P							
Stanford	1 379	4 325	1 831	5 649	P		P							
Greater Gansbaai	3 251	7 698	8 124	22 628	P		P							
Pearly Beach	314	363	508	862	P		P							
Baardskeerdersbos	39	122	42	130	P									
Buffeljags Bay	33	147	19	93	P		P							
Sub-Total	**22 781**	**61 937**	**34 311**	**87 954**										
Townships					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Informal Settlements					Adequate			Below RDP					None	
Greater Gansbaai	1 407	5 628	540	2 160		P								
Greater Hermanus	1 362	5 448	8 343	33 372		P								
Kleinmond	382	1 528	1 108	4 432		P								
Stanford	114	456	267	1 068		P								
Pearly Beach	171	684	128	512		P								
Buffeljags Bay			16	64		P								
Sub-Total	**3 436**	**13 744**	**10 402**	**41 608**										
Working towns & service centres					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Sub-Total: (Urban)	**26 217**	**75 681**	**44 713**	**129 562**										
RURAL														
Rural / Farming					Adequate			Below RDP					None	
Overstrand Rural	1 794	4 727	2 194	5 781	P		P							P
Sub-Total	**1 794**	**4 727**	**2 194**	**5 781**										
Informal Settlements					Adequate			Below RDP					None	
Sub-Total	**0**	**0**	**0**	**0**										
Sub-Total (Rural)	**1 794**	**4 727**	**2 194**	**5 781**										
TOTAL	**28 011**	**80 408**	**46 907**	**135 343**										

B. WSDP PERFORMANCE REPORT

B.1. WSDP Reference and Status

Overstrand Municipality WSDP was updated during the 2021/2022 financial year for the next five-year WSDP Cycle (2022-2027). The following documents form part of Overstrand Municipality's updated WSDP.

- Administration, Information and Comprehensive Overview Report.
- Future Demand and Functionality Requirements Report.
- WSDP IDP Water Sector Input Report

The following process was followed for the approval of the updated 2022-2027 WSDP.

- The draft WSDP documents were taken to Council on the 30th of March 2022 for approval.
- The draft WSDP-IDP Water Sector Input report was advertised and placed on the Municipality's website for public comment.
- The draft WSDP-IDP Water Sector Input Report was distributed to the DWS, the DLG and the neighbouring WSAs for their comments.
- Comments received on the draft WSDP documents were incorporated, where after the WSDP documents were finalised and taken to Council for final approval (31 May 2022).

The table below gives an overview of Overstrand Municipality's WSDP status.

Table B.1.1: WSDP and Reporting Reference

Nr	WSDP Title and Reference	Status	Date	WSDP Year	Financial Year	Reporting year
1	2022-2027 WSDP	Drafted:	30/03/2022	Year 1	2022/23	Year - 2
		Comment submit:	29/04/2022	Year 2	2023/24	Year - 1
		Finalised:	30/05/2022	**Year 3**	**2024/25**	Year 0
		Adopted:	31/05/2022	Year 4	2025/26	Year + 1
		Published:	01/06/2022	Year 5	2026/27	Year + 2

Legend:

- Past Financial Years
- Previous Financial Year (financial year of reporting)
- Future Years

B.2. Performance on Water Services Objectives and Strategies

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 and Budget Implementation Plan (SDBIP) is developed, to ensure that the organisation delivers on the IDP targets.

The SDBIP is the process plan and performance indicator / evaluation for the execution of the budget. The SDBIP is being used as a management, implementation and monitoring tool that assists and guide the Executive Mayor, Councillors, Municipal Manager, Senior Managers and the community. The plan serves as an input to the performance agreements of the Municipal Manager and Directors. It also forms the basis for the monthly, quarterly, mid-year and the annual assessment report and performance assessments of the Municipal Manager and Directors.

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

The table below gives an overview of the Municipality's performance on the water and sanitation objectives and strategies per WSDP topic.

Table B.2.1: Performance on Water Services Objectives and Strategies per WSDP Topic

Nr	Objective / Strategy	Key Performance Indicator	Inclusion (yes/no)		WSDP Year 1		WSDP Year 2		WSDP Year 3		WSDP Year 4		WSDP Year 5	
					FY 1	2020/21	FY 2	2021/2022	FY 3	2022/2023	FY 4	2023/2024	FY 5	2024/2025
			WSDP	IDP	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
WSDP Topic 1: Administration														
WSDP Topic 2: Demographics														
WSDP Topic 3: Service levels														
D463	Provision of cleaned piped water to all formal HH within 200m from households	Number of formal HH that meet agreed service standards for piped water	Yes	Yes	29 946	30 111	30 111	30 990	30 412	31 829	31 324	32 887	32 466	33 753
D465	Provision of sanitation services to formal residential households	Number of formal residential HH which are billed for sewerage in accordance to the SAMRAS financial system.	Yes	Yes	30 060	30 420	30 420	31 394	30 724	32 323	31 646	33 539	32 969	34 685
D464	The provision of sanitation services to informal households (excluding invaded state owned land and private land) based on the standard of 1 toilet to 5 households	Number of toilet structures provided in relation to the number of informal households.	Yes	Yes	930	934	980	983	1020	1107	785	1112	785	726
D467	Provision of sanitation services to informal households on invaded land with available funding.	The number of toilets provided for informal households on invaded land with available funding.	Yes	Yes	105	139	95	143	105	171	105	133	105	133
D462	Provision of water to informal households (excluding invaded state owned land and private land) based on the standard of 1 water point to 25 households	The number of taps installed in relation to the number of informal households	Yes	Yes	300	341	320	464	328	658	328	718	262	396
D466	Provision of water to informal households on invaded land with available funding.	The number of taps installed for informal households on invaded land with available funding.	Yes	Yes	80	80	70	82	80	99	80	81	80	81
WSDP Topic 4: Socio economic														
WSDP Topic 5: Water Services Infrastructure														
WSDP Topic 5: Water Services Infrastructure														
WSDP Topic 6: Operation Maintenance														
D442	Quality of effluent comply 75% with general or special limit in terms of the Water Act	% compliance	Yes	Yes	90%	79.16%	75%	80.08%	80%	75.54%	75%	77.81%	75%	78.30%
D443	Quality of potable water comply 95% with SANS 241	% compliance with SANS 241	Yes	Yes	95%	98.83%	95%	97.83%	98%	96.99%	95%	97.03%	95%	98.29%
D435	Monthly monitoring of water and waste water quality results of all treatment plants and reporting to DWS via website	Number of months monitored	Yes	Yes	12	12	12	12	12	12	12	12	12	12
WSDP Topic 7: Associated services														
WSDP Topic 8: Conservation and Demand management														
	Completion of works orders within the next calendar month for water distribution services: Gansbaai Water	% compliance with the completion time	-	-	92%	98.55%	92%	99.41%	-	-	-	-	-	-
D511	Completion of works orders within 30 days for water distribution services: Hangklip/Kleinmond Water	% compliance with the completion time	Yes	Yes	92%	94.00%	92%	93.72%	-	-	92%	89.28%	92%	84.53%
D484	Completion of works orders within 30 days for water distribution services: Hermanus Water	% compliance with the completion time	Yes	Yes	92%	99.69%	92%	99.80%	-	-	92%	92.24%	92%	91.13%
	Completion of works orders within the next calendar month for water distribution services: Stanford Water	% compliance with the completion time	-	-	92%	96.60%	92%	100.00%	-	-	-	-	-	-
D497	Completion of works orders within 30 days for water distribution services: Gansbaai and Stanford Water	% compliance with the completion time	Yes	Yes	-	-	-	-	-	-	92%	98%	92%	96.94%
TL231	Limit unaccounted water to less than 25% {(Number of kilolitre water purified - Number of kilolitre water sold)/Number of kilolitre purified x 100	% of water unaccounted for	Yes	Yes	19%	28.26%	18%	24.04%	25%	24.48%	25%	30.59%	25%	31.21%

Table B.2.1: Performance on Water Services Objectives and Strategies per WSDP Topic

Nr	Objective / Strategy	Key Performance Indicator	Inclusion (yes/no)		WSDP Year 1		WSDP Year 2		WSDP Year 3		WSDP Year 4		WSDP Year 5	
					FY 1	2019/20	FY 2	2020/21	FY 3	2021/22	FY 4	2022/23	FY 5	2023/24
			WSDP	IDP	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
	Completion of works orders within the next calendar month for Sewerage maintenance (network and tankers): Gansbaai	% compliance with the completion time	-	-	92% 98%	97.92% 100%	92% 98%	98.08% 100.0%	-	-	-	-	-	-
D508 & D509	Completion of works orders within 30 days for Sewerage maintenance (network and tankers): Hangklip/Kleinmond	% compliance with the completion time	Yes	Yes	92% 98%	97.18% 100%	92% 98%	97.88% 100.0%	-	-	92% 98%	93.53% 100%	92% 98%	83.99% 99.99%
D481 & D482	Completion of works orders within 30 days for Sewerage maintenance (network and tankers): Hermanus	% compliance with the completion time	Yes	Yes	92% 98%	99.61% 99.99%	92% 98%	99.64% 100.0%	-	-	92% 98%	91.54% 99.80%	92% 98%	92.83% 99.97%
	Completion of works orders within the next calendar month for Sewerage (network and tankers): Stanford	% compliance with the completion time	-	-	92% 98%	96.06% 99.75%	92% 98%	100.0% 100.0%	-	-	-	-	-	-
D494 & D495	Completion of works orders within 30 days for Sewerage maintenance (network and tankers): Gansbaai and Stanford	% compliance with the completion time	Yes	Yes	92% 98%	96.06% 99.75%	92% 98%	100.0% 100.0%	-	-	92% 98%	95.77% 99.91%	92% 98%	98.47% 99.94%
WSDP Topic 9: Water Resources														
WSDP Topic 10: Financial profile														
WSDP Topic 11: Institutional Arrangements Profile														
D446	Report on the implementation of the Water Service Development plan annually by the end of October	Report submitted	Yes	Yes	1	1	1	1	1	1	1	1	1	1
WSDP Topic 12: Social and Customer service requirements														
D450	Maintenance of sanitation services (tankers and networks) measured by the daily recording/completion of enquiries within 30 days.	% completed	Yes	Yes	92%	99.53%	92%	99.70%	92%	99.60%	92%	99.65%	92%	119.78%
D455	Maintenance of water services measured by the daily recording/completion of enquiries/completed within 30 days.	% completed	Yes	Yes	92%	98.05%	92%	99.00%	92%	94.93%	92%	94.48%	92%	90.40%
WSDP Topic 13: Needs development plan														

Legend:

	Past Financial Years
	Previous Financial Year (financial year of reporting)
	Future Years

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

- The Water Services Audit Report for 2023/2024 was finalised and approved by Council as part of the Annual Report. The NRW water balance models were updated for each of the distribution systems (Up to the end of June 2024) as part of the Water Services Audit Process.
- Overstrand Municipality continues with the implementation of their Drinking Water Quality and Effluent Quality Sampling Programmes (Both Operational and Compliance Monitoring). Sample results are loaded monthly onto DWS's IRIS. All the WTWs and WWTWs were registered on the IRIS website, according to the new Regulation 3630 requirements. The quality of the treated effluent re-used for irrigation purposes from the Hermanus- and Gansbaai WWTW is also sampled monthly.
- Overstrand Municipality is continuing with their Groundwater Monitoring and Management Programmes. The following Groundwater Monitoring Reports were compiled during the last financial year:
  - Gansbaai Groundwater Monitoring at the WWTW and Communal Sports Centre. Gansbaai Annual Groundwater Monitoring Report October 2023 to October 2024.
  - Water Source Development and Management Plan for the Hermanus Area. Gateway, Camphill and Volmoed Wellfields Annual Monitoring Report: October 2023 to September 2024.
  - Water Source Development and Management Plan for the Overstrand Local Municipality. Kouevlakte Wellfield Annual Monitoring Report October 2023 to September 2024.
  - Water Source Development and Management Plan for the Overstrand Local Municipality. Baardskeerdersbos Wellfield Annual Monitoring Report October 2023 to September 2024.
- Detail Plant and Process Audits were done for all the WTWs and WWTWs, Enviro Metsi, December 2024.
- The Asset Register was updated to include all the water and sewerage capital projects completed during the 2024/2025 financial year.
- The following Technical investigations were completed during the 2024/2025 financial year:
  - Upgrade of Hawston Wastewater Treatment Works: Preliminary Design Report. WEC Consult, July 2024.
  - Upgrade and Refurbishment of Buffels Rivier Water Treatment Works: Preliminary Design Repot, Bigen, March 2025.
  - Marine Ecological Monitoring Report for Hermanus Wastewater Treatment Works (WWTW), WEC Consult, May 2025.
  - Upgrade of Hawston Wastewater Treatment Works: WSIG Technical Report. WEC Consult, June 2025.
  - De Bos Dam: Dam Safety Report: Fifth Dam Safety Evaluation Report, Zutari, June 2025.

The Municipality also previously received the following awards / acknowledgements with regard to DWS's Blue-, Green- and No Drop assessments:

- **Overstrand Municipality was awarded first place in the 2023 Blue Drop Best Performing Water Services Institution category in South Africa.** All eight water supply systems were awarded Blue Drop Status. The Blue Drop Risk Ratings for all eight systems were also in the low-risk category (<50%). The Blue Drop scores were supported by an excellent technical site assessment score of 94% for the Preekstoel WTW. **The Buffels River, Greater Gansbaai, Greater Hermanus, Kleinmond, Pearly Beach and Stanford systems were awarded a joint first place in the 2023 Blue Drop Best Performing Water Supply System category.**
- **Overstrand Municipality performed above average with regard to wastewater quality management, with an overall Green Drop Score of 89% for DWS's 2021 assessment.** The Green Drop Scores for all six WWTWs were between 88% and 96% (Six potential Green Drop Certified Systems).

- Overstrand Municipality also received their 2023 Green Drop Risk Ratings, as included in the 2023 Green Drop Progress Report. The overall Cumulative Risk Rating of Overstrand Municipality was 51.3%. The Wastewater Risk Ratings were at low risk (<50%) for the Gansbaai-, Kleinmond- and Stanford WWTW and at medium risk for the Hermanus-, Pearly Beach- and Hawston WWTW (50% - <70%).

- **Overstrand Municipality achieved an "Excellent" score of 101% for the 2023 No Drop Assessment and was acknowledged as the top performing WSA in the country with regard to the No Drop Assessment.**

B.3. Status of Water Services Projects

Overstrand Municipality completed or continued with the following key water and sewerage capital infrastructure projects during the 2024/2025 financial year (Capital expenditure above R1 000 000).

- Various sections of the water reticulation networks and sewer drainage networks and pump stations were upgraded as recommended in the Water and Sewer Master Plans. Sections of the old water reticulation networks were also replaced in Proteadorp (Implementation of the Pipeline Replacement Programme).

- Sections of the bulk raw water pipelines were replaced.

- The Municipality continued with the Hermanus Wellfield Phase 2 upgrade project, including the basic assessment process for the upgrade of the wellfields in the Hemel-en-Aarde valley and the successful drilling of two (2) new production boreholes.

- The Municipality started with the installation of a new disinfection system for the Preekstoel WTW and the refurbishment of the Buffels River WTW.

- The refurbishment of the Pearly Beach water tower was completed.

- The refurbishment / upgrade of the Kleinmond WWTW was completed.

- Disinfection facilities at some of the WWTWs were upgraded.

- Vehicles were purchased to improve service delivery for sewerage services.

- The Municipality continued with the upgrading work at the Hermanus WWTW (Screens, RAS and Sludge Dewatering facilities).

The capital expenditure for the water and sewerage infrastructure for the 2024/2025 financial year is indicated in the table below.

Table B 3.1: Water Services Projects Status and Performance

Nr	Project Title and Description	Inclusion		Total Project Cost R'000	Project Progress (%)	Year 0 Performance - FY2024/25			Funding Source(s)	Project Category / Type	Planned Period		Project Status	Actual Completion Year
		WSDP	IDP			FY Budget R'000	Expended R'000	%			From FY	To FY		
1	Refurbishment of Bulk Water Infrastructure	Yes	Yes	R9 899	70%	R1 900	R1 772	93%	EL 25/26/27	Water	2020/2021	2027/2028	In progress	-
2	Fencing at Water Installations	Yes	Yes	R6 285	76%	R500	R500	100%	EL 25/26/27	Water	2018/2019	2027/2028	In progress	-
3	Replacement of Overstrand Water Pipes	Yes	Yes	R121 382	76%	R8 875	R8 875	100%	EL 23 R/O, EL 25/26/27	Water	2013/2014	2027/2028	In progress	-
4	Water facilities (Contingency)	Yes	Yes	R8 633	83%	R500	R500	100%	EL 25/26/27	Water	2015/2016	2027/2028	In progress	-
5	Upgrade Hermanus Well Fields Phase 2	Yes	Yes	R29 119	72%	R10 525	R6 039	57%	EL 25/26, WSIG	Water	2021/2022	2026/2027	In progress	-
6	Pearly Beach WTW Process Upgrade	Yes	Yes	R4 881	70%	R2 500	R623	25%	EL25	Water	2023/2024	2025/2026	In progress	-
7	Refurbishment of Buffels River WTW	Yes	Yes	R69 284	4%	R4 100	R2 995	73%	EL25/26/27, WSIG	Water	2024/2025	2027/2028	In progress	-
8	Replacement of Water Pipes Proteadorp	Yes	Yes	R6 800	88%	R6 000	R6 000	100%	MIG	Water	2024/2025	2025/2026	In progress	-
9	De Kelders WTW Membrane Replacement	Yes	Yes	R800	100%	R800	R800	100%	EL25	Water	2024/2025	2024/2025	Completed	2024/2025
10	Pearly Beach Water Tower Refurbish	Yes	Yes	R1 000	100%	R1 000	R1 000	100%	EL25	Water	2024/2025	2024/2025	Completed	2024/2025
11	New Disinfection System at Preekstoel WTW	Yes	Yes	R10 000	30%	R3 000	R3 000	100%	EL25/26	Water	2024/2025	2025/2026	In progress	-
12	Vehicles-Water	Yes	Yes	R993	100%	R1 000	R993	99%	Surplus	Water	2024/2025	2024/2025	Completed	2024/2025
13	Sewerage Facilities (Contingency)	Yes	Yes	R8 790	76%	R571	R571	100%	EL 25/26, EL 25/26/27	Sewerage	2015/2016	2027/2028	In progress	-
14	Kleinmond WWTW Refurbish Upgrade	Yes	Yes	R49 208	100%	R10 870	R10 866	100%	EL23 R/O, EL24 R/O	Sewerage	2020/2021	2024/2025	Completed	Completed
15	Fencing at Sewerage Installations	Yes	Yes	R7 392	73%	R600	R600	100%	EL 25/26, EL 25/26/27	Sewerage	2018/2019	2027/2028	In progress	-
16	Upgrading of pump stations rising mains	Yes	Yes	R71 426	64%	R13 522	R13 501	100%	EL24 R/O, EL25/26/27	Sewerage	2020/2021	2027/2028	In progress	-
17	Vehicles - Sewerage	Yes	Yes	R7 495	100%	R7 726	R7 495	97%	Surplus Cash (L/S)	Sewerage	2024/2025	2024/2025	Completed	2024/2025
18	Vehicles - Waste Water Management	Yes	Yes	R1 499	100%	R1 640	R1 499	91%	Surplus	Sewerage	2024/2025	2024/2025	Completed	2024/2025
19	Hermanus WWTW upgrade screens RAS sludge Dewatering	Yes	Yes	R6 903	81%	R2 758	R2 604	94%	EL 25/26	Sewerage	2023/2024	2025/2026	In progress	-
20	Telemetry System Upgrade	Yes	Yes	R1 473	73%	R500	R492	98%	EL 25/26/27	Sewerage	2023/2024	2026/2027	In progress	-
21	New Disinfection Systems at Wastewater Plant	Yes	Yes	R12 466	52%	R6 000	R6 000	100%	EL 25/26	Sewerage	2023/2024	2025/2026	In progress	-
	Total			**R435 728**		**R84 887**	**R76 725**	**90%**						

B.4. Past Financial Year Water Services Projects Impact Declaration

The impacts of the water and sewerage capital projects, which were implemented by Overstrand Municipality in the previous financial year, were as follows:

Table B.4.1: Past Financial Year Project Impact Declaration

Nr	Project Title and Description	Project Category	Settlements which benefitted	Nr Beneficiaries		Impact Declaration
				Households	Population	
1	Refurbishment of Bulk Water Infrastructure	Bulk water pipelines	Management Area	59	171	Ensure adequate bulk water pipeline capacity.
2	Fencing at Water Installations	Security	Management Area	-	-	Improve security at water infrastructure.
3	Replacement of Overstrand Water Pipes	Reticulation	Management Area	296	858	Implement Pipeline Replacement Programme to reduce NRW and Water Losses.
4	Water facilities (Contingency)	WTW	Management Area	-	-	Ensure adequate O&M of existing water facilities.
5	Upgrade Hermanus Well Fields Phase 2	Resources	Hermanus	27506	83361	Increase assurance of supply through additional groundwater development.
6	Pearly Beach WTW Process Upgrade	WTW	Pearly Beach	636	1374	Improve treatment processes at the WTW in order to ensure water qualtiy compliance.
7	Refurbishment of Buffels River WTW	WTW	Rooi Els / Pringle Bay / Bettys Bay	1965	3897	Improve treatment processes at the WTW in order to ensure water qualtiy compliance.
8	Replacement of Water Pipes Proteadorp	Reticulation	Kleinmond	200	486	Implement Pipeline Replacement Programme to reduce NRW and Water Losses.
9	De Kelders WTW Membrane Replacement	WTW	De Kelders	2389	6833	Improve treatment processes at the WTW in order to ensure water qualtiy compliance.
10	Pearly Beach Water Tower Refurbish	Reservoir	Pearly Beach	636	1374	Ensure adequate storage capacity and pressure.
11	New Disinfection System at Preekstoel WTW	WTW	Hermanus	27506	83361	Improve treatment processes at the WTW in order to ensure water qualtiy compliance.
12	Vehicles-Water	Other	Management Area	-	-	Replace old vehicles in order to ensure adequate service to customers.
13	Sewerage Facilities (Contingency)	Other	Management Area	-	-	Ensure adequate O&M of existing sewerage facilities.
14	Kleinmond WWTW Refurbish Upgrade	WWTW	Kleinmond	3767	9138	Ensure adequate treatment capacity and final effluent quality discharg from the WWTW that complies with the legal quality requirements.
15	Fencing at Sewerage Installations	Security	Management Area	-	-	Improve security at sewerage installations.
16	Upgrading of pump stations rising mains	Sewer pump station	Management Area	450	1305	Ensure adequate pump station capacity and rising main capacity.
17	Vehicles - Sewerage	Other	Management Area	-	-	Replace old vehicles in order to ensure adequate service to customers.
18	Vehicles - Waste Water Management	Other	Management Area	-	-	Replace old vehicles in order to ensure adequate service to customers.
19	Hermanus WWTW upgrade screens RAS sludge Dewatering	WWTW	Hermanus	27506	83361	Improve treatment processes at the WWTW iln order to ensure final effluent quality compliance.
20	Telemetry System Upgrade	Other	Management Area	-	-	Upgrade telemetry system to ensure adequate monitoring and management of services
21	New Disinfection Systems at Wastewater Plant	WWTW	Management Area	-	-	Improve disinfection processes at the WWTWs in order to ensure final effluent quality compliance.
	TOTAL			**92916**	**275520**	

C. WATER SERVICES AUDIT REPORT

C.1. Quantity of Water Services Provided (Water Balance)

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

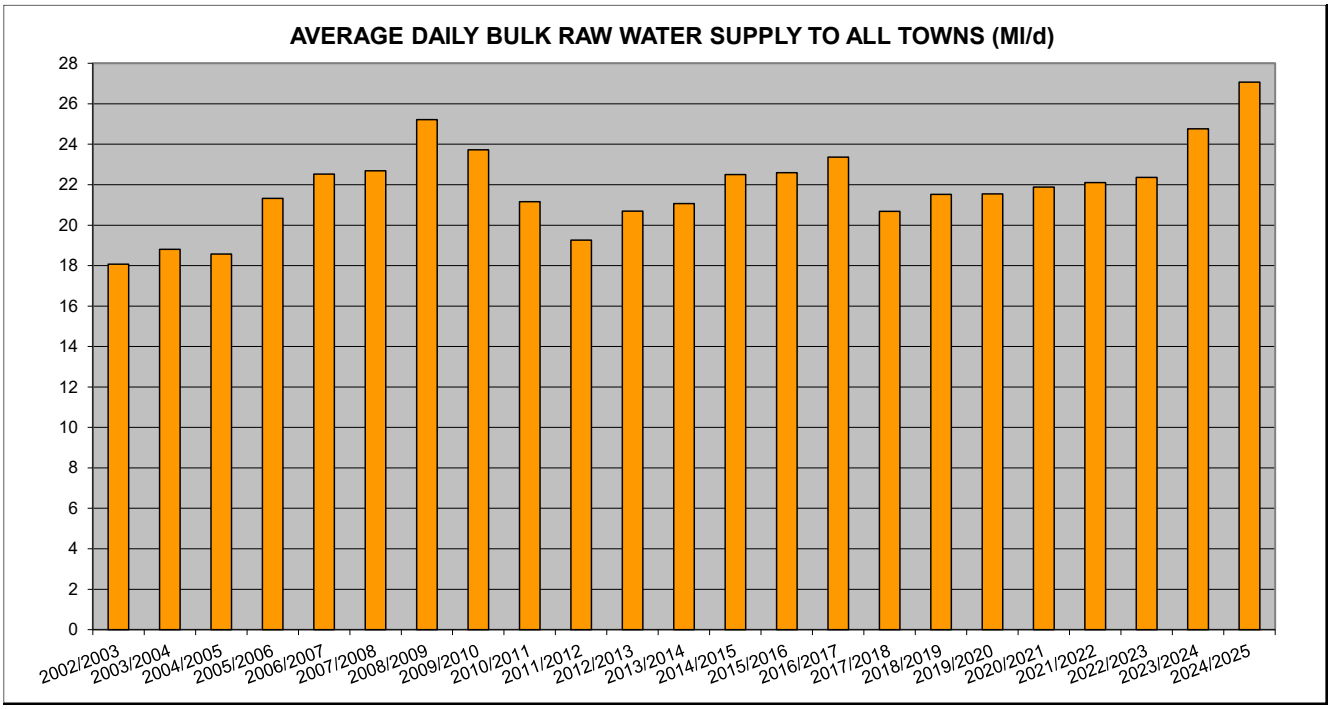


Figure C.1.1: Average Daily Bulk Raw Water Supply Volume to all the Towns in Overstrand Municipality

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

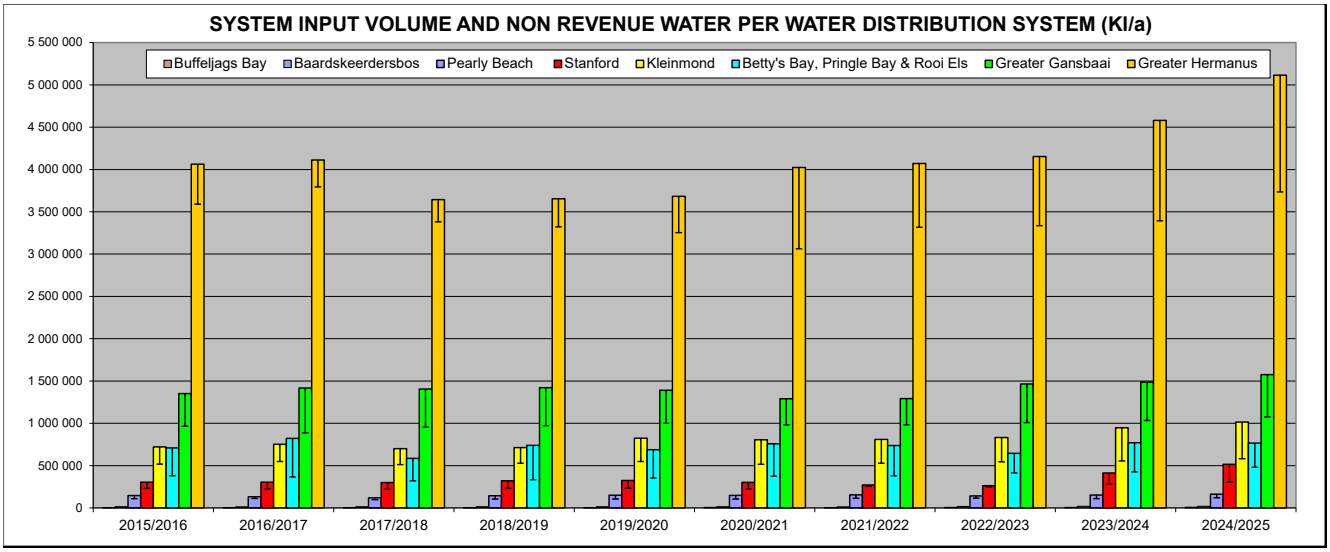


Figure C.1.2: System Input Volume and Non-Revenue Water for the Various Water Distribution Systems

Quantity of water provided by the WSA

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

Table C.1.1: Annual Bulk Raw Water Volume Supplied to the Various Towns

Distribution System	Source	24/25	Record: Prior (Ml/a)				
			23/24	22/23	21/22	20/21	19/20
Buffels River	Buffels River Dam	776.600	782.579	671.598	788.232	772.751	767.993
Kleinmond	Palmiet River and Dorpsfontein spring	1 069.747	1 010.616	918.124	871.522	880.390	898.489
Greater Hermanus	De Bos Dam and Groundwater	5 369.338	4 776.898	4 267.244	4 265.761	4 242.199	4 128.705
Stanford	Stanford spring and two Boreholes	631.166	548.595	498.341	468.903	446.512	365.453
Greater Gansbaai	Kraaibosch and Franskraal Dam, Klipgat, De Kelders Grotte	1 815.037	1 718.103	1 631.362	1 480.781	1 467.816	1 524.604
Pearly Beach	Pearly Beach Springs and Koekemoer Dam	188.066	172.150	148.586	158.837	153.406	155.368
Baardskeerdersbos	Two Boreholes	21.695	22.888	19.274	16.838	17.741	18.311
Buffeljags Bay	Borehole	8.080	7.100	5.872	5.504	5.879	5.019
Total Supply to all towns		**9 879.729**	**9 038.929**	**8 160.401**	**8 056.378**	**7 986.694**	**7 863.942**

The graph below gives an overview of the raw water percentage distribution for the 2024/2025 financial year between the different systems.

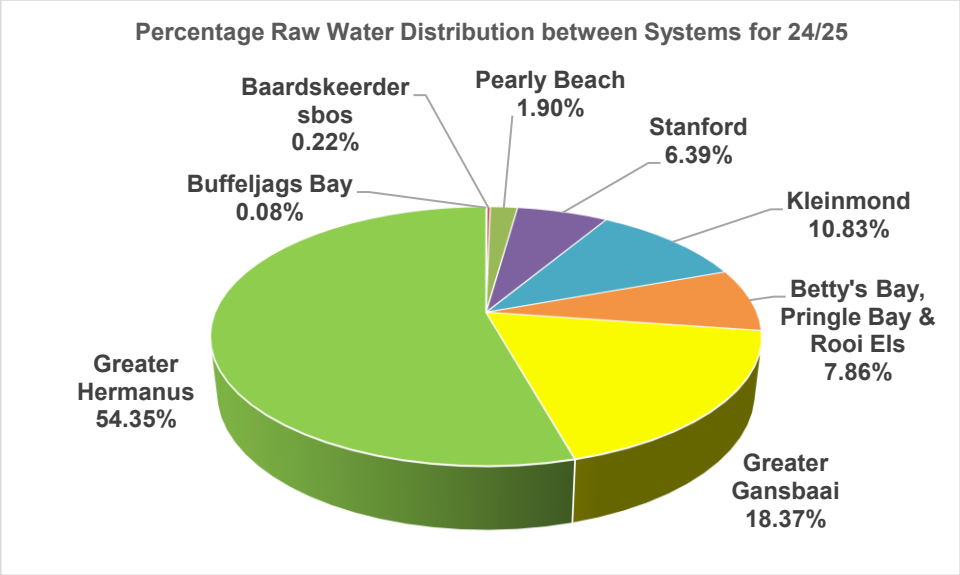


Figure C.1.3: Percentage Raw Water Distribution between the Systems for the 2024/2025 financial year

The table below gives an overview of the quantity of water services provided / water balance for all the distribution systems in Overstrand Municipality's Management Area.

Table C.1.2: Quantity of Water Services Provided / Water Balance								
WSDP Ref. #	Regulations Ref. #	Description	m^3 per annum			Ml/d		
			Year 0	Year - 1	Year - 2	Year 0	Year - 1	Year - 2
			FY2024/25	FY2023/24	FY2022/23	FY2024/25	FY2023/24	FY2022/23
		RAW WATER						
7.2.1		Surface water purchased	0	0	0	0.00	0.00	0.00
7.1 / 7.2.2		Surface water abstracted	6 825 328	6 856 896	6 278 617	18.70	18.79	17.20
7.1 / 7.2.3		Ground water abstracted	3 054 401	2 182 033	1 881 784	8.37	5.98	5.16
7.2.14		Effluent recycled	0	0	0	0.00	0.00	0.00
7.2.4		*less* Raw water supplied to others	0	0	0	0.00	0.00	0.00
7.2.5		**Sub-Total: Raw Water supplied**	**9 879 729**	**9 038 929**	**8 160 401**	**27.07**	**24.76**	**22.36**
	10.2 (g) (i)	**BULK WATER SUPPLY**						
7.2.6		Volume of water treated	9 175 754	8 379 591	7 521 759	25.14	22.96	20.61
7.2.7	10.2 (a) (ii)	Purchased treated water	0	0	0	0.00	0.00	0.00
7.2.7A		Ground water not treated	0	0	0	0.00	0.00	0.00
7.2.6A		*less* Treated water supplied to others	0	0	0	0.00	0.00	0.00
		Sub-Total: System Input Volume	**9 175 754**	**8 379 591**	**7 521 759**	**25.14**	**22.96**	**20.61**
		WATER CONSUMPTION						
7.2.8.1		Billed Metered:	6 311 868	5 816 534	5 680 780	17.29	15.94	15.56
	10.2 (a) (i)	Domestic	5 307 724	4 849 388	4 742 372	14.54	13.29	12.99
	10.2 (a) (i)	Commercial	525 599	474 313	450 815	1.44	1.30	1.24
	10.2 (a) (i)	Industrial	139 159	149 238	136 174	0.38	0.41	0.37
	10.2 (a) (i)	Other	339 386	343 595	351 419	0.93	0.94	0.96
7.2.8.2		Billed Unmetered	0	0	0	0.00	0.00	0.00
	10.2 (a) (i)	Domestic	0	0	0	0.00	0.00	0.00
	10.2 (a) (i)	Commercial	0	0	0	0.00	0.00	0.00
	10.2 (a) (i)	Industrial	0	0	0	0.00	0.00	0.00
	10.2 (a) (i)	Other	0	0	0	0.00	0.00	0.00
7.2.8.3		Unbilled Metered	2 813	3 334	2 029	0.01	0.01	0.01
7.2.8.4		Unbilled Unmetered	94 639	107 430	105 782	0.26	0.29	0.29
	10.2 (g) (i)	**Sub-Total: Authorized consumption**	**6 409 320**	**5 927 298**	**5 788 591**	**17.56**	**16.24**	**15.86**
		WATER LOSSES						
7.3.1		Raw water bulk loss	703 975	659 338	638 642	1.93	1.81	1.75
7.2.3/7.2.4		Billing losses	97 452	110 764	107 811	0.27	0.30	0.30
7.2.5		Apparent losses	129 920	113 748	92 164	0.36	0.31	0.25
7.2.5.1		Illegal connections	55 329	49 046	34 663	0.15	0.13	0.09
7.2.5.2		Inaccurate meters	46 927	40 180	40 169	0.13	0.11	0.11
7.2.5.3		Data errors	27 664	24 523	17 332	0.08	0.07	0.05
7.2.6		Real losses	2 636 514	2 338 545	1 641 004	7.22	6.41	4.50
	10.2 (g) (ii)	**Sub-Total: Water Losses**	**2 766 434**	**2 452 293**	**1 733 168**	**7.58**	**6.72**	**4.75**
		WASTEWATER TREATMENT						
7.2.9	10.2 (a) (iii)	Total received at WWTW	5 436 555	5 379 788	4 573 422	14.89	14.74	12.53
7.2.11		Total discharged	3 651 895	3 748 411	3 408 718	10.01	10.27	9.34
7.2.13		Returned to environment	3 174 459	3 128 163	2 892 548	8.70	8.57	7.92
7.2.14		Recycled	477 436	620 248	516 170	1.31	1.70	1.41
	10.2 (a) (iv)	**Quantity of water supplied not discharged to WWTW's**	**972 765**	**547 510**	**1 215 169**	**2.67**	**1.50**	**3.33**

Graphs of the water usage per sector for the various water distribution systems within Overstrand Municipality's Management Area are included as part of the IWA Water Balance Models in Annexure A.

Quantity of water used by each user sector:

The figure below gives an overview of Overstrand Municipality's overall water usage per Sector for the various financial years.

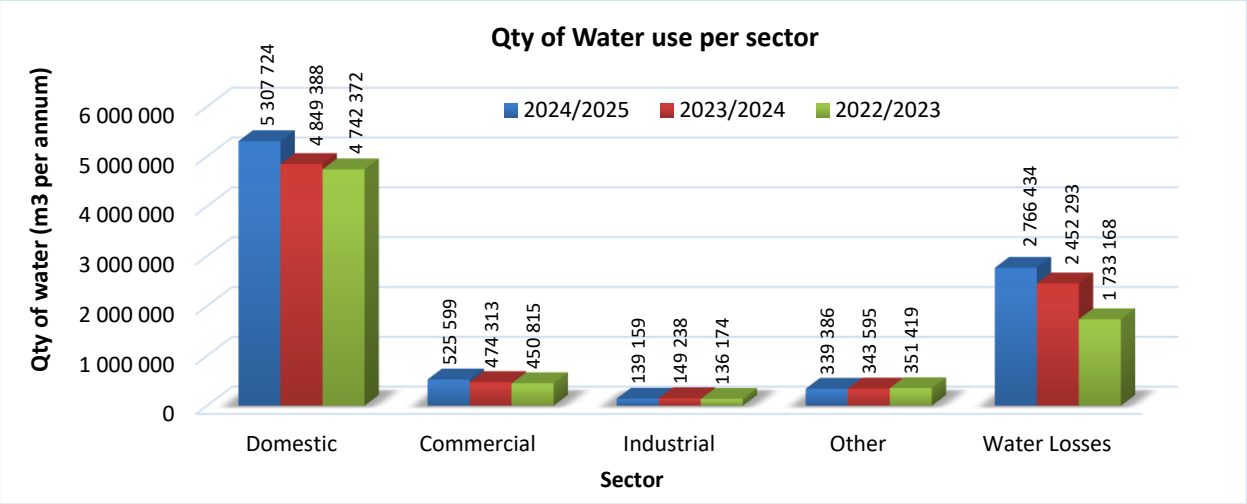


Figure C.1.4: Quantity of Water Services Provided / Water Balance

The table below gives a summary of the annual water usage per sector within the various water distribution systems in Overstrand Municipality's Management Area (Billed Metered Consumption).

Table C.1.3: Quantity of Water Used by each User Sector (Ml/a)

Distribution System	Year	Residential	Commercial	Industrial	Other	Non-Revenue Water	Total
Buffels River	15/16	360.949	16.044	0.000	4.056	327.463	708.512
	16/17	346.625	16.465	0.000	3.076	455.126	821.292
	17/18	302.592	15.437	0.000	1.965	265.104	585.098
	18/19	313.453	17.793	0.000	2.094	407.056	740.396
	19/20	335.936	14.113	0.000	3.067	335.271	688.387
	20/21	357.825	13.306	0.000	3.204	383.457	757.792
	21/22	361.210	14.043	0.000	3.296	358.678	737.227
	22/23	388.550	19.025	0.000	5.292	232.091	644.958
	23/24	401.724	20.871	0.000	2.375	345.377	770.347
	24/25	451.409	23.766	0.000	4.938	285.971	766.084
Kleinmond	15/16	450.695	39.820	0.000	27.817	202.304	720.636
	16/17	439.966	45.341	0.000	63.656	203.625	752.588
	17/18	412.329	44.499	0.000	55.060	188.379	700.267
	18/19	425.380	43.827	0.204	59.441	183.409	712.261
	19/20	432.243	41.226	0.616	73.898	276.922	824.905
	20/21	422.400	41.024	1.247	51.080	289.372	805.123
	21/22	428.239	41.729	1.376	57.744	281.074	810.162
	22/23	437.987	49.999	0.806	55.741	287.316	831.849
	23/24	439.709	47.801	0.777	66.364	392.380	947.031
	24/25	473.104	52.605	0.924	55.387	433.103	1 015.123
Greater Hermanus	15/16	2 827.118	247.923	70.566	443.993	474.020	4 063.620
	16/17	2 915.073	248.026	68.614	562.588	317.045	4 111.346
	17/18	2 634.572	239.268	72.865	434.621	262.270	3 643.596
	18/19	2 516.253	249.022	68.057	488.253	332.685	3 654.270
	19/20	2 509.986	230.858	56.920	454.818	430.532	3 683.114
	20/21	2 542.047	211.139	65.232	244.886	960.986	4 024.290
	21/22	2 868.910	253.288	58.517	137.223	753.296	4 071.234
	22/23	2 848.181	254.798	64.680	168.822	816.989	4 153.470
	23/24	2 889.049	274.540	66.797	163.739	1 186.105	4 580.230
	24/25	3 176.557	309.631	61.477	185.801	1 380.614	5 114.080
Stanford	15/16	181.474	23.032	6.002	19.607	73.438	303.553

Table C.1.3: Quantity of Water Used by each User Sector (Ml/a)							
Distribution System	**Year**	**Residential**	**Commercial**	**Industrial**	**Other**	**Non-Revenue Water**	**Total**
	16/17	175.738	22.831	5.357	23.314	76.937	304.177
	17/18	170.569	21.954	4.726	24.514	78.723	300.486
	18/19	171.181	23.734	8.548	27.346	90.868	321.677
	19/20	176.335	21.408	8.714	25.474	93.141	325.072
	20/21	172.483	16.546	7.810	26.515	79.613	302.967
	21/22	187.249	20.403	4.497	42.414	17.035	271.598
	22/23	193.412	23.961	5.406	26.543	13.485	262.807
	23/24	224.124	24.336	5.417	30.778	129.046	413.701
	24/25	261.265	27.220	3.637	12.224	210.916	515.262
Greater Gansbaai	15/16	647.941	64.996	82.285	170.803	384.841	1 350.866
	16/17	591.887	76.555	68.208	151.578	529.125	1 417.353
	17/18	631.340	83.517	83.633	157.117	449.900	1 405.507
	18/19	668.242	94.399	55.860	153.067	450.328	1 421.896
	19/20	695.208	86.324	58.131	161.247	390.657	1 391.567
	20/21	698.023	80.463	48.861	155.225	308.492	1 291.064
	21/22	686.619	88.469	55.352	152.124	308.847	1 291.411
	22/23	751.997	100.076	65.282	92.074	455.188	1 464.617
	23/24	774.245	103.939	76.247	78.850	454.827	1 488.108
	24/25	813.145	109.557	73.121	80.724	499.286	1 575.833
Pearly Beach	15/16	103.592	2.071	0.000	2.816	36.951	145.430
	16/17	106.401	1.495	0.000	2.713	21.928	132.537
	17/18	94.021	1.430	0.000	1.427	23.495	120.373
	18/19	101.500	2.080	0.000	2.672	38.499	144.751
	19/20	100.149	1.219	0.000	3.104	46.005	150.477
	20/21	100.005	1.492	0.000	2.835	44.318	148.650
	21/22	108.015	1.793	0.000	3.199	41.065	154.072
	22/23	111.715	2.136	0.000	1.685	25.787	141.323
	23/24	106.437	2.262	0.000	1.269	43.359	153.327
	24/25	117.322	2.467	0.000	0.298	41.758	161.845
Baardskeerdersbos	15/16	7.466	0.392	0.000	0.132	6.654	14.644
	16/17	7.482	0.429	0.000	0.094	5.047	13.052
	17/18	7.616	0.308	0.000	0.032	6.752	14.708
	18/19	6.849	0.593	0.000	0.025	7.509	14.976
	19/20	8.254	0.454	0.000	0.025	6.941	15.674
	20/21	6.683	0.401	0.000	0.136	7.918	15.138
	21/22	7.067	0.666	0.000	0.020	5.883	13.636
	22/23	8.087	0.820	0.000	0.013	8.125	17.045
	23/24	10.686	0.564	0.000	0.014	8.546	19.810
	24/25	12.369	0.353	0.000	0.014	6.771	19.507
Buffeljags Bay	15/16	2.928	0.000	0.000	0.815	0.705	4.448
	16/17	2.866	0.000	0.000	0.861	0.200	3.927
	17/18	2.885	0.000	0.000	1.185	0.373	4.443
	18/19	2.901	0.000	0.000	1.193	0.770	4.864
	19/20	2.863	0.000	0.000	1.365	0.930	5.158
	20/21	2.535	0.000	0.000	0.188	3.156	5.879
	21/22	2.215	0.000	0.000	0.743	2.299	5.257
	22/23	2.443	0.000	0.000	1.249	1.998	5.690
	23/24	3.414	0.000	0.000	0.206	3.417	7.037
	24/25	2.553	0.000	0.000	0.000	5.467	8.020
TOTAL	**15/16**	**4 582.163**	**394.278**	**158.853**	**670.039**	**1 506.376**	**7 311.709**
	16/17	**4 586.038**	**411.142**	**142.179**	**807.880**	**1 609.033**	**7 556.272**
	17/18	**4 255.924**	**406.413**	**161.224**	**675.921**	**1 274.996**	**6 774.478**
	18/19	**4 205.759**	**431.448**	**132.465**	**734.091**	**1 511.124**	**7 015.091**
	19/20	**4 260.974**	**395.602**	**124.381**	**722.998**	**1 580.399**	**7 084.354**
	20/21	**4 302.001**	**364.371**	**123.150**	**484.069**	**2 077.312**	**7 350.903**
	21/22	**4 649.524**	**420.391**	**119.742**	**396.763**	**1 768.177**	**7 354.597**
	22/23	**4 742.372**	**450.815**	**136.174**	**351.419**	**1 840.979**	**7 521.759**
	23/24	**4 849.388**	**474.313**	**149.238**	**343.595**	**2 563.057**	**8 379.591**
	24/25	**5 307.724**	**525.599**	**139.159**	**339.386**	**2 863.886**	**9 175.754**

Quantity of effluent received at the WWTWs (Ml/a):

The inflow to all the WWTWs in Overstrand Municipality's Management Area is metered and the five-year history of the total inflow to the various WWTWs are summarised in the table below. The hydraulic and organic design capacities of the various WWTWs and the monthly flows and organic loads at the various plants, as well as the rainfall are included in Annexure A.

Table C.1.4: Quantity of Effluent Received at the Various WWTWs

WWTWs	24/25	Record: Prior (Ml/a)				
		23/24	22/23	21/22	20/21	19/20
Kleinmond	648.231	650.381	580.603	601.483	554.671	458.086
Hawston	205.490	296.039	264.910	291.700	222.561	157.316
Hermanus	3 690.213	3 662.575	2 947.775	2 645.129	2 357.005	2 157.670
Stanford	404.529	308.789	380.449	390.670	388.477	287.228
Gansbaai	433.268	422.836	363.738	320.462	313.684	319.058
Pearly Beach	54.824	39.168	35.947	37.775	29.531	16.333
Total	**5 436.555**	**5 379.788**	**4 573.422**	**4 287.219**	**3 865.929**	**3 395.691**

Quantity of treated effluent returned to the water resource system:

There is a need to report on the volume or proportion of treated effluent that is returned from each WWTW to the Water Resource System. These return flows can be significant and can add to the water resources of a catchment and need to be accounted for. In other instances, the effluent is not returned and is diverted to oxidation ponds or is re-used on parks, sports fields, etc.

All effluent discharged into the Municipal sewer systems are treated at the existing WWTWs and the total returns to the water resource system and the treated effluent re-used for irrigation purposes are summarised in the table below.

Table C.1.5: Total Returns to the Water Resource System and Treated Effluent re-used for Irrigation Purposes

WWTW	Type of WWTW	Resource Name (River, Dam, Other)	Current returns (24/25)		Current re-use (23/24)	
			Total Returns (Ml/a)	Portion (%) of total influent returned	Total Re-use (Ml/a)	Portion (%) of total influent reused
Kleinmond	Activated Sludge	Wetland to Sea	388.939 *	60.0%	390.229 *	60.00%
Hawston	Activated Sludge	Wetland	234.283 *	114.0%	232.040	78.38%
Hermanus	Activated Sludge	Sea	2 128.773	57.7%	2 219.015	60.59%
Stanford	Activated Sludge	Tributary of the Klein River	400.802	99.1%	265.737	86.06%
Gansbaai	Nereda System	Artificial Wetland	21.663 *	5.0%	21.142 *	5.00%

Notes: * Total returns were estimated

The current effluent re-use practices in Overstrand Municipality are as follows:

Table C.1.6: Current Effluent re-use Practices at the Various WWTWs

WWTWs	Current effluent re-used practices
Hermanus	Irrigation of the Hermanus Sports Club, Hermanus High School sports fields, Hermanus Bowling Club, Hermanus Primary School sports fields, Mount Pleasant sport fields, Curro Private School sport fields, Hermanus Golf course, Zwelihle High School, Mount Pleasant Primary School, Schulphoek Reserve, Zwelihle Sports Field and Sandbaai Community Hall. Treated effluent is also used by Contractors.
Gansbaai	Irrigation of the public sport fields in Gansbaai, the sport fields at Gansbaai Primary School and the Gansbaai Academia and the bowling field in Franskraal.

The quantity of effluent treated by industrial consumers on their own premises and re-use by them is not known at this stage.

C.2. Water Services Delivery Profile

The current water and sanitation service levels provided by Overstrand Municipality to their consumers are included in the Municipality's Water Supply and Sanitation Services By-law. A Water and Sanitation Service Level Policy however needs to be drafted for Overstrand Municipality, which takes the following into account.

- National Sanitation Policy, 2016;
- Water and Sanitation Services on Privately Owned Land Policy (November 2023); and
- Revised Compulsory National Water and Sanitation Services Standards in terms of Section 9(1) of the Water Services Act, Act No. 108 of 1997. Government Gazette No.52814 of 6 June 2025.

C.2.1. User Connection Profile

The total number of user connections in each user sector, for the consumers provided with water services by Overstrand Municipality, is as follows:

Table C.2.1.1: User Connection Profile (Water Services)

WSDP Ref. #	Category of users	Water Services						
		Year 0 FY2024/25		Year -1 FY2023/24		Year -2 FY2022/23		New Connections Year 0 FY2024/25
		Nr	%	Nr	%	Nr	%	Nr
	RESIDENTIAL (DOMESTIC)							
3.3	Metered: Uncontrolled	40 342	75%	39 500	75%	38 682	73%	842
3.3	Metered: Controlled	0	0%	0	0%	0	0%	0
	Unmetered (flat rate)	0	0%	0	0%	0	0%	0
	Communal services	10 402	19%	10 421	20%	11 160	21%	-19
	Sub-Total: Residential	**50 744**	**94%**	**49 921**	**94%**	**49 842**	**94%**	**823**
	EDUCATION							
3.3	Schools	17	0%	17	0%	17	0%	0
	Tertiary educaton facilities	0	0%	0	0%	0	0%	0
	Sub-Total: Education	**17**	**0%**	**17**	**0%**	**17**	**0%**	**0**
	HEALTH							
3.3	Clinics	9	0%	9	0%	9	0%	0
3.3	Hospitals	2	0%	2	0%	2	0%	0
3.3	Health Centres	1	0%	1	0%	1	0%	0
	Sub-Total: Health	**12**	**0%**	**12**	**0%**	**12**	**0%**	**0**
	INSTITUTIONAL							
	Public Institutions (Incl. under "Other")	0	0%	0	0%	0	0%	0
3.3	Magistrate Offices	1	0%	1	0%	1	0%	0
3.3	Police Stations	5	0%	5	0%	5	0%	0
3.3	Prisons	0	0%	0	0%	0	0%	0
	etc	0	0%	0	0%	0	0%	0
	Sub-Total: Institutional	**6**	**0%**	**6**	**0%**	**6**	**0%**	**0**
	INDUSTRIAL							
3.3	Dry industries	42	0%	53	0%	52	0%	-11
3.3	Wet industries	3	0%	3	0%	3	0%	0
	Sub-Total: Commercial	**45**	**0%**	**56**	**0%**	**55**	**0%**	**-11**
	COMMERCIAL							
3.3	Businesses	2 144	4%	2 143	4%	2 131	4%	1
3.3	Office Buildings	0	0%	0	0%	0	0%	0
	Sub-Total: Commercial	**2 144**	**4%**	**2 143**	**4%**	**2 131**	**4%**	**1**
	MINING							
		0	0%	0	0%	0	0%	0
	Sub-Total: Commercial	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**
	OTHER							
	Agriculture: raw water	0	0%	0	0%	0	0%	0
	etc	756	1%	755	1%	776	1%	1
	Sub-Total: Other	**756**	**1%**	**755**	**1%**	**776**	**1%**	**1**
	TOTAL	**53 724**	**100%**	**52 910**	**100%**	**52 839**	**100%**	**814**

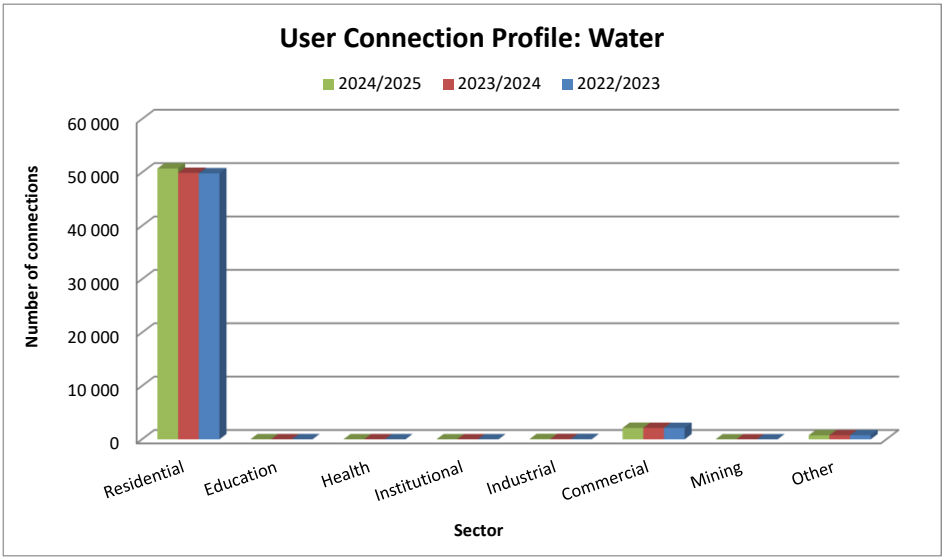


Figure C.2.1.1: User Connection Profile for Water

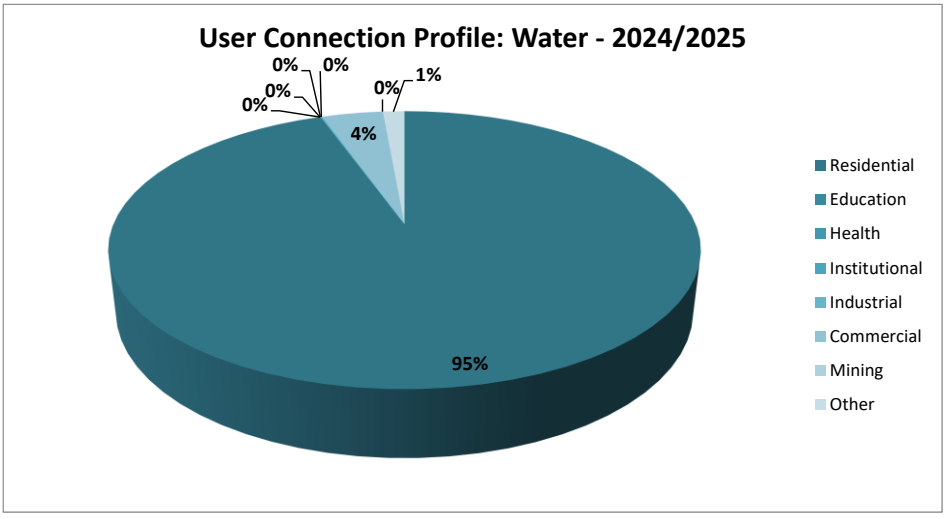


Figure C.2.1.2: User Connection Distribution for Water – Year 2024/2025

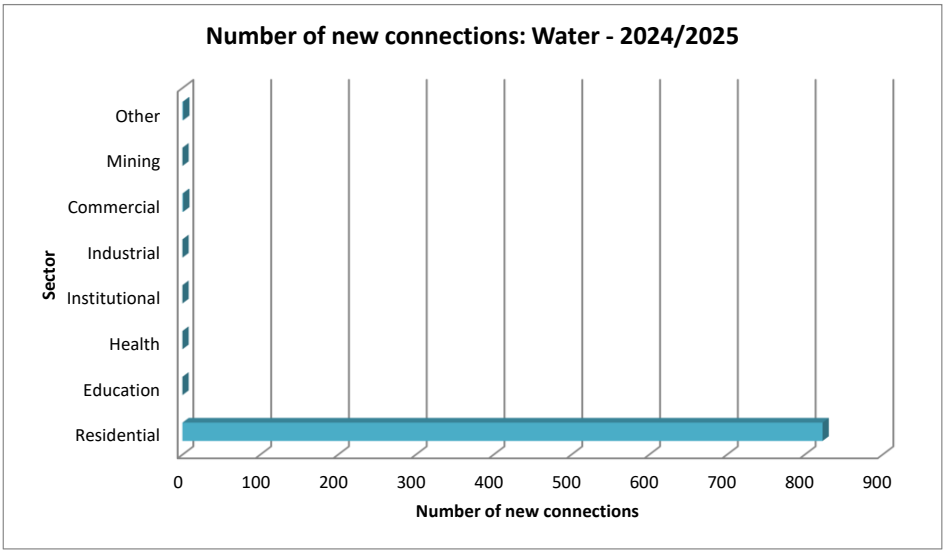


Figure C.2.1.3: Number of New Water Connections Provided during 2024/2025

Table C.2.1.2: User Connection Profile (Wastewater Services)								
WSDP Ref. #	Category of users	Wastewater Services						
		Year 0 FY2024/25		Year -1 FY2023/24		Year -2 FY2022/23		New Connections Year 0 FY2024/25
		Nr	%	Nr	%	Nr	%	Nr
	RESIDENTIAL (DOMESTIC)							
3.3	Metered: Uncontrolled	40 342	75%	39 500	75%	38 682	73%	842
3.3	Metered: Controlled	0	0%	0	0%	0	0%	0
	Unmetered (flat rate)	0	0%	0	0%	0	0%	0
	Communal services	10 402	19%	10 421	20%	11 160	21%	-19
	Sub-Total: Residential	**50 744**	**94%**	**49 921**	**94%**	**49 842**	**94%**	**823**
	EDUCATION							
3.3	Schools	17	0%	17	0%	17	0%	0
	Tertiary educaton facilities	0	0%	0	0%	0	0%	0
	Sub-Total: Education	**17**	**0%**	**17**	**0%**	**17**	**0%**	**0**
	HEALTH							
3.3	Clinics	9	0%	9	0%	9	0%	0
3.3	Hospitals	2	0%	2	0%	2	0%	0
3.3	Health Centres	1	0%	1	0%	1	0%	0
	Sub-Total: Health	**12**	**0%**	**12**	**0%**	**12**	**0%**	**0**
	INSTITUTIONAL							
	Public Institutions (Incl. under "Other")	0	0%	0	0%	0	0%	0
3.3	Magistrate Offices	1	0%	1	0%	1	0%	0
3.3	Police Stations	5	0%	5	0%	5	0%	0
3.3	Prisons	0	0%	0	0%	0	0%	0
	etc	0	0%	0	0%	0	0%	0
	Sub-Total: Institutional	**6**	**0%**	**6**	**0%**	**6**	**0%**	**0**
	INDUSTRIAL							
3.3	Dry industries	42	0%	53	0%	52	0%	-11
3.3	Wet industries	3	0%	3	0%	3	0%	0
	Sub-Total: Commercial	**45**	**0%**	**56**	**0%**	**55**	**0%**	**-11**
	COMMERCIAL							
3.3	Businesses	2 144	4%	2 143	4%	2 131	4%	1
3.3	Office Buildings	0	0%	0	0%	0	0%	0
	Sub-Total: Commercial	**2 144**	**4%**	**2 143**	**4%**	**2 131**	**4%**	**1**
	MINING							
		0	0%	0	0%	0	0%	0
	Sub-Total: Commercial	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**
	OTHER							
	Agriculture: raw water	0	0%	0	0%	0	0%	0
	etc	756	1%	755	1%	776	1%	1
	Sub-Total: Other	**756**	**1%**	**755**	**1%**	**776**	**1%**	**1**
	TOTAL	**53 724**	**100%**	**52 910**	**100%**	**52 839**	**100%**	**814**

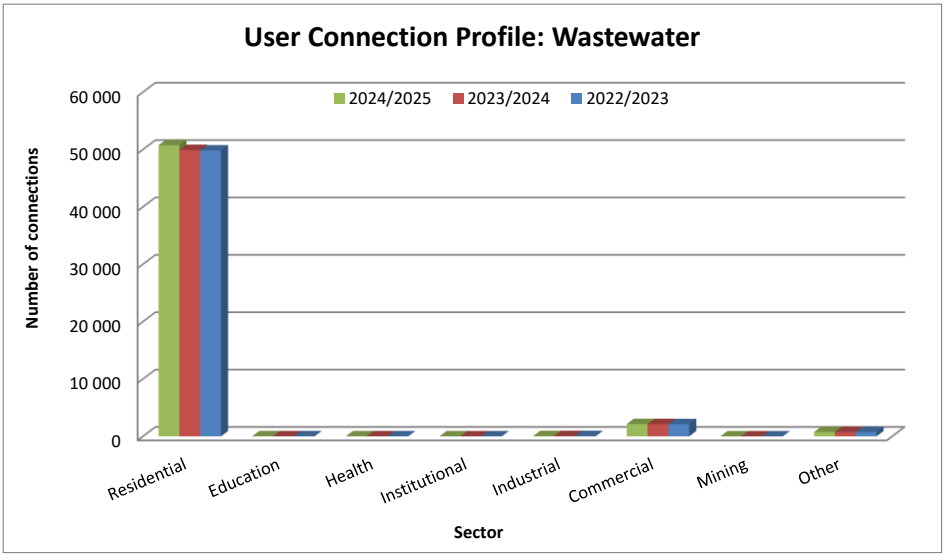


Figure C.2.1.4: User Connection Profile for Wastewater

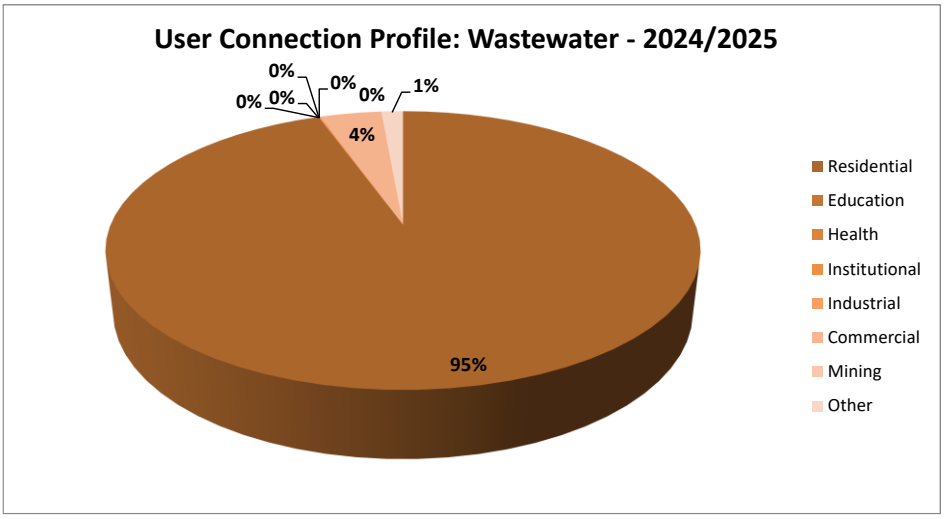


Figure C.2.1.5: User Connection Distribution for Wastewater – Year 2024/2025

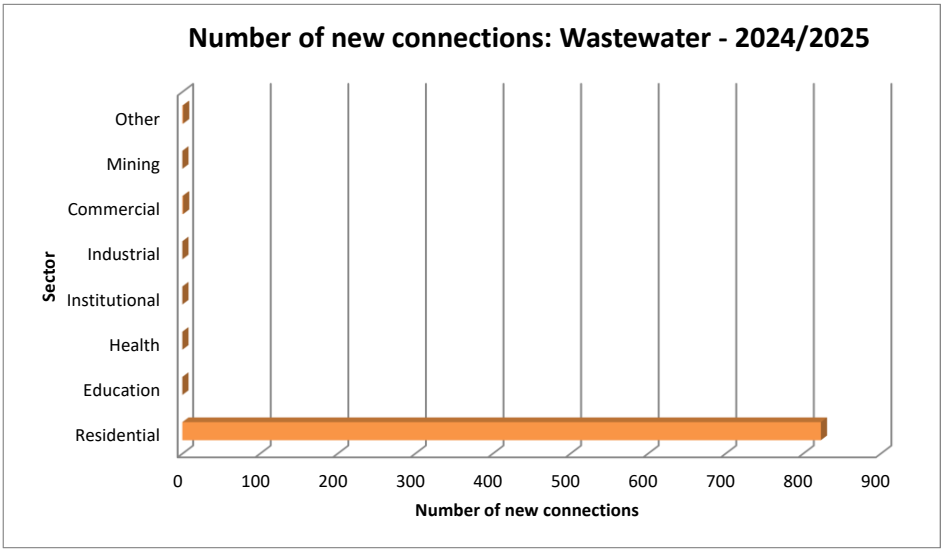


Figure C.2.1.6: Number of New Wastewater Connections Provided during 2024/2025

The number of billed metered consumers in each user sector, for the different water distribution systems in Overstrand Municipality's Management Area, is included in the table below for the various financial years.

Table C.2.1.3: Number of Billed Metered Consumers in each User Sector for the Last Nine Financial Years					
Distribution System	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
2016/2017 (Average over period July 2016 – June 2017)					
Buffels River	3 362	118	0	30	**3 510**
Kleinmond	3 585	292	0	66	**3 943**
Greater Hermanus	18 788	1 004	37	346	**20 175**
Stanford	1 187	55	2	18	**1 262**
Greater Gansbaai	5 091	234	3	202	**5 530**
Pearly Beach	1 500	3	0	7	**1 510**
Baardskeerdersbos	64	0	0	3	**67**
Buffeljags Bay	30	0	0	6	**36**
TOTALS	**33 607**	**1 706**	**42**	**678**	**36 033**
2017/2018 (Average over period July 2017 – June 2018)					
Buffels River	3 416	118	0	30	**3 564**
Kleinmond	3 606	295	0	70	**3 971**
Greater Hermanus	19 460	1 039	38	499	**21 036**
Stanford	1 227	56	3	18	**1 304**
Greater Gansbaai	5 213	286	5	197	**5 701**
Pearly Beach	1 691	5	0	8	**1 704**
Baardskeerdersbos	64	0	0	3	**67**
Buffeljags Bay	30	0	0	6	**36**
TOTALS	**34 707**	**1 799**	**46**	**831**	**37 383**
2018/2019 (Average over period July 2018 – June 2019)					
Buffels River	3 501	119	0	30	**3 650**
Kleinmond	3 625	297	0	71	**3 993**
Greater Hermanus	19 819	1 161	38	532	**21 550**
Stanford	1 260	65	3	20	**1 348**
Greater Gansbaai	5 761	346	9	196	**6 312**
Pearly Beach	1 647	8	0	8	**1 663**
Baardskeerdersbos	64	1	0	3	**68**
Buffeljags Bay	30	0	0	6	**36**
TOTALS	**35 707**	**1 997**	**50**	**866**	**38 620**
2019/2020 (Average over period July 2019 – June 2020)					
Buffels River	3 558	119	0	30	**3 707**
Kleinmond	3 633	307	1	71	**4 012**
Greater Hermanus	20 099	1 209	38	541	**21 887**
Stanford	1 269	76	3	18	**1 366**
Greater Gansbaai	5 917	375	9	198	**6 499**
Pearly Beach	1 657	9	0	8	**1 674**
Baardskeerdersbos	65	2	0	3	**70**
Buffeljags Bay	30	0	0	6	**36**
TOTALS	**36 228**	**2 097**	**51**	**875**	**39 251**
2020/2021 (Estimated)					
Buffels River	3 665	119	0	30	**3 814**
Kleinmond	3 663	307	1	68	**4 038**
Greater Hermanus	20 266	1 219	39	535	**22 058**
Stanford	1 321	76	3	19	**1 418**
Greater Gansbaai	6 332	378	9	186	**6 905**
Pearly Beach	1 698	9	0	8	**1 715**
Baardskeerdersbos	72	2	0	3	**77**
Buffeljags Bay	30	0	0	5	**35**
TOTALS	**37 046**	**2 108**	**52**	**853**	**40 060**
2021/2022 (Estimated)					
Buffels River	3 773	118	0	30	**3 921**
Kleinmond	3 692	306	1	65	**4 064**
Greater Hermanus	20 432	1 228	40	530	**22 230**
Stanford	1 374	76	3	19	**1 471**

Table C.2.1.3: Number of Billed Metered Consumers in each User Sector for the Last Nine Financial Years					
Distribution System	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Greater Gansbaai	6 746	381	10	174	**7 310**
Pearly Beach	1 739	9	0	8	**1 756**
Baardskeerdersbos	79	2	0	3	**84**
Buffeljags Bay	30	0	0	4	**33**
TOTALS	**37 864**	**2 120**	**54**	**832**	**40 870**
2022/2023 (Estimated)					
Buffels River	3 880	118	0	30	**4 028**
Kleinmond	3 722	306	1	62	**4 091**
Greater Hermanus	20 599	1 238	41	524	**22 401**
Stanford	1 426	75	3	20	**1 524**
Greater Gansbaai	7 160	384	10	162	**7 716**
Pearly Beach	1 780	9	0	8	**1 797**
Baardskeerdersbos	86	2	0	3	**91**
Buffeljags Bay	29	0	0	2	**32**
TOTALS	**38 682**	**2 131**	**55**	**811**	**41 679**
2023/2024					
Buffels River	3 988	117	0	30	**4 135**
Kleinmond	3 751	306	1	59	**4 117**
Greater Hermanus	20 765	1 247	42	519	**22 573**
Stanford	1 479	75	3	20	**1 577**
Greater Gansbaai	7 574	387	10	150	**8 121**
Pearly Beach	1 821	9	0	8	**1 838**
Baardskeerdersbos	93	2	0	3	**98**
Buffeljags Bay	29	0	0	1	**30**
TOTALS	**39 500**	**2 143**	**56**	**790**	**42 489**
2024/2025					
Buffels River	4 035	117	0	30	**4 182**
Kleinmond	3 773	306	1	59	**4 139**
Greater Hermanus	20 866	1 248	31	525	**22 670**
Stanford	1 952	74	3	22	**2 051**
Greater Gansbaai	7 765	388	10	145	**8 308**
Pearly Beach	1 826	9	0	7	**1 842**
Baardskeerdersbos	95	2	0	3	**100**
Buffeljags Bay	30	0	0	0	**30**
TOTALS	**40 342**	**2 144**	**45**	**791**	**43 322**

The number of billed metered consumers for each of the water distribution systems and the annual percentage growth over the period 2016/2017 to 2024/2025 are included in the table below.

Table C.2.1.4: Number of Billed Metered Consumers per Water Distribution System and Annual Percentage Growth over the period 2016/2017 to 2024/2025										
Distribution System	**Annual Growth % 16/17 – 24/25**	**24/25**	**23/24**	**22/23**	**21/22**	**20/21**	**19/20**	**18/19**	**17/18**	**16/17**
Buffels River	2.21%	4 182	4 135	4 028	3 921	3 814	3 707	3 650	3 564	3 510
Kleinmond	0.61%	4 139	4 117	4 091	4 064	4 038	4 012	3 993	3 971	3 943
Greater Hermanus	1.47%	22 670	22 573	22 401	22 230	22 058	21 887	21 550	21 036	20 175
Stanford	6.27%	2 051	1 577	1 524	1 471	1 418	1 366	1 348	1 304	1 262
Greater Gansbaai	5.22%	8 308	8 121	7 716	7 310	6 905	6 499	6 312	5 701	5 530
Pearly Beach	2.51%	1 842	1 838	1 797	1 756	1 715	1 674	1 663	1 704	1 510
Baardskeerdersbos	5.13%	100	98	91	84	77	70	68	67	67
Buffeljags Bay	-2.25%	30	30	32	33	35	36	36	36	36
TOTALS	**2.33%**	**43 322**	**42 489**	**41 679**	**40 870**	**40 060**	**39 251**	**38 620**	**37 383**	**36 033**

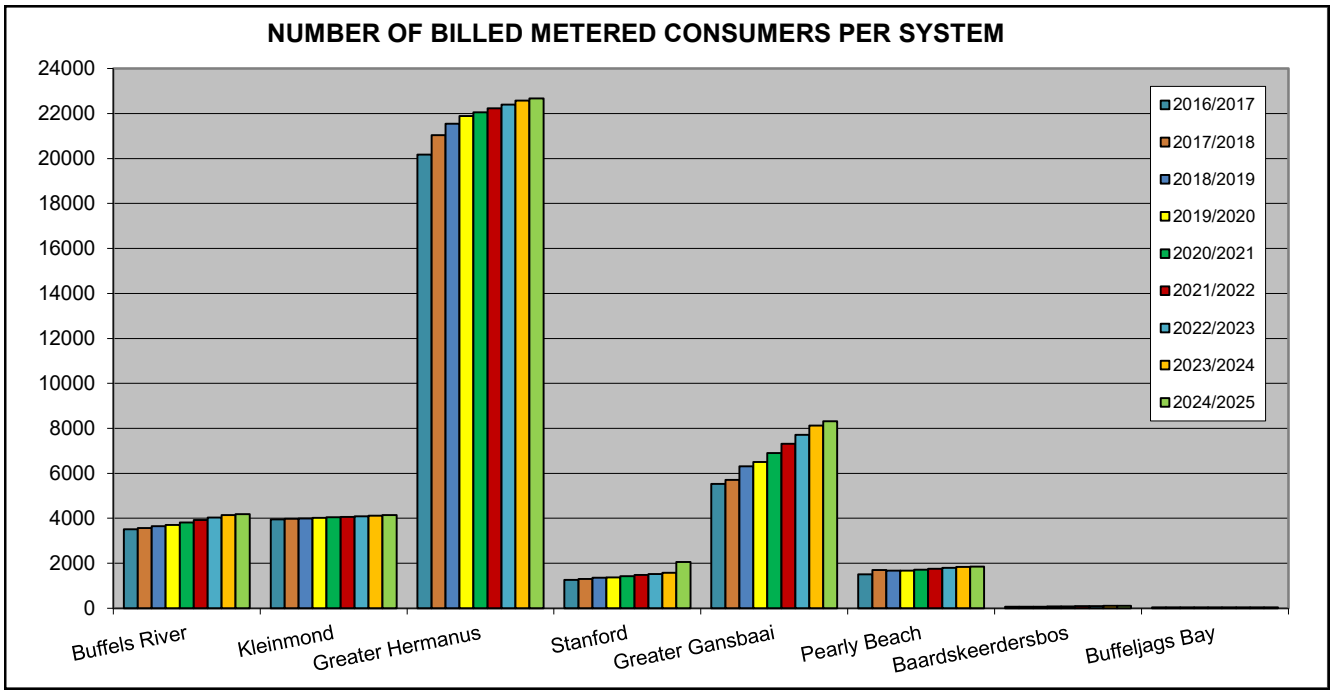


Figure C.2.1.7: Number of Billed Metered Consumers per System

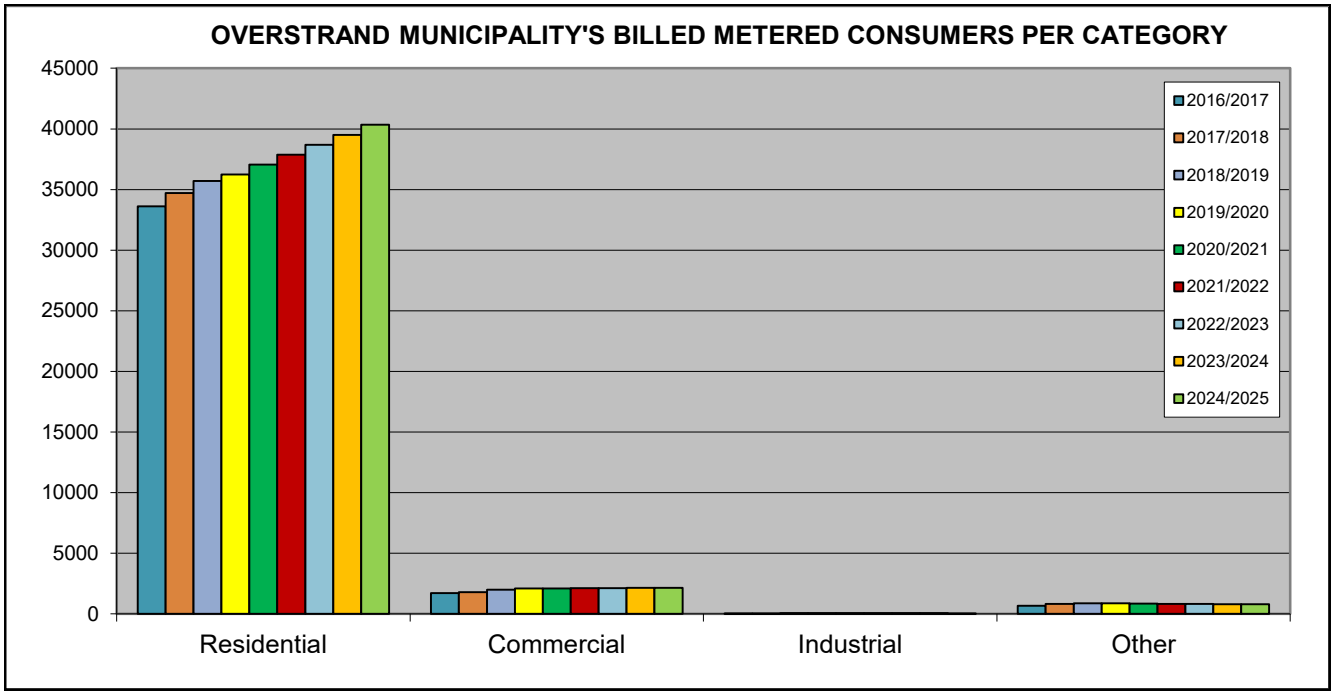


Figure C.2.1.8: Overstrand Municipality's Billed Metered Consumers per Category Type

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

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

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

C.2.2. Residential Water Services Delivery Access Profile

The Revised Compulsory National Water and Sanitation Standards, as published in the Government Gazette No.52814 of 6 June 2025, make provision for the following standards for basic water supply services.

Table C.2.2.1: Basic Water Supply Services

- A WSA is responsible for the provision of basic water supply services to all consumers or potential consumers in its jurisdictional area inclusive of people residing on privately owned land as guided by the Water and Sanitation Services Policy on Privately Owned Land (2023).
- The minimum standard for basic water services must consist of:
  - Within two years of promulgation of these regulations an access or delivery point which must be at least at the end boundary of the yard (user connection point) of the existing settlement.
  - A minimum quantity of drinking water of 6 kl/household per month -
    - at a minimum flow rate of not less than 10 litres per minute.
    - with an effectiveness such that water is made available for at least 358 days per year.
    - not interrupted for longer than 48 consecutive hours.
    - at no cost to indigent households, upon depletion of the initial 6 kl per month allocation, qualifying indigent household will be subject to usage restrictions and will be responsible for payment based on the adopted tariff policy for any additional water consumed.
  - Water provided which complies with the requirements of SANS 241.
- Maintenance of the infrastructure up to the user connection is the responsibility of the Water Services Institution and the maintenance of the infrastructure within the boundary of the property is the responsibility of the owner.
- All new users applications for water connections must be completed within 21 calendar days by a WSA in areas where the infrastructure allows or exist.
- All user connections for water supply must be metered or measured, controlled and tariffed by the relevant Water Services Institution.
- A Water Services Institution must replace stolen meters and or repair or replace damaged meters within 30 days of it being reported or detected.
- Water meters must be managed and replaced within their asset lifespan.
- The Water Services Institution must ensure the provision of appropriate education in respect of safe, effective and efficient water use, hygiene and groundwater use management.
- Within two years after promulgation of these Regulations, WSA must submit plans to the Department, using the WSDP platform as part of their WSDP on how they are going to upgrade all consumers in formal settlements to basic services (yard connection; user connection point).

The table below gives an overview of the water services delivery access profile of Overstrand Municipality.

Table C.2.2.2: Residential Water Services Delivery Access Profile: Water							
Census Category	Description	Year 0		Year -1		Year 2	
		FY2024/25		FY2023/24		FY2022/23	
		Nr	%	Nr	%	Nr	%
	WATER (ABOVE MIN LEVEL)						
Piped (tap) water inside dwelling/institution	House connections	42 254	73%	41 303	72%	40 620	71%
Piped (tap) water inside yard	Yard connections	5 300	9%	5 300	9%	5 300	9%
Piped (tap) water on community stand: distance less than 200m from dwelling/institution	Standpipe connection < 200 m	10 433	18%	10 452	18%	11 191	20%
	Sub-Total: Minimum Serivce Level and Above	**57 987**	**100%**	**57 055**	**100%**	**57 111**	**100%**
	WATER (BELOW MIN LEVEL)						
Piped (tap) water on community stand: distance between 200m and 500m from dwelling/institution	Standpipe connection: > 200 m < 500 m	21	0%	21	0%	21	0%
Piped (tap) water on community stand: distance between 500m and 1000m (1km) from dwelling /institution	Standpipe connection: > 500 m < 1 000 m	8	0%	8	0%	8	0%
Piped (tap) water on community stand: distance greater than 1000m (1km) from dwelling/institution	Standpipe connection: > 1 000 m	5	0%	5	0%	5	0%
No access to piped (tap) water	No services	49	0%	49	0%	49	0%
	Sub-Total: Below Minimum Service Level	**83**	**0%**	**83**	**0%**	**83**	**0%**
	Total number of households	**58 070**	**100%**	**57 138**	**100%**	**57 194**	**100%**

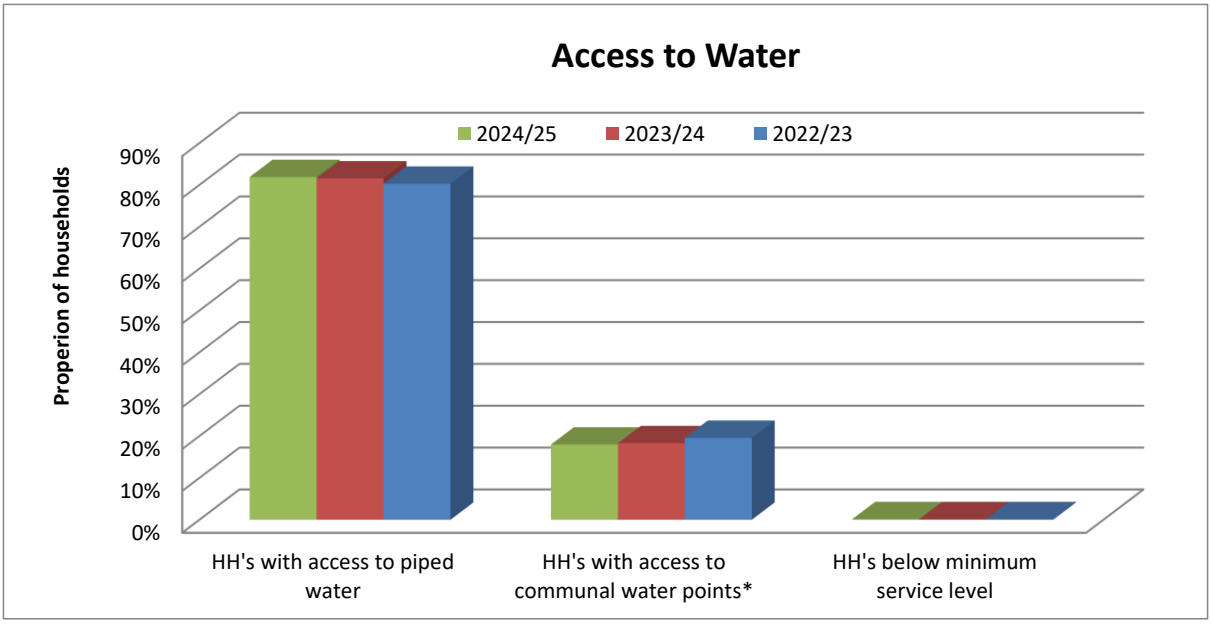


Figure C.2.2.1: Household Water Access Profile

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

Table C.2.2.3: Residential Water Service Levels (Residential Consumer Units)

Service Level	Buffels River	Kleinmond	Greater Hermanus	Stanford	Greater Gansbaai	Pearly Beach	Baardskeer-dersbos	Buffeljags Bay	Farms	Total
No Water Services	0	0	0	0	0	0	0	0	49 [2)]	49
Below RDP: Infrastructure Upgrade	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure Extension	0	0	0	0	0	0	0	0	34 [3)]	34
Below RDP: Infrastructure Refurbishment	0	0	0	0	0	0	0	0	0	0
Below RDP: O&M Needs	0	0	0	0	0	0	0	0	0	0
Below RDP: Water Resource Needs	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure and O&M Needs	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure, O&M and Water Resource Needs	0	0	0	0	0	0	0	0	0	0
Total Basic Need (RDP)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**83**	**83**
Below Housing Interim [4)]	0	0	0	0	0	0	0	0	0	0
Adequate Housing Permanent [5)]	0	1 108	8 343	267	540	128	0	16	0	10 402
Total Housing Need	**0**	**1 108**	**8 343**	**267**	**540**	**128**	**0**	**16**	**0**	**10 402**
Standpipes	0	0	0	0	0	0	0	0	31	31
Yard Connections [6)]	6	282	3 623	482	625	39	0	0	243	5 300
House Connections [1)]	4 035	3 773	20 866	1 952	7 765	1 826	95	30	1 912	42 254
Total Adequate	**4 041**	**4 055**	**24 489**	**2 434**	**8 390**	**1 865**	**95**	**30**	**2 186**	**47 585**
Total Residential Consumer Units	**4 041**	**5 163**	**32 832**	**2 701**	**8 930**	**1 993**	**95**	**46**	**2 269**	**58 070**

Notes: 1) Number of residential billed metered consumers for the urban areas for 2024/2025, as taken from the financial system.

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

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

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

5) Adequate Housing Permanent in the above table is the number of informal households in informal areas with communal water services, as confirmed by the Municipality (June 2025).

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

The Revised Compulsory National Water and Sanitation Standards, as published in the Government Gazette No.52814 of 6 June 2025, make provision for the following standards for basic sanitation supply services.

Table C.2.2.4: Basic Sanitation Supply Services

- A WSA is responsible for the provision of basic sanitation services to all consumers or potential consumers in its jurisdictional area inclusive of people residing on privately owned land as guided by the Water and Sanitation Services Policy on Privately Owned Land (2023).
- The standard for basic sanitation services must include the provision of a toilet with functional hand washing facility in the yard, which is safe, reliable for 24 hours a day, environmentally sound, easy to keep clean, provides privacy and protection against the weather, well ventilated, keeps smells to a minimum and prevents the entry and exit of flies and other disease-carrying pests, providing for an effective and acceptable sanitation technology.
- A WSA must ensure that human excreta and wastewater is safely contained at all times, throughout the sanitation service chain.
- Faecal sludge management must be an integral part of the sanitation service.
- Each household must have uninterrupted access to an adequate, appropriate sanitation facility.
- Hygiene and user education must be an integral part of sanitation service. Households should be supported with knowledge and any other relevant resources to take responsibility for the correct and consistent use of the sanitation service, including but not limited to the toilet facility.
- In providing basic sanitation service, a WSA must consider the following requirements:
  - The need for everyone, including persons with a disability to have a reasonable quality of life.
  - Water efficient sanitation solutions.
  - Groundwater pollution risks in accordance with the Protocol to manage the potential groundwater contamination from on-site sanitation (2003).
  - Water use authorisation in terms of the NWA.
  - Surface water pollution risks and the management thereof.
  - Population density.
  - Economies of scale.
- Subject to the above, a WSA must consider-
  - In high and medium density formal settlements:
    - waterborne sewered sanitation provided that the wastewater treatment system and works have adequate capacity and is performing to acceptable standards under the National Water Act (read with regulation 10); or
    - alternative water efficient sanitation solutions instead of waterborne sewered systems in areas of dense formal and medium settlement where there is resource scarcity and or inadequate capacity or functionality in the sewer system and or the wastewater treatment works.
  - In low density or sparsely populated settlements: water efficient sanitation solutions.
- Water efficient sanitation solutions, as described above, must be shown to include off-grid, on-site sanitation options such as Non-sewered Sanitation Systems (NSSS) as well as Decentralised Wastewater Treatment Systems (DWWTS).
- A WSA may not unreasonably decline a property development to have a water efficient sanitation solution that is not connected to the central system where development will manage the system as a Water Services Intermediary and where the water uses of the system is authorised under the National Water Act.
- Whenever a Water Services Institution is providing new innovative non-sewered sanitation systems, such must be guided by the requirements of SANS 30500 for Non-Sewered Sanitation Systems or the “SANS 24521:2020 Guidelines for the management of basic on-site domestic wastewater services”, whichever is applicable.
- WSA must monitor and regulate safe emptying, transportation, treatment and disposal of faecal sludge to faecal sludge treatment facilities or any other authorised facility.
- Faecal sludge treatment plants must be guided by ISO 31800 for prefabricated units or similar standards for non-prefabricated faecal sludge treatment units.
- WSA must have community participation procedures of informing communities about the emptying processes, routes and health risks.
- Within two years after promulgation of these Regulations, the WSA must submit plans as part of their WSDP, using the WSDP platform, on measures to eradicate unimproved pit toilets and open defaecation in human settlements.

The table below gives an overview of the sanitation services delivery access profile of Overstrand Municipality.

Table C.2.2.5: Residential Water Services Delivery Access Profile: Sanitation

Census Category	Description	Year 0 FY2023/24		Year -1 FY2022/23		Year 2 FY2021/22	
		Nr	%	Nr	%	Nr	%
	SANITATION (ABOVE MIN LEVEL)						
Flush toilet (connected to sewerage system)	Waterborne	31 993	55%	31 139	54%	30 398	53%
	Waterborne: Low Flush	4 100	7%	4 100	7%	4 100	7%
Flush toilet (with septic tank)	Septic tanks / Conservancy	11 278	19%	11 181	20%	11 239	20%
Chemical toilet	Non-waterborne (min. service level)	5	0%	5	0%	5	0%
Pit toilet with ventilation (VIP)		27	0%	27	0%	27	0%
Other / Communal Services	Waterborne (min. service level, communal)	10 402	18%	10 421	18%	11 160	20%
	Sub-Total: Minimum Serivce Level and Above	**57 805**	**100%**	**56 873**	**100%**	**56 929**	**100%**
	SANITATION (BELOW MIN LEVEL)						
Pit toilet without ventilation	Pit toilet	12	0%	12	0%	12	0%
Bucket toilet	Bucket toilet	68	0%	68	0%	68	0%
Other toilet provision (below min. service level	Other	119	0%	119	0%	119	0%
No toilet provisions	No services	66	0%	66	0%	66	0%
	Sub-Total: Below Minimum Service Level	**265**	**0%**	**265**	**0%**	**265**	**0%**
	Total number of households	**58 070**	**100%**	**57 138**	**100%**	**57 194**	**100%**

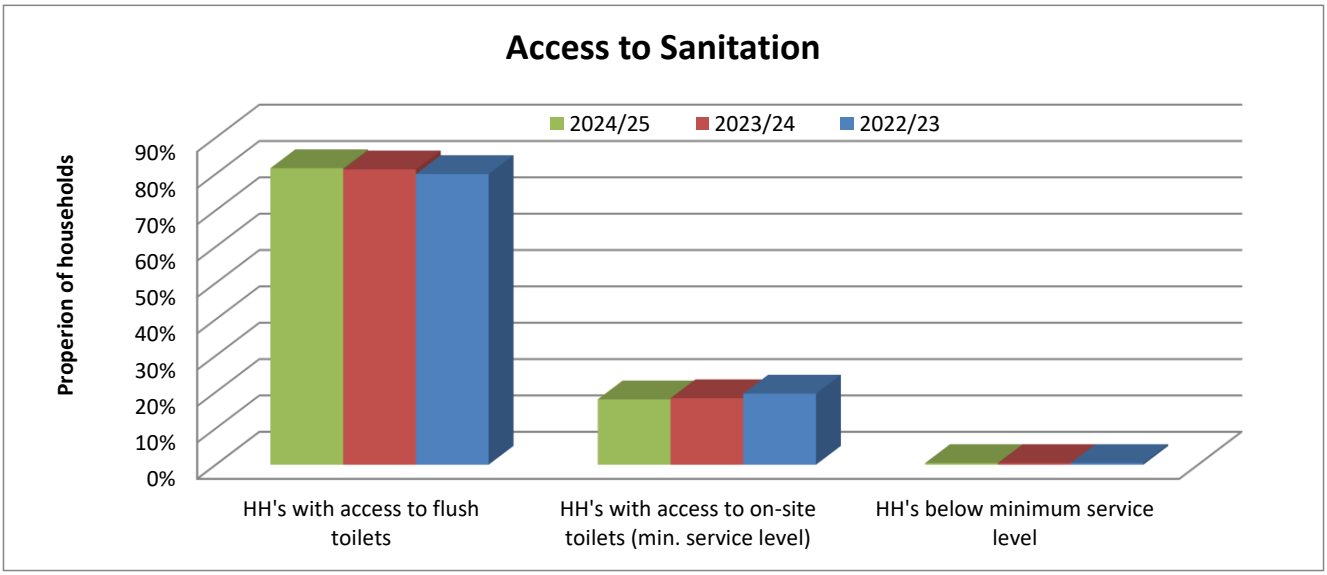


Figure C.2.2.2: Household Sanitation Access Profile

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

Table C.2.2.6: Residential Sanitation Service Levels (Residential Consumer Units)										
Service Levels	**Buffels River**	**Kleinmond**	**Greater Hermanus**	**Stanford**	**Greater Gansbaai**	**Pearly Beach**	**Baardskeer-dersbos**	**Buffeljags Bay**	**Farms**	**Total**
No Sanitation Services	0	0	0	0	0	0	0	0	66 [3]	66
Below RDP: Infrastructure Upgrade	0	0	0	0	0	0	0	0	204 [4]	204
Below RDP: Infrastructure Extension	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure Refurbishment	0	0	0	0	0	0	0	0	0	0
Below RDP: O&M Needs	0	0	0	0	0	0	0	0	0	0
Below RDP: Water Resource Needs	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure and O&M Needs	0	0	0	0	0	0	0	0	0	0
Below RDP: Infrastructure, O&M and Water Resource Needs	0	0	0	0	0	0	0	0	0	0
Total Basic Need (RDP)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**270**	**270**
Below Housing Interim [5]	0	0	0	0	0	0	0	0	0	0
Adequate Housing Permanent [6]	0	1 108	8 343	267	540	128	0	16	0	10 402
Total Housing Need	**0**	**1 108**	**8 343**	**267**	**540**	**128**	**0**	**16**	**0**	**10 402**
No Waterborne (VIP)	0	0	0	0	0	0	0	0	27	27
Waterborne Low Flush	0	0	4 100	0	0	0	0	0	0	4 100
Septic Tanks / Conservancy Tanks [1]	4 041	908	1 284	56	2 370	522	95	30	1 972	11 278
Waterborne	0	3 147	19 105	2 378	6 020	1 343	0	0	0	31 993
Total Adequate [2]	**4 041**	**4 055**	**24 489**	**2 434**	**8 390**	**1 865**	**95**	**30**	**1 999**	**47 398**
Total Residential Consumer Units	**4 041**	**5 163**	**32 832**	**2 701**	**8 930**	**1 993**	**95**	**46**	**2 269**	**58 070**

Notes: 1) Total for Septic Tanks and Conservancy tanks in Urban Areas was estimated from previous Municipal information for June 2025 for "Developed Sites Septic Tanks (SE8D)"

2) Include Backyard dwellers

3) Census 2011: Number of households with no toilet facility 66.

4) Census 2011: Number of households with existing buckets 68, chemical toilets 5, pit toilets without ventilation 12 and "other" 119.

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

6) Adequate Housing Permanent in the above table is the number of informal households in informal areas with communal ablution facilities, as confirmed by the Municipality (June 2025).

Number of households provided with water through communal water services:

The Revised Compulsory National Water and Sanitation Standards, as published in the Government Gazette No.52814 of 6 June 2025, also make provision for the following standards for interim water and sanitation supply services.

Table C.2.2.7: Interim Water and Sanitation Supply Services

Interim water supply services

- A WSA must take reasonable measures to provide interim water supply services in informal settlements.
- Upon realisation of a new informal settlement, the WSA must provide interim water supply services within 90 days of becoming aware thereof.
- A WSA is responsible for the capital, operation, maintenance and refurbishment actions and cost pertaining to interim water services.
- Where an informal settlement is formalised, a WSA must ensure access to basic water services.
- The minimum standard for interim water services must consist of:
  - An access or delivery point which must be a communal standpipe, within a reasonable walking distance of no more than 200m from the furthest household.
  - A minimum quantity of drinking water of 6 kl/household per month -
    - at a minimum flow rate of not less than 10 litres per minute.
    - with an effectiveness such that water is made available for at least 358 days per year.
    - not interrupted for longer than 48 consecutive hours.
  - Water provided which complies with the requirements of SANS 241.
- All areas supplied with interim water supply services must have zonal meters and measured by the relevant Water Services Institution.
- Whenever interim water supply services are provided through water tankers, it must not exceed 12 consecutive months and WSAs need to keep accurate records as specified in Regulation 4(3)(c).

Interim sanitation supply services

- A WSA is responsible for the capital, operation, maintenance and refurbishment actions and cost pertaining to interim sanitation services including the management of faecal sludge in the entire sanitation service chain.
- A WSA must take reasonable measures to provide appropriate interim sanitation services in informal settlements and during a disaster.
- Upon realisation of a new informal settlement, the WSA must provide interim sanitation services within 90 days.
- Interim sanitation services must provide at least the following:
  - Communal and shared facilities in accordance with the following:
    - Communal toilet: Toilet seat – 1 seat per 10 households; Urinal units – 1 unit per 20 households; Hand washing – 1 basin per 10 households.
    - Shared toilets: Toilet seat – 1 unit per 4 households; Urinal units – 1 unit per 10 households; Hand washing – 1 basin per 4 households.
  - The WSA must put measures in place to keep the toilets hygienic.
  - The toilets must be separated according to gender to meet the needs for women, girls and persons with disability.
  - All portable and mobile toilets must be emptied at least twice a week to appropriate licensed facilities for treatment.
- If the sanitation facility is communal, the maximum walking distance should be 100m, wherever possible.
- Parents and care givers must be provided with information by the Water Services Institution regarding safe disposal of infant's faeces, laundering practices and use of nappies, potties or scoops for effectively managing safe disposal.
- A WSA through its Environmental Health Practitioners are responsible for promoting hygiene and user education for ensuring an environmentally safe approach to sanitation and for monitoring the impact of sanitation processes on the environment.

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 3 076. 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 2025).

Table C.2.2.8: Communal Service Levels in the Informal Areas

Area	Informal Settlement	No. of Households	Number of Toilets	Household / Toilet	Number of Taps	Households / Tap
Stanford	Die Kop	159	20	8.0	7	22.7
Kleinmond	Overhills	497	103	4.8	29	17.1
Gansbaai	Mashakhane	506	52	9.7	8	63.3
	Buffeljags Bay	16	8	2.0	2	8.0
Hawston	Erf 170	5	6	0.8	2	2.5
Zwelihle	Tsepe-Tsepe	262	36	7.3	7	37.4
	Serviced Sites	81	25	3.2	4	20.3
	Thambo Square	351	13	27.0	2	175.5
	Asazani	89	14	6.4	4	22.3
	Temporary Relocation Area	250	125	2.0	125	2.0
	New Camp	55	12	4.6	7	7.9
	Transit Camp	171	140	1.2	136	1.3
Sub-Total		**2 442**	**554**	**4.4**	**333**	**7.3**
Communal Service Levels – Emergency Housing						
Stanford	Stanford EHP	108	36	3.0	9	12.0
Hermanus	Mount Pleasant EHP (Haven)	25	8	3.1	4	6.3
	Mount Pleasant EHP (Dankbaar)	29	10	2.9	4	7.3
	Zwelihle EHP	152	42	3.6	13	11.7
	Zwelihle: Swimming Pool	94	20	4.7	14	6.7
	Zwelihle(old Mandela)	64	10	6.4	5	12.8
Gansbaai	Masakhane EHP	34	16	2.1	3	11.3
	Eluxolweni EHP	128	30	4.3	11	11.6
Sub-Total		**634**	**172**	**3.7**	**63**	**10.1**
Total		**3 076**	**726**	**4.2**	**396**	**7.8**

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

Targets: Overstrand Municipality works towards a ratio of at least 1 tap per twenty-five households and 1 communal toilet per five households for their shared services.

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

Table C.2.2.9: Communal Service Levels Provided During Land Invasion

Area	Settlement	No. of Households	Number of Toilets	Household / Toilet	Number of Taps	Households / Tap
Hermanus	Marikana (Area of church)	2 215	14	34.6	10	48.2
	Marikana (Next to swimming pool)		20		16	
	Marikana (Next to recycling site)		20		12	
	Marikana (Next to parking area)		10		8	
	Dubai (Schulphoek)	4 327	30	144.2	21	206.0
	Back of sportground, Zwelihle	173	20	8.7	8	21.6
Kleinmond	Overhills	611	19	32.2	6	101.8
Sub-Total		**7 326**	**133**	**55.1**	**81**	**90.4**

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

Table C.2.2.10: Service Levels at Schools

Associated Services Facility	Number of Facilities	Water			Sanitation		
		Facilities with Adequate Services	Facilities with no Services	Facilities with inadequate Services	Facilities with Adequate Services	Facilities with no Services	Facilities with inadequate Services
Schools	17	17	0	0	17	0	0

Source: Number of public schools – 2024 Socio Economic Profile of Overstrand Municipality, Western Cape Government.

The existing water and sanitation service levels for all the Medical Facilities in Overstrand Municipality's Management Area is summarised in the table below.

Table C.2.2.11: Service Levels at Medical Facilities

Associated Services Facility	Number of Facilities	Water			Sanitation		
		Facilities with Adequate Services	Facilities with no Services	Facilities with inadequate Services	Facilities with Adequate Services	Facilities with no Services	Facilities with inadequate Services
Hospitals	2	2	0	0	2	0	0
Community Day Centres	1	1	0	0	1	0	0
Clinics	4	4	0	0	4	0	0
Satellite Clinics	4	4	0	0	4	0	0

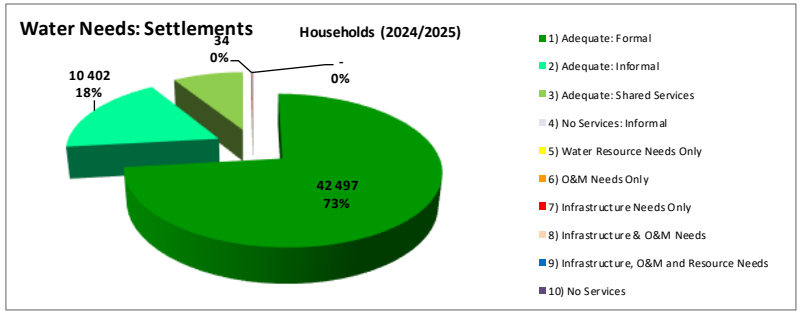
Source: Number of facilities - 2024 Socio Economic Profile of Overstrand Municipality, Western Cape Government

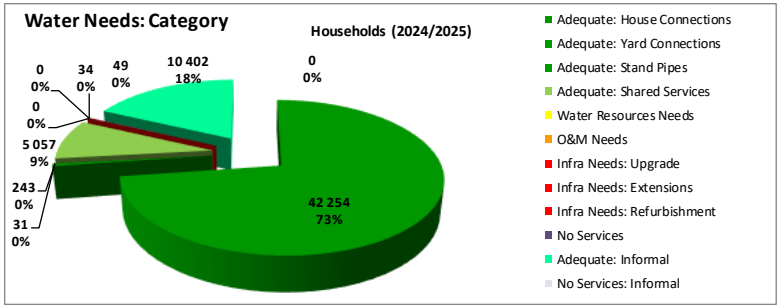
C.2.3. Residential Water Services Delivery Adequacy Profile

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

Table C.2.3.1: 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						Upgrades		Extensions		Refurbishment							
		HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%
1	9	42 254	100%	243	100%																				
2	5																					10 402	100%		
3	7					31	100%	5 057	100%																
4	0																								
5	0																								
6	0																								
7	1															34	100%								
8	0																								
9	0																								
10	1																			49	100%				
Total Household Interventions required		42 254		243		31		5 057		0		0		0		34		0		49		10 402		0	



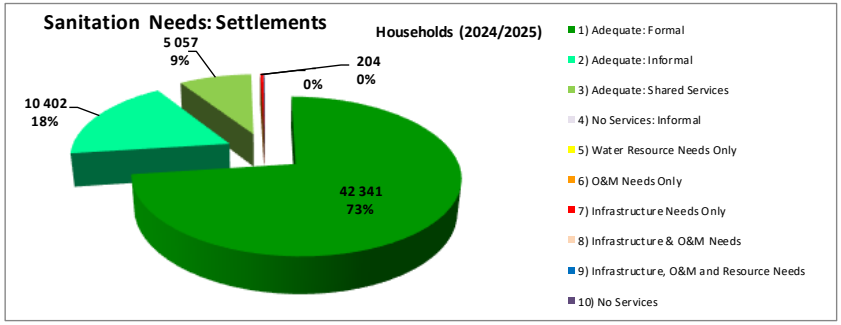


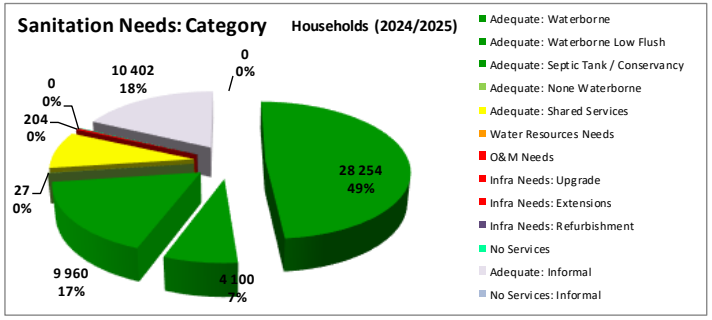
1	Adequate	3	Adequate: Shared services	5	Water Resources Needs **Only**	7	Infrastructure Needs **Only**	9	Infrastructure, O&M & Resource Needs
2	Adequate: Informal	4	No Services: Formal	6	O & M Needs **Only**	8	Infrastructure& O&M needs	10	No Services

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

Table C.2.3.2: Residential Water Services Delivery Adequacy Profile (Sanitation)

Water Categorisation	Number of settlements	FORMAL																				INFORMAL			
		Adequate										Water Resource needs		O & M Needs		Infrastructure Needs						No services		Adequate		No services	
		Waterborne		Waterborne Low flush		Septic Tank/ Conservancy		None Waterborne		Shared Services						Upgrades		Extensions		Refurbishmer							
		HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%
1	9	28 254	100%	4 100	100%	9 960	100%	27	100%																		
2	5																							10 402	100%		
3	7									5 057	100%																
4	0																										
5	0																										
6	0																										
7	1															204	100%										
8	0																										
9	0																										
10	1																					66	100%				
Total Household Interventions required		28 254		4 100		9 960		27		5 057		0		0		204		0		0		66		10 402		0	





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

C.3. Cost Recovery and Free Basic Services

C.3.1. Tariffs

The water tariff structures for Overstrand Municipality for the 2024/2025 financial year and the previous three financial years are summarised in the table below (Subject to 15% VAT, except on consumer deposits and tampering fees).

Table C.3.1.1: Water Tariffs

Consumer / Description	Tariff Code	Category		24/25	23/24	22/23	21/22
Consumer Deposits	WD1	Domestic Water		R765-00	R719-00	R678-00	R646-00
	WD2	Commercial Water Cons. < 40 kl		R3 044-00	R2 872-00	R2 709-00	R2 582-00
	WD3	Commercial Water Cons 40 – 100 kl		R10 651-00	R10 048-00	R9 479-00	R9 036-00
	WD4	Commercial Water Cons. 100 kl +		R18 257-00	R17 224-00	R16 249-00	R15 490-00
	WD5	Domestic – Water RUEs		Applicable RUE's x WD1A			
	WD6	Indigent Registered		R244-00	R230-00	R217-00	R207-00
Basic Charge	W1A1	Basic Monthly Charge per erf/unit per month		R175-68	R165-74	R155-62	R148-35
	W1A2A	Basic Monthly Subsidy: Residential Indigent as per paragraph A of the Indigent Policy per erf/unit per month		R175-68	R165-74	R155-62	R148-35
	W1A2B	Basic Monthly Subsidy: Residential Indigent as per paragraph B, C & D of the Indigent Policy per erf/unit per month 1/7/22-31/10/22		-	-	R129-14	R129-14
	W1A2B	Basic Monthly Subsidy: Residential Indigent as per paragraph B, C & D of the Indigent Policy per erf/unit per month 1/11/22-28/2/23		-	-	R86-09	-
	W1A2B	Basic Monthly Subsidy: Residential Indigent as per paragraph B, C & D of the Indigent Policy per erf/unit per month 1/3/23-30/6/23		-	-	R43-05	-
	W1A3A	Fixed Infrastructure Basic Charge per erf/unit per month		R15-45	R15-45	R15-45	R15-45
	W1A3B	Fixed Infrastructure Basic Charge per erf/unit per month		R8-41	R8-41	R8-41	R8-41
	W1A3C	Subsidised Fixed Infrastructure Basic Charge per erf/unit per month – Registered Indigent Households		R8-41	R8-41	R8-41	R8-41
Consumption Households and Registered Indigent Households (0 - 10 kl subsidised for indigent households)	W1B1	Normal Tariff & Level 1 water restrictions	0 – 6 kl per kl	R7-22	R6-81	R6-38	R6-08
	W1B2		7 - 18 kl per kl	R14-81	R13-97	R13-08	R12-47
	W1B3		19 – 30 kl per kl	R31-04	R29-28	R21-22	R20-23
	W1B4		31 – 45 kl per kl			R32-68	R31-15
	W1B5		46 - 60 kl per kl	R62-06	R58-55	R42-43	R40-45
	W1B6		> 60 kl per kl	R82-76	R78-08	R56-58	R53-94
	W1B7	Restriction Tariff 1 (level 2 & 3 water restrictions)	0 – 6 kl per kl	R7-22	R6-81	R6-38	R6-08
	W1B8		7 – 18 kl per kl	R19-25	R18-16	R17-01	R16-20
	W1B9		19 - 30 kl per kl	R40-35	R38-06	R27-59	R26-29
	W1B10		31 - 45 kl per kl			R42-48	R40-49
	W1B11		46 - 60 kl per kl	R80-68	R76-12	R55-16	R55-57
	W1B12		> 60 kl	R107-59	R101-50	R73-56	R74-10
	W1B13	Restriction Tariff 2 (level 4 & 5 water restrictions)	0 – 6 kl per kl	R7-22	R6-81	R6-38	R6-08
	W1B14		7 – 18 kl per	R23-69	R22-35	R20-93	R19-97
	W1B15		19 - 30 kl per kl	R49-66	R58-55	R33-95	R32-38
	W1B16		31 - 45 kl per kl			R52-28	R49-83
	W1B17		46 - 60 kl per kl	R99-30	R93-68	R67-89	R68-40
	W1B18		> 60 kl	R132-42	R124-93	R90-53	R91-19
	W1B19	Restriction Tariff 3 (level 6 water restrictions)	0 – 6 kl per kl	R7-22	R6-81	R6-38	R6-08
	W1B20		7 – 18 kl per kl	R29-62	R27-94	R26-16	R26-35
	W1B21		19 – 30 kl per kl	R62-07	R58-55	R42-44	R113-99
	W1B22		31 – 45 kl per kl			R65-35	

Table C.3.1.1: Water Tariffs							
Consumer / Description	**Tariff Code**	**Category**		**24/25**	**23/24**	**22/23**	**21/22**
	W1B23		46 – 60 kl per kl	R124-13	R117-10	R84-86	
	W1B24		> 60 kl per kl	R165-53	R156-16	R113-17	
Consumption – All other	W1C1	Normal Tariff & Level 1 water restrictions	0 – 18 kl per kl	R16-38	R15-45	R14-47	R13-79
	W1C2		19 - 30 kl per kl	R36-99	R34-90	R21-22	R20-23
	W1C3		31 – 45 kl per kl			R32-68	R31-15
	W1C4		46 – 60 kl per kl	R48-04	R45-32	R42-43	R40-45
	W1C5		> 60 kl per kl	R64-06	R60-43	R56-58	R53-94
	W1C6	Restriction Tariff 1 (level 2 & 3 water restrictions)	0 – 18 kl per kl	R21-29	R20-09	R18-81	R17-93
	W1C7		19 – 30 kl per kl	R48-09	R45-37	R27-59	R26-29
	W1C8		31 - 45 kl per kl			R42-48	R40-49
	W1C9		46 - 60 kl per kl	R62-45	R58-92	R55-16	R55-58
	W1C10		> 60 kl	R83-27	R78-56	R73-56	R74-09
	W1C11	Restriction Tariff 2 (level 4 & 5 water restrictions)	0 – 18 kl per kl	R26-20	R24-72	R23-15	R22-08
	W1C12		19 - 30 kl per kl	R59-19	R55-84	R33-95	R32-38
	W1C13		31 - 45 kl per kl			R52-28	R49-83
	W1C14		46 - 60 kl per kl	R76-86	R72-51	R67-89	R68-40
	W1C15		> 60 kl	R102-49	R96-69	R90-53	R91-19
	-	Restriction Tariff 3 (level 6 water restrictions)	0 – 10 kl per kl	-	-	-	R27-59
	W1C16		0 – 18 kl per kl	R32-75	R30-90	R28-93	-
	W1C17		19 – 30 kl per kl	R73-99	R69-80	R42-44	-
	W1C18		31 - 45 kl per kl			R65-35	-
	W1C19		46 - 60 kl per kl	R96-08	R90-64	R84-86	-
	-		> 10 kl per kl	-	-	-	R113-99
	W1C20		> 60 kl	R128-11	R120-86	R113-17	-
Other Consumers	W1D1	Departmental per kl		R30-29	R29-63	R28-46	R25-19
	W1D2	Fire Hoses: Basic per month		R224-20	R211-51	R198-04	R188-79
	W1D3	Bulk usage (Unconnected to networks) per kl – Consumers permanently residing within Overstrand municipal area		R18-14	R17-11	R16-02	R15-27
	W1D3A	Restriction Tariff 1 (level 2 & 3 water restrictions)		R23-58	R22-24	R20-82	R19-85
	W1D3B	Restriction Tariff 2 (level 4 & 5 water restrictions)		R29-02	R27-38	R25-63	R24-21
	W1D3C	Restriction Tariff 3 (level 6 water restrictions)		R36-27	R34-22	R32-04	R30-53
	W1D4	Kidbrooke (Van Cauter 0 – 8000 kl /a)		R0-08	R0-08	R0-08	R0-08
	W1D5	Onrus Small Holdings Tariff 2 (Van Cauter)		R0-08	R0-08	R0-08	R0-08
	W1D6	Onrus Small Holdings Tariff 4 (Per Agreement)		R1-11	R1-11	R1-11	R1-11
	W1D7	Contractors water consumption – temporary connection		R30-29	R29-63	R28-46	R25-19
	W1D8	Bulk usage (Unconnected to networks) per Kl - People residing outside the Overstrand municipal area		R67-25	R63-44	R59-40	R56-63
	W1D8A	Restriction Tariff 1 (level 2 & 3 restrictions)		R87-42	R82-47	R77-23	R73-62
	W1D8B	Restriction Tariff 2 (level 4 & 5 restrictions)		R107-59	R101-50	R95-05	R90-62
	W1D8C	Restriction Tariff 3 (level 6 restrictions)		R134-49	R126-88	R118-81	R113-27
Wet Commercial, Sport, Parks etc. (must apply for this tariff)	W1E1	Normal Tariff & Level 1 water restrictions	0 – 500 kl per kl	R23-83	R22-48	R21-05	R20-07
	W1E2		501 – 1 000 kl per kl	R36-05	R34-01	R31-84	R30-35
	W1E3		> 1 000 kl per kl	R48-06	R45-34	R42-45	R40-47
	W1E4	Restriction Tariff 1 (level 2 & 3 water restrictions)	0 – 300 kl per kl	R30-98	R29-22	R27-37	R26-10
	W1E5		301 – 700 kl per kl	R46-87	R44-21	R41-39	R39-44
	W1E6		> 700 kl per kl	R62-48	R58-94	R55-19	R52-60
	W1E7	Restriction Tariff 2 (level 4 & 5 water restrictions)	0 – 250 kl per kl	R38-13	R35-97	R33-69	R32-12
	W1E8		251 – 500 kl per kl	R57-68	R54-42	R50-94	R48-55
	W1E9		> 500 kl per kl	R76-90	R72-54	R67-92	R64-73

Table C.3.1.1: Water Tariffs							
Consumer / Description	**Tariff Code**	**Category**		**24/25**	**23/24**	**22/23**	**21/22**
	W1E10	Restriction Tariff 3 (level 6 water restrictions)	0 – 100 kl per kl	R47-66	R44-96	R42-11	R40-14
	W1E11		>100 kl per kl	R96-12	R90-68	R84-91	R80-92
Wet Industry (Marine etc, must apply for this tariff) (Average of 100kl per day over prev. 365 days)	W1F1	Normal Tariff & Level 1 water restrictions	0 – 5 800 kl per kl	R24-83	R23-42	R21-93	R20-91
	W1F2		> 5 800 kl per kl	R48-06	R45-34	R42-45	R40-47
	W1F3	Restriction Tariff 1 (level 2 & 3 water restrictions)	0 – 5 800 kl per kl	R32-27	R30-45	R28-51	R27-19
	W1F4		> 5 800 kl per kl	R62-48	R58-94	R55-19	R52-60
	W1F5	Restriction Tariff 2 (level 4 & 5 water restrictions)	0 – 5 800 kl per kl	R39-72	R37-47	R35-10	R33-46
	W1F6		> 5 800 kl per kl	R76-90	R72-54	R67-92	R64-73
	W1F7	Restriction Tariff 3 (level 6 water restrictions	0 – 5 800 kl per kl	R49-65	R46-84	R43-87	R41-81
	W1F8		> 5 800 kl per kl	R96-12	R90-68	R84-91	R80-92
Availability Charges	W2A1	Overstrand per month		R175-68	R165-74	R155-62	R148-35
	W2A2	Farms connected to water pipeline		R175-68	R165-74	R155-62	R148-35
Rebates (Granted by Municipal Manager after application)	W2J1	Kl above average – per kl		R18-17	R17-78	R28-46	R25-19
Irrigation Water (Leiwater) and Raw Water	W3A1	Use and pump water (80-90min) per month Stanford		R53-84	R50-79	R47-56	R45-34
	W3A2	Pearly Beach Small Holdings: Basic		R65-71	R61-99	R58-04	R55-33
	W3A3	Pearly Beach Small Holdings: Consumption 0 – 70 kl per kl		R5-12	R4-83	R4-52	R4-33
	W3A4	Pearly Beach Small Holdings: Consumption > 70 kl per kl		R12-03	R11-35	R10-63	R10-13
	W3A5	Others per kl		R5-12	R4-83	R4-52	R4-33
	W3A6	Farm 1/722 Stanford as per agreement 0.875% of raw water abstraction from municipal boreholes, max 4380 kl/a, per kl		R0-00	R0-00	R0-00	R0-00
	W3A6A	Farm 10/722 Stanford as per agreement 0.875% of raw water abstraction from municipal boreholes, max 4380 kl/a, per kl		R0-00	R0-00	R0-00	R0-00
	W3A6B	Farms Rem 1/722 and 10/722 Stanford as per agreement, raw water abstraction from boreholes in excess of 0.875% of municipal abstraction per property, per kl		R5-12	R4-83	R4-52	R0-00
	W3A6C	Farm 7/722 and 8/722 Stanford as per agreement, raw water consumption up to 100 kl/month		R0-00	R0-00	-	-
	W3A6D	Farm 7/722 and 8/722 Stanford as per agreement, raw water consumption in excess of 100 kl/month		R5-12	R4-83	-	-
	W3A7	Farm 586 Volmoed raw water from De Bos pipeline consumption 0-300 kl/month per kl		R0-00	R0-00	R0-00	R0-00
	W3A8	Farm 586 Volmoed raw water from De Bos pipeline consumption >300 kl/month per kl		R5-12	R4-83	R4-52	R4-31
Irrigation Water (Treated Effluent)	W3B2	Hermanus Golf Club per month		R58 449-63	R55 141-16	R51 630-30	R49 218-59
	W3B3	All other per kl		R3-30	R3-11	R2-91	R2-77
	W3B4	Schools, municipal sports grounds and project sport grounds as per agreement		No Charge	No Charge	No Charge	No Charge
	W3B5	Curro Holdings – 250kl free per day as per deed of sale		R3-30	R3-11	R2-91	R2-77
Sundry Charges	W4A1	Testing of a meter (Call-out fee incl.)		R1 163-48	R1 097-39	R1 035-65	R991-30
	W4A2	Testing of a meter (Ind. / Bulk Meter)		Cost + 15% Min charge of R500-00	Cost + 15% Min charge of R500-00	Cost + 15% Min charge of R500-00	Cost + 15% Min charge of R500-00
	W4A3	Disconnection		R526-96	R497-39	R469-57	R449-57

Table C.3.1.1: Water Tariffs						
Consumer / Description	**Tariff Code**	**Category**	**24/25**	**23/24**	**22/23**	**21/22**
	W4A4	Reconnection	R526-96	R497-39	R469-57	R449-57
	W4A5	Reconnection after normal working hrs	R1 056-52	R996-52	R940-00	R899-13
	W4A6	Administration fee – recalculation due to no meter access	R205-22	R193-91	R182-61	R175-65
	W4A7	Verification of a meter reading	R289-57	R273-04	R257-39	R246-09
	W4A8	Final and special readings	R264-35	R249-57	R235-65	R225-22
	W4A9	Call-out fee – Normal working hrs	R526-09	R496-52	R468-70	R448-70
	W4A10	Call-out fee – After hrs	R1 054-78	R994-78	R938-26	R898-26
	W4A11	Replacement of damage meter	R1 414-78	R1 334-78	R1 259-13	R1 205-22
	W4A12	Removal / Re-install of Meter (based on call out fee)	R1 163-48	R1 097-39	R1 035-65	R991-30
	W4A13	Registration of Borehole (Incl. inspection fee)	R394-78	R372-17	R351-30	R336-52
	W4A14	Repositioning of Meter (Excl. pipe)	R1 158-26	R1 093-04	R1 031-30	R986-96
	W4A15	Convert to water flow restrictor meter	R3 773-04	R3 559-13	R3 357-39	R3 213-04
	W4A16	Temporary connections – deposit	R9 926-90	R9 365-00	R8 835-00	R8 455-00
	W4A17	Temporary connection – usage per kl	R30-29	R29-63	R28-46	R25-19
	W4A18	Damage to Water Meter	Actual cost plus 15%	Actual cost plus 15%	Actual cost plus 15%	Actual cost plus 15%
	W4A19	Damage of Watermain	Actual cost plus R3 991-00	Actual cost plus R3 764-76	Actual cost plus R3 551-66	Actual cost plus R3 398-72
	W4A20	Damage of Service Connection (including water meter)	Actual cost plus R1 049-00	Actual cost plus R989-57	Actual cost plus R933-56	Actual cost plus R893-36
Illegal Connection / Tampering Fee	W5A1	1st Offence	R8 806-00	R8 308-00	R7 838-00	R7 500-00
	W5A2	2nd Offence – Must convert to a flow-restriction water meter at applicable tariff	R10 333-00	R9 748-00	R9 196-00	R8 800-00
	W5A3	3rd Offence (Restriction of service and remedial action fee = double previous offence fee)	Previous offence amount x 2	Previous offence amount x 2	Previous offence amount x 2	Previous offence amount x 2
Connection Fee	W6A1	20mm Connection Conventional Meter	R6 451-30	R6 086-09	R5 741-74	R5 494-78
	W6A2	20mm Connection Water Flow Restrictor Meter	R7 662-61	R7 228-70	R6 819-13	R6 525-22
	W6A3	Other Connections	Actual cost + 15%	Actual Cost + 15%	Actual Cost + 15%	Actual Cost + 15%
	W6A4	Connections (Erf Boundary – by Dev.)	R1 677-39	R1 582-61	R1 493-04	R1 428-70
Bulk Service Dev. Fees	W7	Tariffs set out in Development Contribution Tariff list	Development Contributions will be determined as set out in the Annexure in respect of Dev. Contribution Policy			

The sewerage tariff structures for Overstrand Municipality for the 2024/2025 financial year and the previous three financial years are summarised in the table below (Subject to 15% VAT).

Table C.3.1.2: Sewerage Tariffs						
Consumer / Description	**Tariff Code**	**Category**	**24/25**	**23/24**	**22/23**	**21/22**
Sewerage – Single and Intermediate Residential (Dwelling house and duplex flats, Conventional sewers, small bore sewers and conservancy tanks)	SE7A1	0 – 35 kl per kl (based on 70% of max 50 kl water usage) – per unit per month. Conservancy tank service only during office hours per month. For after-hours service, refer to tariff SE9B.	R18-18	R16-69	R15-53	R14-89
	SE7A2	Where no municipal water is used – per RUE per month. Conservancy tank service only during office hours per month. For after-hours service, refer to tariff SE9B.	R161-41	R148-22	R137-88	R131-57
	SE7A3	Call out fee for tank service request, but no service due to another defect / no access to tank	R737-71	R677-42	-	-
	SE7A5	Double the basic charge where networks are available but client is not connected.	R320-72	R294-51	-	-
Sewerage – registered	SE7A4	0 – 4.2 kl – subsidised	-	-	-	R14-89
	SE7A6	0 – 7 kl - subsidised	R18-18	R16-69	R15-53	-

Table C.3.1.2: Sewerage Tariffs							
Consumer / Description	**Tariff Code**	**Category**		**24/25**	**23/24**	**22/23**	**21/22**
indigent households	SE7A5	4.3 – 35 kl per kl (based on 70% of max 50 kl water usage) – per unit per month, Conservancy tank service only during office hours per month. For after-hours service, refer to tariff SE9B.		-	-	-	R14-89
	SE7A7	8 – 35 kl per kl (based on 70% of max 50 kl water usage) – per unit per month, Conservancy tank service only during office hours per month. For after-hours service, refer to tariff SE9B.		R18-18	R16-69	R15-53	-
Sewerage – General residential (Blocks of flats and residential buildings)	SE7B1	0 – 45kl per kl (based on 90% of max 50 kl water usage) per unit per month.		R18-18	R16-69	R15-53	R14-89
	SE7B2	Call out fee for tank service request, but no service due to another defect / no access to tank.		R737-71	R677-42	-	-
Sewerage – Guest house, bed & breakfast establishments	SE7C1	Per kl (based on 70% of water usage) per unit per month.		R18-18	R16-69	R15-53	R14-89
Consumption – All other (Including Commercial, Industrial, School, Sport, etc.)	SE7D1	Per kl (based on 90% of water usage) per unit per month – this percentage may be adjusted according to the Tariff Policy after investigation.		R18-18	R16-69	R15-53	R14-89
	SE7D2	Call out fee for tank service request, but no service due to another defect / no access to tank.		R737-71	R677-42	-	-
Consumption - Departmental	SE7E1	0 – 35 kl per kl (based on 70% of max 50 kl water usage) per unit per month.		R18-18	R16-69	R15-53	R14-89
Basic Charge	SE8A	Basic Monthly Charge Developed sites per erf/unit per month.		R160-52	R147-40	R137-88	R132-20
	SE8A1	Basic Monthly Subsidy Residential Indigent as per paragraph A of the Indigent Policy per month.		R160-52	R147-40	R137-88	R132-20
	SE8A2	Basic Monthly Subsidy Residential Indigent as per paragraph B, C & E of the Indigent Policy per month (01/07/2022 – 31/10/2022).		-	-	R115-09	R115-09
	SE8A2	Basic Monthly Subsidy Residential Indigent as per paragraph B, C & E of the Indigent Policy per month (01/11/2022 – 28/02/2023).		-	-	R76-73	R115-09
	SE8A2	Basic Monthly Subsidy Residential Indigent as per paragraph B, C & E of the Indigent Policy per month (01/03/2023 – 30/06/2023).		-	-	R38-36	R115-09
	SE8B	Basic Monthly Charge Undeveloped sites – cannot connect to the network per erf/unit per month.		R108-16	R99-32	R92-91	R89-08
	SE8C	Basic Monthly Charge Undeveloped sites – can connect to the network per erf/unit per month.		R160-51	R147-39	R137-88	R132-20
	SE8D	Basic Monthly Charge Developed sites – with a septic Tank per erf/unit per month.		R108-16	R99-32	R92-91	R89-08
	SE8E	Basic Monthly Charge – Low Cost Housing & Single Quarters per erf/unit per month.		R108-16	R99-32	R92-91	R89-08
	SE8F1	Fixed Infrastructure Basic Charge per erf/unit per month.		R9-60	R9-60	R9-60	R9-60
	SE8F2	Fixed Infrastructure Basic Charge per erf/unit per month.		R3-43	R3-43	R3-43	R3-43
	SE8F3	Subsidised Fixed Infrastructure Basic Charge per erf/unit per month – Registered Indigent Households.		R3-43	R3-43	R3-43	R3-43
Other Sewerage Charges and Sundry Charges	SE9A1	Vacuum Tanker Service for users not paying tariffs SE7 above – Provided on request	Vacuum Tanker service provided on request <6kl (per 6kl or part thereof).	R737-71	R677-42	R634-29	R608-14
	SE9A2		Vacuum Tanker service provided on request <5kl (per 5kl or part thereof).	R737-71	R677-42	R634-29	R608-14
	SE9A4		Vacuum Tanker service provided on request >6kl (per 6kl or part thereof).	R737-71	R677-42	R634-29	R608-14
	SE9A5		Call out fee for Tank Service request but no service due to another defect.	R737-71	R677-42	R634-29	R608-14

Table C.3.1.2: Sewerage Tariffs							
Consumer / Description	**Tariff Code**	**Category**		**24/25**	**23/24**	**22/23**	**21/22**
	SE9A6		More than 3 pipes an additional fee per pipe for users not paying tariff SE7 above	R108-06	R99-23	R92-91	R89-08
	SE9B1	After Hours Vacuum Tanker Service – Provided on request	After hours per request < 6kl (per 6kl or part thereof)	R1 475-42	R1 354-84	R1 268-58	R1 216-28
	SE9B2		After hours per request > 6kl (per 6kl or part thereof)	R1 475-42	R1 354-84	R1 268-58	R1 216-28
	SE9B3		After hours per request < 5kl (per 5 kl or part thereof)	R1 475-42	R1 354-84	R1 268-58	R1 216-28
	SE9B2		After hours businesses with Public Toilets per removal	R443-02	R406-81	R380-90	R365-20
	SE9C1	Vacuum Tanker Service outside urban areas – Provided on request	Normal applicable Tariff (SE9A1 or SE9A2 or SE9A4) plus additional per hour plus SE9C2	R443-02	R406-81	R380-91	R365-21
	SE9C2		Normal applicable Tariff (SE9A1 or SE9A2 or SE9A4) plus additional per km	R21-63	R19-86	R18-60	R17-83
	SE9C6	After Hours Vacuum Tanker Service outside urban areas – Provided on request	After hours applicable Tariff (SE9B1 or SE9B2 or SE9B3) plus additional per hour plus SE9C7	R443-02	R406-81	R380-90	R365-20
	SE9C7		After hours applicable Tariff (SE9B1 or SE9B2 or SE9B3) plus additional per km	R21-63	R19-86	R18-60	R17-83
	SE9D1	Testing and Connection Fees	Testing of septic and conservancy tanks per test	R1 854-78	R1 749-57	R1 650-44	R1 582-61
	SE9D2		Small bore sewerage connection fee + tank test	R8 509-57	R8 027-83	R7 573-04	R7 260-87
	SE9D3		Sewer connection	R6 385-22	R6 023-48	R5 682-61	R5 448-70
	SE9E1	Disposal with own tanker truck	Charge per kl or part thereof	R17-39	R16-52	R15-65	R80-00
Bulk services development fees	SEW10	Bulk services development fees		Development Contributions will be determined as set out in the Annexure in respect of Development Contribution Policy			
Illegal Connection / Tampering Fee	SE11A	1st Offence		R8 745-00	R8 250-00	R7 783-00	R7 462-00
	SE11B	2nd Offence (SE11A x 2)		R17 490-00	R16 500-00	R15 566-00	R14 924-00

C.3.2. Metering, Billing and Free Basic Services

The table below gives an overview of the metering, billing and free basic services of Overstrand Municipality.

Table C.3.2.1: Overview of Metering, Billing and Free Basic Services

Regulations Ref. #	Description	Unit	Year 0	Year - 1	Year - 2
			FY2024/25	FY2023/24	FY2022/23
	UNITS SUPPLIED (as per water services access profile)				
10.2 (b) (i)	Household water connections (house and yard connections)	Nr	**47 554**	**46 603**	**45 920**
10.2 (b) (iv)	Household sewerage connections	Nr	**47 371**	**46 420**	**45 737**
	METERING				
	Metered Water Connections (aligned with Table C2.1)				
	Residential (Exclude communal services)	Nr	40 342	39 500	38 682
	Commercial / Business	Nr	2 144	2 143	2 131
	Industrial	Nr	45	56	55
	Government / Institutional	Nr	35	35	35
	Other	Nr	756	755	776
	Sub-Total: Metered Water Connections	**Nr**	**43 322**	**42 489**	**41 679**
	Proportion of metered connections (residential) *	%	85%	85%	84%
	Total number of meters	Nr	**43 322**	**42 489**	**41 679**
10.2 (b) (vi)	Total number of new connections (aligned with Table C.2.1)	Nr	463	894	742
10.2 (e) (i)	Total number of new meters installed	Nr	463	894	742
	Proportion of new connections, metered	%	100.0%	100.0%	100.0%
	Number of meters tested	Nr	19	7	11
10.2 (e) (ii)	Proportion of meters tested to total number of meters	%	0.0%	0.0%	0.0%
	Number of meters replaced	Nr	117	165	145
10.2 (e) (ii)	Proportion of meters replaced to total number of meters	%	0.3%	0.4%	0.3%
	BILLING				
	Customer billing (water and sewerage)		**Nr**	**Nr**	**Nr**
	Residential	Nr	40 342	39 500	38 682
	Commercial / Business	Nr	2 144	2 143	2 131
	Industrial	Nr	45	56	55
	Government / Institutional	Nr	35	35	35
	Other	Nr	756	755	776
	Sub-Total: Customers billed	Nr	**43 322**	**42 489**	**41 679**
	Proportion of bills to metered connections	%	**100%**	**100%**	**100%**
	Residential	%	100%	100%	100%
	Commercial / Business	%	100%	100%	100%
	Industrial	%	100%	100%	100%
	Government / Institutional	%	100%	100%	100%
	Other	%	100%	100%	100%
	FREE BASIC SERVICES				
	Nr customers receiving:				
	Free Basic Water	Nr	5 646	4 715	1 491
10.2 (b) (v)	Free Basic Sanitation	Nr	5 646	4 715	1 491
	Proportion of Free Basic Services				
	Water	%	14%	12%	4%
	Sewerage	%	14%	12%	4%

Note: * All residential consumers in the urban areas of Overstrand Municipality are metered. The "Water Services Access Profile" however includes the consumers on the farms and the backyard dwellers on formal erven in the urban areas. Backyard dwellers use the service of the main house, which is metered. Consumers on the farms utilise their own water sources, which is not metered by the Municipality, therefore the 80% to 84% compliance in the above table.

C.3.3. Revenue Collection and Cost Recovery

The table and figures below give an overview of Overstrand Municipality's water services revenue collection and cost recovery (Unaudited figures).

Table C.3.3.1: Overview of Water Services Revenue Collection and Cost Recovery				
Regulations Ref. #	Description	Year 0	Year - 1	Year - 2
		FY2024/25	FY2023/24	FY2022/23
	INCOME			
	Billed			
	Water reticulation / provision	R 202 008 390	R 187 902 310	R 161 327 587
	Sewerage / wastewater	R 128 025 586	R 115 063 144	R 105 260 572
	Sub-Total: Billed	**R 330 033 976**	**R 302 965 454**	**R 266 588 159**
	Collections			
	Water reticulation / provision	R 212 513 856	R 183 813 866	R 171 080 016
	Sewerage / wastewater	R 143 358 074	R 116 373 442	R 114 598 887
	Sub-Total: Collections	**R 355 871 930**	**R 300 187 308**	**R 285 678 902**
	Equitable share income			
	Water reticulation / provision	R 17 417 378	R 8 270 439	R 11 970 646
	Sewerage / wastewater	R 15 807 136	R 8 633 117	R 12 300 863
	Sub-Total: Equitable share income	**R 33 224 514**	**R 16 903 556**	**R 24 271 509**
	EXPENDITURE (O&M)			
	Water services	R 185 746 525	R 177 529 628	R 153 152 405
	Sewerage / wastewater services	R 142 095 942	R 146 961 935	R 140 730 503
	Total: Water Services O&M	**R 327 842 467**	**R 324 491 563**	**R 293 882 908**
	COST RECOVERY ANALYSIS / RATIOS	**%**	**%**	**%**
10.2 (d) (ii)	**Billed as % of Cost**			
	Water	118.1%	110.5%	113.2%
	Sewerage	101.2%	84.2%	83.5%
	Total	**110.8%**	**98.6%**	**99.0%**
10.2 (d) (iii)	**Unrecovered as % of Cost**			
	Water services	3.7%	7.0%	1.4%
	Sewerage / wastewater services	0.3%	5.0%	2.1%
	Total	**2.3%**	**6.1%**	**1.8%**

The figure below gives an overview of the revenue collection and cost recovery profile for water services for Overstrand Municipality.

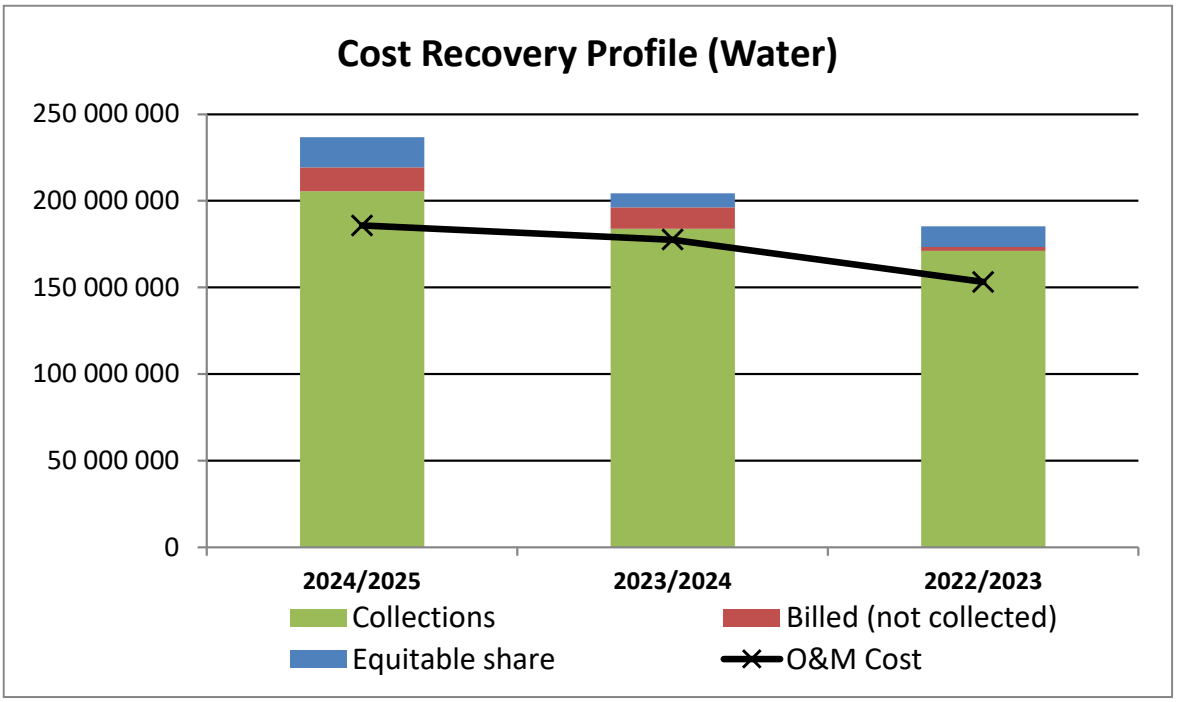


Figure C.3.3.1: Revenue Collection and Cost Recovery Profile (Water)

The figure below gives an overview of the revenue collection and cost recovery profile for wastewater services for Overstrand Municipality.

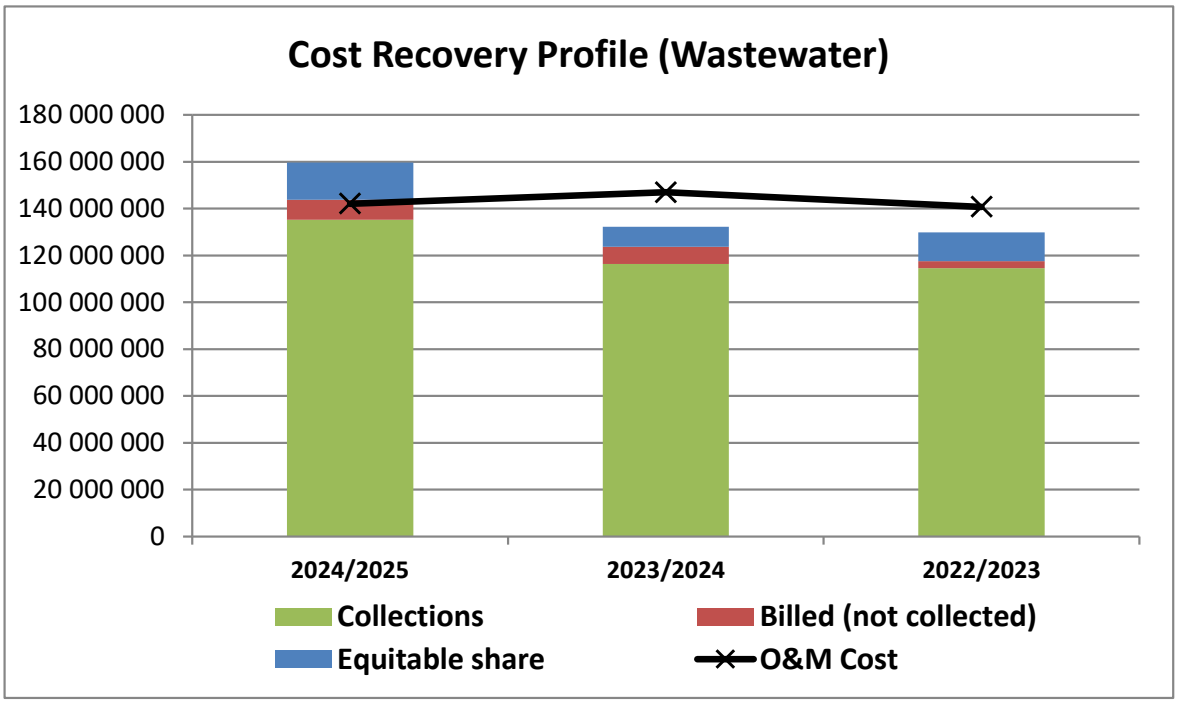


Figure C.3.3.2: Revenue Collection and Cost Recovery Profile (Wastewater)

Overstrand Municipality's O&M expenditure and income for water services for the last four financial years are summarised in the table below (Unaudited figures).

Table C.3.3.2: Operational Budget for Water Services for the Last Four Financial Years					
Category	**Vote**	**Actual 24/25**	**Actual 23/24**	**Actual 22/23**	**Actual 21/22**
Expenditure (2900)					
Employee Related Costs: Wages and Salaries	3000	R12 366 397	R13 755 080	R13 248 820	R12 049 600
Employee Related Costs: Social Contributions	3100				R1 927 755
Dept Impairment	3500	R2 504 762	R5 975 596	R2 157 828	R1 589 611
Depreciation and Asset Impairment	3700	R21 710 206	R22 799 230	R24 123 324	R27 025 840
Interest Expense: External Borrowings	3900	R19 297 322	R19 521 619	R19 118 636	R19 288 546
Other Materials	4110	R3 800 800	R5 018 150	R3 979 479	R3 417 689
Contracted Services	4200	-	-	-	R4 001 503
Other Expenses	4400	R8 634 689	-	R7 134 620	R8 724 745
Bad Debt Written Off	-	R13 672 670	R15 407 173	R3 197 787	-
Total Direct Operating Expenditure	**2900**	**R81 986 846**	**R82 476 848**	**R72 960 494**	**R78 025 290**
Bulk Water Services Operation and Maintenance Contract		R84 525 832	R77 195 655	R65 326 154	R47 284 600
Water Testing		-	-	-	R1 005 626
Water Management Charges		-	-	-	R1 125 600
Groundwater Management		-	-	-	R2 406 997
Contracted Services: Engineering		-	-	-	R1 069 077
Departmental Charges		R19 233 847	R17 857 125	R14 865 757	R14 225 606
Total Expenditure		**R185 746 525**	**R177 529 628**	**R153 152 405**	**R145 142 796**
Income (100)					
Service Charges	400	R200 326 953	R182 274 737	R158 055 781	R142 896 923
Fines	1300	R188 013	R96 866	R144 071	R131 398
Transfers Recognised: Operating	1600	R17 545 102	R12 937 599	R13 838 716	R12 576 728
Transfers Recognised: Capital	1610	-	-	-	-
Other Revenue	1700	R1 365 700	R863 547	R1 259 665	R820 600
Total Direct Operating Revenue	**1900**	**R219 425 768**	**R196 172 749**	**R173 298 233**	**R156 425 649**
Total Surplus / Deficit		**R33 679 243**	**R18 643 121**	**R20 145 828**	**R11 282 853**

Overstrand Municipality's O&M expenditure and income for sanitation services (Excluding Stormwater and Public Toilets) for the last four financial years are summarised in the table below (Unaudited figures).

Table C.3.3.3: Operational Budget for Sanitation Services for the Last Four Financial Years					
Category	**Vote**	**Actual 24/25**	**Actual 23/24**	**Actual 22/23**	**Actual 21/22**
Expenditure					
Employee Related Costs: Wages and Salaries	3000	R29 305 499	R24 536 579	R24 750 294	R20 083 245
Employee Related Costs: Social Contributions	3100				R2 904 941
Dept Impairment	3500	R545 679	R4 466 732	R1 512 231	R647 604
Depreciation and Asset Impairment	3700	R19 565 569	R21 347 516	R20 561 409	R19 468 953
Interest Expense: External Borrowings	3900	R14 972 121	R13 528 475	R12 472 675	R11 578 860
Other Materials	4110	R5 543 747	R6 320 679	R6 849 065	R6 113 599
Contracted Services	4200	-	-	-	R14 168 099
Other Expenses	4400	R3 467 044	R6 230 406	R2 306 327	R2 429 112
Bad Debt Written Off	-	R4 248 975	R3 296 102	R1 139 947	-
Total Direct Operating Expenditure	**2900**	**R77 648 634**	**R79 726 488**	**R69 591 948**	**R77 394 413**
Bulk Water Services Operation and Maintenance Contract		R49 181 759	R52 736 296	R50 828 232	R17 595 493
Water Testing		-	-	-	R341 808
Contracted Services: Engineering		-	-	-	R532 811
Departmental Charges		R15 265 549	R14 499 150	R20 310 323	R16 880 693
Total Expenditure		**R142 095 942**	**R146 961 935**	**R140 730 503**	**R112 745 218**
Income					
Service Charges	400	R127 050 073	R114 192 619	R100 655 126	R93 177 101

Table C.3.3.3: Operational Budget for Sanitation Services for the Last Four Financial Years					
Category	**Vote**	**Actual 24/25**	**Actual 23/24**	**Actual 22/23**	**Actual 21/22**
Fines	1300	R0	R0	R0	R0
Transfers Recognised: Operating	1600	R15 807 136	R8 924 196	R16 053 554	R11 921 680
Transfers Recognised: Capital	1610	R0	R0	R0	R18 034 404
Other Revenue	1700	R975 513	R579 446	R852 754	R579 473
Total Direct Operating Revenue	**1900**	**R143 832 722**	**R123 696 261**	**R117 561 435**	**R123 712 658**
Total Surplus / Deficit		**R1 736 780**	**R23 265 674**	**R23 169 068**	**R10 967 440**

The table below gives an overview of the consumer debtors for 30, 60 and 90 days for the last ten financial years, as on the 30th of June.

Table C.3.3.4 Consumer Debtors for 30, 60 and 90 days for the Last Ten Financial Years (end of June)										
Days	**2024/2025**	**2023/2024**	**2022/2023**	**2021/2022**	**2020/2021**	**2019/2020**	**2018/2019**	**2017/2018**	**2016/2017**	**2015/2016**
30 Days	R28 130 513	R26 851 635	R20 795 359	R12 652 079	R11 303 670	R12 303 545	R8 867 109	R8 400 107	R7 978 076	R7 267 047
60 Days	R11 404 021	R11 745 258	R10 024 275	R3 767 724	R2 704 243	R4 413 062	R2 561 997	R1 791 955	R2 082 481	R2 646 824
90 Days	R7 178 344	R9 438 176	R7 495 715	R2 532 526	R1 931 764	R2 573 876	R1 702 680	R1 157 743	R1 427 636	R1 672 085

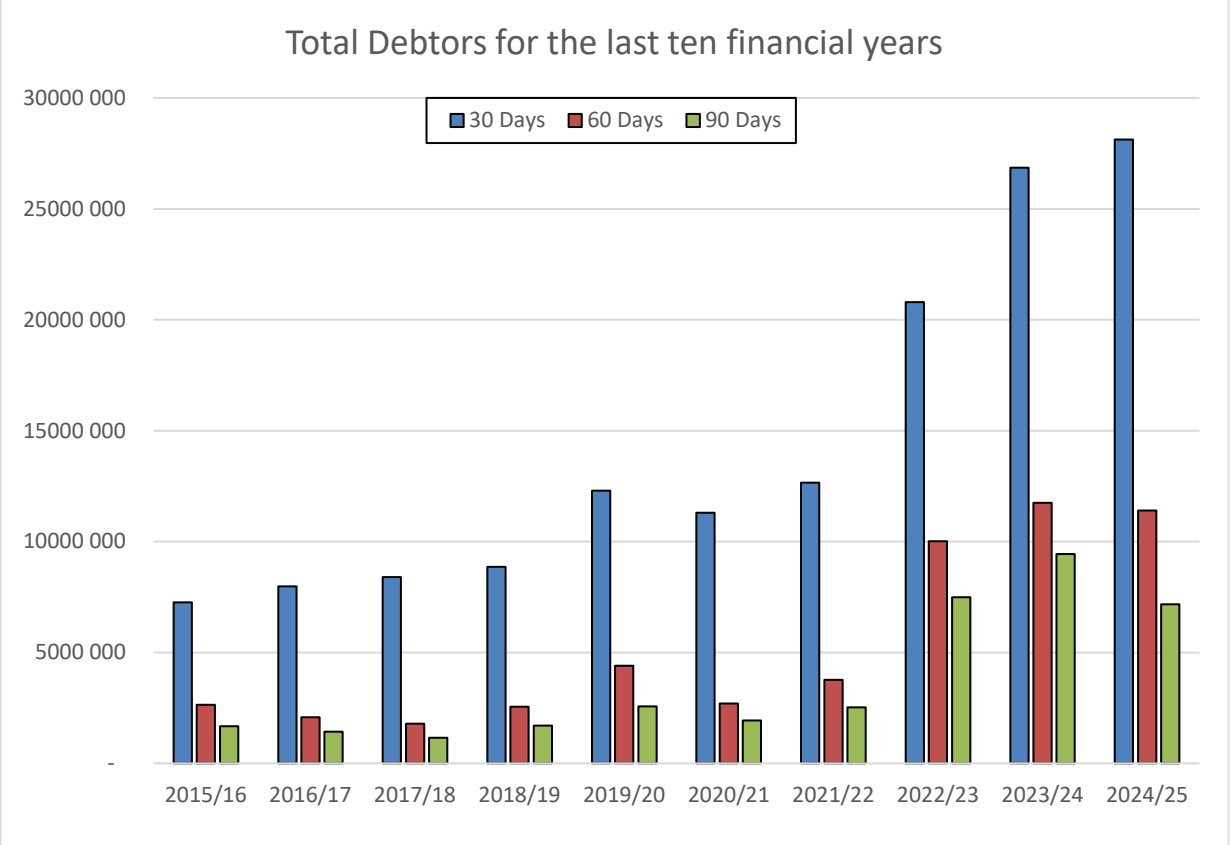


Figure C.3.3.3: Debtors for the Last Ten Financial Years at the end of June

C.4. Water Quality

C.4.1. Sampling Programme

Comprehensive Operational and Compliance Water Quality and Final Effluent Monitoring Programmes are implemented by Overstrand Municipality. The tables below give an overview of Overstrand Municipality's compliance sampling programmes for potable water quality for the various water distribution systems.

Table C.4.1.1: Sampling Programme for Potable Water Quality

Treated Water Schemes: Buffels River (Reticulation)

Registered Sites per Scheme		Active (yes/no)			Determinands per Category (Compliance SANS 241:2015)	Frequency (days)		
		Year 0	Year-1	Year-2		Year 0	Year-1	Year-2
#	Name	FY2024/25	FY2023/24	FY2022/23		FY2024/25	FY2023/24	FY2022/23
1	Betty's Bay (Stoney Point Harbour Stand-pipe)	Yes	Yes	Yes	**Microbiological (Health)**			
2	Rooi-Els Reservoir	Yes	Yes	Yes	E.Coli (Count per 100 ml)	30	30	30
3	Betty's Bay Harold Porter Botanical Gardens	Yes	Yes	Yes				
4	Pringle Bay 365 Restaurant	Yes	Yes	Yes	**Aesthetic**			
5	Rooi-Els Reservoir	Yes	Yes	Yes	Colour (mg/l)	30	30	30
					Conductivity at 25 °C (mS/m)	30	30	30
					Iron as Fe (µg/l)	30	30	30
					Manganese as Mn (µg/l)	30	30	30
					Operational			
					Turbidity NTU	30	30	30
					Aluminium as Al (µg/l)	30	30	30
					Total Coliform Count per 100 ml	30	30	30
					Heterotrophic Plate Count count per 1ml	30	30	30
					pH at 25°C	30	30	30
					Disinfectant Residual			
					Free available chlorine (mg/l)	30	30	30

Table C.4.1.1: Sampling Programme for Potable Water Quality

Treated Water Schemes: Kleinmond (Reticulation)

Registered Sites per Scheme		Active (yes/no)			Determinands per Category (Compliance SANS 241:2015)	Frequency (days)		
		Year 0	Year-1	Year-2		Year 0	Year-1	Year-2
#	Name	FY2024/25	FY2023/24	FY2022/23		FY2024/25	FY2023/24	FY2022/23
1	Municipal Office	Yes	Yes	Yes	**Microbiological (Health)**			
2	Kleinmond Stoor	Yes	Yes	Yes	E.Coli (Count per 100 ml)	30	30	30
					Aesthetic			
					Colour (mg/l)	30	30	30
					Conductivity at 25 °C (mS/m)	30	30	30
					Operational			
					Turbidity NTU	30	30	30
					Aluminium as Al (µg/l)	30	30	30
					Total Coliform Count per 100 ml	30	30	30
					Heterotrophic Plate Count count per 1ml	30	30	30
					pH at 25°C	30	30	30
					Disinfectant Residual			
					Free available chlorine (mg/l)	30	30	30

Table C.4.1.1: Sampling Programme for Potable Water Quality

Treated Water Schemes: Hermanus (Reticulation)

Registered Sites per Scheme		Active (yes/no)			Determinands per Category (Compliance SANS 241:2015)	Frequency (days)		
		Year 0	Year-1	Year-2		Year 0	Year-1	Year-2
	Name	FY2024/25	FY2023/24	FY2022/23		FY2024/25	FY2023/24	FY2022/23
1	House next to Marine Hotel	Yes	Yes	Yes	**Microbiological (Health)**			
2	Grotto Beach Voëlklip	Yes	Yes	Yes	E.Coli (Count per 100 ml)	30	30	30
3	30 Piet Retief Street Sandbaai	Yes	Yes	Yes				
4	6 Riverside Drive Fisherhaven	Yes	Yes	Yes	**Aesthetic**			
5	Hermanus High School	Yes	Yes	Yes	Colour (mg/l)	30	30	30
6	Onrus Eiland	Yes	Yes	Yes	Iron as Fe (µg/l)	30	30	30
7	Onrus Douglas Street (Clinic)	Yes	Yes	Yes	Manganese as Mn (µg/l)	30	30	30
8	Vermont 9 Dekriet Street	Yes	Yes	Yes	Conductivity at 25 °C (mS/m)	30	30	30
9	Haw ston WWTW Drinking Tap	Yes	Yes	Yes				
					Disinfectant Residual			
					Free available chlorine (mg/l)	30	30	30
					Operational			
					Turbidity NTU	30	30	30
					Aluminium as Al (µg/l)	30	30	30
					Total Coliform Count per 100 ml	30	30	30
					Heterotrophic Plate Count count per 1ml	30	30	30
					pH at 25°C	30	30	30

Table C.4.1.1: Sampling Programme for Potable Water Quality

Treated Water Schemes: Stanford (Reticulation)

Registered Sites per Scheme		Active (yes/no)			Determinands per Category (Compliance SANS 241:2015)	Frequency (days)		
		Year 0	Year-1	Year-2		Year 0	Year-1	Year-2
#	Name	FY2024/25	FY2023/24	FY2022/23		FY2024/25	FY2023/24	FY2022/23
1	Municipal Office	Yes	Yes	Yes	**Microbiological (Health)**			
2	WWTW Drinking Water Tap	Yes	Yes	Yes	E.Coli at Reticulation (Count per 100 ml)	30	30	30
3	Stanford Bulk Works	Yes	Yes	Yes				
					Aesthetic			
					Colour (mg/l)	30	30	30
					Conductivity at 25 °C (mS/m)	30	30	30
					Operational			
					Turbidity NTU	30	30	30
					Total Coliform Count per 100 ml	30	30	30
					Heterotrophic Plate Count count per 1ml	30	30	30
					pH at 25°C	30	30	30
					Disinfectant Residual			
					Free available chlorine (mg/l)	30	30	30

Table C.4.1.1: Sampling Programme for Potable Water Quality

Treated Water Schemes: Gansbaai (Reticulation)

Registered Sites per Scheme		Active (yes/no)			Determinands per Category (Compliance SANS 241:2015)	Frequency (days)		
		Year 0	Year-1	Year-2		Year 0	Year-1	Year-2
#	Name	FY2024/25	FY2023/24	FY2022/23		FY2024/25	FY2023/24	FY2022/23
1	Gansbaai (Muni. Office)	Yes	Yes	Yes	**Microbiological (Health)**			
2	Kleinbaai (Superette)	Yes	Yes	Yes	E.Coli (Count per 100 ml)	30	30	30
3	Franskraal (OK)	Yes	Yes	Yes				
4	Franskraal Ulkraal	Yes	Yes	Yes	**Aesthetic**			
5	De Kelders (Cliff Street)	Yes	Yes	Yes	Colour (mg/l)	30	30	30
6	Masekhane Built lt	Yes	Yes	Yes	Conductivity at 25 °C (mS/m)	30	30	30
7	Gansbaai WWTW Drinking Water Tap	Yes	Yes	Yes				
					Operational			
					Aluminium as Al (µg/l)	30	30	30
					pH at 25°C	30	30	30
					Heterotrophic Plate Count count per 1ml	30	30	30
					Turbidity NTU	30	30	30
					Total Coliform Count per 100 ml	30	30	30
					Disinfectant Residual			
					Free available chlorine (mg/l)	30	30	30

Table C.4.1.1: Sampling Programme for Potable Water Quality								
Treated Water Schemes: Pearly Beach (Reticulation)								
Registered Sites per Scheme		**Active (yes/no)**			**Determinands per Category (Compliance SANS 241:2015)**	**Frequency (days)**		
		Year 0	**Year-1**	**Year-2**		**Year 0**	**Year-1**	**Year-2**
	Name	**FY2024/25**	**FY2023/24**	**FY2022/23**		**FY2024/25**	**FY2023/24**	**FY2022/23**
1	INFO Centre	Yes	Yes	Yes	**Microbiological (Health)**			
2	Castle Rock	Yes	Yes	Yes	E.Coli (Count per 100 ml)	30	30	30
					Aesthetic			
					Colour (mg/l)	30	30	30
					Iron as Fe (µg/l)	30	30	30
					Conductivity at 25 °C (mS/m)	30	30	30
					Operational			
					Turbidity NTU	30	30	30
					Aluminium as Al (µg/l)	30	30	30
					Total Coliform Count per 100 ml	30	30	30
					Heterotrophic Plate Count count per 1ml	30	30	30
					pH at 25°C	30	30	30
					Disinfectant Residual			
					Free available chlorine (mg/l)	30	30	30

Table C.4.1.1: Sampling Programme for Potable Water Quality								
Treated Water Schemes: Baardskeerdersbos (Reticulation)								
Registered Sites per Scheme		**Active (yes/no)**			**Determinands per Category (Compliance SANS 241:2015)**	**Frequency (days)**		
		Year 0	**Year-1**	**Year-2**		**Year 0**	**Year-1**	**Year-2**
#	**Name**	**FY2024/25**	**FY2023/24**	**FY2022/23**		**FY2024/25**	**FY2023/24**	**FY2022/23**
1	Community Hall (House Hoofstraat 12)	Yes	Yes	Yes	**Microbiological (Health)**			
2	Community Centre	Yes	Yes	Yes	E.Coli (Count per 100 ml)	30	30	30
					Aesthetic			
					Colour (mg/l)	30	30	30
					Iron as Fe (µg/l)	30	30	30
					Manganese as Mn (µg/l)	30	30	30
					Conductivity at 25 °C (mS/m)	30	30	30
					Operational			
					pH at 25°C	30	30	30
					Heterotrophic Plate Count count per 1ml	30	30	30
					Turbidity NTU	30	30	30
					Total Coliforms count per 100 ml	30	30	30
					Disinfectant Residual			
					Free available chlorine (mg/l)	30	30	30

Table C.4.1.1: Sampling Programme for Potable Water Quality								
Treated Water Schemes: Buffeljags Bay (Reticulation)								
Registered Sites per Scheme		**Active (yes/no)**			**Determinands per Category (Compliance SANS 241:2015)**	**Frequency (days)**		
		Year 0	**Year-1**	**Year-2**		**Year 0**	**Year-1**	**Year-2**
#	**Name**	**FY2024/25**	**FY2023/24**	**FY2022/23**		**FY2024/25**	**FY2023/24**	**FY2022/23**
1	Community Hall	Yes	Yes	Yes	**Microbiological (Health)**			
2	Buffeljagsbaai Bulk Works	Yes	Yes	Yes	E.Coli (Count per 100 ml)	30	30	30
					Aesthetic			
					Colour (mg/l)	30	30	30
					Iron as Fe at reservoir outflow (µg/l)	30	30	30
					Conductivity at 25 °C (mS/m)	30	30	30
					Operational			
					Turbidity NTU	30	30	30
					Total Coliform Count per 100 ml	30	30	30
					Heterotrophic Plate Count count per 1ml	30	30	30
					pH at 25°C	30	30	30
					Disinfectant Residual			
					Free available chlorine (mg/l)	30	30	30

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

The table below indicates the compliance of the E.Coli monitoring frequency in the water distribution systems of Overstrand Municipality, in terms of the minimum requirements of SANS:241-2: 2015 (Table 2). The period assessed was for samples taken from July 2024 to June 2025.

Table C.4.1.2: Overstrand Municipality's Compliance of the Monthly E.Coli Monitoring Frequency in the Water Distribution Systems in Terms of the Minimum Requirements of SANS 241-2:2015 (Table 2).

Distribution System	Population served	Required number of monthly samples (SANS 241-2:2015: Table 2)	Number of monthly E.Coli samples taken by Municipality during 2024/2025
Buffels River	3 897	2.0	12.5
Kleinmond	9 138	2.0	8.3
Greater Hermanus	83 361	16.7	25.0
Stanford	6 717	2.0	10.3
Greater Gansbaai	24 788	5.0	22.8
Pearly Beach	1 374	2.0	8.3
Baardskeerdersbos	130	2.0	8.3
Buffeljags Bay	157	2.0	6.4

It can be noted from the above table that the number of monthly E.Coli samples taken by the Municipality during the 2024/2025 financial year was far more than the required number of samples for all the water distribution systems.

The table below gives an overview of Overstrand Municipality's compliance sampling programme for wastewater (final effluent) quality.

Table C.4.1.3: Sampling Programme for Wastewater Effluent Quality

Registered Sites		Active			Determinands per Category	Frequency (days)		
		Year 0	Year-1	Year-2		Year 0	Year-1	Year-2
#	Name	FY2024/25	FY2023/24	FY2022/23		FY2024/25	FY2023/24	FY2022/23
1	Kleinmond	Yes	Yes	Yes	**Microbiological**			
2	Hawston	Yes	Yes	Yes	Faecal Coliforms (count per 100mℓ)	30	30	30
3	Hermanus	Yes	Yes	Yes				
4	Stanford	Yes	Yes	Yes	**Chemical**			
5	Gansbaai	Yes	Yes	Yes	Ammonia Nitrogen (mg/ℓ as N)	30	30	30
6	Pearly Beach	Yes	Yes	Yes	Nitrate Nitrogen (mg/ℓ as N)	30	30	30
					Nitrite Nitrogen (mg/ℓ as N)	30	30	30
					Ortho Phosphate (mg/ℓ as P)	30	30	30
					COD (mg/ℓ) Unfiltered	30	30	30
					Free Chlorine (mg/ℓ)	30	30	30
					Physical			
					Electrical Conductivity (mS/m)	30	30	30
					pH	30	30	30
					Total Suspended Solids (mg/ℓ)	30	30	30

The table below gives an overview of the compliance with regard to the water quality and final effluent compliance sampling programmes, as taken from the DWS IRIS.

Table C.4.1.4: Compliance to the Sampling Programme (s)

Measurable / Enabling Factor	Unit	Year 0 FY2024/25						Year -1 FY2023/24						Year -2 FY2022/23					
		MAH	CAH	CCH	CNA	O	D	MAH	CAH	CCH	CNA	O	D	MAH	CAH	CCH	CNA	O	D
Potable Water Quality																			
Supply system submissions	Nr registered	Information not available on IRIS						Information not available on IRIS						Information not available on IRIS					
	Nr submitted																		
	Annual %																		
Monitoring compliance	Average %																		
Certified Data	Average %	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
In-Time Submission	Annual %	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	83%	100%	85%	83%	83%	83%
Wastewater Quality																			
		M	C	P	O			M	C	P	O			M	C	P	O		
Monitoring Compliance	Average %	100%	93%	98%	-			100%	83%	100%	-			96%	83%	96%	-		
Certified Data	Average %	100%	100%	100%	-			100%	100%	100%	-			100%	100%	100%	-		
In-Time Submission	Average %	100%	100%	99%	-			99%	98%	98%	-			81%	84%	82%	-		

Legend **MAH**: Microbiological Acute Health; **CAH**: Chemical Acute Health; **CCH**: Chemical Chronic Health; **CNA**: Chemical Non Health Aesthetic; **O**: Operational; **D**: Disinfectant

Legend Wastewater **M**: Microbiological; **C**: Chemical; **P**: Physical; **O**: Operational

Information not correct in IRIS, ongoing discussions with DWS. Compliance data sometimes to be re-submitted due to techical problems at IRIS, which result in low In-Time Submission percentages.

The table below gives an overview of the water quality monitoring from the WSDP Guide Framework perspective.

Table C.4.1.5: Water Quality Monitoring Overview from WSDP Guide Framework Perspective

WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0 FY2024/25	Year - 1 FY2023/24	Year - 2 FY2022/23
6.3	**Water Supply and Quality**				
6.3.2	Process Control in place	yes/total WTW in %	100%	100%	100%
6.3.3	Monitoring Programme in place	yes/total schemes in %	100%	100%	100%
6.3.4	Sample Analysis Credibility	Average %	100%	100%	100%
9.2	**Monitoring**				
9.2.1	% of water abstracted monitored: Surface water	Q monitored / Q abstracted in %	100%	100%	100%
9.2.2	% of water abstracted monitored: Ground water	Q monitored / Q abstracted in %	100%	100%	100%
9.2.3	% of water abstracted monitored: External Sources (Bulk purchase)	Q monitored own / Q purchased in %	N/A	N/A	N/A
9.2.6	Water compliance quality for formal schemes? (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never)	frequency	Monthly	Monthly	Monthly
9.2.7	Water compliance quality for rudimentary schemes? (1: daily, 2: weekly, 3: monthly, 4: annually, 5: never)	frequency	N/A	N/A	N/A
9.2.9	Is the number sufficient in accordance to the SANS241 requirements?	yes/no	Yes	Yes	Yes
9.3	**Water Quality**				
	Is there a water safety plan in place?	yes/no	Yes	Yes	Yes
9.3.1	Reporting on quality of water taken from source: urban & rural	yes/total schemes in %	100%	100%	100%
9.3.5	Quality of water taken from source: urban - % monitored by WSA self?	monitored by WSA / total schemes in %	100%	100%	100%
9.3.6	Quality of water taken from source: rural - % monitored by WSA self?	monitored by WSA / total schemes in %	N/A	N/A	N/A
9.3.9	Are these results available in electronic format?	yes/no	Yes	Yes	Yes

The table below gives an overview of the wastewater quality monitoring from the WSDP Guide Framework perspective.

Table C.4.1.6 : Wastewater Quality Monitoring Overview from WSDP Guide Framework Perspective					
WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0	Year - 1	Year - 2
			FY2024/25	FY2023/24	FY2022/23
5.3.1	**Monitoring and Sample Failure**				
5.3.1.1	Compliance Monitoring: % of tests performed as required by general limits /special limits/ license requirements (Average % over previous 12 months)	Annual %	97%	94%	91%
5.3.1.2	Operational: % of tests performed as required by general limits /special limits/ license requirements (Average % over previous 12 months)	Annual %	Not captured on IRIS and recorded by Process Controllers at each of the WWTW		
6.4	**Wastewater Supply and Quality**				
6.4.2	Process Control in place	yes/total WWTW in %	Yes	Yes	Yes
6.4.3	Monitoring Programme in place	yes/total WWTW in %	Yes	Yes	Yes
6.4.4	Sample Analysis Credibility	Average %	100%	100%	100%
9.2	**Monitoring**				
9.2.10	Is the number sufficient in accordance to licences?	yes/no	Yes	Yes	Yes
9.3	**Water Quality**				
	Is there a wastewater risk abatement plan in place?	yes/no	Yes	Yes	Yes
9.3.2	Reporting on quality of water returned to the resource: urban	yes/total WWTW in %	100%	100%	100%
9.3.3	Reporting on quality of water returned to the resource: rural	yes/total WWTW in %	N/A	N/A	N/A
9.3.7	Quality of water returned to resource: urban - % monitored by WSA self?	monitored by WSA / urban WWTW in %	100%	100%	100%
9.3.8	Quality of water returned to resource: rural - % monitored by WSA self?	monitored by WSA / rural WWTW in %	N/A	N/A	N/A
9.3.9	Are these results available in electronic format?	yes/no	Yes	Yes	Yes

DWS's Blue Drop Process

The 2025 Blue Drop PAT results are not yet available. DWS's previous completed Blue Drop Assessment process for the WSAs was in 2023. Blue drop status is awarded to those towns that comply with 95% criteria on drinking water quality management. The blue drop performance of Overstrand Municipality was summarised as follows in the DWS's 2023 Blue Drop Report.

Table C.4.1.7: Blue Drop Performance of the Municipality (DWS's 2023 Blue Drop Report)	
Municipal Blue Drop Score	**2011 – 90.56%, 2012 – 96.82%, 2014 - 90.79% and 2023 – 99.99%**

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

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

Regulatory Impression: The Overstrand Local Municipality (OLM) was represented by the Deputy Director of Engineering planning and accompanied by two technical managers as well as the operations manager from VEOLIA appointed for the operation of all the treatment works for the OLM. The WSI representatives were very well prepared for the Blue Drop assessment, well informed of all aspects of their systems, and provided an outstanding portfolio of evidence which made the audit process easy and efficient.

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

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

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

Table C.4.1.7: Blue Drop Performance of the Municipality (DWS's 2023 Blue Drop Report)

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

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

Capital works executed under bulk contract:

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

Capital projects implemented by the Municipality:

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

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

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

Technical Site Assessment:

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

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

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

Table C.4.1.8: Average Residential Daily Consumption (l/p/d) for the Last Four Financial Years.

Distribution System	2021/2022			2022/2023			2023/2024			2024/2025		
	Estimated Permanent Population	Aver. Daily Billed Metered Res. Consump-tion (kl)	Aver. Daily consump-tion (l/p/d)	Estimated Permanent Population	Aver. Daily Billed Metered Res. Consump-tion (kl)	Aver. Daily consumption (l/p/d)	Estimated Permanent Population	Aver. Daily Billed Metered Res. Consump-tion (kl)	Aver. Daily consump-tion (l/p/d)	Estimated Permanent Population	Aver. Daily Billed Metered Res. Consump-tion (kl)	Aver. Daily consump-tion (l/p/d)
Buffels River	3 449	931	**270**	3 593	893	**249**	3 742	961	**257**	3 897	1 151	**295**
Kleinmond	8 486	1 076	**127**	8 698	1 089	**125**	8 915	1 125	**126**	9 138	1 206	**132**
Greater Hermanus	73 154	7 113	**97**	76 410	7 067	**92**	79 810	7 420	**93**	83 361	7 920	**95**
Stanford	6 210	487	**78**	6 375	482	**76**	6 544	564	**86**	6 717	673	**100**
Greater Gansbaai	21 480	1 778	**83**	22 531	1 829	**81**	23 632	1 911	**81**	24 788	2 086	**84**
Pearly Beach	1 290	266	**206**	1 317	263	**200**	1 345	242	**180**	1 374	281	**205**
Baardskeerdersbos	128	19	**148**	129	19	**147**	130	26	**200**	130	29	**223**
Buffeljags Bay	155	6	**39**	155	7	**45**	156	9	**58**	157	7	**45**
All Systems	**114 352**	**11 676**	**102**	**119 208**	**11 649**	**98**	**127 274**	**12 258**	**96**	**129 562**	**13 353**	**103**

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

DWS's Green Drop Process

The 2025 Green Drop Assessment results are not yet available. DWS's previous complete Green Drop assessment for the WSAs was in 2021 and the results were received early in 2022. Green drop status is awarded to those WSAs that comply with 90% criteria on key selected indicators on wastewater quality management. The green drop performance of Overstrand Municipality is summarised as follows in the DWS's 2022 Green Drop Report.

Table C.4.1.9: Green Drop Performance of the Municipality (DWS's 2022 Green Drop Report)	
Average Green Drop Score	**2009 – 63.0%, 2011 – 89.0%, 2013 – 89.0%, 2021 – 89.0%**
Regulatory Impression: Overstrand Municipality and WSP Veolia delivered a sterling performance that was awarded with an overall 89% Green Drop score. The municipality continues to maintain a remarkable record of 89% over 10 years, marked by a committed, competent team. In addition, Gansbaai, Hermanus and Stanford were serious contenders for Green Drop Certification, which regrettably had to be waived due to not achieving excellent standards (>90%) on their final microbiological and/or chemical qualities. The WSA should be able to attain Certification status in 2023 if this matter can be resolved. The Regulator is impressed with the level of preparation and professional conduct during the audit, represented by managers in various roles, supported by Veolia Water. All required information was loaded onto IRIS for various KPAs prior which ensure a seamless preliminary assessment. The team then used the main audit and verification audit events to maximise their scores by providing clarification and further evidence on sludge classification (landfilling), stormwater- and water demand management and capital projects. The striking performance and sustained services are not surprising if noting the strength of the engineering, technical, scientific, and laboratory competence, supported by committed senior management and municipal leadership. Perfect score (100%) was achieved for KPA Capacity Management for the expertise, supported by comprehensive operation, maintenance and monitoring plans and records, including financials and energy management. Human capacity is optimised via the adoption of automation and telemetry. This aspect must be taken up with the Regulator to align with capacity requirements to ensure that any risks associated with such innovations are managed. Flow monitoring is in place for inflow and outflow, and online monitoring for night flows (Mycity) is in place. Energy optimisation via LED is standard procedure and CO_2 equivalents are calculated to monitor the benefit. Well done. These best practices set a high standard for wastewater services in South Africa. In a nutshell, the municipality performance exceptionally well in all KPA (>90%), with the exception of Effluent and Sludge Compliance. Areas for improvement include the laboratory turn-around time, monitoring of dedicated sludge streams and performance evaluation against design expectations, flow meter calibration / verification, sludge classification according to the WRC guidelines (noting new landfill regulations). The adoption of site specific W_2RAP process is an encouraging; notably that risk management is informed and influenced by a process audit, sewer master plan and supported by budget for implementation. Improvement should focus on having (independent) Risk Reviews every 6 months to monitor (quantify) risk movement. The Regulator congratulates Overstrand and hope the 2023 audit cycle will result in an exponential improvement until Green Drop excellence is achieved for all six systems.	

Table C.4.1.10: Green Drop Performance of the Municipality (DWS's 2022 Green Drop Report)

Green Drop Findings:

1. All WWTW achieved a full score for capacity management, thereby verifying the availability of registered and qualified process controllers, maintenance teams (inhouse and outsourced services), engineering, technical (technicians and technologists) and scientific expertise tied to wastewater management and asset planning.
2. W_2RAPs are in place and implemented and its impact monitored through operational monitoring and compliance monitoring.
3. All systems presented financial evidence viz. allocated budgets and expenditure, treatment cost (R/m³ treated), energy costs (R/kWh) and contracts for external services.
4. Six of six WWTWs logged full records for compliance monitoring, including biomonitoring.
5. Operational monitoring with online meters for most process streams are implemented. Gaps are still noted with regard to sludge monitoring of dedicated streams, e.g. in and output from settlers and thickeners, anaerobic digesters, belt presses, drying beds, etc.
6. High quality reports were presented for process audits, sewage inspection reports and sewer master planning.
7. Bylaws are updated and enforced.
8. Twelve months of data uploaded on IRIS for all six WWTWs, supported by relevant site-specific water use authorisation and general authorisations.
9. Sludge classification for landfill disposal is done, but not complemented by WRC classification – the latter not only intending to guide disposal but also to monitor the quality of biosolids produced by the site.
10. No penalties and no directives were issued for any systems.
11. No plants in the critical or high-risk positions.
12. Capital projects are part of a three-year plan, with 2021 projects listed as follows:
    - R6 700 000: Sewer network extension in Gansbaai WWTWs and associated infrastructure
    - R16 154 000: Hawston WWTW refurbishment on civil and mechanical equipment's for various unit processes.
    - R8 836 000: Hermanus WWTW refurbishments and associated infrastructure.
    - R1 645 000: Kleinmond WWTW refurbishments and associated infrastructure.
    - R1 797 000: Stanford WWTW refurbishments and associated infrastructure.

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

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

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

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

Table C.4.1.10: Green Drop Risk Rating of the Overstrand Municipality (DWS's 2023 Green Drop Progress Report)	
Municipal CRR 2023 (%CRR/CRRmax)	**51.3%**

Introduction:

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

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

Effluent compliance is generally good at all systems although the Hawston site has a total of 6 non-compliant parameters measured which requires technical intervention to improve the situation. The WSA is applauded for the technical skills and Supervisor competence evident at all sites which is indicative of good planning and infrastructure maintenance. There are some gaps in the availability of technical and operational staff which should be prioritized to ensure effective operation of the WWTWs, especially evident at Hermanus and Pearly Beach where process controller and technical skill availability is lower than desired. The WSA must address the final effluent non-compliance in the Hawston WWTW to improve the CRR scores. The WSA is encouraged to work on decreasing the risks by reviewing their W_2RAP documentation to address all risks as well as ensure that the GDIP is fully implemented in order to reduce the CRR score for all systems, by targeting the poor performing KPIs, especially effluent quality.

All Overstrand systems have W_2RAPs in place and the WSA is encouraged to continually update and implement the available W_2RAPs as they are a vital management tool for effective wastewater management. The WSA has GDIPs in place for all systems and the WSA are evidently making sure that the wastewater generated in the Overstrand LM is managed by competent staff with budgets in place for refurbishment and upgrade work. Overstrand LM is commended for their good performance during this GDPAT, and the regulator will be looking forward to their future performance during the next round of GD Audits.

Risk Assessment Areas	Weight	Gansbaai	Hawston	Hermanus	Kleinmond	Pearly Beach	Stanford
Class of Works		D: Approved	D: Approved	C: Approved	D: Approved	E: Approved	D: Approved
Treatment Technology		Activated Sludge	Activated Sludge	Activated Sludge	Activated Sludge	Oxidation ponds	Activated Sludge
A: Total Design Capacity	Kl/d	2 000	1 000	12 000	2 000	250	1 200
B: Operational Capacity (% inflow / design)	%	41.2%	61.0%	54.1%	82.4%	41.6%	70.8%
C: Effluent Quality Non-compliance	#	2	6	3	3	3	1

Table C.4.1.10: Green Drop Risk Rating of the Overstrand Municipality (DWS's 2023 Green Drop Progress Report)							
% Microbiological Compliance	%	76.5%	86.7%	78.6%	91.7%	100.0%	100.0%
% Physical Compliance	%	100.0%	63.4%	100.0%	91.2%	50.0%	97.2%
% Chemical Compliance	%	84.2%	34.6%	90.9%	35.3%	63.9%	100.0%
D: Technical Skills Compliance	%	100.0%	100.0%	77.8%	100.0%	83.3%	100.0%
Process Controller Compliance	%	100%	100%	33%	100%	50%	100.0%
Supervisor Compliance	%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Maintenance Team Compliance	%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CRR (2023)	%	**31.3%**	**62.5%**	**57.1%**	**43.8%**	**50.0%**	**29.4%**
CRR (2022)	%	**41.2%**	**52.9%**	**36.4%**	**47.1%**	**52.9%**	**64.0%**
CRR (2013)	%	**35.3%**	**29.0%**	**45.0%**	**47.0%**	**-**	**29.0%**
CRR (2011)	%	**31.0%**	**33.0%**	**35.0%**	**44.0%**	**-**	**44.0%**
W_2RAP Status: 2022 Green Drop Report		Final document (approved by Council)	Final document (approved by Council)	Final document (approved by Council)	Final document annual review no. 3	Draft document (unapproved by Council)	Final document (approved by Council)
W_2RAP Status: 2023 Green Drop PAT		Final document annual review no. 3	Final document (approved by Council)	Final document (approved by Council)	Final document annual review no. 3	Final document annual review no. 1	Final document annual review no. 3
Capital and Refurbishment Projects (Rand)		18 200 479	0	14 675 201	2 735 289	0	0
Description of Capital and Refurbishment Projects		1. Masakhane Bulk Sewer Supply Line. 2. Gansbaai CBD Sewer Network Extension.	No projects for this financial year, but refurbishments and upgrades has been planned for 2024/25 and 2025/26.	1) New Inlet Screw Pump station. 2) New Belt Press. 3) RAS Upgrade.	1) Kleinmond WWTW Refurbishment & Upgrade. 2) Kleinmond Sewer Network Extension.	Non-Available. No capital projects were undertaken for the 2022/23 financial year.	No capital projects undertaken for the 2022/23 financial year.
2022 GD Score	%	89.0%	89.0%	89.0%	88.0%	88.0%	89.0%
GD Improvement Plan (GDIP)	Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Corrective Action Plan (CAP)	Y/N	No	No	No	No	No	No

C.4.2. Water Quality Compliance

The table below gives an overview of Overstrand Municipality's water quality compliance, as taken from the IRIS.

Table C.4.2.1: Overview of Water Quality Compliance

WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0 FY2024/25						Year -1 FY2023/24						Year -2 FY2022/23					
			MAH	CAH	CCH	CNA	O	D	MAH	CAH	CCH	CNA	O	D	MAH	CAH	CCH	CNA	O	D
	Results per the Integrated Regulatory Information System																			
n/a	Analysis compliance	Total	1161	60	2427	3462	4276	1146	1185	72	2511	3594	4489	1139	1192	76	2487	3382	4344	1138
n/a		Nr Failures	1	0	9	36	116	31	11	0	12	62	197	23	8	0	8	44	147	22
n/a		Compliance %	100%	100%	100%	99%	97%	97%	99%	100%	100%	98%	96%	98%	99%	100%	100%	99%	97%	98%
n/a	Samples frequency	Total	1131	15	1451	1007	1795	1131	1147	18	1178	1106	1424	1122	1154	19	1170	996	1352	1119
n/a		Nr Failures	441	7	547	273	622	441	456	10	482	313	557	442	485	9	502	281	543	456
n/a		Compliance %	61%	53%	62%	73%	65%	61%	60%	44%	59%	72%	61%	61%	58%	53%	57%	72%	60%	59%
n/a	Sites compliance	Total	454	15	455	454	457	454	452	16	452	455	456	448	453	19	454	454	457	450
n/a		Nr Failures	108	7	108	107	108	108	107	8	107	106	107	107	107	9	108	108	108	106
n/a		Compliance %	76%	53%	76%	76%	76%	76%	76%	50%	76%	77%	77%	76%	76%	53%	76%	76%	76%	76%
6.3	**Water Supply and Quality**																			
6.3.6	Blue Drop Status	last year certified by DWS	2026 Blue Drop Assessment still to be done						Waiting for results from 2025 Blue Drop PAT						2023 Blue Drop Assessment					
9.3	**Water Quality**																			
9.3.10	% Time (days) within SANS 241 standards per year	Average of analysis compliance %	99%						98%						99%					

Legend **MAH**: Microbiological Acute Health; **CAH**: Chemical Acute Health; **CCH**: Chemical Chronic Health; **CNA**: Chemical Non Health Aesthetic; **O**: Operational; **D**: Disinfectant

Information not correct in IRIS, ongoing discussions with DWS. Compliance data sometimes to be re-submitted due to techical problems at IRIS, which result in low sample frequency and site compliance percentages.

The Table below gives an overview of the number of compliance samples taken over the period July to June for the last two financial years for the various water distribution networks.

Table C.4.2.2: Number of Water Quality Compliance Samples Taken Throughout the Various Water Distribution Systems Over the Period July to June for the Last Two Financial Years

Number of Sampling points within the distribution system (WTW Included)	6		3		10		4		9		3		3		2	
Parameter Sampled	**Buffels River**		**Kleinmond**		**Greater Hermanus**		**Stanford**		**Greater Gansbaai**		**Pearly Beach**		**Baards-keerdersbos**		**Buffeljags Bay**	
	24/25	**23/24**	**24/25**	**23/24**	**24/25**	**23/24**	**24/25**	**23/24**	**24/25**	**23/24**	**24/25**	**23/24**	**24/25**	**23/24**	**24/25**	**23/24**
pH (at 25°C)	133	131	75	74	289	289	97	99	211	210	74	75	76	79	50	50
Conductivity	67	64	41	39	137	148	62	62	133	136	50	50	38	38	38	38
Turbidity	158	142	76	85	294	355	98	101	205	255	76	89	113	118	50	55
Colour	112	112	41	39	277	280	50	50	209	208	74	75	38	38	26	26
Iron (as Fe)	112	112	15	15	289	288	2	2	16	26	50	50	98	100	26	26
Aluminium (as Al)	126	123	74	74	275	280	2	2	178	194	75	79	2	2	2	2
E.Coli	150	150	99	99	300	317	124	122	273	273	100	102	100	100	77	77
Total Coliform Bacteria	83	78	42	39	134	139	51	54	121	130	41	40	39	38	29	27
Heterotrophic Plate Count	152	153	99	101	314	326	124	132	282	285	103	121	138	124	80	79
Somatic Coliphages	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Free Chlorine	149	146	96	97	298	315	121	123	264	260	97	98	97	102	75	76
Cadmium (as Cd)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Total Organic Carbon	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Nitrate	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Nitrite	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Calcium Hardness	13	13	13	13	13	13	105	153	35	43	12	12	12	12	11	12
Total Hardness	13	13	13	13	13	13	119	160	68	66	12	12	12	12	11	12
Magnesium Hardness	13	13	13	13	13	13	95	96	35	36	12	12	12	12	11	12
Fluoride (as F)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Total Dissolved Solids	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Manganese (as Mn)	63	59	2	2	291	289	2	2	4	14	2	2	105	121	2	2

Table C.4.2.2: Number of Water Quality Compliance Samples Taken Throughout the Various Water Distribution Systems Over the Period July to June for the Last Two Financial Years																
Number of Sampling points within the distribution system (WTW Included)	6		3		10		4		9		3		3		2	
Parameter Sampled	**Buffels River**		**Kleinmond**		**Greater Hermanus**		**Stanford**		**Greater Gansbaai**		**Pearly Beach**		**Baards-keerdersbos**		**Buffeljags Bay**	
	24/25	**23/24**	**24/25**	**23/24**	**24/25**	**23/24**	**24/25**	**23/24**	**24/25**	**23/24**	**24/25**	**23/24**	**24/25**	**23/24**	**24/25**	**23/24**
Sodium (as Na)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Zinc	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Chloride	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Sulphate (as SO4)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Ammonium	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Nitrate/Nitrite Nitrogen	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Nickel (as Ni)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Copper (as Cu)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Chromium (as Cr)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Lead (as Pb)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Cyanide	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Arsenic (as As)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Mercury (as Hg)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Selenium (as Se)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Antimony (as Sb)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Total THM Ratio (Calc)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Phenols	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Chloroform	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Bromoform	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Dibromochloromethane	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Bromodichloromethane	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Uranium (as U)	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Cryptosporidium Species	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Giardia Species	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Monochloramine	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Microcystins	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Barium	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Boron	2	3	2	2	2	2	2	2	4	4	2	2	2	2	2	2
Total number of samples	**1 414**	**1 414**	**769**	**773**	**3 007**	**3 135**	**1 122**	**1 228**	**2 174**	**2 276**	**848**	**887**	**950**	**966**	**558**	**564**

The water quality of all the water distribution systems in Overstrand Municipality was categorised as "Excellent" for the 2024/2025 financial year, except for the Operational Efficiency indicator for Baardskeerdersbos, which was categorised as "Unacceptable" (According to the SANS 241:2015 classification). The water quality compliance sample results are included in Annexure D for each of the water distribution systems. The overall percentage of compliance of the water quality samples taken over the period July to June for the last two financial years is summarised in the table below per distribution system. The additional monitoring required by Overstrand Municipality for determinands identified during the risk assessment exceeding the SANS 241:2015 numerical limits are also included in the table.

Table C4.2.3: Percentage Compliance of the Water Quality Samples for the Last Two Financial Years

Performance Indicator	Performance Indicator categorised as unacceptable Yes / No (Table 4 of SANS 241-2:2015)		% Sample Compliance according to SANS 241-2015 Limits		Frequency of Additional Monitoring due to failure (Table 3 of SANS 241-2:2015)	
	24/25	23/24	24/25	23/24	24/25	23/24
Buffels River						
Acute Health Microbiological	No (Excellent)	No (Excellent)	100.0%	99.4%	-	-
Acute Health Chemical	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Chronic Health	No (Excellent)	No (Excellent)	99.7%	100.0%	-	-
Aesthetic	No (Excellent)	No (Excellent)	99.8%	99.8%	-	-
Operational Efficiency	No (Good)	No (Excellent)	91.3%	94.4%	-	-
Kleinmond						
Acute Health Microbiological	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Acute Health Chemical	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Chronic Health	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Aesthetic	No (Excellent)	No (Excellent)	99.5%	99.0%	-	-
Operational Efficiency	No (Excellent)	No (Excellent)	98.6%	96.8%	-	-
Greater Hermanus						
Acute Health Microbiological	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Acute Health Chemical	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Chronic Health	No (Excellent)	No (Excellent)	99.8%	100.0%	-	-
Aesthetic	No (Excellent)	No (Excellent)	99.7%	99.2%	-	-
Operational Efficiency	No (Excellent)	No (Excellent)	97.2%	93.7%	-	-
Stanford						
Acute Health Microbiological	No (Excellent)	No (Excellent)	99.2%	99.2%	-	-
Acute Health Chemical	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Chronic Health	No (Excellent)	No (Excellent)	98.8%	98.8%	-	-
Aesthetic	No (Excellent)	No (Excellent)	99.6%	100.0%	-	-
Operational Efficiency	No (Excellent)	No (Excellent)	99.5%	95.1%	-	-
Greater Gansbaai						
Acute Health Microbiological	No (Excellent)	No (Excellent)	100.0%	99.6%	-	-
Acute Health Chemical	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Chronic Health	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Aesthetic	No (Excellent)	No (Excellent)	99.8%	99.9%	-	-
Operational Efficiency	No (Excellent)	No (Excellent)	97.4%	96.6%	-	-
Pearly Beach						
Acute Health Microbiological	No (Excellent)	Yes (Unacceptable)	100.0%	94.3%	-	Monthly
Acute Health Chemical	No (Excellent)	No (Excellent	100.0%	100.0%	-	-
Chronic Health	No (Excellent)	No (Excellent	99.0%	98.4%	-	-
Aesthetic	No (Excellent)	No (Excellent	100.0%	98.9%	-	-
Operational Efficiency	No (Excellent)	Yes (Unacceptable)	97.8%	88.4%	-	Monthly
Baardskeerdersbos						
Acute Health Microbiological	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Acute Health Chemical	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Chronic Health	No (Excellent)	No (Excellent)	99.4%	97.8%	-	-
Aesthetic	No (Excellent)	No (Excellent)	98.0%	94.9%	-	-
Operational Efficiency	Yes (Unacceptable)	Yes (Unacceptable)	85.1%	87.9%	Monthly	Monthly

Table C4.2.3: Percentage Compliance of the Water Quality Samples for the Last Two Financial Years						
Performance Indicator	Performance Indicator categorised as unacceptable Yes / No (Table 4 of SANS 241-2:2015)		% Sample Compliance according to SANS 241-2015 Limits		Frequency of Additional Monitoring due to failure (Table 3 of SANS 241-2:2015)	
	24/25	23/24	24/25	23/24	24/25	23/24
Buffeljags Bay						
Acute Health Microbiological	No (Excellent)	No (Excellent)	100.0%	98.8%	-	-
Acute Health Chemical	No (Excellent)	No (Excellent)	100.0%	100.0%	-	-
Chronic Health	No (Excellent)	No (Excellent)	98.6%	100.0%	-	-
Aesthetic	No (Excellent)	No (Excellent)	100.0%	95.7%	-	-
Operational Efficiency	No (Excellent)	No (Excellent)	98.1%	95.8%	-	-

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

Table C.4.2.4: Four Categories under which the Risks Posed by Micro-organism, Physical or Aesthetic Property or Chemical Substance of Potable Water is Normally Classified	
Category	**Risk**
Acute Health	Determinand that poses an immediate unacceptable health risk if present at concentration values exceeding the numerical limits specified in this part of SANS 241.
Aesthetic	Determinand that taints water with respect to taste, odour and colour and that does not pose an unacceptable health risk if present at concentration values exceeding the numerical limits specified in SANS 241.
Chronic Health	Determinand that poses an unacceptable health risk if ingested over an extended period if present at concentration values exceeding the numerical limits specified in SANS 241.
Operational	Determinand that is essential for assessing the efficient operation of treatment systems and risks from infrastructure

The recommendations from the detail 2023/2024 WTW Process Audits (Dec 2024), as completed during the 2024/2025 financial year, are summarised in the table below.

Table C.4.2.5 Recommendations from the detail WTW Process Audits	
WTW	**Recommendation**
Buffels River	• Continue monitoring flocculant dosing rate very closely. • Continue monitoring turbidity values for the individual settling tanks. • Develop reservoir flushing schedule. • Install a formal, fixed treated water sampling point. • There should be 30 days' Sodium Hypochlorite stock on site.
Kleinmond	• Monitor (and record) turbidity values for the individual settling tanks in order to optimise the operation of this Process Unit. • Provide flow control to the individual settling tank inlets (currently isolation sluice gates are provided). • Control flow to the filters as to ensure they are equally loaded. • Install a second Backwash Pump & Blower. • Theoretically, the plant should be able to cope with only 2 filters in operation. • Perform Specific Deposit –determination on filter media – refer to Chapter B3 of "Handbook for the Operation of Water Treatment Works".
Preekstoel	• Housekeeping - clean off some of the residue that accumulates on the dosing equipment. • Monitor (and record) turbidity values for the individual settling tanks in order to optimise the operation of this Process Unit. • Consider moving the inlet to the centre of the distribution box as to establish better flow distribution between the two basins. • Control flow to the filters as to ensure they are equally loaded. • Monitor (and record) turbidity values for the individual filters in order to optimise the operation of this Process Unit. • Theoretically, the plant should be able to cope with only 2 filters per bank in operation. • Perform Specific Deposit –determination on filter media – refer to Chapter B3 of "Handbook for the Operation of Water Treatment Works". • Continue with maintenance on equipment. • Perform Specific Deposit –determination on filter media – refer to Chapter B3 of "Handbook for the Operation of Water Treatment Works". • Monitor (and record) turbidity values for the individual Process Units.

Table C.4.2.5 Recommendations from the detail WTW Process Audits	
WTW	**Recommendation**
Stanford	• As there is only 1 x RO Feed Pump, it is recommended that a standby unit be installed / available in storage. • Ensure maintenance of dosing pumps are scheduled. • Closely monitor residual chlorine levels – maintain a balance between providing additional residual protection in the network and raising levels to a point where a “chlorine taste and smell” become evident to consumers. • Ensure all parameters and frequencies as per SANS241 – Table 1 are adhered to.
Franskraal	• Monitor (and record) turbidity values for the individual settling tanks in order to optimise the operation of this Process Unit. • Being able to control the flow to the individual settling tanks would allow more operational flexibility. • Control flow to the filters as to ensure they are equally loaded. • Theoretically, the plant should be able to cope with only 2 filters in operation. • Perform Specific Deposit –determination on filter media – refer to Chapter B3 of “Handbook for the Operation of Water Treatment Works”. • Current stacking practices related to cylinders needs to be addressed – both full and empty cylinders should be securely chained. • Confirm units used to capture dosing rate records.
De Kelders	• Maintenance of the membranes are crucial – ensure all schedules are adhered to. • It is noted that proposals for the replacement of membranes have already been made and replacement eminent. • Ensure maintenance of dosing pumps are scheduled.
Pearly Beach	• Maintain sludge lagoon in a clean condition. • Maintenance of the membranes are crucial – ensure all schedules are adhered to. • Ensure spare membranes are available, either on site or in storage. • Ensure maintenance of dosing pumps are scheduled. • Provide a containment barrier around the dosing station to prevent any spillages or leaks from becoming a hazard to plant personnel. • Closely monitor residual chlorine levels – maintain a balance between providing additional residual protection in the network and raising levels to a point where a “chlorine taste and smell” become evident to consumers.
Baardskeerdersbos	• As deficiencies in the removal of manganese has been noted, it is recommended that alternative technologies / processes be considered to augment the current treatment. • Automate desludging of the second settler. • Ensure sludge disposal records are kept. • Ensure water quality results from the sludge drainage water, flowing back into the natural water course, are kept on site. • Maintenance of the membranes are crucial – ensure all schedules are adhered to. • Ensure spare membranes are available, either on site or in storage. • Ensure maintenance of dosing pumps are scheduled.
Buffeljags Bay	• Ensure monitoring is done in accordance with SANS241:2015 – Table 1.
All WTWs	• Ensure spreadsheet is being kept up to date and not only populated once a month. • Process Controllers to interact with the data collected on site - draw graphs etc. to track operational changes (quality & quantities). • Process Controllers should receive feedback from both the internal lab and the independent laboratory. • The calibration of the equipment used on site should be verified by the internal lab. • Ensure Process Controllers are to be aware of the Preventative Maintenance Schedule. • Ensure records / logbooks pertaining to preventative maintenance are also available on site. • Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the Works.

The table below gives an overview of the overall wastewater quality compliance, as taken from the IRIS.

Table C.4.2.6: Overview of Wastewater Quality Compliance															
WSDP Ref #	Measurable / Enabling Factor	Unit	Year 0 FY2024/25				Year-1 FY2023/24				Year-2 FY2022/23			
			M	C	P	O	M	C	P	O	M	C	P	O
	Results per the Integrated Regulatory Information System													
n/a	Regulatory compliance	Total	119	341	360	-	150	287	345	-	119	330	301	-
n/a		Nr Failures	36	94	90	-	45	104	88	-	38	167	96	-
n/a		Compliance %	70%	72%	75%	-	70%	64%	74%	-	68%	49%	68%	-
n/a	Operational compliance	Total	Not captured on IRIS, but recorded by Process Controllers at each of the WWTW											
n/a		Nr Failures												
n/a		Compliance %												
5.3.1	**Monitoring and Sample Failure**													
5.3.1.3 5.3.1.4 5.3.1.5	Average % of sample failure	Failure %	30%	28%	25%	-	30%	36%	26%	-	32%	51%	32%	NA
6.3	**Water Supply and Quality**													
6.4.6	Green Drop Status	last year certified by DWS	2026 Green Drop PAT still to be done				Waiting for results from 2025 Green Drop Assessment				2023 Green Drop PAT			

Legend **M**: Microbiological; **C**: Chemical; **P**: Physical; **O**: Operational

The final effluent quality complies with the authorised Microbiological, Chemical and Physical limits for most of the WWTWs. The final effluent quality compliance sample results are included in Annexure D for each of the WWTWs. The overall Microbiological, Chemical and Physical compliance percentages of the final effluent samples taken over the last three financial years at the Kleinmond-, Hawston-, Hermanus-, Stanford-, Gansbaai and Pearly Beach WWTW are summarised in the tables below.

Table 4.2.7: Percentage Microbiological (Faecal Coliforms) Compliance of the Compliance Samples Taken at the Various WWTWs for the Last Three Financial Years

WWTW	2024/2025	2023/2024	2022/2023
Kleinmond	75.0%	75.0%	91.7%
Hawston	85.7%	83.3%	100.0%
Hermanus	54.2%	41.7%	91.7%
Stanford	75.0%	75.0%	33.3%
Gansbaai	63.2%	66.7%	16.7%
Pearly Beach	85.7%	91.7%	83.3%
All WWTWs	**70.9%**	**72.2%**	**69.4%**

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

Table 4.2.8: Percentage Chemical Compliance of the Compliance Samples Taken at the Various WWTWs for the Last Three Financial Years

WWTW	2024/2025					2023/2024					2022/2023				
	Ammonia	Nitrites & Nitrates	COD	Ortho Phosphate	Overall	Ammonia	Nitrites & Nitrates	COD	Ortho Phosphate	Overall	Ammonia	Nitrites & Nitrates	COD	Ortho Phosphate	Overall
Kleinmond	16.7%	100.0%	58.3%	100.0%	**68.8%**	8.3%	100.0%	0.0%	75.0%	**45.8%**	16.7%	100.0%	0.0%	100.0%	**54.2%**
Hawston	50.0%	91.7%	37.5%	78.6%	**58.8%**	66.7%	100.0%	41.7%	66.7%	**68.8%**	33.3%	100.0%	16.7%	66.7%	**54.2%**
Hermanus	52.9%	100.0%	73.3%	84.6%	**74.4%**	75.0%	100.0%	100.0%	100.0%	**93.8%**	83.3%	83.3%	100.0%	91.7%	**89.6%**
Stanford	92.3%	100.0%	100.0%	100.0%	**98.0%**	58.3%	100.0%	83.3%	83.3%	**81.3%**	91.7%	100.0%	100.0%	100.0%	**97.9%**

Table 4.2.8: Percentage Chemical Compliance of the Compliance Samples Taken at the Various WWTWs for the Last Three Financial Years															
WWTW	2024/2025					2023/2024					2022/2023				
	Ammonia	Nitrites & Nitrates	COD	Ortho Phosphate	Overall	Ammonia	Nitrites & Nitrates	COD	Ortho Phosphate	Overall	Ammonia	Nitrites & Nitrates	COD	Ortho Phosphate	Overall
Gansbaai	85.7%	64.7%	66.7%	80.0%	**73.4%**	91.7%	83.3%	91.7%	91.7%	**89.6%**	41.7%	66.7%	66.7%	91.7%	**66.7%**
Pearly Beach	83.3%	100.0%	0.0%	100.0%	**70.8%**	100.0%	100.0%	0.0%	100.0%	**75.0%**	91.7%	100.0%	0.0%	100.0%	**72.9%**
All WWTWs	**62.8%**	**90.9%**	**54.8%**	**89.7%**	**73.4%**	**66.7%**	**97.2%**	**52.8%**	**86.1%**	**75.7%**	**59.7%**	**91.7%**	**47.2%**	**91.7%**	**72.6%**

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

Table 4.2.9: Percentage Physical Compliance of the Compliance Samples Taken at the Various WWTWs for the Last Three Financial Years												
WWTW	2024/2025				2023/2024				2022/2023			
	pH	Electrical Conductivity	Total Suspended Solids	Overall	pH	Electrical Conductivity	Total Suspended Solids	Overall	pH	Electrical Conductivity	Total Suspended Solids	Overall
Kleinmond	100.0%	100.0%	83.3%	**94.4%**	100.0%	100.0%	41.7%	**80.6%**	100.0%	100.0%	50.0%	**83.3%**
Hawston	100.0%	41.7%	100.0%	**80.6%**	100.0%	41.7%	83.3%	**75.0%**	91.7%	50.0%	75.0%	**72.2%**
Hermanus	100.0%	100.0%	84.6%	**94.6%**	100.0%	100.0%	91.7%	**97.2%**	100.0%	100.0%	100.0%	**100.0%**
Stanford	100.0%	66.7%	100.0%	**88.9%**	100.0%	83.3%	83.3%	**88.9%**	100.0%	83.3%	100.0%	**94.4%**
Gansbaai	100.0%	100.0%	70.6%	**87.8%**	100.0%	100.0%	91.7%	**97.2%**	100.0%	75.0%	91.7%	**88.9%**
Pearly Beach	75.0%	75.0%	50.0%	**66.7%**	41.7%	50.0%	8.3%	**33.3%**	50.0%	25.0%	0.0%	**25.0%**
All WWTWs	**95.8%**	**80.6%**	**80.8%**	**85.6%**	**90.3%**	**79.2%**	**66.7%**	**78.7%**	**90.3%**	**72.2%**	**69.4%**	**77.3%**

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

Power outages through load shedding have been at the worst level ever during the 2022/2023 and 2023/2024 financial years, and had the following negative impacts on the treatment processes at the WWTWs and the compliance of the final effluent:

- Pumps and telemetry devices cannot be operated during load shedding periods if no backup power is available;
- Treatment stops and sewage flows cannot be controlled, which also negatively impact the compliance of the final effluent discharged from the WWTWs; and
- Equipment damage costs, back-up generators costs, including refuelling and more frequent maintenance, increased labour costs and increased pump start-up costs.

The recommendations from the detail 2023/2024 WWTW Process Audits (Dec 2024), as completed during the 2024/2025 financial year, are summarised in the table below.

Table C.4.2.10: Recommendations from the detail WWTW Process Audits	
WWTW	**Recommendation**
Kleinmond	• Monitor and maintain alkalinity above 600 mg/l.
Hawston	• As there is no grit removal prior to the transfer pumpstation scheduled cleaning of the sump should be prioritised. • Provide a dedicated area for vacuum tanker discharge / secure the operation by providing a built-in quick-couple connection for discharge (eliminate the need to open and close the manhole. As an interim measure, ensure the team follows a Standard Operating Procedure which includes securing the area while they are working and ensure the manhole cover is replaced once they leave. • Reduce the MLSS concentration to no more than 3 500 mg/l and then maintain these levels by daily wasting. • Measure Alkalinity and ensure it remains in excess of 800 mg/l. • Ensure MLSS is maintained as not to overload the clarifier. • Install standby dosing pump / ensure standby unit is available (in safe storage) for quick installation should the need arise. • Waste 37m^3/d from the clarifier underflow.

Table C.4.2.10: Recommendations from the detail WWTW Process Audits	
WWTW	**Recommendation**
	• Ensure the drying beds are cleaned as to allow sufficient capacity for wasting in the event of the Screw Press failing. The Press was out of order for around 4 months during the audit period.
Hermanus	• Ensure tankers keep on discharging in the same way that they are currently doing. It would however be advisable to do periodic spot-check analyses on the contents being discharged. • The practice of discharging pumpstation contents onto the drying beds needs to be re-visited and a more permanent solution found. A Standard Operating Procedure dealing with the rotation of beds being used, when these are to be cleared, etc. should be instituted while infrastructure solutions are investigated. • Maintain, calibrate / verify in-line DO meters should be done on a routine basis. • Maintain the MLSS concentration at no more than 3 500 mg/l by daily wasting. • Monitor and maintain raw alkalinity at levels above 420 mg/l. • Monitor the scum sprayer system. • Increase RAS Pump capacity, i.e. provide bigger motors for pumps. • Investigate options of dealing with back-flow from maturation ponds after heavy rains. • Do not be over-reliant on the automated system – Process Controllers should be encouraged to closely monitor the performance of this section of their Works. • Operate press for 3.7 hours per day, every day. • Clean drying beds as per the schedule to allow for use as and when required. Various Belt Press related challenges were recorded during the year under review and the fact that the beds are being cleaned and prepared for use after they have been used is commendable.
Stanford	• Use only 1 grit channel at a time. • Implement a Standard Operating Procedure for the removal of grit. This could include providing grating over the channels to ensure staff have safe access to the channels. • Clean out the downstream pump sump on a routine basis. • Maintain MLSS concentration at 3 500 mg/l by daily wasting. • Monitor and maintain alkalinity above 600 mg/l. • Monitor COD:TKN -ratio when nitrification is problematic. • Consider changing pumps feeding from raw sewage sump to reactor to one with a maximum capacity of 99 m^3/h (meet the 1 m/h upflow velocity). • Clean out the Chlorine Contact Channel on routine basis as to minimise secondary contamination and/or additional chlorine demand. • Run the press 1 hour per day, every day. • Clean out the sludge lagoons as to provide capacity for sludge disposal, should the need arise. Given the fact that the Sludge Press was out of operation on numerous occasions, this additional capacity is recommended. • Process Controllers should be encouraged to fully interact with the PLC/HMI.
Gansbaai	• Maintain the MLSS concentration at 3 500 mg/l by continuing the current WAS program. • Measure Alkalinity and ensure it remains in excess of 700 mg/l. • Clean out Chlorine Contact Channel on a routine basis. • Run the drying press 3.5 hours per day, every day. • Keep the drying beds maintained as to ensure spare capacity as / when required. Various Belt Press failures were recorded during the audit period and it is commendable to see the beds clean after use.
Pearly Beach	• Clean screen on a regular basis (as the plant is left unattended this should not be neglected). • Ensure screenings are periodically removed from the primary pond (Anaerobic Pond). • Ensure the grit channels are cleaned on a routine basis (as the plant is left unattended this should not be neglected). • Check grit channel flow velocity during tanker discharge – velocity not to exceed 0.3 m/s. • Ensure that screenings are periodically removed from the primary pond. • Investigate grit accumulation in the primary pond / Clean out the primary pond. • Check Residual Chlorine readings on regular basis. • Ensure grit is removed, screenings are cleared, required readings recorded and grounds are maintained. • Ensure operational monitoring, including flowmeter readings and residual chlorine testing is done on a frequent basis. • Filtered COD analyses could provide a different perspective on the system's compliance. • Ensure records pertaining to maintenance are in line with best-practice principles.

Table C.4.2.10: Recommendations from the detail WWTW Process Audits	
WWTW	**Recommendation**
All WWTWs	• Ensure spreadsheet is being kept up to date and not only populated once a month. • Process Controllers to interact with the data collected on site - draw graphs etc. to track operational changes (quality and quantities). • Process Controllers should receive feedback from both the internal lab and the independent laboratory. • The calibration of the equipment used on site should be verified by the internal lab. • Consider expanding the spreadsheet to provide operational feedback and not act as database only. • Ensure Process Controllers are to be aware of the Preventative Maintenance Schedule. • Ensure records / logbooks pertaining to preventative maintenance are also available on site. • Start sensitising Process Controllers to take more responsibility for aspects related to risk management pertaining to the operation of the works.

C.4.3. Incident Management

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. Detail WTW Process Audits were also completed for all the WTWs during the 2024/2025 financial year.

A W_2RAP for the various WWTWs is also in place. The W_2RAP is an all-inclusive risk analysis tool by which risks associated with the management of collection, treatment and disposal of wastewater, are identified and rated (quantified). The identified risks can then be managed according to its potential impacts on the receiving environment / community / resource. Detail WWTW Process Audits were also completed for all the WWTWs during the 2024/2025 financial year.

The medium and high risks (Post control) for the source, treatment and distribution for the various water systems, as identified as part of the Water Safety Planning process, are indicated in the table below.

Table C.4.3.1: Medium and High Risks for the various water distribution systems (Water Safety Plan)			
Harzards or Hazardous Event	**Element**	**Residual Risk**	**Existing Control Measures**
Buffels River			
Treatment plant needs refurbishment and upgrades.	Treatment	Medium	Upgrade study was done by Zutari. Treatment Plant will be refurbished and upgraded in the next five years. Plant is being maintained to supply water that complies to the SANS241 standards.
Poor condition of pipelines.	Distribution	Medium	Pipe bursts are monitored, the condition of the pipelines are inspected and old pipelines are replaced as funds become available.
Kleinmond			
On-site septic tank systems close to source.	Source: Palmiet River	Medium	Septic tanks are phased out and households are connected to the full waterborne sewer system as capital funding becomes available.
Livestock, human activity at water source (Harmful organisms).	Source: Palmiet River	High	No control measures in place. Long river running from Grabouw to Kleinmond. Can only test raw water as a control measure.
Poor condition of pipelines.	Distribution	Medium	Pipe bursts are monitored, the condition of the pipelines are inspected and old pipelines are replaced as funds become available.
Greater Hermanus			
Falling water levels due to drought or drawdown of water body.	Source: De Bos Dam	Medium	Mitigated by diversification of water sources by addition of boreholes. Boreholes managed according to recommendations in geohydrological report. If allocation from De Bos Dam is decreased, boreholes alone not adequate.
Water allocation from De Bos dam.	Source: De Bos Dam	Medium	Boreholes drilled; Currently adequate supply. A desalination project has been included in the latest WSDP.
Adequacy of infrastructure.	Source: De Bos Dam	Medium	Raw water is augmented from 2 x Borehole fields. A desalination project has been included in the latest WSDP.
Saline ingress would impact on the quality of the water.	Source: Gateway Borehole field	Medium	Monitoring program in place. Manage abstraction - Stop abstracting 3m above sea level / set point.

Table C.4.3.1: Medium and High Risks for the various water distribution systems (Water Safety Plan)			
Harzards or Hazardous Event	**Element**	**Residual Risk**	**Existing Control Measures**
Groundwater may contain metals naturally occurring in soil / rocks (local geology).	Source: Gateway Borehole field	Medium	Water treatment process for Fe and Mn removal has been implemented. Water stabilised. Scheduled monitoring of Fe and Mn levels. Electrical conductivity monitored in-line.
Security: Theft / Vandalism or sabotage.	Source: Gateway Borehole field	Medium	The area is now fenced and there has been a reduction in vandalism. Should there be no further abatement an alarm system could be considered.
Power failures/ load shedding would impact on the supply of water.	Source: Gateway Borehole field	Medium	Portable generators available. Measures are in place to ensure sustainable supply (reservoir operated at 90%, gravity line from De Bos dam not affected and generator to run the plant).
Saline ingress would impact on the quality of the water.	Source: Hemel & Aarde Borehole field	Medium	Monitoring program in place (Done by Umvoto). Manage abstraction - Stop abstracting 3m above sea level /set point
Groundwater may contain metals naturally occurring in soil / rocks (local geology).	Source: Hemel & Aarde Borehole field	Medium	Water treatment process for Fe and Mn removal has been implemented. Scheduled monitoring of Fe and Mn levels. (Done by Umvoto).
Security: Theft / Vandalism or sabotage.	Source: Hemel & Aarde Borehole field	Medium	Fenced and gate locked. A number of alarm systems have been installed together with armed response to curb the cable theft.
Power failures/ load shedding would impact on the supply of water.	Source: Hemel & Aarde Borehole field	Medium	Portable generators available, but due to access constraints to boreholes it would not be possible to use. Measures are in place to ensure sustainable supply (reservoir operated at 90%, gravity line from De Bos dam not affected). Generator available to continue with operation of plant.
Site security (i.e. fencing, gates, locks).	Treatment	High	Boundary fence in place. Fence inspected.
Adequate chemical stock / runs out of stock: Coagulants, chlorine and caustic soda.	Treatment	High	Stock taking done 2 x month. A 3 month re-order level is in place. SLAs with service providers.12 months guaranteed - not possible now. Caustic soda no guarantee any more.
Disposal of sludge.	Treatment	High	Lagoons fully utilised. Project to address the situation.
Safety warning signs.	Treatment	Medium	Plan compiled to erect safety signs has commenced; Health and Safety Officer assigned with responsibility.
PPE , training on the use of equipment and testing of safety equipment i.e. safety shower, eye wash, BA apparatus. Not available / available but not functional.	Treatment	Medium	Safety Officer has identified the need. Required PPE per job determined. Employees equipped with personal protective clothing and /or equipment. Only harnesses and retractable lifeline shared; issued as per job requirement. Training was done for everything listed in fall protection plan. Annual medical fitness evaluation.
Inadequate Safety training.	Treatment	Medium	Annual safety training done: Evacuation drill; Training on handling of chlorine and chlorine leaks; Chemical spillages. There is a Training plan for high risk management standards: Confined spaces, control of hazardous energy, traffic management done. Busy with working on heights. Annual safety inductions (for all staff).
Storage of chemicals.	Treatment	Medium	Tanks in good condition; possibility of leaking tanks / tanks bursting thus reduced. Busy with upgrading of safety system and compiling of emergency plan.
Water losses / Water reclamation.	Treatment	Medium	Water losses calculated monthly; At bio-filter plant Fe-filters backwashed at 80% and Mn filters backwashed 1 x per week. Re-cycle filter backwash water. Filters in conventional plant run up to 36 - 48 hours. Implementation of WDM Strategy.
Gateway borehole treatment; $KMnO_4$ dosing system.	Treatment	Medium	Inspections done by Process Controllers; report any malfunction and will take corrective action immediately. Strainer cleaned 2 x month. Water mixed with outflow from De Bos and Hemel and Aarde borehole systems.
Discharge of filter backwash water.	Treatment	Medium	Although probably impacting of the operation of the Gateway section, measures in place to control the possible associated risks. Filtrate from three filters in Gateway treatment section monitored every 2 hours. Outflow from this section blends with outflow from conventional treatment plant. Adequate chlorine contact time for inactivation of oocysts.
Dosing of caustic soda.	Treatment	Medium	Corrective action is implemented immediately. If Mn concentrations are high, the water is diverted to be treated with the Gateway boreholes. (Challenges with supply of caustic soda will be partially addressed by decreased usage once aeration basin phase 2 has been completed).

Table C.4.3.1: Medium and High Risks for the various water distribution systems (Water Safety Plan)			
Harzards or Hazardous Event	**Element**	**Residual Risk**	**Existing Control Measures**
Chlorine dosage control.	Treatment	Medium	Standby equipment available. Free chlorine measured every 2 hours and recorded. Routine checks done and findings recorded; action taken immediately. Generator available to run whole plant during power failures.
Chlorine room - the structure / lay out and general safety procedures.	Treatment	Medium	Lay-out of installation meets safety requirements. Adequate safety signs. Chlorine detector. Chlorine room is kept locked; room is alarmed.
Water Losses – Bulk	Distribution	High	Reservoir levels are mainly controlled from Control Room. Annual Control Room training. Planning to replace some pipelines (IDP).
Water Losses - Reticulation	Distribution	High	Planning to replace some pipelines (IDP). Reservoir levels are mainly controlled from Control Room. Annual Control Room training.
Communal standpipes	Distribution	High	Consumer education and inspections.
Control Room: Instrumentation failure (e.g. telemetry, SCADA).	Distribution	Medium	Protocols in place. Annual control room training. Manual inspection of reservoir in place. Functional IOT devices as replacement availability in the case of major failure.
Control Room: Tools to do the job.	Distribution	Medium	Session where Process Controllers could list all matters impacting on the work.
Knowledge on the network / training.	Distribution	Medium	Specific areas for training were identified. Training and refresher training were provided.
Reservoir security	Distribution	Medium	Reservoirs mostly fenced and gates are kept locked. Not all reservoirs affected; impact on supply system reduced.
Power outages / load shedding.	Distribution	Medium	Generators available. IOT replacements where high level of vandalism observed.
Infrastructure (pipelines) integrity.	Distribution	Medium	Busy with replacing of infrastructure; documented in WSDP. Planned maintenance done every 4th month. Communication protocol in place. Plans for specific areas are in place (improvement plan).
Infrastructure (pipelines) integrity.	Distribution	Medium	Busy with replacing of infrastructure; documented in WSDP. Bi-monthly network monitoring. Customer care section register complaints, which are then investigated. Communication protocol in place.
Monitoring program compiled, registered on IRIS and implemented according to SANS 241-2:2015.	Water Quality	High	Sampling program compiled and registered on the IRIS, but not compliant.
Training of samplers.	Water Quality	Medium	Training material will be compiled and staff responsible for sampling will be trained. Tertiary qualified employees are responsible for taking of the samples.
Draft Regulation 813 - not meeting the requirements.	Institutional	High	Working 2 shifts, 3 X Class IV would be required - currently Foreman plus 1 x Principal PC (2 x Class IV). Training plans in place.
Inadequate budget.	Institutional	High	Annual O&M budget is adequate. Bi-annual O&M adjustment budget.
Delays with Procurement / Supply chain / credit control.	Institutional	High	Internal changes made, busy with training.
Global warming / impact not considered.	Institutional	High	WSDP covers suggested planning. Response strategies to be included in WSDP. Plan to reduce NRW and water losses. Approach towards Water Resource Management. Dealing with consequences of unpredictability of weather patterns. Good practise in case of Natural Environment. Plan for progressive adaptation to climate change and current challenges.
Asset register not in place and updated with all necessary information.	Institutional	Medium	Asset register in place.
In-migration of people into the area / Increased demand.	Institutional	Medium	Planning: Full implementation of the WC/WDM Strategy and measures. Develop groundwater to its full potential (Licenced volumes). Regional scheme with Overberg Water for possible bulk supply from the Theewaterskloof Dam or the Palmiet River. Direct and indirect potable water re-use.
	Institutional	Medium	Additional reservoir capacity and network replacement planned for over the next 5 -10 years.
Actions not taken on process deficiencies / no infrastructure development planning.	Institutional	Medium	WSDP covers recommendations from Process audit reports and projects. Implementation plans with budgets compiled. Some corrective actions already implemented.

Table C.4.3.1: Medium and High Risks for the various water distribution systems (Water Safety Plan)			
Harzards or Hazardous Event	**Element**	**Residual Risk**	**Existing Control Measures**
WSP / Annual Revision of WSP.	Institutional	Medium	Now being revised. Institution aware of most risks. Risks were identified and assessed during the last 12 months. Updated risk assessment done (both Veolia and Overstrand Municipality present) on 29 April 2022.
Asset Management.	Institutional	Medium	Busy updating Maintenance schedules to be aligned with asset register. Standby equipment available. From WSDP: The asset renewal needs for the water infrastructure assets over the next 10 years is R65.965 million per year (for all systems).
Reporting of WQ data to DWS / IRIS.	Institutional	Medium	Contract with the external Laboratory also for monthly uploading of data.
Pandemics / Covid 19.	Institutional	Medium	Contingency Plan in place. Procedure was put in place; barrier between teams and plants. Monitored and adjusted. Awareness done; protocol communicated.
Stanford			
Poor condition of pipelines.	Distribution	Medium	Pipe bursts are monitored, the condition of the pipelines are inspected and old pipelines are replaced as funds become available.
Greater Gansbaai			
On-site septic tank systems close to source.	Source	Medium	Septic tanks are phased out and households are connected to the full waterborne sewer system as capital funding becomes available.
Poor condition of pipelines.	Distribution	Medium	Pipe bursts are monitored, the condition of the pipelines are inspected and old pipelines are replaced as funds become available.
Pearly Beach			
Capacity of the DAFF is inadequate	Treatment	Medium	The DAFF must be upsized as a pre-treatment process on the Koekemoer dam water to the same size as the treatment works.
Poor condition of pipelines.	Distribution	Medium	Pipe bursts are monitored, the condition of the pipelines are inspected and old pipelines are replaced as funds become available.
Baardskeerdersbos and Buffeljags Bay			
Poor condition of pipelines.	Distribution	Medium	Pipe bursts are monitored, the condition of the pipelines are inspected and old pipelines are replaced as funds become available.

The medium and high risks for the wastewater source, drainage systems and wastewater treatment for the various sewer drainage systems, as identified as part of the W_2RAP process, are indicated in the table below.

Table C.4.3.2: Medium and High Risks for the various sewer drainage systems (W_2RAP)			
Harzards or Hazardous Event	**Element**	**Risk**	**Recommendations**
Kleinmond			
Fats and oils getting into sewer system	Wastewater Source	Medium	Regular inspections to be performed at restaurants and garages
Damage to the reticulation system due to construction activity.	Drainage System	Medium	Maintenance teams repair damage pipe as soon as possible.
Power failure at sewer pump stations	Drainage System	Medium	Install permanent generators.
Power failures, MCC failures or Transformer failure.	Wastewater Treatment	Medium	Install permanent generators.
Inefficient or inadequate maintenance lead to treatment failure.	Wastewater Treatment	Medium	The control forms were implemented, which will improve the maintenance and ensure better treatment plant performance.
Instrument failure (e.g. telemetry, SCADA).	Wastewater Treatment	Medium	Maintenance teams are on standby for breakdowns.
The site is not secured, fenced.	Wastewater Treatment	Medium	Fence must be upgraded.
Grit removal not effective. Grit carry-over to the downstream processes.	Wastewater Treatment	Medium	Control forms implemented, which improve grit removal.
Inefficient or inadequate maintenance can lead to treatment failure.	Wastewater Treatment	Medium	The control forms were implemented, which will improve the maintenance and ensure better treatment plant performance. Training was given to PC.

Table C.4.3.2: Medium and High Risks for the various sewer drainage systems (W_2RAP)			
Harzards or Hazardous Event	**Element**	**Risk**	**Recommendations**
Secondary Treatment: Poor nitrification.	Wastewater Treatment	Medium	Plant must be upgraded in future, but for now control sheets must be implemented, which will improve treatment processes.
Secondary Treatment: Inefficient or inadequate sludge wasting can lead to treatment failure	Wastewater Treatment	Medium	The control forms were implemented, which will improve sludge wasting and PC was given training.
Secondary Treatment: pH correction not done correctly and must be done throughout the day.	Wastewater Treatment	Medium	The control forms must be implemented, which will improve the adding of lime.
Secondary Treatment: Poor operational monitoring leading to potential poor process performance.	Wastewater Treatment	Medium	The control forms must be implemented, which will improve the treatment processes. PC must go for training.
Secondary Treatment: Non-optimised treatment processes leads to final effluent quality not complying with the requirements at times.	Wastewater Treatment	Medium	Control sheets must be implemented.
Dosing malfunction due to equipment failure or power failure. Possible interruption to chlorination.	Wastewater Treatment	Medium	Chlorine dosing equipment inspected on daily basis and chlorine samples tested daily
Low free chlorine residual at point of discharge has negative impact on humans / environment.	Wastewater Treatment	Medium	Chlorine test done at discharge points and chlorine set according to demand.
Staff safety is compromised as they do not always were PPE.	Wastewater Treatment	Medium	PPE clothing is left at work so that always available.
The site is not secured, fenced.	Wastewater Treatment	Medium	Fence must be upgraded
Inadequate storage of chemicals can compromise staff safety.	Wastewater Treatment	Medium	More chemical space must be provided.
Hawston			
Sea water ingress into the sewer system.	Wastewater Source	Medium	Inspect the sewer system by taking samples in reticulation system and pump stations to find the sea water ingress position.
Damage to the reticulation system due to construction activity.	Drainage System	Medium	Maintenance teams repair damage pipes as soon as possible.
Fower failures at sewer pump stations.	Drainage System	Medium	Install permanent generators.
Power failures, MCC failures or Transformer failure.	Wastewater Treatment	Medium	A generator should be provided to the Hawston WWTW.
Inefficient or inadequate maintenance lead to treatment failure.	Wastewater Treatment	Medium	The control forms were implemented, which will improve the maintenance and ensure better treatment plant performance.
High strength influent (high organic load)	Wastewater Treatment	Medium	Put a system in place at the Hawston WWTW entrance where control can be kept on the quantities and nature (quality) of tank truck contents discharged into the inlet works.
Instrument failure (e.g. telemetry, SCADA).	Wastewater Treatment	Medium	Maintenance teams are on standby for breakdowns.
Inlet flow measurement measures less than outlet meter.	Wastewater Treatment	Medium	Inlet must be upgraded.
Ineffective removal of grit	Wastewater Treatment	Medium	Inlet works must be upgraded, but PCs must clean grit channels more.
Secondary Treatment: Inefficient or inadequate sludge wasting can lead to treatment failure	Wastewater Treatment	Medium	The control forms were implemented, which will improve sludge wasting and PC was given training. Sludge screw press must be upgraded to handle sludge load.
Secondary Treatment: pH correction not done correctly and must be done throughout the day.	Wastewater Treatment	Medium	The control forms must be implemented, which will improve the adding of lime.
Secondary Treatment: Poor aeration in aeration basin	Wastewater Treatment	Medium	The aerators were refurbished. Control forms was implemented to monitor aeration. New bigger aerators must be installed.
Secondary Treatment: High organic loads can have an affect on the final quality.	Wastewater Treatment	Medium	Daily quality testing must be done.
No disinfection at plant.	Wastewater Treatment	Medium	Chlorine dosing system must be implemented in the future.
Staff safety is compromised as they do not always were PPE.	Wastewater Treatment	Medium	PPE clothing is left at work so that always available.

Table C.4.3.2: Medium and High Risks for the various sewer drainage systems (W_2RAP)			
Harzards or Hazardous Event	**Element**	**Risk**	**Recommendations**
The site is not secured, fenced.	Wastewater Treatment	Medium	Fence must be upgraded
Inadequate storage of chemicals can compromise staff safety.	Wastewater Treatment	Medium	More chemical space must be provided.
Hermanus			
Sea water ingress into the sewer system.	Wastewater Source	Medium	Inspect the sewer system by taking samples in reticulation system and pump stations to find the sea water ingress position.
Fats and oils getting into sewer system.	Wastewater Source	Medium	Regular inspections to be performed at restaurants and garages.
Uncontrolled discharge of inorganic / organic chemicals into the sewer system by industries.	Wastewater Source	Medium	Inspect the sewer system by taking samples and writing letters to industries to comply to the quality stipulated in the mun by-laws.
Damage to the reticulation system due to construction activity.	Drainage System	Medium	Maintenance teams repair damage pipes as soon as possible.
Power (Electricity) failures at pump stations.	Drainage System	Medium	Make use of roaming generators and suction tankers. Monitor early warning system.
Pump failures at pump stations.	Drainage System	Medium	Use maintenance teams to do repair word and use suction tankers to control sump level of pump stations. Ensure duty and standby pump operations. Monitor early warning system.
MCC failures at pump stations.	Drainage System	Medium	Use maintenance teams to do repair work and use suction tankers to control sump level of pump station.
Pump station vandalism.	Drainage System	Medium	Use maintenance teams to do repair word and use suction tankers to control sump level of pump stations. Investigate security measures and daily inspections. Monitor early warning system.
Insufficient sump and / or pump capacity at pump stations.	Drainage System	High	Implement Master Planning
Pump station rising main failure	Drainage System	Medium	Use maintenance teams to do repair word and use suction tankers to control sump level of pump stations. Monitor early warning system.
Power failures, MCC failures or Transformer failure.	Wastewater Treatment	Medium	Generators were provided with upgrade and tested on a weekly basis.
Inefficient or inadequate maintenance lead to treatment failure.	Wastewater Treatment	Medium	The control forms were implemented, which will improve the maintenance and ensure better treatment plant performance.
Instrument failure (e.g. telemetry, SCADA).	Wastewater Treatment	Medium	Maintenance teams are on standby for breakdowns.
Inefficient or inadequate maintenance can lead to treatment failure.	Wastewater Treatment	Medium	Job card system in place to ensure maintenance requests are captured and executed.
Secondary Treatment: Inefficient or inadequate sludge wasting can lead to treatment failure	Wastewater Treatment	Medium	The control forms were implemented, which will improve sludge wasting and PC was given training.
Secondary Treatment: pH correction not done correctly and must be done throughout the day.	Wastewater Treatment	Medium	The control forms must be implemented, which will improve the adding of lime.
Secondary Treatment: High organic loads can have an effect on the final quality.	Wastewater Treatment	Medium	Daily quality testing must be done.
Dosing malfunction due to equipment failure or power failure. Possible interruption to chlorination.	Wastewater Treatment	Medium	Chlorine dosing equipment inspected on daily basis and chlorine samples tested daily
Low free chlorine residual at point of discharge has negative impact on humans / environment.	Wastewater Treatment	Medium	Chlorine test done at discharge points and chlorine set according to demand.
Pooling of wastewater (result in fly breeding and public health hazard).	Wastewater Treatment	Medium	Irrigation controlled by telemetric system and sport field gets only specific volume of water. Irrigation effluent water is disinfected again after treatment and tested by external laboratory monthly.
Poor maintenance of irrigation infrastructure.	Wastewater Treatment	Medium	Irrigation infrastructure monitored on a daily basis and repaired immediately. Maintenance contract in place.
Staff safety is compromised as they do not always were PPE.	Wastewater Treatment	Medium	PPE clothing is left at work so that always available.
Public entering the treatment works.	Wastewater Treatment	Medium	More security with a new camera system with flood lights.

Table C.4.3.2: Medium and High Risks for the various sewer drainage systems (W_2RAP)			
Harzards or Hazardous Event	**Element**	**Risk**	**Recommendations**
Stanford			
Damage to the reticulation system due to construction activity.	Drainage System	Medium	Maintenance teams repair damage pipes as soon as possible.
Power failure at pump stations	Drainage System	Medium	Install permanent generators.
Inefficient or inadequate maintenance lead to treatment failure.	Wastewater Treatment	Medium	The control forms were implemented, which will improve the maintenance and ensure better treatment plant performance.
Instrument failure (e.g. telemetry, SCADA).	Wastewater Treatment	Medium	Maintenance teams are on standby for breakdowns.
Secondary Treatment: Inefficient or inadequate sludge wasting can lead to treatment failure	Wastewater Treatment	Medium	The control forms were implemented, which will improve sludge wasting and PC was given training.
Poor operational monitoring leading to potential poor process performance.	Wastewater Treatment	Medium	Control sheets must be implemented, which will improve treatment processes. PC must go for training.
Non-optimised treatment processes leads to final effluent quality not complying with the requirements at times.	Wastewater Treatment	Medium	Control sheets must be implemented.
Dosing malfunction due to equipment failure or power failure. Possible interruption to chlorination.	Wastewater Treatment	Medium	Chlorine dosing equipment inspected on daily basis and chlorine samples tested daily
Low free chlorine residual at point of discharge has negative impact on humans / environment.	Wastewater Treatment	Medium	Chlorine test done at discharge points and chlorine set according to demand.
Staff safety is compromised as they do not always were PPE.	Wastewater Treatment	Medium	PPE clothing is left at work so that always available.
Greater Gansbaai			
Sea water ingress into the sewer system.	Wastewater Source	Medium	Inspect the sewer system by taking samples in reticulation system and pump stations to find the sea water ingress position.
Fats and oils getting into sewer system.	Wastewater Source	Medium	Regular inspections to be performed at restaurants and garages.
Damage to the reticulation system due to construction activity.	Drainage System	Medium	Maintenance teams repair damage pipes as soon as possible.
Pump failures at pump stations.	Drainage System	Medium	Install permanent generators.
Power failures, MCC failures or Transformer failure.	Wastewater Treatment	Medium	Generators must be installed at the Gansbaai WWTW.
Inefficient or inadequate maintenance lead to treatment failure.	Wastewater Treatment	Medium	The control forms were implemented, which will improve the maintenance and ensure better treatment plant performance.
Instrument failure (e.g. telemetry, SCADA).	Wastewater Treatment	Medium	Maintenance teams are on standby for breakdowns.
Flow meter not accurate.	Wastewater Treatment	Medium	Flow meter must be calibrated.
Meter between holding tank and reactor not working.	Wastewater Treatment	Medium	Meter must be inspected on daily basis.
Power failure at the WWTW.	Wastewater Treatment	Medium	Generators must be installed at the Gansbaai WWTW.
Raw sewage feed pumps between holding tank and reactor not working.	Wastewater Treatment	Medium	Pumps must be inspected on a daily basis.
Aeration system not working.	Wastewater Treatment	Medium	Blowers must be inspected on a daily basis.
High organic loads can have an affect on the final quality.	Wastewater Treatment	Medium	Daily quality testing must be done.
Chlorine dosing equipment, contact tank is not regularly cleaned / maintained.	Wastewater Treatment	Medium	Chlorine dosing equipment and contact tank must be inspected on a daily basis.
Dosing malfunction due to equipment failure or power failure. Possible interruption to chlorination.	Wastewater Treatment	Medium	Chlorine dosing equipment inspected on daily basis and chlorine samples tested daily
Disinfection chemicals supply runs out.	Wastewater Treatment	Medium	Extra chlorine cylinders must be available when necessary.
Chlorine under dosing may occur due	Wastewater	Medium	Chlorine test done on daily basis and set according to need.

Table C.4.3.2: Medium and High Risks for the various sewer drainage systems (W_2RAP)			
Harzards or Hazardous Event	**Element**	**Risk**	**Recommendations**
to increased chlorine demand of poorly treated effluent or increased effluent flows.	Treatment		Control forms must be completed daily.
Low free chlorine residual at point of discharge has negative impact on humans / environment.	Wastewater Treatment	Medium	Chlorine test done at discharge points and chlorine set according to demand.
Pooling of wastewater (result in fly breeding and public health hazard).	Wastewater Treatment	Medium	Irrigation controlled by telemetric system and sport field gets only specific volume of water. Irrigation effluent water is disinfected again after treatment and tested by external laboratory monthly.
Poor maintenance of irrigation infrastructure.	Wastewater Treatment	Medium	Irrigation infrastructure monitored on a daily basis and repaired immediately. Maintenance contract in place.
Staff safety is compromised as they do not always were PPE.	Wastewater Treatment	Medium	PPE clothing is left at work so that always available.
Pearly Beach			
Power failure at pump stations	Drainage System	Medium	Install permanent generators.
Inefficient or inadequate maintenance lead to treatment failure.	Wastewater Treatment	Medium	The control forms were implemented, which will improve the maintenance and ensure better treatment plant performance.
Ineffective removal of grit	Wastewater Treatment	Medium	Process Controllers must clean grit channels more when necessary and the steel grit must be replaced with GRP.
Remove screenings from ponds.	Wastewater Treatment	Medium	Process Controllers must clean grit channels to prevent screenings landing up in ponds.
Boost process to improve performance.	Wastewater Treatment	Medium	Improve process with the installation of aerators, etc.
Dosing malfunction due to equipment failure or power failure. Possible interruption to chlorination.	Wastewater Treatment	Medium	Chlorine dosing equipment inspected on daily basis and chlorine samples tested.
Low free chlorine residual at point of discharge has negative impact on humans / environment.	Wastewater Treatment	Medium	Chlorine test done at discharge points and chlorine set according to demand.

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

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

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

Table C.4.3.3: Incident Management and Reporting Overview					
WSDP Ref #	**Measurable / Enabling Factor**	**Unit**	**Year 0**	**Year - 1**	**Year - 2**
			FY2024/25	**FY2023/24**	**FY2022/23**
6.3	**Water Supply and Quality**				
6.3.1	Incident Management Protocol in place	yes/total schemes in %	100%	100%	100%
6.3.5	Failure Response Management in place	yes/total schemes in %	100%	100%	100%
6.4	**Waste Water Supply and Quality**				
6.4.1	Incident Management Protocol in place	yes/total schemes in %	100%	100%	100%
6.4.5	Failure Response Management in place	yes/total schemes in %	100%	100%	100%

Table C.4.3.4: Water Quality Incident Reporting Compliance (Health Oriented)										
Measurable / Enabling Factor	Unit	Year 0 FY2024/25			Year-1 FY2023/24			Year-2 FY2022/23		
		Acute Health Micriobiological	Acute Health Chemical	Chronic Health	Acute Health Micriobiological	Acute Health Chemical	Chronic Health	Acute Health Micriobiological	Acute Health Chemical	Chronic Health
Failures in terms of Analysis	Total nr	1259	90	2654	1278	95	2726	1255	95	2685
	Nr of failures	1	0	11	10	0	13	8	0	12
	Failure %	0.1%	0.0%	0.4%	1%	0%	0%	0.6%	0.0%	0.4%
	Nr reported	1	0	11	10	0	13	8	0	12
	Reported % of failure	100%	100%	100%	100%	100%	100%	100%	100%	100%
Failures in terms of Samples	Total	1259	90	2654	1278	95	2726	1255	95	2685
	Nr of failures	1	0	11	10	0	13	8	0	12
	Failure %	0.08%	0.0%	0.4%	1%	0%	0%	0.6%	0.0%	0.4%
	Nr reported	1	0	11	10	0	13	8	0	12
	Reported % of failure	100%	100%	100%	100%	100%	100%	100%	100%	100%
Failures in terms of Sites	Total	1259	90	2654	1278	95	2726	1255	95	2685
	Nr of failures	1	0	11	10	0	13	8	0	12
	Failure %	0.1%	0.0%	0.4%	1%	0%	0%	0.6%	0.0%	0.4%
	Nr reported	1	0	11	10	0	13	8	0	12
	Reported % of failure	100%	100%	100%	100%	100%	100%	100%	100%	100%

C.5. Water Conservation and Water Demand Management

The table below gives an overview of the WC/WDM activities implemented by Overstrand Municipality.

Table C.5.1: Overview of WC/WDM Activities

WSDP Ref. #	Regulations Ref. #	Description	Urban Settlements						Rural Settlements					
			Year 0		Year - 1		Year - 2		Year 0		Year - 1		Year - 2	
			2024/25		2023/24		2022/23		2024/25		2023/24		2022/23	
7.1.1	10.2.g.iii	**REDUCING UNACCOUNTED FOR WATER AND WATER INEFFICIENCIES**												
		Number of customers where the following activities have been pursued:	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total
7.1.1.1		Night flow metering	9 000	33%	9 000	33%	9 000	33%	0	0%	0	0%	0	0%
7.1.1.2		Day flow metering	43 322	100%	42 489	100%	41 679	100%	0	0%	0	0%	0	0%
7.1.1.3		Reticulation leaks fixed	577	100%	386	100%	307	100%	0	0%	0	0%	0	0%
7.1.1.4		Illegal connections formalized	0	100%	0	100%	0	100%	0	0%	0	0%	0	0%
7.1.1.5		Un-metered connections, metered	0	100%	0	100%	0	100%	0	0%	0	0%	0	0%
7.1.2	10.2.g.iii	**REDUCING HIGH PRESSURES FOR RESIDENTIAL CONSUMERS**												
		Number of residential consumers with water supply pressure of:	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total
7.1.2.1		< 300 kPa	686	1.7%	672	1.7%	658	1.7%	0	0%	0	0%	0	0%
7.1.2.2		300 kPa - 600 kPa	2 017	5.0%	1 975	5.0%	1 934	5.0%	0	0%	0	0%	0	0%
7.1.2.3		600 kPa - 900 kPa	37 518	93.0%	36 735	93.0%	35 974	93.0%	0	0%	0	0%	0	0%
7.1.2.4	10.2.b.iii	> 900 kPa	121	0.3%	119	0.3%	116	0.3%	0	0%	0	0%	0	0%
7.1.3	10.2.g.iii	**LEAK AND METER REPAIR PROGRAMMES**												
		Number of consumer units targeted by:	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total
7.1.3.1		Leak repair assistance programme	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7.1.3.2	10.2.g.iv	Retro-fitting of water inefficient toilets	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
7.1.3.3		Meter repair programme	117	0.3%	165	0.4%	145	0.0%	0	0%	0	0%	0	0%
7.1.4	10.2.g.iii	**CONSUMER / END-USE DEMAND MANAGEMENT: PUBLIC INFO AND EDUCATION PROGRAMMES**												
			Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total	Nr	% of total
7.1.4.1		Number of schools targeted by education programmes	10	60%	10	60%	10	60%	0	0%	0	0%	0	0%
7.1.4.2		Number of consumers targeted by public information programmes	43 322	100%	42 489	100%	41 679	100%	0	0%	0	0%	0	0%

Quantity of water unaccounted for (Ml/year):

Overstrand Municipality's 2024/2025 performance with regard to the Key Performance Indicators included in the Revised Compulsory National Water and Sanitation Standards, as published in the Government Gazette No.52814 of 6 June 2025, is indicated in the table below for the various water distribution systems.

Table C.5.2: Overstrand Municipality's performance with regard to the WC/WDM KPIs for 2024/2025

Water Distribution System	NRW 20%-30%	Water Losses 10% - 20%	ILI 2 - 4	Per Capita Usage 120 – 180 l/c/d
Buffels River	37.33%	31.37%	2.36	295
Kleinmond	42.67%	41.75%	4.58	132
Greater Hermanus	27.00%	26.43%	3.14	95
Stanford	40.93%	40.43%	4.66	100
Greater Gansbaai	31.68%	31.06%	3.23	84
Pearly Beach	25.80%	25.25%	1.13	205
Baardskeerdersbos	34.71%	33.65%	1.72	223
Buffeljags Bay	68.17%	67.94%	64.38	45
Overstrand Municipality	**31.21%**	**30.15%**	**3.05**	**103**

Note: Comply with KPI / Do not comply with KPI

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

Table C.5.3: Treatment Losses, NRW, Water Losses and ILIs for the Various Water Distribution Systems

Water Distribution System	Component	Unit	24/25	Record: Prior (Ml/a)				
				23/24	22/23	21/22	20/21	19/20
Buffels River	Treatment Losses	Volume	10.516	12.232	26.640	51.005	14.959	79.606
		Percentage	1.35%	1.56%	3.97%	6.47%	1.94%	10.37%
	NRW	Volume	285.971	345.377	232.091	358.678	383.457	335.271
		Percentage	37.33%	44.83%	35.99%	48.65%	50.60%	48.70%
	Water Losses	Volume	240.348	286.476	169.546	295.471	330.845	302.971
		Percentage	31.37%	37.19%	26.29%	40.08%	43.66%	44.01%
	ILI		**2.36**	**2.83**	**1.73**	**3.04**	**3.44**	**3.00**
	The current treatment losses of below 5% are at an excellent level. The NRW and Water Losses decreased over the last financial year, which are excellent. The NRW percentage is above the DWS's target of 30% and the Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards a NRW target below 30% and a water losses target below 25% for the Buffels River system. The ILI value of 2.36 indicates a good system and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							
Kleinmond	Treatment Losses	Volume	54.624	63.585	86.275	61.360	75.267	73.584
		Percentage	5.11%	6.29%	9.40%	7.04%	8.55%	8.19%
	NRW	Volume	433.103	392.380	287.316	281.074	289.372	276.922
		Percentage	42.67%	41.43%	34.54%	34.69%	35.94%	33.57%
	Water Losses	Volume	423.765	384.712	283.332	269.958	282.963	273.090
		Percentage	41.75%	40.62%	34.06%	33.32%	35.15%	33.11%
	ILI		**4.58**	**4.17**	**3.09**	**2.96**	**3.11**	**3.30**
	The current treatment losses of below 10% are at an acceptable level. The NRW and water losses increased slightly over the last financial year. The NRW percentage is above the DWS's target of 30% and the Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards a NRW target below 30% and a water losses target below 25% for Kleinmond. The current ILI value above 4.0 indicates a poor management system, which require specific NRW and water loss reduction interventions.							
Greater Hermanus	Treatment Losses	Volume	255.258	196.668	113.774	194.527	217.909	445.591
		Percentage	4.75%	4.12%	2.67%	4.56%	5.14%	10.79%
	NRW	Volume	1 380.614	1 186.105	816.989	753.296	960.986	430.532
		Percentage	27.00%	25.90%	19.67%	18.50%	23.88%	11.69%
	Water Losses	Volume	1 351.655	1 155.771	782.891	702.134	947.239	416.581
		Percentage	26.43%	25.23%	18.85%	17.25%	23.54%	11.31%

Table C.5.3: Treatment Losses, NRW, Water Losses and ILIs for the Various Water Distribution Systems								
Water Distribution System	**Component**	**Unit**	**24/25**	**Record: Prior (Ml/a)**				
				23/24	**22/23**	**21/22**	**20/21**	**19/20**
	ILI		**3.14**	**2.70**	**1.77**	**1.62**	**2.23**	**0.98**
	The current treatment losses of below 5% are at an excellent level. The NRW and water losses increased during the last financial year, but are still below DWS's target of 30% for NRW. The Municipality needs to work towards a NRW target below 25% and a water losses target below 20% for Hermanus. The ILI value between 2.0 and 4.0 indicates a good management system and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							
Stanford	Treatment Losses	Volume	115.904	134.894	235.534	197.305	143.545	40.381
		Percentage	18.36%	24.59%	47.26%	42.08%	32.15%	11.05%
	NRW	Volume	210.916	129.046	13.485	17.035	79.613	93.141
		Percentage	40.93%	31.19%	5.13%	6.27%	26.28%	28.65%
	Water Losses	Volume	208.328	126.448	11.884	13.758	78.036	91.463
		Percentage	40.43%	30.57%	4.52%	5.07%	25.76%	28.14%
	ILI		**4.66**	**3.39**	**0.33**	**0.39**	**2.27**	**4.31**
	The treatment losses of the RO plant is closely monitored by the Municipality to ensure that it is at acceptable levels. The NRW and water losses for the 21/22 and 22/23 financial years were very low for Stanford. The Municipality recently installed a new bulk water meter in order to ensure that readings for the calculation of the NRW and Water are accurate. The 23/24 NRW were just above DWS's target of 30%, but the NRW for the last financial year increased drastically, which is a concern. The Municipality needs to work towards a NRW target below 30% and a water losses target below 25% for Stanford. The current ILI value above 4.0 indicates a poor management system, which require specific NRW and water loss reduction interventions.							
Greater Gansbaai	Treatment Losses (Franskraal)	Volume	73.405	115.808	83.200	120.239	97.490	64.025
		Percentage	5.58%	9.17%	6.55%	10.64%	8.69%	5.45%
	Treatment Losses (De Kelders)	Volume	165.799	114.187	83.545	69.131	79.262	69.012
		Percentage	33.13%	25.11%	23.11%	19.71%	22.89%	19.68%
	NRW	Volume	499.286	454.827	455.188	308.847	308.492	390.657
		Percentage	31.68%	30.56%	31.08%	23.92%	23.89%	28.07%
	Water Losses	Volume	489.460	444.798	450.605	294.694	303.451	384.859
		Percentage	31.06%	29.89%	30.77%	22.82%	23.50%	27.66%
	ILI		**3.23**	**2.90**	**3.16**	**2.13**	**2.26**	**3.03**
	The treatment losses of the De Kelders RO plant are closely monitored by the Municipality to ensure that it is at acceptable levels. The current treatment losses of below 10% for the Franskraal plant are at an acceptable level. The NRW and water losses increased slightly during the last financial year and is just above the DWS's NRW target of 30%. The Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards a NRW target below 30% and a water losses target below 25% for the Greater Gansbaai system. The ILI value between 2.0 and 4.0 indicates a good management system and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							
Pearly Beach	Treatment Losses	Volume	26.221	18.823	7.263	-6.419	4.756	4.891
		Percentage	13.94%	10.93%	4.89%	-4.35%	3.10%	3.15%
	NRW	Volume	41.758	43.359	25.787	41.065	44.318	46.005
		Percentage	25.80%	28.28%	18.25%	26.65%	29.81%	30.57%
	Water Losses	Volume	40.864	42.463	25.284	39.415	43.574	45.166
		Percentage	25.25%	27.69%	17.89%	25.58%	29.31%	30.02%
	ILI		**1.13**	**1.18**	**0.70**	**1.12**	**1.26**	**2.81**
	The current treatment losses are between 10% and 15%, which are still at an acceptable level. The NRW and Water Losses decreased over the last financial year, which is excellent. The current NRW percentage is below DWS's target of 30% for NRW. The Municipality needs to work towards a NRW target below 25% and a water losses target below 20% for Pearly Beach. The ILI value indicates an excellent system, with no immediate intervention required and the Municipality needs to keep the ILI level below 2.							
Baardskeerdersbos	Treatment Losses	Volume	2.188	3.078	2.229	3.202	2.603	2.637
		Percentage	10.09%	13.45%	11.56%	19.02%	14.67%	14.40%
	NRW	Volume	6.771	8.546	8.125	5.883	7.918	6.941
		Percentage	34.71%	43.14%	47.67%	43.14%	52.31%	44.28%
	Water Losses	Volume	6.565	8.243	7.640	5.738	7.871	6.834
		Percentage	33.65%	41.61%	44.82%	42.08%	52.00%	43.60%
	ILI		**1.72**	**2.17**	**2.26**	**1.71**	**2.35**	**2.12**
	The current treatment losses are between 10% and 15%, which are still at an acceptable level. The NRW and							

Table C.5.3: Treatment Losses, NRW, Water Losses and ILIs for the Various Water Distribution Systems								
Water Distribution System	**Component**	**Unit**	**24/25**	**Record: Prior (Ml/a)**				
				23/24	**22/23**	**21/22**	**20/21**	**19/20**
	water losses decreased during the last financial year, which are excellent. The current NRW and water losses are however still high. The NRW percentage is above the DWS's target of 30% and the Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards a NRW target below 30% and a water losses target below 25% for Baardskeerdersbos. The ILI value indicates an excellent system, with no immediate intervention required and the Municipality needs to keep the ILI level below 2.							
Buffeljags Bay	Bulk Distribution Losses	Volume	0.060	0.063	0.182	0.247	-0.220	-0.139
		Percentage	0.74%	0.89%	3.10%	4.49%	-3.89%	-2.77%
	NRW	Volume	5.467	3.417	1.998	2.299	3.156	0.930
		Percentage	68.17%	48.56%	35.11%	43.73%	53.68%	18.03%
	Water Losses	Volume	5.449	3.381	1.986	2.243	3.127	0.901
		Percentage	67.94%	48.05%	34.90%	42.67%	53.19%	17.46%
	ILI		**64.38**	**39.94**	**21.47**	**24.25**	**33.80**	**4.95**
	The bulk distribution losses of below 5% are at an excellent level. The NRW and Water Losses increased drastically over the last financial year, which is of concern. The current NRW and water losses are extremely high and above the DWS's NRW target of 30%. The Municipality needs to continue with the implementation of specific WC/WDM measures to reduce the NRW and water losses. The Municipality needs to work towards a NRW target below 40% and a water losses target below 30% for Buffeljags Bay. The current ILI value of 64.38 is extremely high, which requires immediate water loss reduction interventions.							
TOTAL	**NRW**	**Volume**	**2 863.886**	**2 563.057**	**1 840.979**	**1 768.177**	**2 077.312**	**1 580.399**
		Percentage	**31.21%**	**30.59%**	**24.48%**	**24.04%**	**28.26%**	**22.31%**
	Water Losses	**Volume**	**2 766.435**	**2 452.293**	**1 733.168**	**1 623.411**	**1 997.106**	**1 521.865**
		Percentage	**30.15%**	**29.27%**	**23.04%**	**22.07%**	**27.17%**	**21.48%**
	ILI		**3.05**	**2.73**	**1.94**	**1.85**	**2.32**	**1.83**
	The NRW and water losses for all the systems combined increased slightly during the last financial year. The overall NRW is just above DWS's target of 30%. The Municipality needs to work towards a NRW target below 30% and a water losses target below 25%. The ILI value between 2.0 and 4.0 indicates good management systems and no urgent action is required, but the NRW and Water Losses should however be monitored carefully.							

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

Category A = No specific intervention required.

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

Category C = Requires attention

Category D = Requires immediate water loss reduction interventions

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

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. The parameters used to calculate the ILIs for the various distribution systems are included in Annexure B. Attaining an ILI = 1 is a theoretical limit, which is the minimum water loss in an operational water reticulation system. A value of less than 1 should not occur since this implies that the actual leakage is less than the theoretical minimum level of leakage.

The table below gives an overview of the System Input Volume, Average Billed Metered Consumption and NRW in litre per connection per day for the various water distribution systems for the 2024/2025 financial year.

Table C.5.4: System Input Volume, Average Billed Metered Consumption and NRW in Litre per Connection per Day for the various Water Distribution Systems for 2024/2025

Water Balance Component	Buffels River	Kleinmond	Greater Hermanus	Stanford	Greater Gansbaai	Pearly Beach	Baardskeer-dersbos	Buffeljags Bay	Overstrand Municipality
System Input Volume	483	672	618	688	520	241	534	732	**580**
Average Billed Metered Cons.	315	385	451	407	355	179	349	233	**399**
Non-Revenue Water	168	287	167	282	165	62	186	499	**181**

The system with the highest system input volume and NRW per connection per day is Buffeljags Bay. The system with the highest average billed metered consumption per connection per day is Hermanus.

The 2025 No Drop Score for Overstrand Municipality is not yet available and the 2023 No Drop Score is still the latest score, as published by the DWS. The 2023 No Drop assessments were performed using a reduced set of No Drop Criteria. These criteria were selected to assess a WSA's understanding of their WC/WDM status, the plans, strategies, budgets, and implementation of remedial projects. Below is a brief description of the Criteria used for the 2023 assessment.

Table C.5.5: Description of No Drop Criteria	
Criteria 1	WC/WDM status quo, plans and strategies, budgets, and implementation of projects (Water Resource Diagram, Water Balance, Council approved WC/WDM strategies and budgets).
Criteria 2	Asset management as it relates to meter replacement. Monitoring, analysis, and action of high loss District Metered Areas (DMAs) in metropolitan municipalities.
Criteria 3	Technical skills of WC/WDM team.
Criteria 5	Compliance and Performance based on the water loss and efficiency Key Performance Indicators (KPI) and year on year improvement there-of.

The purpose of the 2023 No Drop Assessments was twofold:

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

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

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

Table C.5.6: No Drop Performance of the Municipality (DWS's 2023 No Drop Report)		
No Drop Score (2021/2022)		**101%**
Criteria	**Weight**	**Score**
1: WC/WDM Strategy, Planning and Implementation	45%	100% (Excellent)
2: Asset Management	10%	100% (Excellent)
3: Technical Skills	10%	100% (Excellent)
5: Compliance and Performance	35%	74% (Average)
Weighted Sub-Total		**91%**
Bonus		10%
Score		**101% (Excellent)**
Penalty 1: No evidence of approved budget		0.0%
Penalty 2: Section 82 of the Water Servies Act		0.0%
Criteria 1 Sub-Items: WC/WDM Strategy, Planning and Implementation		
Item		**Score (Max = 1)**
1.1: Water Resources		1.0 (Excellent)

Table C.5.6: No Drop Performance of the Municipality (DWS's 2023 No Drop Report)	
1.2: Water Balance	1.0 (Excellent)
1.2: WC/WDM Strategy and Business Plan	1.0 (Excellent)
Penalty 1: No evidence of approved budget	0.0
Criteria 5 Sub-Items: Compliance and Performance	
Item	**Score (Max = 1)**
5.1: Reticulation Leak Repair	0.3 (Poor)
5.2: Physical Water Losses	0.9 (Excellent)
5.3: Commercial Water Losses	1.0 (Excellent)
5.4: Non-Revenue Water	0.8 (Good)
5.5: Water Use Efficiency	0.7 (Average)
Water Balance Integrity	**High (Excellent)**

Number of consumers connected to a water reticulation system where pressures rise above 900 kPa at the consumer connection are as follows:

The towns in Overstrand Municipality's Management Area, as identified in the proposed WDM Strategy developed by CES, that should consider pressure management as a measure of water demand management (where the % potential saving > 3% of the total water demand) were as follows:

Table C.5.7 Potential Savings on Bulk Water Supply through the Implementation of Pressure Management			
Distribution System	**Saving Potential**	**Number of consumer connections where pressure rise above 900 kPa (Static Pressure)**	**Comments**
Kleinmond	5%	0	Two PRVs were installed
Buffels River (Betty's Bay & Pringle Bay)	4%	0	Five PRVs were installed
Buffels River (Rooi Els)	3%	0	-
Greater Hermanus	3%	0	-
Stanford	< 3%	0	One PRV was installed
Greater Gansbaai	< 3%	64 (Stanfords Bay)	Municipality plan to install a PRV for De Kelders
Pearly Beach	< 3%	0	Pressure Management is not viable

PRVs are in operation in Kleinmond, Stanford and Betty's 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).

The table below gives an overview of the length of water pipelines and the average head for the different water distribution zones (Water Master Plan 2021).

Table C.5.8: Length and Average Head of Water Pipelines			
Component Type	**Zone**	**Length (km)**	**Average Head**
Buffels River			
Bulk	Buffels River – Rooi Els	0.099	45.2
	Buffels River	15.227	66.5
	Total	**15.325**	**65.8**
Reticulation	Pringle Bay	37.384	41.9
	Voorberg PRV Zone	37.405	47.4
	Rooi Els	7.509	43.9

Table C.5.8: Length and Average Head of Water Pipelines			
Component Type	**Zone**	**Length (km)**	**Average Head**
	Rooi Els Booster	0.334	43.2
	Bettys Bay	0.012	24.4
	Voorberg Reservoir Zone	22.496	36.6
	Sunny Seas PRV 1 Zone	2.504	26.8
	Sunny Seas Reservoir Zone	10.706	55.4
	Sunny Seas PRV 2 Zone	5.509	31.6
	Total	**123.859**	**43.4**
Kleinmond			
Private	Kleinmond Reservoir	0.271	44.8
	Total	**0.271**	**44.8**
Reticulation	Overhills Booster	0.440	55.0
	Kleinmond Reservoir	34.342	46.7
	Kleinmond PRV	38.719	51.6
	Protearand Booster	1.280	43.1
	Total	**74.781**	**49.2**
Greater Hermanus			
Bulk	Greater Hermanus	31.896	55.8
	Total	**31.896**	**55.8**
Private	Sandbaai	2.268	38.6
	Hemel en Aarde	5.343	69.3
	Hermanus	0.068	27.0
	Fisherhaven LL Reservoir	7.241	26.1
	Vermont	2.607	43.5
	Onrus	0.545	42.7
	Onrus Manor	4.538	78.0
	Total	**22.610**	**57.0**
Raw	Greater Hermanus Raw Water	8.670	66.2
	Greater Hermanus Recycled WW	4.449	48.3
	Total	**13.119**	**55.4**
Reticulation	Sandbaai	41.011	43.2
	Hemel en Aarde	3.038	46.3
	Hermanus	71.492	31.9
	Fisherhaven LL Reservoir	23.402	41.2
	Hawston	28.857	39.9
	Fisherhaven HL	7.956	50.2
	Vermont	23.580	55.3
	Onrus	26.636	51.5
	Onrus Manor	5.433	85.5
	Kidbrooke Place	0.009	1.7
	Mount Pleasant	11.541	46.5
	Northcliff	2.472	37.1
	Hermanus Heights LL	17.619	41.6
	Voëlklip LL	27.030	43.9
	Hermanus Heights HL	1.043	38.0
	Hermanus Heights LL Booster	1.453	67.4
	Voëlklip HL	13.619	49.1
	Total	**306.191**	**43.6**
Stanford			
Bulk	Stanford Bulk Supply	1.241	16.2
	Total	**1.241**	**16.2**
Private	Stanford Reservoir	2.019	60.5
	Total	**2.019**	**60.5**
Raw	Stanford Bulk Supply	4.310	22.1
	Total	**4.310**	**22.1**
Reticulation	Stanford PRV	18.142	42.6
	Stanford Reservoir	14.340	57.1

Table C.5.8: Length and Average Head of Water Pipelines			
Component Type	**Zone**	**Length (km)**	**Average Head**
	Total	**32.482**	**49.0**
Greater Gansbaai			
Bulk	Greater Gansbaai	24.997	31.2
	Total	**24.997**	**31.2**
Raw	Gansbaai Raw Water	10.312	17.8
	Total	**10.312**	**17.8**
Reticulation	Gansbaai	57.804	28.9
	Kleinbaai	22.446	36.6
	De Kelders	24.282	51.7
	Franskraal	36.429	50.1
	Total	**140.961**	**38.5**
Pearly Beach			
Bulk	Pearly Beach Bulk Supply	2.770	11.3
	Total	**2.770**	**11.3**
Raw	Pearly Beach Bulk Supply	9.634	13.9
	Total	**9.634**	**13.9**
Reticulation	Tower	25.784	47.8
	Reservoir	5.185	12.1
	Total	**30.969**	**40.1**
Baardskeerdersbos			
Bulk	Bulk Supply	0.524	25.5
	Baardskeerdersbos Reservoir	0.272	74.5
	Total	**0.796**	**63.2**
Raw	Baardskeerdersbos Reservoir	0.062	3.7
	Total	**0.062**	**3.7**
Reticulation	Baardskeerdersbos Reservoir	0.990	50.5
	Baardskeerdersbos PRV	3.962	51.7
	Total	**4.952**	**51.5**
Buffeljags Bay			
Raw	Buffeljags Bay – Borehole	2.57	1.3
	Total	**2.575**	**1.3**
Reticulation	Buffeljags Bay – Buffeljags Bay Reservoir	0.469	6.1
	Total	**0.469**	**6.1**

Demand management activities undertaken:

Overstrand Municipality is committed to reduce the percentage of NRW for the various water distribution systems to below DWS target of 30%. The Municipality's WDM Strategy and Action Plan include the following key activities (June 2025 progress in brackets):

- Continue with pipe replacement in priority areas with old reticulation networks and history of frequent pipe failures (2018/2019 to 2024/2025 phases included Rooi-Els, Pringle Bay, Betty's Bay, Kleinmond, Northcliff, Vermont, Zwelihle and Voëlklip);

- Continued operation and maintenance of intelligent pressure management systems in Stanford, Kleinmond and Betty's Bay. Municipality is implementing pressure management in De Kelders in 2025/2026;

- The phased pro-active replacement of older water meters to be continued in 2025/2026;

- Review and improve efficiency of remote monitoring of minimum night flows in all zones (On-going maintenance and extension of SCADA and telemetry systems).

- Link properties with distribution zones in financial data base to enable water balance in smaller areas (ongoing in all areas);

- Enhance public awareness on general water and water demand management issues, e.g. the watering of gardens as determined by the bylaws, rainwater harvesting, dam levels, and general water saving tips; regular publication of water and wastewater quality in local media and on Overstrand Municipality's website and primary school learners are reached with water awareness puppet shows as well as live shows;

- Identify users on financial data base with regular abnormal high or abnormal low water use, and physically inspect the causes (on-going);

- Sourcing of external funds, e.g. from the DWS WSIG program and MIG and SIDAFF grants for water projects, as well as exploring innovative private funding mechanisms;

- Tariffs structured to discourage excessive use of water, including volumetric sewerage tariffs, and specific water restriction tariffs implemented for specific water restriction levels (implemented and on-going);

- Continue with removal of alien vegetation in catchment areas (ongoing);

- Maximum use of treated effluent for irrigation (Implemented and extended in Hermanus and Gansbaai).

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

Progress made with the installation of water efficient devices:

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

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

C.6. Water Services Asset Management

The bulk water and sewerage infrastructure in Overstrand Municipality's Management Area for which the operation and maintenance functions were outsourced to an external Contractor from the 8th of December 2018 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, twenty-one (21) water pump stations, forty-five (45) reservoirs and one hundred and one (101) km of bulk water pipelines.

- Bulk Wastewater Infrastructure: Six (6) WWTWs, fifty-two (52) sewer pump stations and forty-five (45) km of bulk sewer pipelines.

The tables and graphs below give an overview of the water and sewerage infrastructure included in Overstrand Municipality's Asset Register for the end of June 2025.

Water Infrastructure: The current replacement cost and carrying value of the water infrastructure of Overstrand Municipality is summarised in the table below (June 2025).

Table C.6.1: Current Replacement Cost and Carrying Value of the Water Infrastructure (June 2025)

Asset Type	CRC	CV	% CV / CRC
Dams	R11 119 399	R4 253 604	38.3%
Boreholes	R11 161 486	R14 305 618	128.2%
Bulk Water Pipelines	R123 598 903	R43 251 078	35.0%
Pump Stations	R49 252 052	R13 510 440	27.4%
Reservoirs	R120 153 764	R61 214 416	50.9%
Water Reticulation Pipelines	R672 015 685	R258 430 535	38.5%
Buffels River WTW	R13 813 820	R3 956 784	28.6%
Kleinmond WTW	R27 568 183	R9 719 158	35.3%
Preekstoel WTW	R78 510 492	R57 225 910	72.9%
Franskraal New WTW	R36 298 367	R16 219 659	44.7%
Franskraal Old WTW	R20 036 738	R2 167 076	10.8%
Baardskeerdersbos WTW	R6 724 089	R2 928 069	43.5%
Pearly Beach WTW	R8 154 514	R6 153 849	75.5%
De Kelders WTW	R18 982 042	R6 883 141	36.3%
Totals	**R1 197 389 534**	**R500 219 337**	**41.8%**

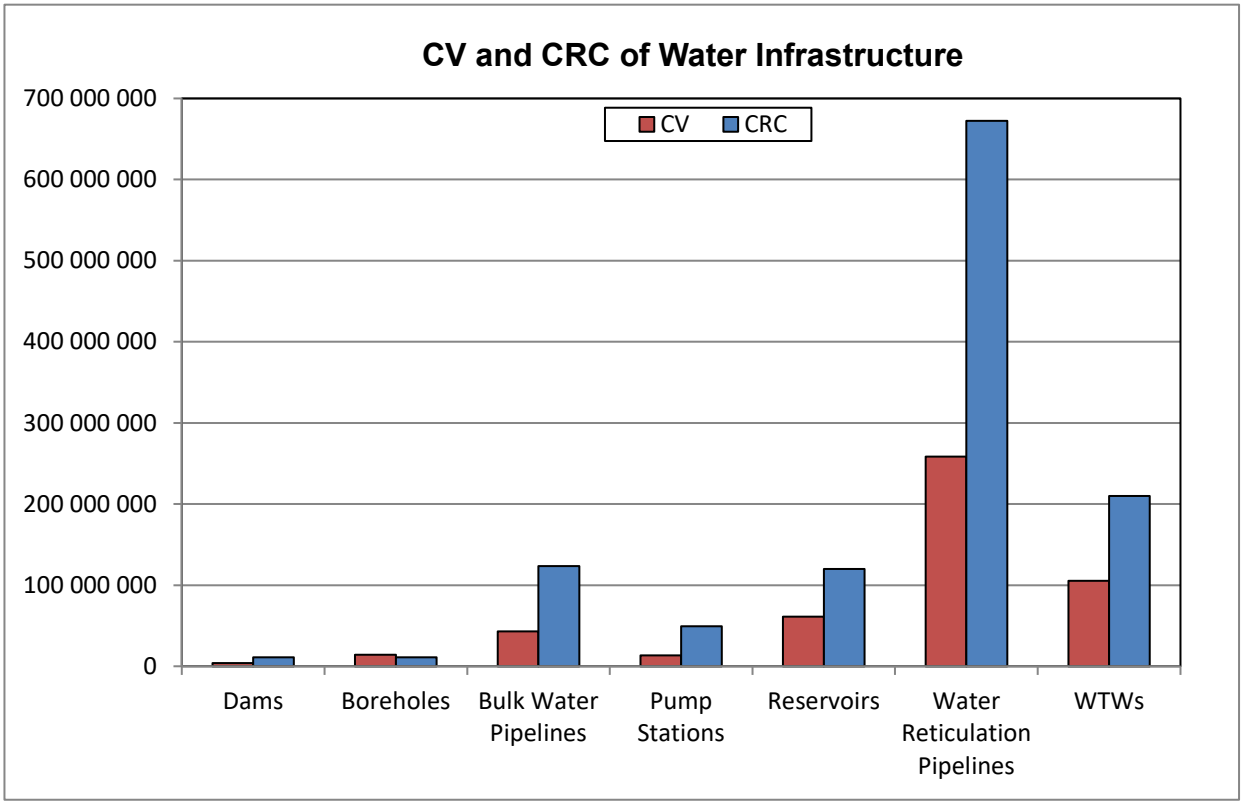


Figure C.6.1: CV and CRC of the Water Infrastructure

The previous table indicates that 58.2% of the value of the water supply infrastructure has been consumed.

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

Table C.6.2: Overview of the Remaining Useful Life by Facility Type for the Water Infrastructure – June 2025 (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Dams	R683 837	R0	R9 355 486	R0	R1 080 076
Boreholes	R6 276 361	R16 106	R472 226	R3 831	R4 392 962
Bulk Water Pipelines	R66 198 631	R1 975 841	R0	R15 095 773	R40 328 658
Pump Stations	R30 545 841	R376 639	R9 799 210	R42 141	R8 488 221
Reservoirs	R16 965 347	R414 640	R74 528 115	R22 986	R28 222 676
Water Reticulation Pipelines	R430 530 394	R21 023 530	R0	R15 986 449	R204 475 312
Buffels River WTW	R5 818 205	R0	R7 990 365	R0	R5 250
Kleinmond WTW	R3 945 863	R18 819	R16 563 102	R0	R7 040 399
Preekstoel WTW	R15 606 908	R976 366	R1 210 941	R1 252 606	R59 463 671
Franskraal New WTW	R14 426 952	R63 424	R446 210	R0	R21 361 781
Franskraal Old WTW	R7 581 351	R6 955	R12 448 432	R0	R0
Baardskeerdersbos WTW	R5 208 877	R65 430	R0	R163 880	R1 285 902
Pearly Beach WTW	R2 760 811	R2 652 030	R279 874	R2 198	R2 459 601
De Kelders WTW	R13 161 873	R0	R242 892	R213 953	R5 363 324
Totals	**R619 711 251**	**R27 589 780**	**R133 336 853**	**R32 783 817**	**R383 967 833**

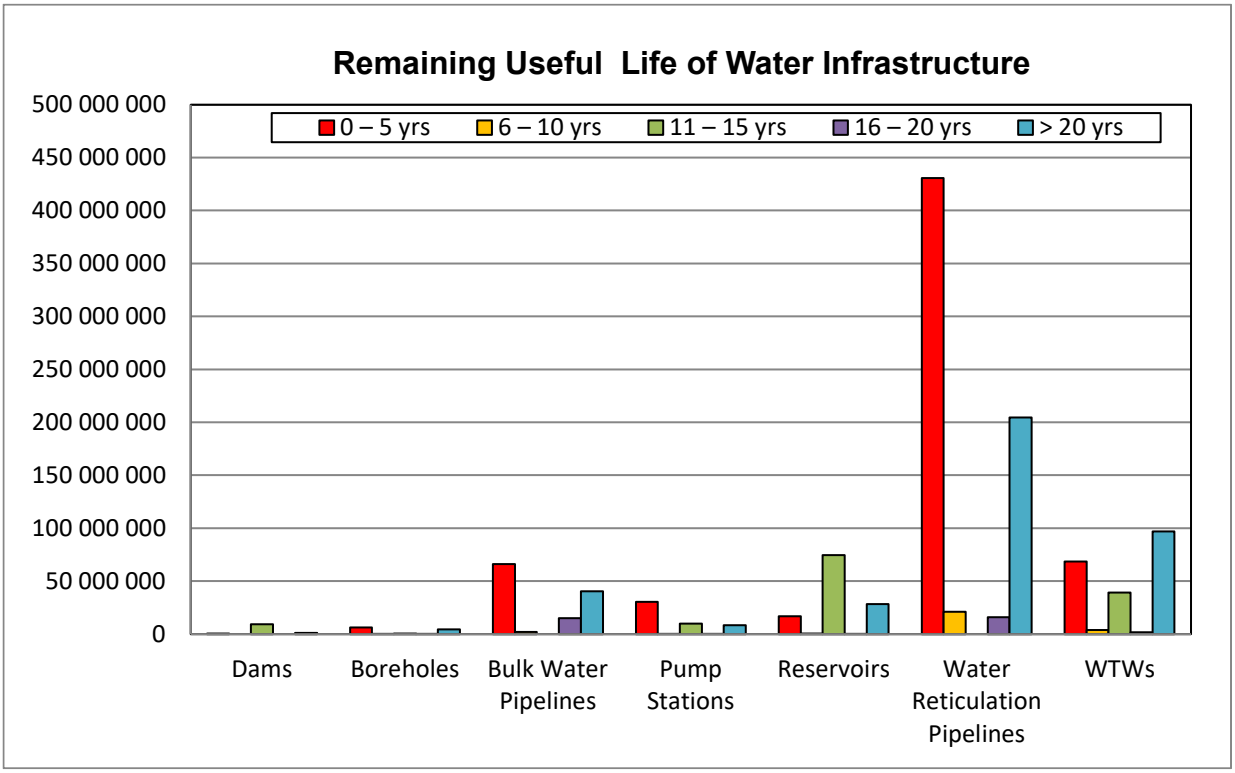


Figure C.6.2: Remaining Useful Life of the Water Infrastructure

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

Table C.6.3: Overview of the Age Distribution by Facility Type for the Water Infrastructure – June 2025 (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Dams	R0	R549 065	R0	R134 772	R10 435 562
Boreholes	R0	R0	R4 407 505	R6 043 603	R 710 378
Bulk Water Pipelines	R0	R0	R7 543 865	R17 231 912	R98 823 126
Pump Stations	R0	R0	R5 413 056	R20 393 630	R23 445 366
Reservoirs	R0	R186 225	R1 914 833	R14 444 297	R103 608 409
Water Reticulation Pipelines	R0	R17 743 627	R42 011 620	R226 026 175	R386 234 263
Buffels River WTW	R0	R364 073	R0	R4 099 423	R9 350 324
Kleinmond WTW	R0	R0	R0	R5 138 930	R22 429 253
Preekstoel WTW	R0	R0	R76 023 040	R1 955 146	R532 306
Franskraal New WTW	R0	R31 823	R36 266 544	R0	R0
Franskraal Old WTW	R0	R0	R0	R562 970	R19 473 768
Baardskeerdersbos WTW	R0	R0	R6 724 089	R0	R0
Pearly Beach WTW	R0	R0	R0	R6 851 773	R1 302 741
De Kelders WTW	R0	R0	R18 982 042	R0	R0
Totals	**R0**	**R18 874 813**	**R199 286 594**	**R302 882 631**	**R676 345 496**

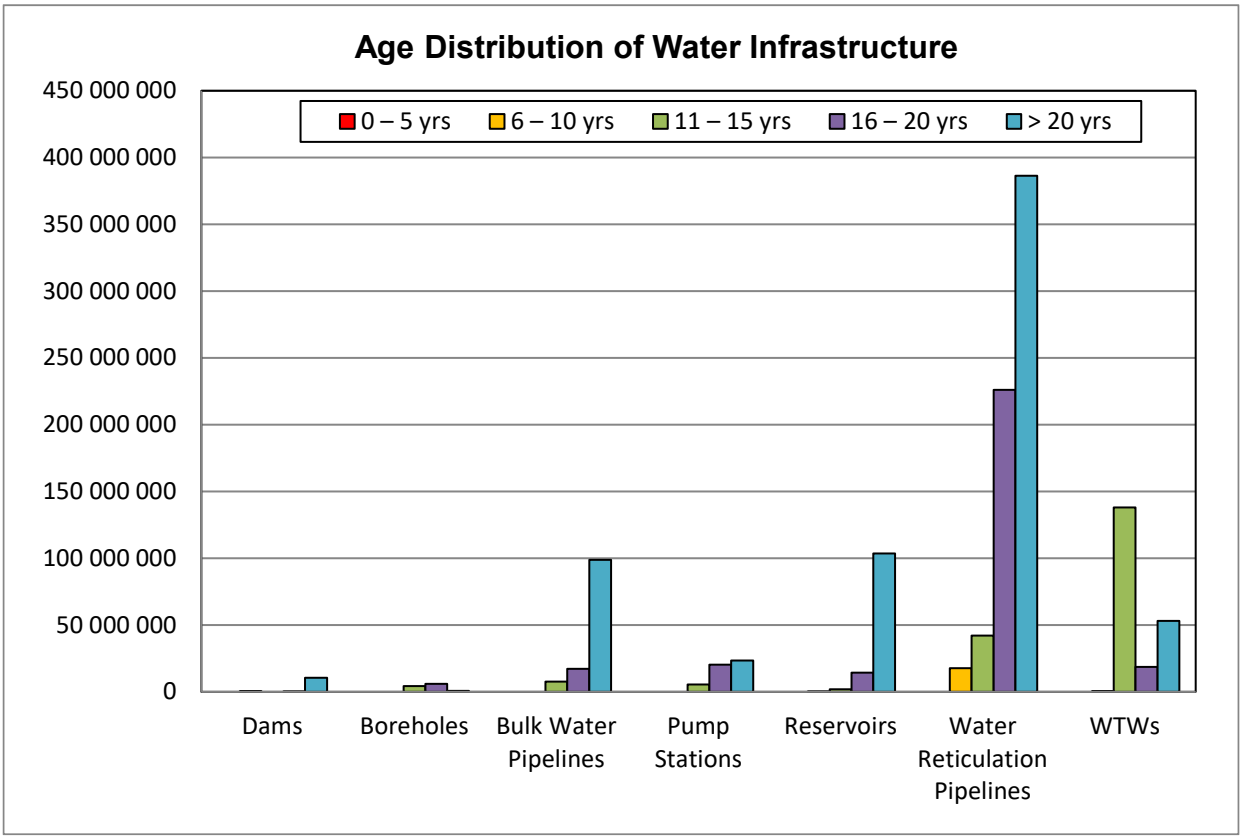


Figure C.6.3: Age Distribution of the Water Infrastructure

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

Table C.6.4: Overview of the Condition Grading by Facility Type for the Water Infrastructure – June 2025 (CRC)					
Asset Type	**Very Poor**	**Poor**	**Fair**	**Good**	**Very Good**
Dams	R0	R0	R10 570 334	R0	R549 065
Boreholes	R186 545	R78 365	R8 468 951	R2 411 330	R16 295
Bulk Water Pipelines	R66 198 631	R1 975 841	R22 840 656	R9 505 682	R23 078 093
Pump Stations	R921 951	R6 103 315	R31 217 742	R10 752 696	R256 348
Reservoirs	R5 006 986	R3 691 538	R80 415 707	R30 254 328	R785 205
Water Reticulation Pipelines	R298 456 471	R21 611 487	R183 014 720	R34 586 097	R134 346 910
Buffels River WTW	R0	R409 206	R12 947 079	R93 462	R364 073
Kleinmond WTW	R7 164	R3 168	R20 299 016	R5 851 745	R1 407 090
Preekstoel WTW	R0	R550 608	R16 234 675	R40 817 863	R20 907 346
Franskraal New WTW	R0	R0	R17 242 946	R18 219 366	R836 055
Franskraal Old WTW	R817 309	R6 142 278	R13 077 151	R0	R0
Baardskeerdersbos WTW	R0	R0	R555 518	R2 244 433	R3 924 138
Pearly Beach WTW	R0	R0	R914 226	R3 061 412	R4 178 876
De Kelders WTW	R0	R0	R5 815 836	R1 969 276	R11 196 930
Totals	**R371 595 057**	**R40 565 806**	**R423 614 557**	**R159 767 690**	**R201 846 424**

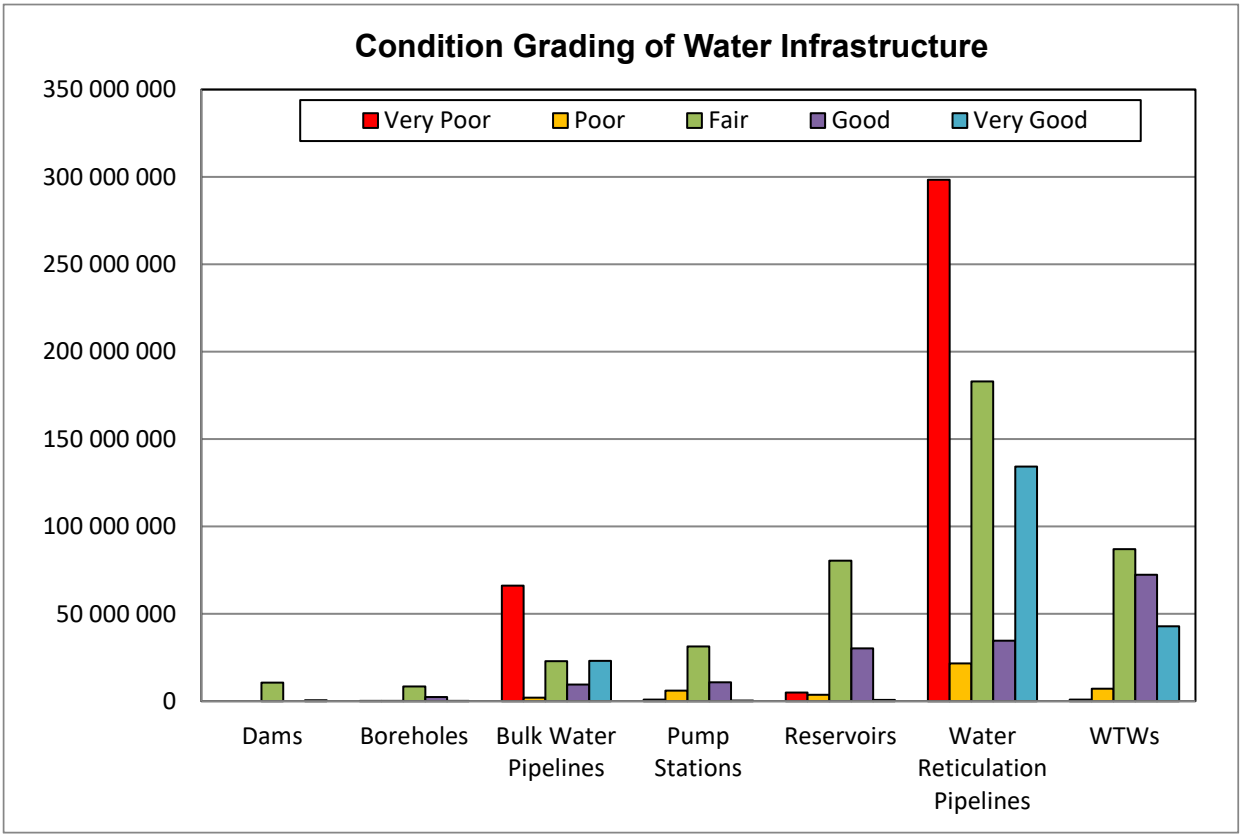


Figure C.6.4: Condition Grading of the Water Infrastructure

Sewerage Infrastructure: The current replacement cost and carrying value of the sewerage infrastructure of Overstrand Municipality is summarised in the table below (June 2025).

Table C.6.5: Current Replacement Cost and Carrying Value of the Sewerage Infrastructure (June 2025)			
Asset Type	**CRC**	**CV**	**% CV / CRC**
Sanitation Pump Stations	R36 815 888	R34 542 677	93.8%
Sewer Reticulation Pipelines	R417 612 440	R309 663 146	74.2%
Stanford WWTW	R18 563 529	R19 481 113	104.9%
Hermanus WWTW	R75 734 100	R51 665 078	68.2%
Hawston WWTW	R13 438 372	R3 489 222	26.0%
Kleinmond WWTW	R13 430 196	R51 855 541	386.1%
Gansbaai WWTW	R34 135 896	R7 041 861	20.6%
Pearly Beach WWTW	R11 060 449	R6 531 578	59.1%
Totals	**R620 790 870**	**R484 270 216**	**78.0%**

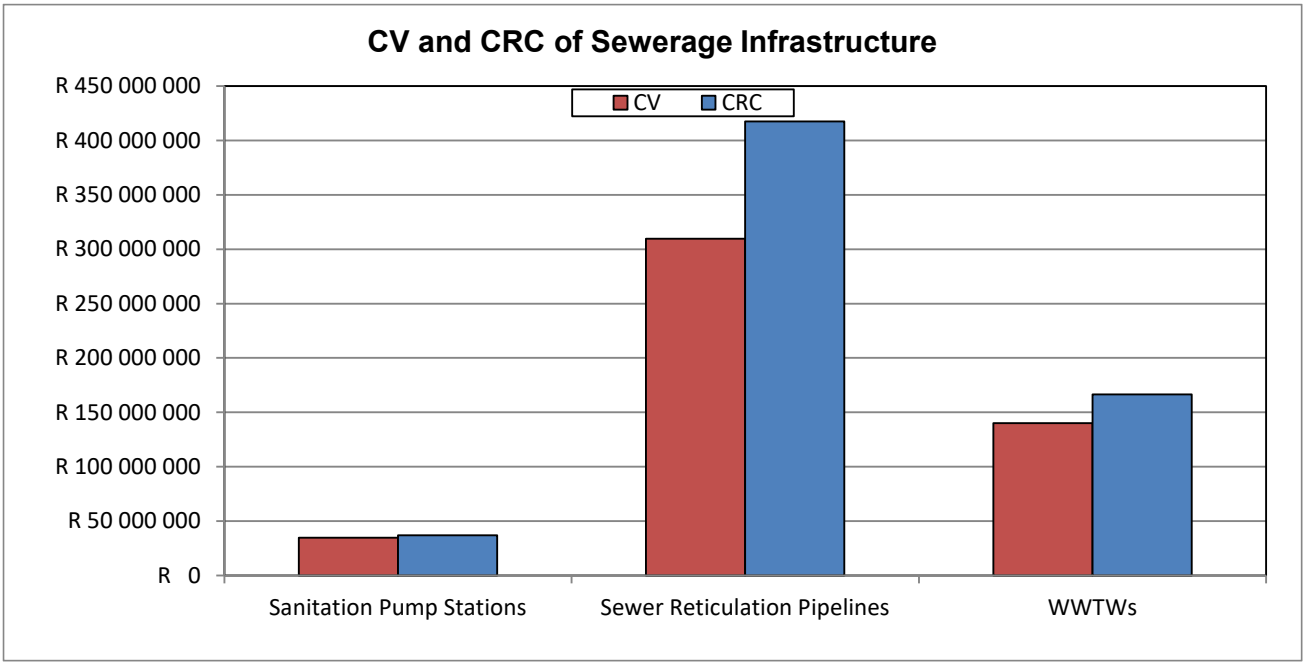


Figure C.6.5: CV and CRC of the Sewerage Infrastructure

The previous table indicates that 22% of the value of the sewerage infrastructure has been consumed.

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

Table C.6.6: Overview of the Remaining Useful Life by Facility Type for the Sewerage Infrastructure – June 2025 (CRC)					
Asset Type	**0 – 5 yrs**	**6 – 10 yrs**	**11 – 15 yrs**	**16 – 20 yrs**	**> 20 yrs**
Sanitation Pump Stations	R21 899 673	R1 255 725	R10 464 745	R0	R3 195 745
Sewer Reticulation Pipelines	R14 852 744	R47 237 847	R20 256 058	R26 104 631	R309 161 160
Stanford WWTW	R11 235 991	R277 773	R5 697 748	R0	R1 352 017
Hermanus WWTW	R51 318 492	R1 558 568	R10 161 476	R26 072	R12 669 492
Hawston WWTW	R7 819 304	R923 731	R2 066 358	R0	R2 628 979
Kleinmond WWTW	R9 157 208	R131 212	R1 816 069	R0	R2 325 707
Gansbaai WWTW	R24 017 522	R782 672	R3 575 748	R0	R5 759 954
Pearly Beach WWTW	R787 053	R2 975	R0	R0	R10 270 421
Totals	**R141 087 987**	**R52 170 503**	**R54 038 202**	**R26 130 703**	**R347 363 475**

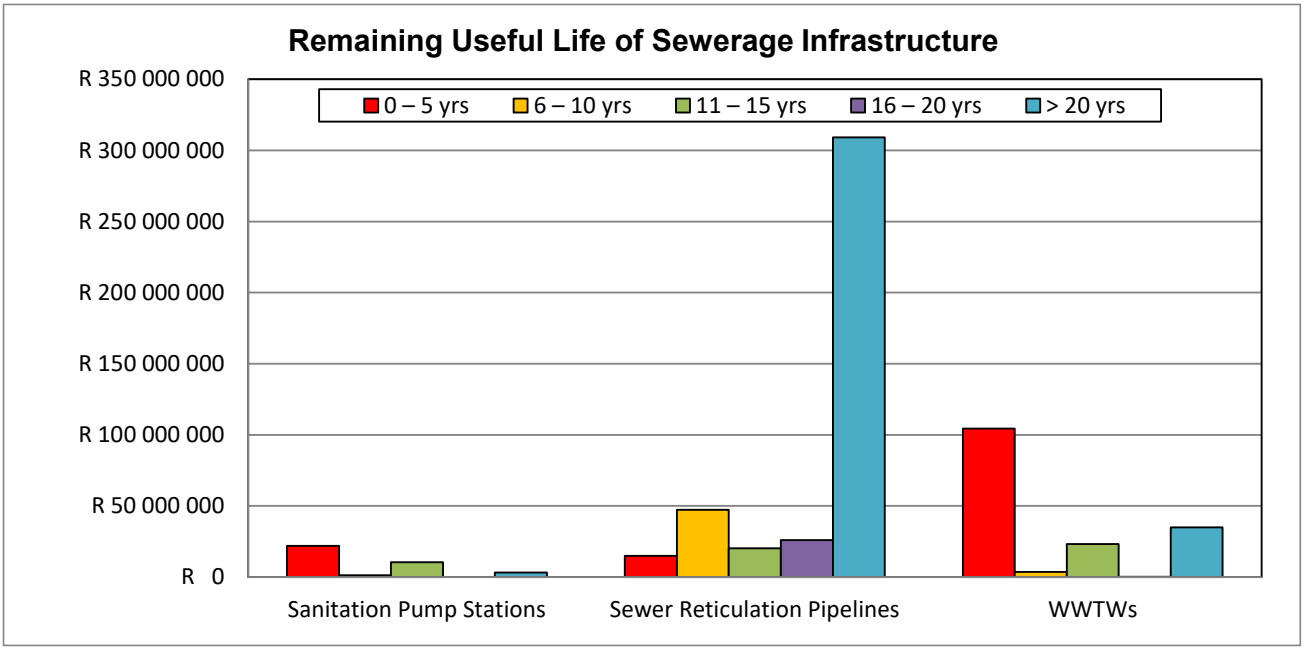


Figure C.6.6: Remaining Useful Life of the Sewerage Infrastructure

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

Table C.6.7: Overview of the Age Distribution by Facility Type for the Sewerage Infrastructure – June 2025 (CRC)

Asset Type	0 – 5 yrs	6 – 10 yrs	11 – 15 yrs	16 – 20 yrs	> 20 yrs
Sanitation Pump Stations	R0	R1 698 747	R7 750 910	R15 406 886	R11 959 345
Sewer Reticulation Pipelines	R0	R10 815 049	R21 142 544	R40 807 580	R344 847 267
Stanford WWTW	R0	R0	R1 039 451	R9 639 650	R7 884 428
Hermanus WWTW	R0	R35 182	R50 033 091	R5 003 820	R20 662 007
Hawston WWTW	R0	R0	R1 634 987	R7 057 145	R4 746 240
Kleinmond WWTW	R0	R0	R2 840 619	R6 310 638	R4 278 939
Gansbaai WWTW	R0	R0	R7 925 135	R13 396 202	R12 814 559
Pearly Beach WWTW	R0	R11 060 449	R0	R0	R0
Totals	**R0**	**R23 609 427**	**R92 366 737**	**R97 621 921**	**R407 192 785**

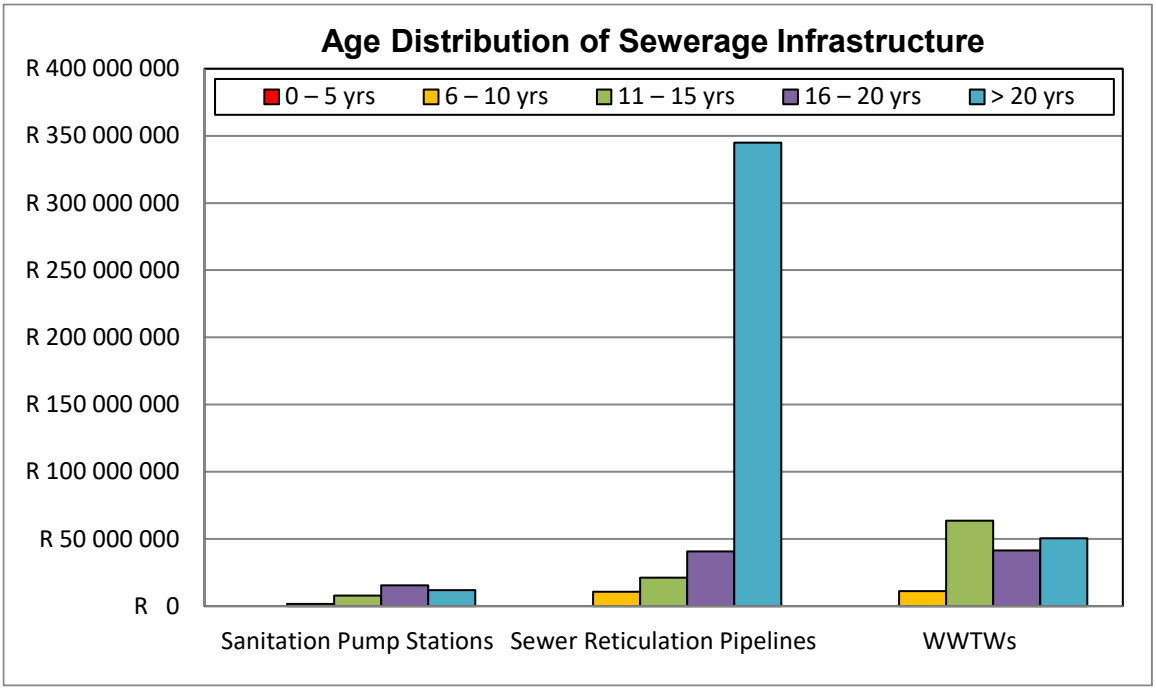


Figure C.6.7: Age Distribution of the Sewerage Infrastructure

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

Table C.6.8: Overview of the Condition Grading by Facility Type for the Sewerage Infrastructure – June 2025 (CRC)

Asset Type	Very Poor	Poor	Fair	Good	Very Good
Condition Grading by Facility Type					
Sanitation Pump Stations	R14 990	R882 871	R32 375 817	R2 625 619	R916 591
Sewer Reticulation Pipelines	R4 663 675	R60 105 948	R164 745 682	R143 290 758	R44 806 377
Stanford WWTW	R0	R531 791	R15 306 978	R2 724 760	R0
Hermanus WWTW	R5 223 413	R5 777 044	R36 523 882	R21 672 302	R6 537 459
Hawston WWTW	R0	R711 930	R12 221 462	R504 980	R0
Kleinmond WWTW	R 25 913	R247 615	R8 888 853	R4 267 815	R0
Gansbaai WWTW	R3 435 802	R307 842	R17 963 942	R12 428 310	R0
Pearly Beach WWTW	R0	R58 022	R634 266	R6 775 369	R3 592 792
Totals	**R13 363 793**	**R68 623 063**	**R288 660 882**	**R194 289 913**	**R55 853 219**

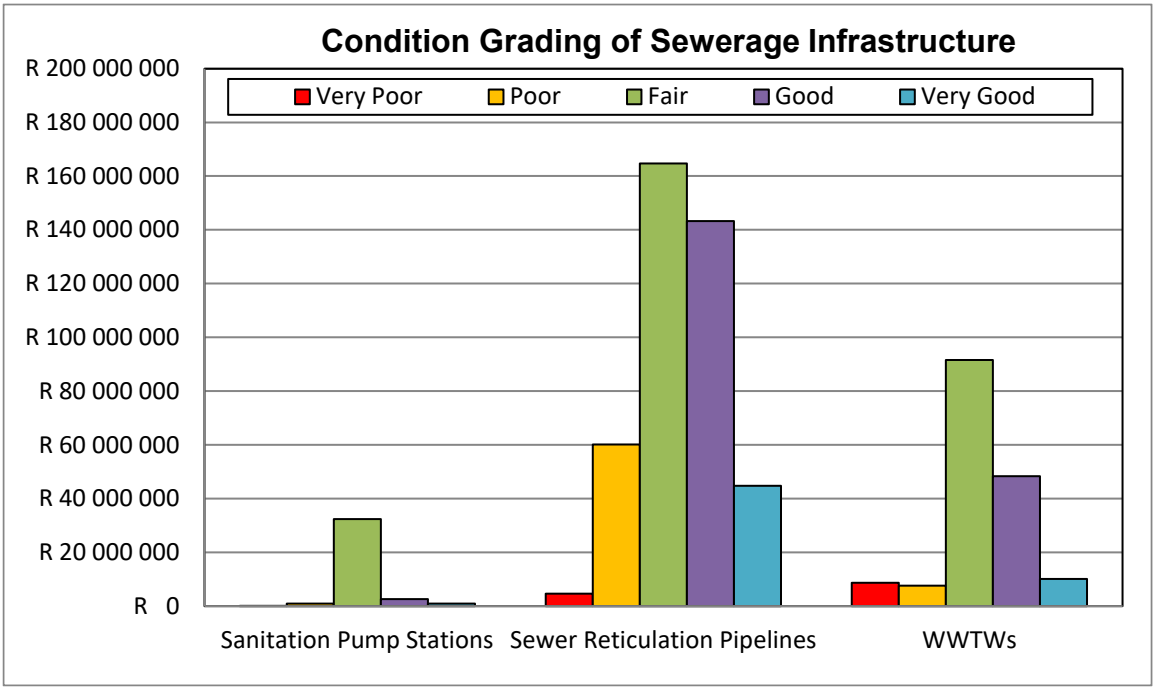


Figure C.6.8: Condition Grading of the Sewerage Infrastructure

The CRC of the water and sewerage infrastructure that will need to be replaced over the next five years (RUL <5 yrs) is R760.799 million. The asset renewal needs for the water infrastructure assets over the next ten years is R64.730 million per year. The reinvestment required is R619.711 million in the first five years and R27.590 million in the second five-year period. The age of 56.5% of the water infrastructure assets is greater than twenty years. The CRC of the water infrastructure with a condition grading of "Very Poor" is R371.595 million. The asset renewal needs for the sewerage infrastructure assets over the next ten years is R19.326 million per year. The reinvestment required is R141.088 million in the first five years and R52.171 million in the second five-year period. The age of 65.6% of the sewerage infrastructure assets is greater than twenty years. The CRC of the sewerage infrastructure with a condition grading of "Very Poor" is R13.364 million.

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

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

C.7. Water Services Operation and Maintenance

The existing Water and Wastewater Bulk Works Contract assist Overstrand Municipality with the operation and maintenance of their bulk water and sewerage infrastructure. Overstrand Municipality practices the following planned and unplanned preventative and corrective maintenance, as summarised in the table below.

Table C.7.1: Types of Planned and Unplanned Preventative and Corrective Maintenance Implemented by Overstrand Municipality

Design-out Maintenance: Design-out Maintenance originates on the drawing board and is aimed at improving the operation, reliability or capacity of equipment. The engineer follows a life cycle approach to infrastructure development.	
Preventative Maintenance: Preventative maintenance is based on planning. For example, breakdowns at a plant can be reduced to a minimum if it is planned that all wearing parts are to be replaced before they fail.	Systematic (Periodic Maintenance): Systematic maintenance is periodic maintenance where the servicing of equipment takes place at regular intervals, either in accordance with a time schedule or on the basis of predetermined units of use, to eliminate possible causes of failure before a breakdown occurs. Systematic maintenance requires a servicing schedule, which is based on the manufacturer's guidelines for equipment. Condition-based (Predictive) Maintenance: Condition-based maintenance is predictive maintenance based on regularly inspecting equipment and infrastructure in order to assess the state of wear and tear. Any failures that are observed, complemented by the findings of the programmed inspections and checks, are then dealt with through corrective action, so as to avoid breakdowns or the deterioration of a condition that could pose a safety hazard.
Corrective or Breakdown Maintenance: It is important to work methodically to keep repair time as short as possible. Good work preparation, use of correct (and well maintained) tools and equipment, and gathering and processing of all data relevant to the repairs helps to avoid downtime, eliminate mistakes and improve operational conditions.	Planned (Scheduled Repairs) Unplanned repairs guided by Troubleshooting: Troubleshooting is used when poor condition causes either total or partial stoppages, or when operations take place under intolerable conditions.

Overstrand Municipality's operation and maintenance assessments and plans for their water and sewerage infrastructure are indicated in the table below.

Table C.7.2: Overstrand Municipality's Operation and Maintenance Assessments and Plans

Element	Assessment Criteria	Status Quo
Resources		
Staff	Sufficient staff numbers. Competency level of staff at all levels. Level of service provided by staff. Empowerment and training (Adequately trained for position, Safety regulation and Commitment). Responsibility allocation (organisational structure) and acceptance thereof.	Adequate: The Contractor appointed for the Water and Wastewater Bulk Works Contract ensures that the number of Process Controllers at the WTWs and WWTWs are adequate and comply with the new Regulation 3630 requirements. Workplace Skills Programme is compiled annually to ensure adequate training of staff.
External Resources	Need for external resource providers. Competency level and value for money. Management and control over these providers.	Adequate: Section 78 Assessment Process was completed to appoint the Contractor for the Bulk Works Contract. The Contract is adequately managed by the Engineering Planning Department and the reticulation networks by the Operational Services Department.
Spare Parts	Adequate materials provisioning. Store management (Sufficient stock kept, stock control and delivery time).	Adequate: Contractor of Bulk Works Contract ensure adequate spare parts are available. Monitored by the Engineering Planning Department and managed by the Operational Services Department for the reticulation networks.
Tools and Equipment	Adequate tools and equipment provided. Control and maintenance.	Adequate: Contractor of Bulk Works Contract ensure adequate tools and equipment. Monitored by the Engineering Planning Department and managed by the Operational Services Department for the reticulation networks.
Budget	Adequate budget provided. Budget control. Identification and documentation of needs. Budget preparation and motivation.	Adequate: Required Financial Strategies, Policies and Systems are in place to ensure proper budget control.

Table C.7.2: Overstrand Municipality's Operation and Maintenance Assessments and Plans		
Element	**Assessment Criteria**	**Status Quo**
Information		
Manuals	Existence of manuals (operation / maintenance or manufacturer). Record keeping / safekeeping and control. Utilisation of manuals by staff.	Adequate: O&M Manuals are in place for the bulk water and sewerage infrastructure. These Manuals are also used by the Process Controllers at the treatment plants.
Asset Register	Existence of an asset register. Maintenance / updating of asset register. Accessibility of information. Control over assets. Stock taking.	Adequate: An up-to-date Asset Register is in place, which include all the water and sewerage infrastructure. CRC, DRC, RUL, Age and Condition Gradings are included in the Asset Register. Asset Register is updated annually.
As-built Information	Existence of as-built drawings. Existence of important reports e.g. design reports etc. Record keeping / safekeeping and control. Accessibility of information. Updating of records.	Adequate: As-built information is available for all water and sewerage infrastructure. The information is also included in the IMQS of the Municipality. The information is regularly updated when the Water and Sewer Master Plans are updated.
Tools and Equipment	Existence of information on tools and equipment. Record keeping / safekeeping and control. Accessibility of information.	Adequate: Managed by the Contractor appointed for the Bulk Works Contract. Monitored by the Engineering Planning Department and managed by the Operational Services Department for the reticulation networks.
Contingency and Safety Plans	Compliance to safety requirements. Safety equipment and maintenance thereof. Existence of safety plan where required. Existence of contingency plan where required.	Adequate: Water Safety Plan and W_2RAP are in place. Annual WTW and WWTW Process Audits are also done. Incident Management Protocols, as included in the Water Safety Plan and W_2RAP, are followed by the personnel.
Activity Control and Management		
Procedures	Existence of procedures for all activities. Existence of policies – standardisation, quality, operational and maintenance, etc. Correctness of procedures – if in place.	Adequate: Required Procedures and Policies are in place. Managed by the Engineering Planning and Operational Services Department.
Record Keeping	Existence of record keeping system. Process of data. Actions activated.	Adequate: Record keeping is comprehensive, with all the required information for the WSDP and Water Services Audit Report kept up to date. Contract for the Bulk Works Contract also ensure that all the required information is recorded, as stipulated in the Contract. The information is linked to KPIs with relevant penalties for non-compliance.
Quality Controls	Quality management plan. Quality assurance. Quality control (Inspections, Control charts, trend analysis). Process adjustment and rework. Quality improvement.	Adequate: Required quality control mechanisms are in place to ensure high quality of materials and to ensure that all work carried out on the water and sewerage infrastructure is of a high quality. The Engineering Planning and Operational Services Department monitors all work carried out by Consultants and Contractors.
Risk Management	Risk management planning. Risk identification. Risk probability and impact assessment. Risk response planning. Risk monitoring and control.	Adequate: Required Risk Management Protocols are in place, which is followed by the personnel. Potential risks/incidents and control measure to reduce or manage these risks were identified as part of the Water Safety Plan and W_2RAP processes.
Reporting	Production and activity reporting (Completeness, evaluation and action activation). Management reporting (Completeness and evaluation and action activation). Performance monitoring.	Adequate: The existing Bulk Works Contract and the Engineering Planning and Operational Services Department's own monthly reporting ensure adequate reporting. A SDBIP is also in place, linked to specific water and sanitation KPIs, which allows for proper performance monitoring.

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

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

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

A budget of approximately 2% of the total asset value per annum should be allocated towards the replacement of existing infrastructure. In the case of the operations and maintenance of the systems, a budget of approximately 1% to 2% of the value of the system is typically required to ensure that the systems remain in good condition. The table below gives an overview of the CRC and CV of the water and sewerage infrastructure included in Overstrand Municipality's Asset Register (June 2025). The recommended budgets for the replacement of the existing infrastructure and the operation and maintenance of the existing infrastructure, based on the CRC, are also indicated.

Table C.7.3: Recommended Budgets for the Replacement and the Operation and Maintenance of the existing Water and Sewerage Infrastructure.

Asset Type	Asset Register June 2025		CRC (Escalated from WSDP and Master Plans)	Required Annual Replacement Budget	Required Annual O&M Budget	Overstrand Actual O&M Expenditure
	CRC	CV		2.00%	1.50%	2024/2025
Dams	R11 119 399	R4 253 604	R16 813 668	R336 273	R252 205	R21 710 206
Boreholes	R11 161 486	R14 305 618	R16 371 801	R327 436	R245 577	
Bulk Water Pipelines	R123 598 903	R43 251 078	R352 243 697	R7 044 874	R5 283 655	
Pump Stations	R49 252 052	R13 510 440	R55 023 796	R1 100 476	R825 357	
Reservoirs	R120 153 764	R61 214 416	R376 723 125	R7 534 463	R5 650 847	
Water Reticulation Pipelines	R672 015 685	R258 430 535	R1 331 799 570	R26 635 991	R19 976 994	
Buffels River WTW	R13 813 820	R3 956 784	R110 000 000	R2 200 000	R1 650 000	
Kleinmond WTW	R27 568 183	R9 719 158	R116 000 000	R2 320 000	R1 740 000	
Preekstoel WTW	R78 510 492	R57 225 910	R760 000 000	R15 200 000	R11 400 000	
Franskraal New WTW	R36 298 367	R16 219 659	R130 000 000	R2 600 000	R1 950 000	
Franskraal Old WTW	R20 036 738	R2 167 076	-	-	-	
Baardskeerdersbos WTW	R6 724 089	R2 928 069	R3 700 000	R74 000	R55 500	
Pearly Beach WTW	R8 154 514	R6 153 849	R28 800 000	R576 000	R432 000	
De Kelders WTW	R18 982 042	R6 883 141	R32 000 000	R640 000	R480 000	
Sub Total Water	**R1 197 389 533**	**R500 219 337**	**R3 329 475 657**	**R66 589 513**	**R49 942 135**	**R21 710 206**
Sanitation Pump Stations	R36 815 888	R34 542 677	R58 927 375	R1 178 548	R883 911	R19 565 569
Sewer Reticulation Pipelines	R417 612 440	R309 663 146	R1 193 406 846	R23 868 137	R17 901 103	
Stanford WWTW	R18 563 529	R19 481 113	R30 000 000	R600 000	R450 000	
Hermanus WWTW	R75 734 100	R51 665 078	R300 000 000	R6 000 000	R4 500 000	
Hawston WWTW	R13 438 372	R3 489 222	R17 500 000	R350 000	R262 500	
Kleinmond WWTW	R13 430 196	R51 855 541	R50 000 000	R1 000 000	R750 000	
Gansbaai WWTW	R34 135 896	R7 041 861	R50 000 000	R1 000 000	R750 000	
Pearly Beach WWTW	R11 060 449	R6 531 578	R6 475 000	R129 500	R97 125	
Sub Total Sewerage	**R620 790 871**	**R484 270 215**	**R1 706 309 221**	**R34 126 184**	**R25 594 638**	**R19 565 569**
Total Water and Sewerage	**R1818 180 405**	**R984 489 553**	**R5 035 784 878**	**R100 715 698**	**R75 536 773**	**R41 275 775**

Most of the major replacement of old water and sewerage infrastructure in Overstrand Municipality is done through the Municipality's annual capital budget. The capital budget however also includes new infrastructure. The table below gives an overview of the total historical water and sewerage capital expenditure for the last five financial years.

Table C.7.4: Historical Water and Sewerage Capital Expenditure

Infrastructure	24/25	23/24	22/23	21/22	20/21
Water	R33 097 110	R29 091 572	R31 607 552	R36 630 152	R34 573 765
Sewerage	R43 627 942	R39 441 838	R31 123 018	R40 005 632	R30 513 335
Total	**R76 725 052**	**R68 533 410**	**R62 730 570**	**R76 635 784**	**R65 087 100**

A **pipe replacement study** was performed for Overstrand Municipality's entire water distribution system (October 2019). The project entailed the verification of system data, establishment of a computer model for the pipe replacement network, performing an analysis and reporting. The pipe replacement potential was determined for each of the pipelines in the water distribution systems by assessing the likelihood of failure (LF) and the consequence of failure (CF). The independent factors and their weight factors used are summarised in the tables below.

Table C.7.5: The Independent Factors and the Weight Factors used to determine the Water Pipe Replacement Potential

Likelihood of Failure Property	Weight	Weight (%)	Consequence of Failure Property	Weight	Weight (%)
Nominal diameter (mm)	6	15.38%	High cost to consumer due to high water pressure (m)	5	11.1%
Reserve water pressure ratio	5	12.82%	High cost to consumer due to flow (l/s)	6	13.3%
Catalogue remaining useful life (yr)	3	7.69%	Extended non-supply over time	0	0.0%
Master Plan Item	6	15.38%	High repair cost	7	15.6%
Assessed condition	0	0.0%	Flooding due to geography	8	17.8%
Failure frequency (breaks/km/yr)	11	28.21%	Strategic location	9	20.0%
Leakage volume (l/min/km)	2	5.14%	Network redundancy (l/s)	10	22.2%
Undesired material	6	15.38%	Pavement management system alignment	0	0.0%
Geology	0	0.0%			
		100.0%			100.0%

The total pipe replacement potential was calculated for each pipeline as an index

PRP = LF x CF (In the range of 1 to 25)

The replacement value for the top 200 pipes to be replaced in Overstrand Municipality is R19.849 million. The location of pipe failures should be recorded with accurate GPS coordinates or with the Wadiso link number as was done for the 2016/2017 and 2017/2018 financial years. It is recommended that pipe replacement in Overstrand Municipality is performed in accordance with the PRP values. Pipes with the highest PRP values should be considered to be replaced first. The table below gives an overview of these pipes.

Table C.7.6: Top Two Hundred Water Pipes in Overstrand Municipality's Water Distribution Systems to be Replaced based on PRP (Pipes with PRP > 98.99%)

Area	System	Length (m)	Replacement Cost
Buffels River	Buffels River	920.61	R816 310-42
Buffels River - Pringle Bay		4 872.24	R2 929 622-88
Buffels River - Rooi Els		329.26	R195 248-58
Buffels River - Sunny Seas PRV 1 zone		193.80	R114 921-99
Buffels River - Sunny Seas PRV 2 zone		248.31	R147 250-55
Buffels River - Sunny Seas Reservoir zone		668.28	R396 292-05
Buffels River - Voorberg PRV zone		1 712.85	R1 104 430-84
Buffels River - Voorberg Reservoir zone		1 485.15	R1 588 544-05
Kleinmond PRV	Kleinmond	1 037.78	R642 228-50

Table C.7.6: Top Two Hundred Water Pipes in Overstrand Municipality's Water Distribution Systems to be Replaced based on PRP (Pipes with PRP > 98.99%)			
Area	**System**	**Length (m)**	**Replacement Cost**
Kleinmond Reservoir		1 749.91	R1 109 588-88
Greater Hermanus	Greater Hermanus	3 627.30	R8 142 925-53
Greater Hermanus - Hawston		138.55	R82 160-16
Greater Hermanus - Hermanus		842.30	R558 226-59
Greater Hermanus - Mount Pleasant		88.75	R52 627-91
Greater Hermanus - Northcliff		69.27	R41 075-97
Greater Hermanus - Onrus		268.91	R159 463-36
Greater Hermanus - Sandbaai		149.84	R102 108-21
Greater Hermanus - Vermont		222.68	R374 125-86
Greater Hermanus - Voëlklip HL		311.17	R252 113-49
Greater Hermanus - Voëlklip LL		206.77	R122 614-32
Stanford PRV	Stanford	27.70	R16 428-17
Stanford reservoir		83.07	R45 271-64
Greater Gansbaai - De Kelders	Greater Gansbaai	1 430.48	R848 276-87
Greater Gansbaai - Franskraal		11.67	R6 921-83
Total		**20 696.65**	**R19 848 778-66**

C.8. Water Resources

Overstrand Municipality experienced severe droughts over the periods 2010 to 2011 and 2015 to 2017, with some relief during the winter months of the following years. The droughts reduced the safe yields of the Municipality's own existing surface and groundwater resources. The Municipality therefore continued with the implementation of various WC/WDM measures to lower the current and future water requirements and investigations of augmentation options for the existing water resources.

Future water requirement projection models were developed for each of the towns within Overstrand Municipality's Management Area, which are included in Annexure C. IWA Water Balances with graphs of the total water requirements (bulk raw water volumes, system input volumes and billed metered consumption), peak month factors, annual treatment losses, NRW and water losses per town and water usage per sector are included in Annexure A.

The future water requirement projection models include the future projections up to 2049 and were calibrated by using the historical IWA Water balance data. The percentage of NRW was determined for each of the distribution systems and growth in future water requirement was based on agreed population and growth figures.

Table C.8.1: Projected Future Water Requirements and Yield / Licence Surplus / Shortfall based on WSDP Model						
Distribution System	**Projection**	**POJECTED FUTURE WATER REQUIREMENTS (Ml/a)**				
		2029	**2034**	**2039**	**2044**	**2049**
Buffels River	2.5% Annual Growth	878.652	994.114	1 124.748	1 272.550	1 439.773
	3.5% Annual Growth	922.357	1 095.471	1 301.076	1 545.270	1 835.296
	WSDP Model	**878.887**	**1 035.919**	**1 227.165**	**1 460.613**	**1 746.190**
	Yield surplus / shortfall	**838.113**	**681.081**	**489.835**	**256.387**	**29.190**
Kleinmond	2.5% Annual Growth	1 210.321	1 369.367	1 549.313	1 752.905	1 983.251
	3.5% Annual Growth	1 270.524	1 508.984	1 792.199	2 128.571	2 528.074
	WSDP Model	**1 076.385**	**1 184.632**	**1 310.077**	**1 455.723**	**1 625.176**
	Yield surplus / shortfall	**1 512.985**	**1 404.738**	**1 279.293**	**1 133.647**	**964.194**
Greater Hermanus	3.0% Annual Growth	6 224.534	7 215.941	8 365.254	9 697.622	11 242.201
	4.0% Annual Growth	6 532.621	7 947.932	9 669.874	11 764.881	14 313.776
	WSDP Model	**6 492.206**	**7 820.562**	**9 472.441**	**11 532.394**	**14 107.922**
	Licence surplus / shortfall	**492.206**	**1 820.562**	**3 472 441**	**5 532 394**	**8 107 922**
Stanford	2.5% Annual Growth	714.106	807.946	914.117	1 034.239	1 170.146

Table C.8.1: Projected Future Water Requirements and Yield / Licence Surplus / Shortfall based on WSDP Model						
Distribution System	Projection	POJECTED FUTURE WATER REQUIREMENTS (Ml/a)				
		2029	2034	2039	2044	2049
	3.5% Annual Growth	749.627	890.322	1 057.423	1 255.887	1 491.600
	WSDP Model	**691.619**	**777.229**	**880.453**	**1 004.444**	**1 153.072**
	Licence surplus / shortfall	**908.381**	**822.771**	**719.547**	**595.556**	**446.928**
Greater Gansbaai	3.0% Annual Growth	2 104.125	2 439.258	2 827.769	3 278.159	3 800.284
	4.0% Annual Growth	2 208.270	2 686.698	3 268.779	3 976.970	4 838.592
	WSDP Model	**2 012.867**	**2 385.593**	**2 845.820**	**3 415.980**	**4 124.523**
	Yield surplus / shortfall	**755.114**	**382.388**	**77.839**	**647.999**	**1 356.542**
Pearly Beach	2.5% Annual Growth	212.779	240.740	272.376	308.168	348.664
	3.5% Annual Growth	223.363	265.286	315.076	374.212	444.446
	WSDP Model	**218.535**	**268.457**	**331.916**	**412.893**	**516.588**
	Yield surplus / shortfall	**88.365**	**38.443**	**25.016**	**105.993**	**209.688**
Baardskeer-dersbos	2.5% Annual Growth	24.546	27.771	31.421	35.550	40.221
	3.5% Annual Growth	25.767	30.603	36.347	43.168	51.271
	WSDP Model	**21.048**	**21.954**	**22.958**	**24.078**	**25.336**
	Yield surplus / shortfall	**68.952**	**68.046**	**67.042**	**65.922**	**64.664**
Buffeljags Bay	2.5% Annual Growth	9.142	10.343	11.702	13.240	14.980
	3.5% Annual Growth	9.597	11.398	13.537	16.077	19.095
	WSDP Model	**6.509**	**5.302**	**4.499**	**3.927**	**3.499**
	Yield surplus / shortfall	**21.874**	**23.080**	**23.884**	**24.456**	**24.884**

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

Table C.8.2: Years in which the Annual Water Requirement will Exceed the Sustainable Yields / License Volumes from the Various Resources				
Distribution System	Total Sustainable Yield (Y) / License Volume (L) (x 10^6 m^3/a)	Annual Growth on 2024/2025 requirement (2.5% or 3.0%)	Annual Growth on 2024/2025 requirement (3.5% or 4.0%)	WSDP Projection Model
Buffels River	1.717 (Y)	>2049 (2.5%)	2047 (3.5%)	2048
Kleinmond	2.589 (Y)	>2049 (2.5%)	>2049 (3.5%)	>2049
Greater Hermanus	6.000 (L) *	2027 (3.0%)	2026 (4.0%)	2026
Stanford	1.600 (L)	>2049 (2.5%)	>2049 (3.5%)	>2049
Greater Gansbaai	2.768 (Y)	2038 (3.0%)	2034 (4.0%)	2038
Pearly Beach	0.307 (Y)	2043 (2.5%)	2038 (3.5%)	2037
Baardskeerdersbos	0.090 (Y)	>2049 (2.5%)	>2049 (3.5%)	>2049
Buffeljags Bay	0.028 (Y)	>2049 (2.5%)	>2049 (3.5%)	>2049

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

Source Studies: Overstrand Municipality continues with their groundwater monitoring programmes for Hermanus (Gateway and Hemel & Aarde), Stanford and Baardskeerdersbos.

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

Greater Hermanus Area: The Gateway, Camphill and Volmoed wellfields were developed by Overstrand Municipality as additional groundwater resources for the greater Hermanus Area. These boreholes are in production and the Municipality is maintaining their Groundwater Monitoring Programmes for all their wellfields, in order to comply with the License conditions. The License for the next phase of the Camphill and Volmoed wellfields was also received from the DWS. The Municipality obtained environmental authorisation for the augmentation of the Hemel & Aarde (Camphill and Volmoed well fields) boreholes and two new production boreholes were commissioned in 2024/25.

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

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

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

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

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

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

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

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

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

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

option, while it will trigger a need for environmental authorisation from the Department of Environmental Affairs and Development Planning (DEA & DP). The latter will be difficult to obtain;

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

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

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

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

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

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

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

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

- Sea water quality tests: The collection of at least twelve (12) water samples over a twelve (12) month period was proposed and to have these samples analysed comprehensively by an accredited laboratory (completed).

- Renewable energy options: An investigation into available renewable energy options to reduce the impact of the electricity price on the overall operational cost of the desalination plant was explored. Various renewable energy options such as wind, hydro, biomass, wave energy and solar energy were investigated. The suitability of applying these renewable energy options to power a SWRO plant was considered with the following conclusions:

  - Wind technology is not recommended due to the length and complexity of permitting and uncertainty around technology options for small scale self-generation.
  - Hydro technology is not recommended due to high site establishment and capex costs.
  - Biomass digesters are a possible innovative solution; however, the quantity and quality of the abalone farm waste may make this technology unreliable.
  - Whilst there has been tremendous growth in wave & tidal energy over the last decade, it is not yet mature enough to move forward in securing a reliable power supply. The construction costs are simply too high for it to be competitive with well-established renewable energy options such as wind or solar.

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

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

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

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

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

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

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

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

Pearly Beach: Overstrand Municipality is committed to manage the dam efficiently. Other future resource options include groundwater development and the possible Kraaibosch scheme. An investigation into potential groundwater use in Pearly Beach was completed.

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

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

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

Table C.8.3: Potential Future Water Resources for the Various Towns (Summary of DWS's All Towns Reconciliation Strategies)

Distribution System	Recommended Summary Options
Betty's Bay, Rooi Els and Pringle Bay	**The current water sources have adequate supply to cater for the medium and longer term future water requirements. The following sources are identified as potential sources to augment the water supply (In order of priority and implementation sequence):** • Continue with the implementation of the WC/WDM Strategy and measures. • Groundwater development in the TMG Aquifer. • Raising of Buffels River dam wall • Abstraction from the Palmiet River • Abstraction from the Rooi Els River
Kleinmond	**The current water sources have adequate supply to cater for the medium and longer term future water requirements. The following sources are identified as potential sources to augment the water supply in the future if required (In order of priority and implementation sequence):** • Continue with the implementation of the WC/WDM Strategy and measures. • Increase allocation from the Palmiet River, when required. • **Regional scheme with Overberg Water for possible bulk supply from the Theewaterskloof Dam.**

Table C.8.3: Potential Future Water Resources for the Various Towns (Summary of DWS's All Towns Reconciliation Strategies)	
Distribution System	**Recommended Summary Options**
Hermanus	**Hermanus will experience a shortfall by 2030 in water supply under all growth scenarios. This will increase to 2.874 million m^3/a by 2040 under the low-growth scenario and to 8.632 million m^3/a under the high-growth scenario. The following sources are identified as potential sources to augment the water supply in the future if required (In order of priority and implementation sequence):** • Full implementation of the WC/WDM Strategy and measures. • **Develop groundwater to its full potential (Licenced volumes).** • **Desalination of seawater.** • **Regional scheme with Overberg Water for possible bulk supply from the Theewaterskloof Dam or the Palmiet River.** • Direct and indirect potable water re-use.
Stanford	**The current water sources have adequate supply to cater for the medium and longer term future water requirements, if the Municipality continues with the full implementation of their WC/WDM Strategy. The following sources are identified as potential sources to augment the water supply in the future (In order of priority and implementation sequence):** • Continue with the implementation of the WC/WDM Strategy and measures. • Further Kouevlakte Wellfield development, if required.
Greater Gansbaai	**The current water sources have adequate supply to cater for the medium and longer term future water requirements. The Kraaibosch Dam will provide for Gansbaai until 2030. The following sources are identified as potential sources to augment the water supply in the future if required (In order of priority and implementation sequence):** • Continue with the implementation of the WC/WDM Strategy and measures. • Groundwater development in the TMG Aquifer. • Re-use of water
Pearly Beach	**The current water sources have adequate supply to cater for the medium and longer term future water requirements up to 2030. The following sources are identified as potential sources to augment the water supply in the future if required (In order of priority and implementation sequence):** • Continue with the full implementation of the WC/WDM Strategy and measures. • Groundwater development, if required.
Baardskeer-dersbos	**The current water sources have adequate supply to cater for the medium and longer term future water requirements. If the town may require alternative water resource options in the future, the following sources were identified as potential sources to augment future water requirements (In order of priority and implementation sequence):** • Continue with the full implementation of the WC/WDM Strategy and measures. • Further groundwater development, if required.
Buffeljags Bay	**The current water sources have adequate supply to cater for the medium and longer term future water requirements. If the town may require alternative water resource options in the future, the following sources are identified as potential sources to augment future requirements (In order of priority and implementation sequence):** • Continue with the full implementation of the WC/WDM Strategy and measures. • Further groundwater development, if required.

Industrial Effluent Monitoring:

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

C.9. Water Services Institutional Arrangements and Customer Services

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

Overstrand Municipality updated their WSDP during the 2021/2022 financial year. The WSDP is for the 2022-2027 five-year WSDP cycle and was approved by Council on the 31st of May 2022. The WSDP IDP Water Sector Input Report was also compiled as part of the updating of the WSDP. An updated WSDP IDP Water Sector Input Report was compiled early in 2024, which was approved by Council with the Municipality's 2024/2025 IDP. The Municipality updated their existing Water Supply and Sanitation Services By-law during the 2020/2021 financial year. The updated Water Supply and Sanitation Services By-law was advertised for public comment, where after it was finalised and gazetted.

Overstrand Municipality continues to undertake basic public awareness programmes. The education of users where sanitation facilities are upgraded to waterborne systems is on-going. This is primarily focused on informing users of the appropriate use of and routine maintenance of such facilities. Specific awareness interventions are also targeted at primary schools.

The approved organogram for the municipality had 1 039 filled and 225 vacant posts at the end of June 2025, resulting in a vacancy rate of 17.8% for the 2024/2025 financial year. The actual positions filled, and the vacancy rates are indicated in the table below by post level and by functional level for the last three financial years.

Table C.9.1: Positions Filled and Vacancy Rates of Overstrand Municipality for the Last Three Financial Years

Per Post Level	2024/2025			2023/2024			2022/2023		
	Filled	Vacant	% Vacant	Filled	Vacant	% Vacant	Filled	Vacant	% Vacant
MM &MSA section 57 & 56	4	3	42.9%	7	0	0.0%	6	1	14.3%
Middle management **(T14-T19)**	58	12	17.1%	60	8	11.8%	62	6	8.8%
Admin Officers **(T4-T13)**	651	144	18.1%	680	81	10.6%	669	91	12.0%
General Workers **(T3)**	326	38	10.4%	340	24	6.6%	355	10	2.7%
Not Evaluated	-	28	-	-	-	-	-	-	-
Total	**1 039**	**225**	**17.8%**	**1 087**	**113**	**9.4%**	**1 092**	**108**	**9.0%**
Per Functional Level	**2024/2025**			**2023/2024**			**2022/2023**		
	Filled	**Vacant**	**% Vacant**	**Filled**	**Vacant**	**% Vacant**	**Filled**	**Vacant**	**% Vacant**
Municipal Manager	21	15	41.7%	10	3	23.1%	10	3	23.1%
Management Services	65	20	23.5%	53	1	1.9%	49	5	9.3%
Financial Services	103	39	27.5%	103	11	9.6%	103	11	9.6%
Community Services	333	39	10.5%	641	49	7.1%	644	46	6.7%
Protection Services	149	39	20.7%	151	24	13.7%	150	25	14.3%
Infrastructure and Planning Services	321	59	15.5%	122	18	12.9%	128	12	8.6%
Economic Development Services	47	14	23.0%	7	7	50.0%	8	6	42.9%
Total	**1 039**	**225**	**17.8%**	**1 087**	**113**	**9.4%**	**1 092**	**108**	**9.0%**

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

to effectively plan and direct appropriate resources that will also enable DWS and the sector to provide more effective support.

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

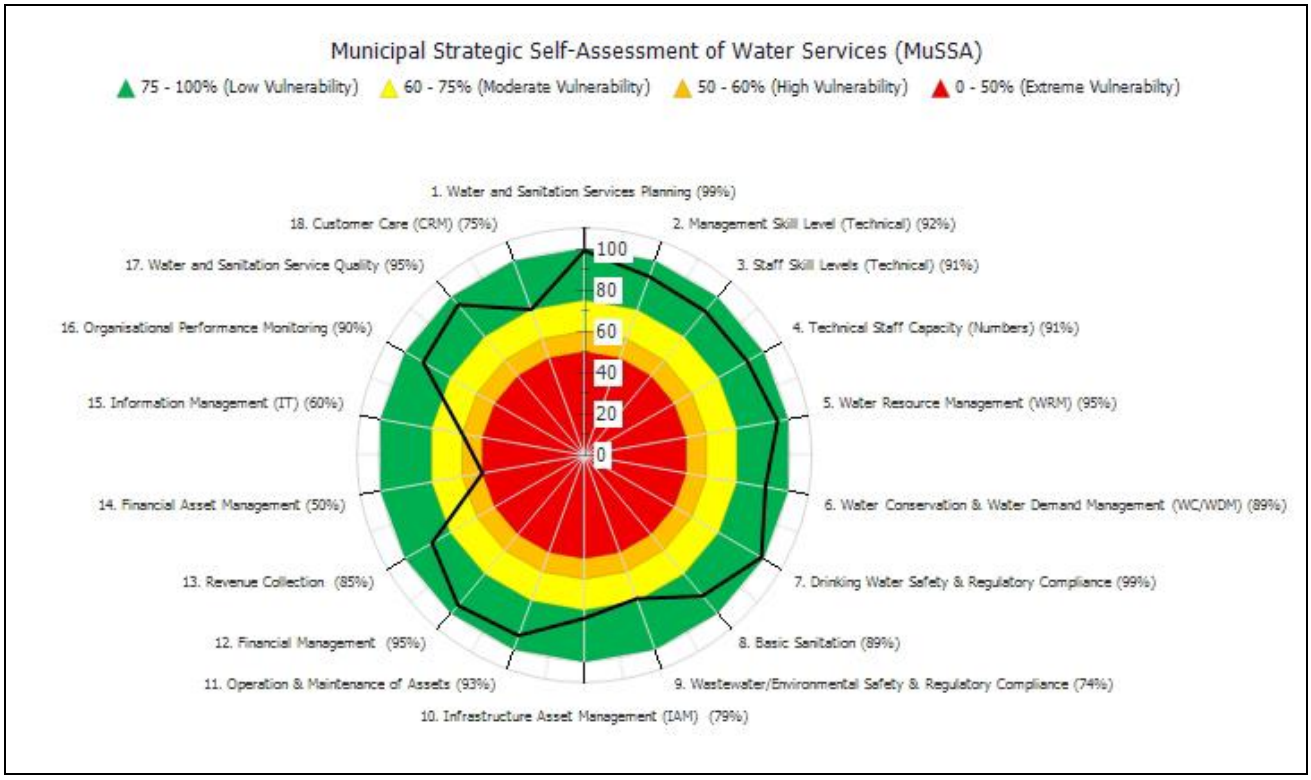


Figure C.9.1: Spider Diagram of the Vulnerability Levels of Overstrand Municipality for 2025

Overstrand Municipality's Vulnerability Index for 2025 was indicated as 0.21 "Low Vulnerability". The only area of concern evident from the 2025 assessment is Financial Asset Management (High Vulnerability, 50.0%).

Table C.9.2: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Overstrand Municipality

Section	Vulnerability
Water and Sanitation Service Quality • Critical business databases and documents (e.g. as-built drawings, records, manuals, agreements, billing/revenue collection, project and scheme management data, etc.) are current, maintained and stored in secure locations (on-site and off-site, both paper and electronic). • Customers have a functional, reliable and safe water supply system with sufficient quantity and flow, good quality and minimal interruptions. • All consumers served experience interruptions of less than 48 hours (at any given time) and a cumulative interruption time during the year of less than 15 days. • Households in your WSA experience water pressure problems (no flow/partial flow less than 10 litres / minute) (not to be confused with interruption to supply). • Customers have a functional, reliable, dignified and safe sanitation system with no blockages resulting in overflows that impact on the environment, including effective collection and treatment of faecal sludge.	**Low (95.0%)**
Customer Care • A functional customer service system manned by appropriate customer services representatives and using a complaints register, is in place to address complaints and appropriately inform customers of service interruptions, contamination of water, boil water alert, etc. • Regular municipal wide customer satisfaction surveys are conducted to determine customer satisfaction levels	**Low (75.0%)**

Table C.9.2: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Overstrand Municipality	
Section	**Vulnerability**
and inform the Customer Care Management Plan. • Please indicate what percentage of the reported water related complaints/callouts are acknowledged, including consumer response, within 24 hours. • Please indicate what percentage of the reported wastewater/sanitation related complaints/callouts are acknowledged, including consumer response, within 24 hours. • A comprehensive customer awareness programme (informing customers of water and wastewater system O&M activities, water quality, resource protection / pollution, reporting incidents / security concerns, etc.) is in place and implemented.	
Water and Sanitation Services Planning • Your appropriate water and sanitation services planning (e.g. WSDP) and associated master planning processes include and are aligned with appropriate Water and Sewage Master Plans, Spatial Development Framework, Water Safety Plans and Wastewater Risk Abatement Plans (W_2RAPs), and are aligned to your IDP and associated SDBIP targets. • You are implementing an up-to-date and adopted municipal water and sanitation services plan (e.g. WSDP). • Your current project list addresses existing needs / shortcomings identified through the WSDP and associated master planning process. • Project progress is monitored, tracked and reported to municipal top management / council and the Regulator (through the annual water and sanitation services report). • Projects identified through your various planning processes have been implemented in the last 3 years.	**Low (99.0%)**
Water Resource Management (WRM) • The recommendations and actions from the Reconciliation Strategies (Large Systems / All Towns) have been incorporated into your WSDP, master planning and IDP processes. • The metered quantity of water available from the resources is sufficient for your future WSA needs (at the stipulated level of abstraction and assurance of supply and considering possible climate change impacts) (i.e. no shortage in 10 years). • The quantity of water available from the resources is sufficient for your future WSA needs (at the stipulated level of assurance of supply) (i.e. no shortage in 10 years). • The source water quality is currently acceptable for its purpose. • The trend indicates a deteriorating source water quality.	**Low (95.0%)**
WC/WDM • Your WSA has developed a council approved WC/WDM Strategy, which includes a standard water balance (e.g. modified IWA). • Please indicate your percentage Non-Revenue Water (NRW) as per the modified IWA water balance. • System input volumes (bulk) to the WSA are accurately monitored using calibrated bulk meters (e.g. check metering). • Please indicate what percentage of all connections are metered and billed (residential and non-residential (commercial, industrial, etc.)) on a monthly basis. • Your WSA is implementing appropriate intervention programmes to reduce NRW (e.g. minimisation of night flows through pressure management, removal of unlawful connections, leak detection and repairs, consumer education / awareness).	**Low (89.0%)**
Drinking Water Safety and Regulatory Compliance • Please indicate your microbiological drinking- water quality compliance for E.Coli (or faecal coliforms) for the communities you are monitoring for the last 12 months. • ALL your supply schemes, WTWs, process controllers, monitoring programmes, sample points, laboratories, results, procedures, protocols, etc. are managed with a suitable Water Safety Planning framework. • Council have been made aware of high risk / critical water safety plan related issues (including those identified via the Blue Drop Certification programme) that require budget and auctioning, and these issues have been actioned (where applicable). • Sufficient funds have been made available to address all these identified water safety related issues. • Required corrective actions/remedial measures to address all these identified water safety related issues have been successfully implemented.	**Low (99.0%)**
Basic Sanitation • You have formal housing areas that are not fully serviced with sanitation infrastructure.	**Low (89.0%)**

Table C.9.2: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Overstrand Municipality	
Section	**Vulnerability**
• You have informal housing or rural areas that are not fully serviced with sanitation infrastructure. • You have a detailed plan and programme to provide safe sanitation to all households (including health and hygiene education and user awareness including Water, Sanitation and Health (WASH) aspects). • Your sanitation budget is appropriate for required sanitation programmes (implementation and O&M). • You are servicing your basic sanitation facilities (e.g. pit latrines) as per safe sanitation requirements (healthy, environmentally safe, structurally sound, regularly maintained, following faecal sludge management best practices).	
Wastewater / Environmental Safety and Regulatory Compliance • Please indicate your treated wastewater effluent compliance for COD for your (or your service provider's) WWTWs for the last 12 months. • ALL your WWTWs, process controllers, monitoring programmes, sample points, laboratories, results, procedures, protocols, etc. are managed with a suitable wastewater risk abatement framework. • Council have been made aware of all W_2RAP related issues (e.g. pollution incidents, Green Drop deficiencies) that require budget and auctioning, and these issues have been actioned (where applicable). • Sufficient funds have been made available to address all identified wastewater and environmental safety related issues. • Required corrective actions/remedial measures to address all identified wastewater and environmental safety related issues have been successfully implemented.	**Moderate (74.0%)**
Infrastructure Asset Management • You have an appropriate and up-to-date water and sanitation services technical Asset Register (includes asset name, location, condition, extent, remaining useful life, performance and risk). NOTE: This does only not refer to GRAP17 asset register requirements. • You have developed an appropriate Infrastructure Asset Management (IAM) Plan for your WSA. • You are implementing the IAM outcomes. • Budget allocated to implement IAM outcomes is sufficient and is being effectively spent. • You conduct annual technical assessments of your water and wastewater related systems (including sources, WTWs, WWTWs, pump stations, network, etc.) and implement required follow-up actions.	**Low (79.0%)**
Operation and Maintenance of Assets • Appropriate maintenance facility(ies) that is (are) secure and stocked with essential equipment (e.g. spare parts), plant and tools is (are) available. • Appropriate water and sanitation services infrastructure / equipment planned / preventative maintenance schedules are developed. • Appropriate planned / preventative maintenance is performed at all WTWs and associated reservoirs, pump stations and distribution networks. • Appropriate planned / preventative maintenance is performed at all WWTWs and associated collection systems and pump stations. • Please indicate your infrastructure repairs and maintenance costs as a function of total operating expenditure (%).	**Low (93.0%)**
Information Management • You have a developed, approved and implemented IT Master Systems Plan (e.g. covering 3-5 years) that addresses your IT business requirements. • You have a developed, approved and implemented ICT Technology Master Plan that addresses your current and future IT infrastructure requirements. • You have IT systems that support your full range of water and sanitation services business requirements (e.g. billing, GIS, customer care, O&M, asset management). • ICT service continuity – Adequate IT security exists with off-site back-ups / archiving of operation critical applications, databases, data, etc. routinely performed in terms of an IT disaster Recovery Plan. • You have sufficient budget and staff to keep key IT systems table and up to date as per IT policies and procedures.	**Moderate (60.0%)**
Organisational Performance Monitoring • Appropriate plans, policies and procedures to address Disaster Management / emergencies and other issues (safety, public participation, communication, etc.) are developed and implemented. NOTE: Although Disaster Management is a district function, LMs need to ensure they are aware of their associated roles and responsibilities and have developed a Disaster Management Framework.	**Low (90.0%)**

Table C.9.2: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Overstrand Municipality	
Section	**Vulnerability**
• An organisational performance management system is developed and implemented (i.e. effectively measure, monitor and track water and sanitation services performance indicators). • A municipal risk management framework is developed and implemented and includes monitoring and tracking of water and sanitation related risks. • Effective administration support is available to technical staff to assist with processing work orders, providing order numbers, handling correspondence, etc. • "Access to Basic Water and Sanitation Services" progress reports are frequently produced and presented to council for discussion, action and follow-up.	
Financial Management • Financial controls - Please state the audit opinion with regard to your last audit report on the financial statements. • Cash flow status – Please state your Cash / Cost Coverage Ratio (excluding Unspent Conditional Grants) • Your actual operating expenditure closely reflects your budgeted operating expenditure (i.e. Operating Expenditure Budget Implementation Indicator). • Your actual revenue closely reflects your budgeted operating revenue (i.e. Operating Revenue Budget Implementation Indicator). • Liabilities (Creditors) - Money is owed by your municipality to major / critical service providers (e.g. ESKOM, Water Board, largest contractors, etc.) for more than 30 days from receipt of invoice (NOTE: Ignore disputed invoices).	**Low (95.0%)**
Revenue Collection • Please indicate the frequency of actual consumer meter readings. • Net Surplus / Deficit – Please state your net surplus / deficit from water services activities for the last 12 months (NOTE: This question tests whether your WSA currently has fully cost reflective Water and Sanitation Tariffs, which take into account cost of maintenance and renewal of purification plants and networks and the cost of new infrastructure). • Revenue collections - Please state the revenue collection rate in respect to Water and Sanitation Services (%). • Revenue Growth – Please state your Water and Sanitation Services revenue growth for the last 12 months (%). • Grant dependency – Actual-operating revenue less operational grants / subsidies (e.g. equitable share) sufficiently covers actual operating expenditure.	**Low (85.0%)**
Financial Asset Management • Capital Expenditure (Municipal). Please state your municipal Capital Expenditure as a percentage of Total Expenditure (i.e. Total Operating Expenditure + Capital Expenditure). • Capital Expenditure (Water Services). Please state your Capital Expenditure on Water and Sanitation Services as a percentage of Total Capital Expenditure (Capital Expenditure (Municipal)). • Asset Renewal. Please state your Asset Renewal investment as percentage of Depreciation Costs. • Repairs and Maintenance. Please state your Repairs and Maintenance expenditure as a percentage of Property, Plant and Equipment, Investment Property (Carrying Value). • Grant funding of capital expenditure – Please state your reliance on grant funding.	**High (50.0%)**
Management Skill Level (Technical) • Your council approved technical management organisational organogram meets your business requirements, and key posts are filled (e.g. Technical Director, Water Services Manager, and Sanitation Services Manager). • You have sufficient technical management and technical support staff. • Technical management and technical support staff have the correct skills / qualifications and experience as per Job Description requirements (e.g. if Job Description requires Pr Eng, Pr Tech or CPM, the staff have these qualifications). • Managers and technical support staff regularly attend appropriate water and sanitation services skills development / training to support professionalisation. • Key technical managers (e.g. Section 56 and other Senior Management) have signed and monitored Performance Agreements.	**Low (92.0%)**
Staff Skill Levels (Technical) • WTWs are operated by staff with the correct skills / qualifications and experience (as per Regulation 2834). • WWTWs are operated by staff with the correct skills / qualifications and experience (as per Regulation 2834).	**Low (91.0%)**

Table C.9.2: Municipal Strategic Self-Assessment (MuSSA) of Water Services for Overstrand Municipality	
Section	**Vulnerability**
• Water system plumbers, mechanics and electricians have the correct skills / qualifications and experience. • Sewage system plumbers, millwrights, mechanics and electricians have the correct skills/qualifications and experience (including contractors / outsourced resources). • Staff regularly attend appropriate water services skills development / training (including safety) (e.g. ESETA courses).	
Technical Staff Capacity (Numbers) • Your council approved technical staff organisational organogram meets your business requirements, and posts are filled (i.e. Superintendent of WTWs / WWTWs and below). • WTWs are operated by the appropriate number of staff (as per Regulation 2834). • WWTWs are operated by the appropriate number of staff (as per Regulation 2834). • You have sufficient water and sewerage/sanitation network operations and repair staff/plumbers including contractors / outsourced resources (i.e. you have the appropriate number of staff). • An active mentoring/shadowing programme is in place where experienced staff train younger, inexperienced municipal staff.	**Low (91.0%)**

The Municipal personnel and the bulk water services contractor's personnel are continuously exposed to training opportunities, skills development and capacity building at a technical, operations and management level in an effort to create a more efficient overall service to the users. A Workplace Skills Plan is compiled every year and the specific training needs of the personnel, with regard to water and wastewater management are determined annually. The Actual training expenditure for the 2024/2025 financial year was R1.835 million. The following training was provided during the 2024/2025 financial year, as included in the Municipality's Workplace Skills Plan.

Table C.9.3: Training Provided during the 2024/2025 Financial Year (Workplace Skills Plan)				
LGSETA Strategic Focus Area	**Municipal Key Performance Area**	**Female Employed**	**Male Employed**	**Total**
Enhancing Good Governance, Leadership and Management Capabilities.	Good Governance and the linking of democracy.	20	27	47
Promoting Sound Financial Management & Financial Viability.	Municipal Financial Viability and Management.	29	30	59
Enhancing Infrastructure and Service Delivery.	Basic Service Delivery and Infrastructure Development.	23	156	179
Enhancing Municipal Planning.	Municipal Transformation and Institutional Development.	19	104	123
Promoting Spatial Transformation and Inclusion.	Sustainable Local Economic Development	0	0	0
Total		**91**	**317**	**408**

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.

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

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

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

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

Water Services Quality:

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

Vacuum Tanker Service:

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

Our Service Standards: We will

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

- Requests for vacuum tanker services received by the Administration after 15:00 to be executed after 16:30 on the same day must receive preference and will be charged at the applicable after hour tariffs.

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

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

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

Table C.9.4: Queries/Complaints Responded within 24 Hours by the Various Departments for the last three financial years

Department	2024/2025			2023/2024			2022/2023		
	Total received	Completed within 24 hours	Percentage completed within 24 hours	Total received	Completed within 24 hours	Percentage completed within 24 hours	Total received	Completed within 24 hours	Percentage completed within 24 hours
Sewer	1 036	921	88.9%	978	942	96.3%	913	940	97.1%
Tankers	1 538	1 307	85.0%	-	-	-	647	890	72.7%
Water	2 574	2 228	86.6%	1 421	1 350	95.0%	1 260	1 314	95.9%

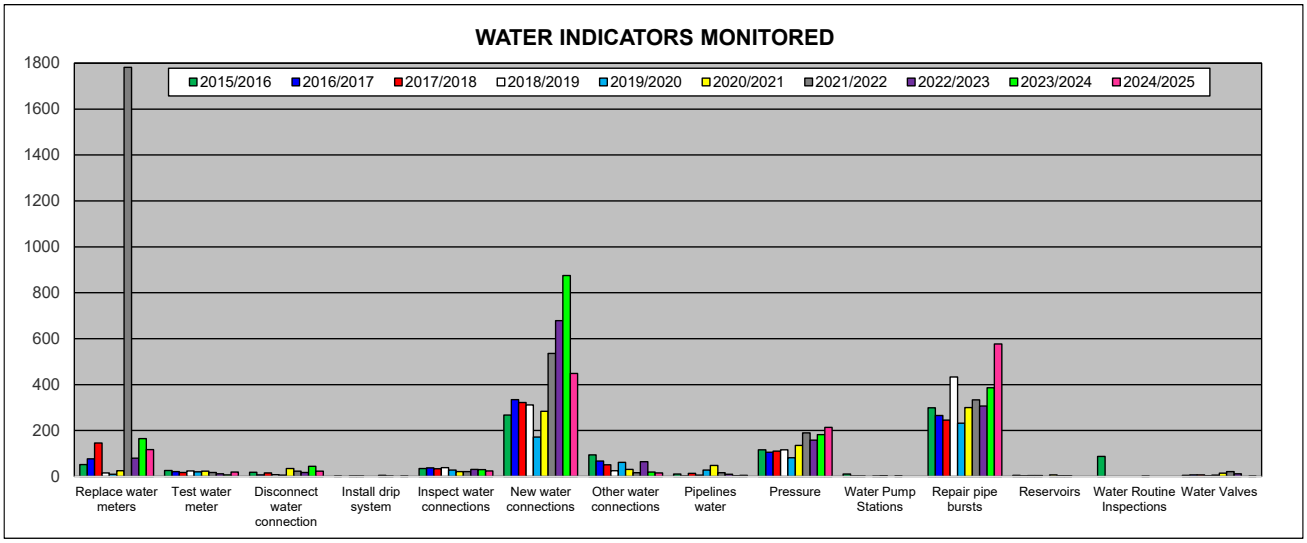


Figure C.9.2: Water Indicators Monitored by Overstrand Municipality

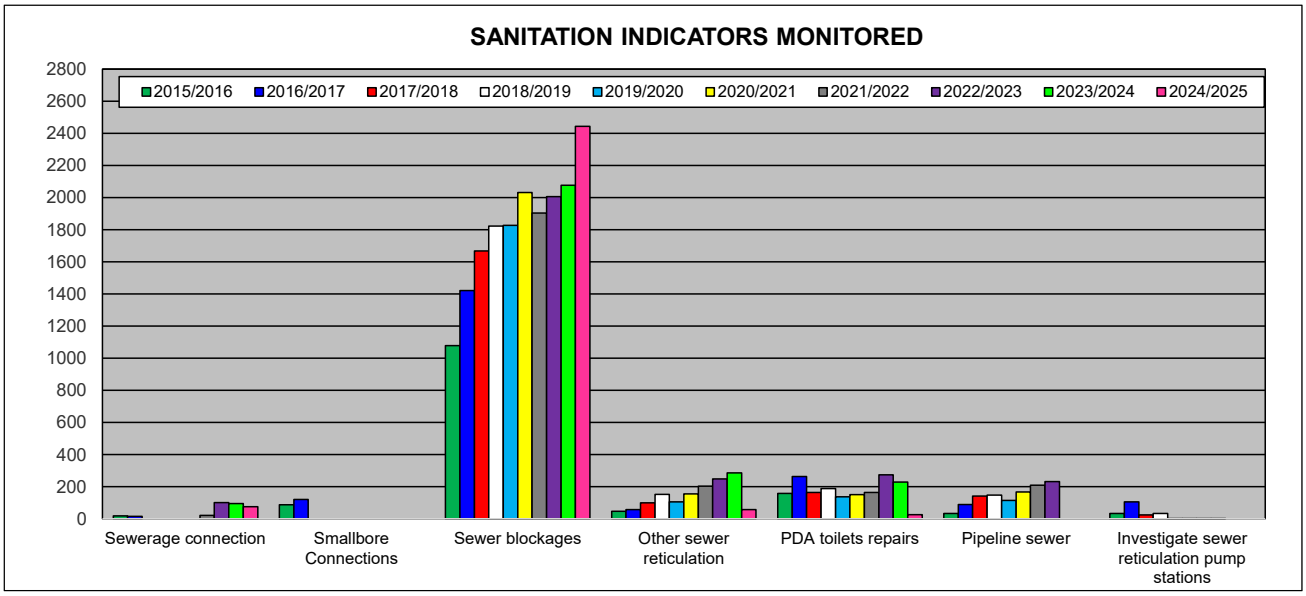


Figure C.9.3: Sanitation Indicators Monitored by Overstrand Municipality

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

Table C.9.5: Water and Sanitation Indicators Monitored by Overstrand Municipality with regard to Customer Services and Maintenance Work

Service	Definition	Gansbaai					Hermanus					Kleinmond					Stanford					Overstrand Total				
		24/25	23/24	22/23	21/22	20/21	24/25	23/24	22/23	21/22	20/21	24/25	23/24	22/23	21/22	20/21	24/25	23/24	22/23	21/22	20/21	24/25	23/24	22/23	21/22	20/21
Sewerage connection	Provision of connection or inspection of existing connections	5	7	15	7	-	70	-	85	80	12	0	-	4	1	-	1	3	2	2	-	76	95	101	22	-
Smallbore Connections	Test new tanks smallbore	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer blockages	Repair blockages on main sewer pipelines up to connection points	115	137	130	79	83	1 860	-	1 610	1 515	1 481	394	273	294	291	244	75	57	67	53	67	2 444	2 077	2 006	1 904	2 032
Sewer spillages	Clean-up of sewer spillages	3	2	-	-	-	195	-	222	-	-	4	5	-	-	-	1	2	-	-	-	203	231	-	-	-
Other sewer reticulation	Any other sewer reticulation inspections	15	9	9	1	2	42	-	276	239	199	-	1	-	3	1	1	-	-	1	1	58	286	248	204	156
PDA toilets repairs	Previously disadvantaged toilets repaired	7	21	161	128	94	15	-	171	79	16	3	37	33	20	1	1	-	1	1	4	26	229	274	165	151
Pipeline sewer	Installation of sewer pipelines or repair of pipelines	-	-	3	1	-	-	-	-	229	206	-	-	-	-	1	-	-	-	2	1	-	-	232	209	167
Investigate sewer reticulation pump stations	Work carried out at sewer pump stations	-	-	1	1	-	-	-	-	-	-	-	-	-	1	1	-	-	1	-	-	-	-	2	2	1
Replace water meters	Replace water meters	68	17	19	-	5	8	-	6	24	1 623	11	132	21	159	8	30	10	15	-	7	117	165	79	1 782	25
Test water meter	Testing of water meter for accuracy	3	7	2	2	3	12	-	-	8	11	4	-	1	3	2	-	-	-	1	-	19	7	11	17	23
Disconnect water connection	Disconnect supply	19	39	13	1	2	2	-	1	2	21	1	-	-	1	7	1	4	2	-	-	23	44	17	23	34
Install drip system	Installation and inspection of drip systems	-	-	-	2	-	-	-	-	-	-	-	-	1	-	-	1	-	-	3	-	1	-	1	5	-
Inspect water connections	Inspect connections	6	9	13	2	6	7	-	13	9	11	8	2	9	8	7	3	6	-	-	-	24	30	31	21	21
New water connections	New water connections	269	660	433	217	96	107	-	97	107	116	64	111	129	197	106	8	7	9	6	11	448	875	678	536	284
Other water connections	Inspections and work carried out at water connections	2	10	55	4	26	9	-	2	3	8	4	3	1	2	4	-	4	5	2	-	15	19	64	16	31
Pipelines water	Installation or repair of water pipelines	-	2	3	9	43	5	-	-	-	-	-	-	3	7	3	-	-	3	-	2	5	2	9	16	48
Pressure	Complaints with regard to pressure in the system	35	34	32	19	30	91	-	24	47	76	75	117	77	93	61	13	7	2	2	1	214	182	158	190	135
Water Pump Stations	Inspections and work carried out at water pump stations.	-	-	2	-	3	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-	2	-	3
Repair pipe bursts	Repair of burst water pipelines	77	51	13	13	11	151		85	44	15	316	241	243	298	297	33	9	7	7	10	577	386	307	333	267
Reservoirs	Inspection of reservoirs and work carried out at reservoirs	-	-	-	-	1	-	-	-	-	-	-	-	2	2	4	-	-	-	-	-	-	-	2	2	7
Water Routine Inspections	Any water related inspections	-	-	-	1	-		-	-	-	-		-	-	-	-		-	-	-	-	-	-	-	1	-
Water Valves	Inspection of valves and work carried out on valves	-	-	4	6	5	-	-	-	1	1	1	-	5	11	8	-	-	1	3	-	1	-	11	21	14

Access to safe drinking water is essential to health and is a human right. Safe drinking water that complies with the SANS:241 Drinking Water specification does not pose a significant risk to health over a lifetime of consumption, including different sensitivities that may occur between life stages. Overstrand Municipality is therefore committed to ensure that their water quality always complies with national safety standards.

The Water Safety Plans of Overstrand Municipality includes an Improvement / Upgrade Plan. The purpose of the Improvement / Upgrade Plan is to address the existing significant risks where the existing controls were not effective or absent. Barriers implemented by Overstrand Municipality against contamination and deteriorating water quality include the following:

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

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

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

D. APPROVAL AND PUBLICATION RECORD

This Annual WSDP Performance- and Water Services Audit Report is for the 2024/2025 Financial Year and is hereby approved for submission to the Minister of the Department of Water and Sanitation, the Minister for the Department of Cooperative Governance, the Western Cape Province, and to SALGA, as required by the Water Services Act, 1997. The Municipality will endeavour to publicise a summary of the report.

This report will be available for inspection at the offices of the municipality and is available on the Municipality's website.

RECOMMENDED:

Signature — Date: 20/10/2025
Name: Mr H Blignaut
Title: Principal Engineer: Civil Infrastructure Planning

Signature — Date: 20/10/2025
Name: Mr S Müller
Title: Chief Engineer: Infrastructure Services

APPROVED:

Signature — Date: 20 October 2025
Name: Dr. DGI O'Neill
Title: Municipal Manager

REFERENCES

- SA Census Data (2011), Community Profiles and SA Census 2022 Data.
- DWS's Annual Water Services Development Plan Performance- and Water Services Audit Report Template, August 2014.
- Revised Compulsory National Water and Sanitation Services Standards in terms of Section 9 (1) of the Water Services Act, Act No.108 of 1997, 6 June 2025, Gazette No.52814.
- DWS's 2023 Blue Drop Report.
- DWS's 2022 Green Drop Report and 2023 Green Drop Progress Report.
- 2024 Socio Economic Profile for Overstrand Municipality, Western Cape Government.
- DWS's All Towns Reconciliation Strategy Documents for each of the towns in Overstrand Municipality's Management Area, Version 2 June 2015.
- Overstrand Municipality's Municipal Services Strategic Assessment (MuSSA) Report, 2025, DWS.
- Overstrand Municipality's Water Services Audit Report for 2023/2024, Final Document, iX engineers, 11 October 2024.
- Overstrand Municipality's Operational Budgets and Tariffs.
- Asset Register for Water and Sewerage Infrastructure Assets, June 2025.
- SDBIP of Overstrand Municipality for 2024/2025.
- WWTW Plant and Process Audit Reports, December 2024, EnviroMetsi, on behalf of Integral Laboratories.
- WTW Plant and Process Audit Reports, December 2024, EnviroMetsi, on behalf of Integral Laboratories.
- Augmentation of potable water supplies to Hermanus, Scoping Report, Overstrand Municipality, Aurecon Ref 113216.
- Augmentation of potable water supplies to Hermanus, Additional work undertaken into sea water desalination, Overstrand Municipality, Aurecon Ref 113216.

ATTENDANCE REGISTER (DISCUSSION OF DRAFT DOCUMENT)

iX engineers
Infrastructure Excellence

ATTENDANCE REGISTER

Meeting Subject	24/25 Water Services Audit Report – Discussion of Draft Document		
Location Of Meeting	Overstrand Municipality	**Document No**	
Chaired By	J Human	**Date of Meeting**	14 October 2025
Recorded By	iX engineers	**Time Start**	14:00
		Time Finish	15:30

Attended by:

Representative	Name of Firm	Postal Address	Contact Details				Signature
1. J HUMAN	iX ENGINEERS	PO BOX 398 BELLVILLE	Tel No	021-912 3000	E-mail	jaco.h@ixengineers.co.za	
			Cell No	0824318728	Fax No		
2. H. BLIGNAUT	O.M.	PO Box 20 HERMANUS	Tel No	028 313 5047	E-mail	hblignaut@overstrand.gov.za	
			Cell No	082 497 9169	Fax No		
3. P. Robinson	OM	"	Tel No	028 313 5044	E-mail	probinson@overstrand.gov.za	
			Cell No	076 548 8256	Fax No		
4. T.P. STEENBERG	OM	"	Tel No	028 313 8982	E-mail	tsteenberg@overstrand.gov.za	
			Cell No	0724021019	Fax No		

ANNEXURE A

Number of Consumer Units per Category (Water)

Number of Consumer Units per Category (Sanitation)

IWA Water balances for the various distribution systems

WTW flows and capacities

WTW peak flows (December and January 22/23, 23/24 and 24/25)

Rainfall and WWTWs flows and capacities

WWTW peak flows (December and January 22/23, 23/24 and 24/25)

NUMBER OF CONSUMER UNITS PER CATEGORY USER

Date	Buffels River					Kleinmond					Greater Hermanus					Stanford					Gansbaai					B/Bos					Buffeljags					Pearly Beach				
	Domestic	Commerce	Industry	Wet	Other	Domestic	Commerce	Industry	Wet	Other	Domestic	Commerce	Industry	Wet	Other	Domestic	Commerce	Industry	Wet	Other	Domestic	Commerce	Industry	Wet	Other	Domestic	Commerce	Industry	Wet	Other	Domestic	Commerce	Industry	Wet	Other	Domestic	Commerce	Industry	Wet	Other
Jul-12	3 188	62	0	0	32	3 436	100	0	0	62	13 689	498	0	21	82	1 116	67	0	3	12	4 170	183	2	6	90	62	1	0	0	2	29	1	0	0	3	661	9	0	0	3
Aug-12	3 187	62	0	0	32	3 438	101	0	0	62	13 667	491	0	20	92	1 117	67	0	3	12	4 169	183	2	6	90	62	1	0	0	2	29	1	0	0	3	661	9	0	0	3
Sep-12	3 193	63	0	0	32	3 436	101	0	0	62	13 688	497	0	21	83	1 116	67	0	3	12	4 171	184	2	6	90	62	1	0	0	2	29	1	0	0	3	661	9	0	0	3
Oct-12	3 189	63	0	0	32	3 438	101	0	0	62	13 690	497	0	21	83	1 117	67	0	3	12	4 173	183	2	6	90	62	1	0	0	2	29	1	0	0	3	660	9	0	0	3
Nov-12	3 188	63	0	0	33	3 423	99	0	0	63	13 672	496	0	21	82	1 119	66	0	3	12	4 167	180	2	6	90	63	1	0	0	2	29	1	0	0	3	660	9	0	0	3
Dec-12	3 189	61	0	0	36	3 428	101	0	0	63	13 690	495	0	21	83	1 121	65	0	3	12	4 151	181	2	6	99	63	1	0	0	2	29	1	0	0	3	652	9	0	0	4
Jan-13	3 189	61	0	0	37	3 427	101	0	0	63	13 700	495	0	21	85	1 119	66	0	3	11	4 157	180	2	6	99	63	1	0	0	2	29	1	0	0	3	655	9	0	0	4
Feb-13	3 192	59	0	0	37	3 442	100	0	0	63	13 651	451	0	21	129	1 119	66	0	3	12	4 152	184	2	6	100	63	1	0	0	2	29	1	0	0	3	661	9	0	0	4
Mar-13	3 192	59	0	0	37	3 431	100	0	0	63	13 717	462	0	21	129	1 117	67	0	3	12	4 162	184	3	6	98	63	1	0	0	2	29	1	0	0	3	658	10	0	0	5
Apr-13	3 198	60	0	0	37	3 439	101	0	0	63	13 761	465	0	21	129	1 122	66	0	4	12	4 172	182	2	6	98	63	1	0	0	2	29	1	0	0	3	658	10	0	0	5
May-13	3 199	60	0	0	37	3 442	101	0	0	63	13 738	466	0	20	130	1 123	68	0	4	12	4 174	184	2	6	98	63	1	0	0	2	29	1	0	0	3	660	10	0	0	5
Jun-13	3 201	60	0	0	37	3 442	101	0	0	63	13 754	463	0	23	130	1 122	67	0	4	12	4 176	183	2	6	98	63	1	0	0	2	29	1	0	0	3	657	10	0	0	5
Total	38 305	733	0	0	419	41 222	1 207	0	0	752	164 417	5 776	0	252	1 237	13 428	799	0	39	143	49 994	2 191	25	72	1 140	752	12	0	0	24	348	12	0	0	36	7 904	112	0	0	47
Average	**3 192**	**61**	**0**	**0**	**35**	**3 435**	**101**	**0**	**0**	**63**	**13 701**	**481**	**0**	**21**	**103**	**1 119**	**67**	**0**	**3**	**12**	**4 166**	**183**	**2**	**6**	**95**	**63**	**1**	**0**	**0**	**2**	**29**	**1**	**0**	**0**	**3**	**659**	**9**	**0**	**0**	**4**
Jul-13																																								
Aug-13																																								
Sep-13																																								
Oct-13																																								
Nov-13																																								
Dec-13	3 217	109	0	0	37	3 522	265	0	0	64	17 438	816	0	33	325	1 135	49	0	2	14	4 946	225	0	4	251	63	0	0	0	3	29	0	0	0	3	1023	5	0	0	5
Jan-14	3 218	109	0	0	37	3 522	265	0	0	64	17 425	816	0	33	325	1 135	49	0	2	14	4 947	225	0	4	251	63	0	0	0	3	29	0	0	0	3	1024	5	0	0	5
Feb-14	3 220	109	0	0	36	3 522	265	0	0	64	17 428	816	0	31	324	1 135	49	0	2	14	4 949	225	0	4	252	63	0	0	0	3	29	0	0	0	3	1024	5	0	0	6
Mar-14	3 223	109	0	0	37	3 524	265	0	0	64	17 557	929	0	31	324	1 137	49	0	2	14	4 951	225	0	4	254	63	0	0	0	3	29	0	0	0	3	1115	5	0	0	14
Apr-14	3 233	109	0	0	37	3 523	266	0	0	64	17 904	816	0	31	324	1 139	49	0	2	14	4 952	225	0	4	254	63	0	0	0	3	29	0	0	0	3	1115	5	0	0	14
May-14	3 236	109	0	0	37	3 523	266	0	0	64	17 717	816	0	31	324	1 139	49	0	2	13	4 954	225	0	4	254	63	0	0	0	3	29	0	0	0	3	1117	5	0	0	14
Jun-14	3 237	109	0	0	37	3 523	266	0	0	64	18 062	820	0	31	325	1 139	49	0	2	13	4 954	226	0	4	24	63	0	0	0	3	29	0	0	0	3	1117	5	0	0	14
Total	22 584	763	0	0	258	24 659	1 858	0	0	448	123 531	5 829	0	221	2 271	7 959	343	0	14	96	34 653	1 576	0	28	1 540	441	0	0	0	21	203	0	0	0	21	7 535	35	0	0	72
Average	**3 226**	**109**	**0**	**0**	**37**	**3 523**	**265**	**0**	**0**	**64**	**17 647**	**833**	**0**	**32**	**324**	**1 137**	**49**	**0**	**2**	**14**	**4 950**	**225**	**0**	**4**	**220**	**63**	**0**	**0**	**0**	**3**	**29**	**0**	**0**	**0**	**3**	**1 076**	**5**	**0**	**0**	**10**
Jul-14	3 237	109	0	0	37	3 523	266	0	0	64	18 087	838	0	31	324	1 139	49	0	2	13	4 957	226	0	4	222	63	0	0	0	3	30	0	0	0	3	1 035	5	0	0	7
Aug-14	3 237	109	0	0	37	3 523	265	0	0	64	18 040	851	0	31	324	1 140	49	0	2	13	4 957	226	0	4	186	63	0	0	0	3	30	0	0	0	3	1219	5	0	0	7
Sep-14	3 245	109	0	0	37	3 523	265	0	0	64	18 197	824	0	31	324	1 142	48	0	2	12	4 958	226	0	4	178	63	0	0	0	3	30	0	0	0	3	1214	5	0	0	7
Oct-14	3 259	104	0	0	37	3 525	265	0	0	66	18 043	917	0	31	324	1 141	56	0	2	13	4 959	226	0	4	178	63	0	0	0	3	30	0	0	0	3	1216	5	0	0	7
Nov-14	3 259	104	0	0	37	3 548	265	0	0	66	18 118	916	0	31	325	1 143	56	0	2	13	4 959	226	0	4	185	63	0	0	0	3	30	0	0	0	3	1216	5	0	0	8
Dec-14	3 263	104	0	0	37	3 528	263	0	0	66	18 128	916	0	31	327	1 146	56	0	2	13	4 960	227	0	4	186	63	0	0	0	3	30	0	0	0	3	1250	5	0	0	7
Jan-15	3 262	104	0	0	37	3 528	264	0	0	66	18 448	916	0	31	326	1 146	56	0	2	13	4 959	223	0	4	186	63	0	0	0	3	30	0	0	0	3	1250	5	0	0	8
Feb-15	3 269	104	0	0	37	3 529	264	0	0	66	18 160	915	0	31	326	1 147	54	0	2	13	4 959	223	0	4	186	63	0	0	0	3	30	0	0	0	6	1251	5	0	0	7
Mar-15	3 278	104	0	0	37	3 531	264	0	0	66	18 181	917	0	31	325	1 151	54	0	2	13	4 960	223	0	4	186	63	0	0	0	3	30	0	0	0	6	1251	5	0	0	7
Apr-15	3 282	104	0	0	37	3 534	264	0	0	64	18 201	924	0	31	325	1 155	54	0	2	15	4 968	223	0	4	188	63	0	0	0	3	30	0	0	0	6	1250	5	0	0	8
May-15	3 287	108	0	0	32	3 534	264	0	0	64	18 198	929	0	31	325	1 155	54	0	2	16	4 970	223	0	4	189	64	0	0	0	3	30	0	0	0	6	1251	5	0	0	8
Jun-15	3 290	108	0	0	33	3 564	264	0	0	64	18 219	989	0	31	325	1 154	55	0	2	16	4 972	224	0	4	187	64	0	0	0	3	30	0	0	0	5	1251	5	0	0	7
Total	39 168	1 271	0	0	435	42 390	3 173	0	0	780	218 020	10 852	0	372	3 900	13 759	641	0	24	163	59 538	2 696	0	48	2 257	758	0	0	0	36	360	0	0	0	50	14 654	60	0	0	88
Average	**3 264**	**106**	**0**	**0**	**36**	**3 533**	**264**	**0**	**0**	**65**	**18 168**	**904**	**0**	**31**	**325**	**1 147**	**53**	**0**	**2**	**14**	**4 962**	**225**	**0**	**4**	**188**	**63**	**0**	**0**	**0**	**3**	**30**	**0**	**0**	**0**	**4**	**1 221**	**5**	**0**	**0**	**7**
Jul-15	3 298	108	0	0	33	3 539	264	0	0	65	18 221	990	0	31	300	1 155	54	0	2	16	4 980	223	0	4	195	64	0	0	0	3	30	0	0	0	6	1 252	5	0	0	7
Aug-15	3 298	108	0	0	33	3 539	264	0	0	65	18 221	990	0	31	300	1 155	54	0	2	16	4 980	223	0	4	195	64	0	0	0	3	30	0	0	0	6	1 252	5	0	0	7
Sep-15	3 301	108	0	0	33	3 618	264	0	0	65	18 245	989	0	31	300	1 152	54	0	2	17	4 982	224	0	4	195	64	0	0	0	3	30	0	0	0	6	1 253	5	0	0	7
Oct-15	3 307	108	0	0	33	3 542	265	0	0	65	18 245	997	0	31	300	1 156	54	0	2	17	5 041	226	0	4	195	64	0	0	0	3	30	0	0	0	6	1 252	3	0	0	7
Nov-15	3 312	111	0	0	30	3 539	264	0	0	65	18 258	997	0	31	300	1 155	54	0	2	16	5 043	228	0	4	195	64	0	0	0	3	30	0	0	0	6	1 252	3	0	0	7
Dec-15	3 313	111	0	0	30	3 541	263	0	0	62	18 261	998	0	32	300	1 157	54	0	0	16	5 048	228	0	4	196	64	0	0	0	3	30	0	0	0	6	1 253	3	0	0	6
Jan-16	3 320	111	0	0	30	3 544	263	0	0	64	18 261	999	0	32	299	1 154	54	0	2	17	5 044	230	0	4	195	64	0	0	0	3	30	0	0	0	6	1 253	3	0	0	6
Feb-16	3 324	111	0	0	30	3 551	262	0	0	64	18 278	1 005	0	32	298	1 156	54	0	2	17	5 051	230	0	4	196	64	0	0	0	3	30	0	0	0	6	1 253	3	0	0	6
Mar-16	3 325	111	0	0	30	3 553	261	0	0	64	18 287	1 004	0	32	298	1 158	54	0	2	17	5 055	234	0	4	204	64	0	0	0	3	30	0	0	0	6	1 255	3	0	0	6
Apr-16	3 327	111	0	0	30	3 556	261	0	0	64	18 469	1 005	0	32	298	1 159	54	0	2	17	5 053	231	0	4	204	64	0	0	0	3	30	0	0	0	6	1 256	3	0	0	6
May-16	3 332	111	0	0	30	3 558	260	0	0	64	18 412	1 005	0	32	390	1 159	54	0	2	17	5 058	231	0	4	204	64	0	0	0	3	30	0	0	0	6	1 257	3	0	0	7
Jun-16	3 334	111	0	0	30	3 559	260	0	0	64	18 505	1 005	0	32	314	1 159	54	0	2	17	5 068	232	0	4	205	64	0	0	0	3	30	0	0	0	6	1 257	3	0	0	7
Total	39 791	1 320	0	0	372	42 639	3 151	0	0	771	219 663	11 984	0	379	3 697	13 875	648	0	22	200	60 403	2 740	0	48	2 379	768	0	0	0	36	360	0	0	0	72	15 045	42	0	0	79
Average	**3 316**	**110**	**0**	**0**	**31**	**3 553**	**263**	**0**	**0**	**64**	**18 305**	**999**	**0**	**32**	**308**	**1 156**	**54**	**0**	**2**	**17**	**5 034**	**228**	**0**	**4**	**198**	**64**	**0**	**0**	**0**	**3**	**30**	**0**	**0**	**0**	**6**	**1 254**	**4**	**0**	**0**	**7**
Jul-16	3 340	118	0	0	30	3 561	260	0	0	64	18 516	1 005	0	33	316	1 162	54	0	2	17	5 076	232	0	4	202	64	0	0	0	3	30	0	0	0	6	1 258	3	0	0	7
Aug-16	3 347	118	0	0	30	3 572	278	0	0	64	18 488	1 005	0	33	319	1 169	54	0	2	17	5 079	232	0	4	202	64	0	0	0	3	30	0	0	0	6	1 259	3	0	0	7
Sep-16	3 353	118	0	0	30	3 582	296	0	0	64	18 459	1 004	0	33	322	1 175	54	0	2	17	5 082	232	0	3	202	64	0	0	0	3	30	0	0	0	6	1 259	3	0	0	7
Oct-16	3 353	118	0	0	30	3 584	296	0	0	64	18 612	1 004	0	33	324	1 179	54	0	2	18	5 082	233	0	3	201	64	0	0	0	3	30	0	0	0	6	1 259	2	0	0	7
Nov-16	3 358	118	0	0	30	3 587	296	0	0	63	18 700	1 007	0	33	320	1 179	54	0	2	18	5 081	233	0	3	201	64	0	0	0	3	30	0	0	0	6	1 259	3	0	0	7
Dec-16	3 363	118	0	0	30	3 587	296	0	0	67	18 784	1 002	0	39	325	1 182	54	0	2	18	5 082	233	0	3	201	64	0	0	0	3	30	0	0	0	6	1 260	3	0	0	7
Jan-17	3 365	118	0	0	30	3 588	296	0	0	68	18 862	1 001	0	39	337	1 189	54	0	2	18	5 084	231	0	3	202	64	0	0	0	3	30	0	0	0	6	1 260	3	0	0	7
Feb-17	3 367	118	0	0	30	3 588	296	0	0	68	18 886	1 001	0	39	321	1 191	56	0	2	18	5 087	229	0	3	198	64	0	0	0	3	30	0	0	0	6	1 261	3	0	0	7
Mar-17	3 367	118	0	0	30	3 588	296	0	0	68	19 001	1 000	0	39	387	1 207	55	0	2	18	5 095	238	0	3	199	64	0	0	0	3	30	0	0	0	6	1 981	3	0	0	8
Apr-17	3 368	118	0	0	30	3 588	296	0	0	68	19 029	1 004	0	39	392	1 200	55	0	2	18	5 110	238	0	3	206	64	0	0	0	3	30	0	0	0	6	1 981	3	0	0	8
May-17	3 379	118	0	0	30	3 596	296	0	0	69	19 048	1 007	0	39	393	1 203	55	0	2	18	5 110	240	0	3	208	64	0	0	0	3	30	0	0	0	6	1 981	3	0	0	8
Jun-17	3 382	118	0	0	30	3 597	296	0	0	69	19 070	1 005	0	39	392	1 206	55	0	2	18	5 118	241	0	3	208	64	0	0	0	3	30	0	0	0	6	1 982	3	0	0	8
Total	40 342	1 416	0	0	360	43 018	3 498	0	0	796	225 455	12 045	0	438	4 148	14 242	654	0	24	213	61 086	2 812	0	38	2 430	768	0	0	0	36	360	0	0	0	72	18 000	35	0	0	88
Average	**3 382**	**118**	**0**	**0**	**30**	**3 585**	**292**	**0**	**0**	**66**	**18 788**	**1 004**	**0**	**37**	**346**	**1 187**	**55**	**0**	**2**	**18**	**5 091**	**234**	**0**	**3**	**203**	**64**	**0**	**0**	**0**	**3**	**30**	**0**	**0**	**0**	**6**	**1 500**	**3**	**0**	**0**	**7**
Jul-17	3 388	118	0	0	30	3 596	296	0	0	69	19 089	1 005	0	38	392	1 206	55	0	2	18	5 139	241	1	2	202	64	0	0	0	3	30	0	0	0	6	1 983	3	0	0	8
Aug-17	3 388	118	0	0	30	3 596	296	0	0	69	19 164	1 006	0	38	468	1 210	56	0	2	18	5 120	241	1	2	201	64	0	0	0	3	30	0	0	0	6	1 985	3	0	0	8
Sep-17	3 395	118	0	0	30	3 599	296	0	0	69	19 404	1 008	0	38	514	1 210	56	0	2	18	5 120	240	1	2	202	64	0	0	0	3	30	0	0	0	6	1 624	3	0	0	8
Oct-17	3 406	118	0	0	30	3 599	296	0	0	69	19 404	1 009	0	38	514	1 214	56	0	2	18	5 121	266	1	2	194	64	0	0	0	3	30	0	0	0	6	1 625	3	0	0	8
Nov-17	3 395	118	0	0	30	3 601	295	0	0	70	19 409	1 004	0	38	514	1 222	55	0	3	18	5 122	266	1	2	193	64	0	0	0	3	30	0	0	0	6	1 625	3	0	0	8
Dec-17	3 412	118	0	0	30	3 603	295	0	0	70	19 453	1 004	0	38	514	1 224	55	0	3	18	5 758	266	1	2	195	64	0	0	0	3	30	0	0	0	6	1 625	3	0	0	8
Jan-18	3 425	118	0	0	30	3 610	295	0	0	70	19 509	1 070	0	38	514	1 234	56	0	3	18	5 155	266	1	2	195	64	0	0	0	3	30	0	0	0	6	1 626	3	0	0	8
Feb-18	3 425	118	0	0	30	3 610	295	0	0	70	19 509	1 070	0	38	514	1 234	56	0	3	18	5 155	266	1	2	195	64	0	0	0	3	30	0	0	0	6	1 626	3	0	0	8
Mar-18	3 432	118	0	0	30	3 611	295	0	0	71	19 527	1 071	0	38	512	1 238	56	0	3	18	5 207	346	2	7	197	64	1	0	0	3	30	0	0	0	6	1 642	8	0	0	9
Apr-18	3 436	118	0	0	30	3 612	295	0	0	70	19 670	1 071	0	38	512	1 240	56	0	3	18	5 213	346	2	7	195	64	1	0	0	3	30	0	0	0	6	1 643	8	0	0	8
May-18	3 443	118	0	0	30	3 615	295	0	0	71	19 681	1 072	0	38	511	1 246	57	0	3	18	5 219	346	2	7	195	64	1	0	0	3	30	0	0	0	6	1 643	8	0	0	8
Jun-18	3 451	118	0	0	30	3 615	296	0	0	71	19 706	1 075	0	38	512	1 246	57	0	3	18	5 226	346	2	7	196	64	1	0	0	3	30	0	0	0	6	1 644	8	0	0	8
Total	40 994	1 416	0	0	360	43 267	3 545	0	0	839	233 525	12 465	0	456	5 991	14 724	671	0	32	216	62 555	3 436	16	44	2 360	768	4	0	0	36	360	0	0	0	72	20 291	56	0	0	97
Average	**3 416**	**118**	**0**	**0**	**30**	**3 606**	**295**	**0**	**0**	**70**	**19 460**	**1 039**	**0**	**38**	**499**	**1 227**	**56**	**0**	**3**	**18**	**5 213**	**286**	**1**	**4**	**197**	**64**	**0**	**0**	**0**	**3**	**30**	**0**	**0**	**0**	**6**	**1 691**	**5**	**0**	**0**	**8**
Jul-18	3 457	118	0	0	30	3 615	296	0	0	71	19 723	1 072	0	38	511	1 247	57	0	3	18	5 227	346	2	7	198	64	1	0	0	3	30	0	0	0	6	1 643	8	0	0	9
Aug-18	3 465	120	0	0	30	3 615	296	0	0	71	19 729	1 071	0	38	513	1 249	57	0	3	18	5 232	348	2	7	198	64	1	0	0	3	30	0	0	0	6	1 645	8	0	0	9
Sep-18	3 545	120	0	0	30	3 615	297	0	0	71	19 662	1 071	0	38	513	1 251	67	0	3	18	5 845	347	2	7	197	64	1	0	0	3	30	0	0	0	6	1 647	8	0	0	9
Oct-18	3 478	120	0	0	31	3 619	297	0	0	71	19 792	1 170	0	38	537	1 252	67	0	3	18	5 848	346	2	7	197	64	1	0	0	3	30	0	0	0	6	1 646	8	0	0	9
Nov-18	3 487	120	0	0	30	3 625	297	0	0	71	19 846	1 184	0	38	537	1 260	67	0	3	18	5 851	346	2	7	197	64	1	0	0	3	30	0	0	0	6	1 647	8	0	0	8
Dec-18	3 494	120	0	0	30	3 628	298	0	0	71	19 849	1 185	0	38	537	1 260	67	0	3	21	5 852	346	2	7	197	64	1

2012/2013					
Description	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffels River	3 192	61	0	35	3 288
Kleinmond	3 435	101	0	63	3 598
Greater Hermanus	13 701	481	21	103	14 307
Stanford	1 119	67	3	12	1 201
Greater Gansbaai	4 166	183	8	95	4 452
Pearly Beach	659	9	0	4	672
Baardskeerdersbos	63	1	0	2	66
Buffeljags Bay	29	1	0	3	33
TOTALS	26 364	904	32	317	27 617

2013/2014					
Description	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffels River	3 226	109	0	37	3 372
Kleinmond	3 523	265	0	64	3 852
Greater Hermanus	17 647	833	32	324	18 836
Stanford	1 137	49	2	14	1 202
Greater Gansbaai	4 950	225	4	220	5 400
Pearly Beach	1 076	5	0	10	1 092
Baardskeerdersbos	63	0	0	3	66
Buffeljags Bay	29	0	0	3	32
TOTALS	31 652	1 486	38	675	33 851

2014/2015					
Description	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffels River	3 264	106	0	36	3 406
Kleinmond	3 533	264	0	65	3 862
Greater Hermanus	18 168	904	31	325	19 429
Stanford	1 147	53	2	14	1 216
Greater Gansbaai	4 962	225	4	188	5 378
Pearly Beach	1 221	5	0	7	1 234
Baardskeerdersbos	63	0	0	3	66
Buffeljags Bay	30	0	0	4	34
TOTALS	32 387	1 558	37	642	34 624

2015/2016					
Description	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffels River	3 316	110	0	31	3 457
Kleinmond	3 553	263	0	64	3 880
Greater Hermanus	18 305	999	32	308	19 644
Stanford	1 156	54	2	17	1 229
Greater Gansbaai	5 034	228	4	198	5 464
Pearly Beach	1 254	4	0	7	1 264
Baardskeerdersbos	64	0	0	3	67
Buffeljags Bay	30	0	0	6	36
TOTALS	32 712	1 657	37	634	35 040

2020/2021					
Description	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffels River	3 665	119	0	30	3 814
Kleinmond	3 663	307	1	68	4 038
Greater Hermanus	20 266	1 219	39	535	22 058
Stanford	1 321	76	3	19	1 418
Greater Gansbaai	6 332	378	9	186	6 905
Pearly Beach	1 698	9	0	8	1 715
Baardskeerdersbos	72	2	0	3	77
Buffeljags Bay	30	0	0	5	35
TOTALS	37 046	2 108	52	853	40 060

2022/2023					
Description	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffels River	3 880	118	0	30	4 028
Kleinmond	3 722	306	1	62	4 091
Greater Hermanus	20 599	1 238	41	524	22 401
Stanford	1 426	75	3	20	1 524
Greater Gansbaai	7 160	384	10	162	7 716
Pearly Beach	1 780	9	0	8	1 797
Baardskeerdersbos	86	2	0	3	91
Buffeljags Bay	29	0	0	2	32
TOTALS	38 682	2 131	55	811	41 679

2024/2025					
Description	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffels River	4 035	117	0	30	4 182
Kleinmond	3 773	306	1	59	4 139
Greater Hermanus	20 866	1 248	31	525	22 670
Stanford	1 552	74	3	22	2 051
Greater Gansbaai	7 765	388	10	145	8 308
Pearly Beach	1 826	9	0	7	1 842
Baardskeerdersbos	95	2	0	3	100
Buffeljags Bay	30	0	0	0	30
TOTALS	40 342	2 144	45	791	43 322

2016/2017					
Description	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffels River	3 362	118	0	30	3 510
Kleinmond	3 585	292	0	66	3 943
Greater Hermanus	18 788	1 004	37	346	20 174
Stanford	1 187	55	2	18	1 261
Greater Gansbaai	5 091	234	3	203	5 530
Pearly Beach	1 500	3	0	7	1 510
Baardskeerdersbos	64	0	0	3	67
Buffeljags Bay	30	0	0	6	36
TOTALS	33 606	1 705	42	679	36 031

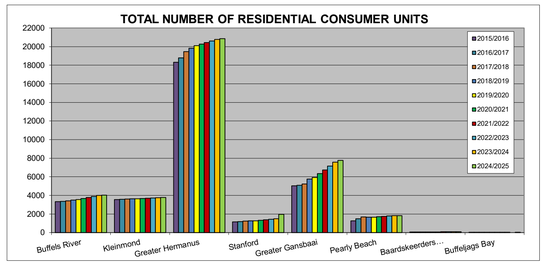
2017/2018					
Description	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffels River	3 416	118	0	30	3 564
Kleinmond	3 606	295	0	70	3 971
Greater Hermanus	19 460	1 039	38	499	21 036
Stanford	1 227	56	3	18	1 304
Greater Gansbaai	5 213	286	5	197	5 701
Pearly Beach	1 691	5	0	8	1 704
Baardskeerdersbos	64	0	0	3	67
Buffeljags Bay	30	0	0	6	36
TOTALS	34 707	1 799	46	831	37 383

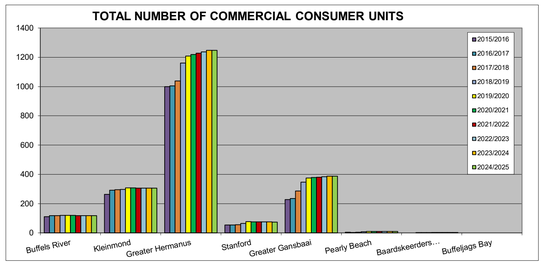
2018/2019					
Description	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffels River	3 501	119	0	30	3 650
Kleinmond	3 625	297	0	71	3 993
Greater Hermanus	19 819	1 161	38	532	21 550
Stanford	1 260	65	3	20	1 348
Greater Gansbaai	5 761	346	9	196	6 312
Pearly Beach	1 647	8	0	8	1 664
Baardskeerdersbos	64	1	0	3	68
Buffeljags Bay	30	0	0	6	36
TOTALS	35 707	1 997	50	866	38 620

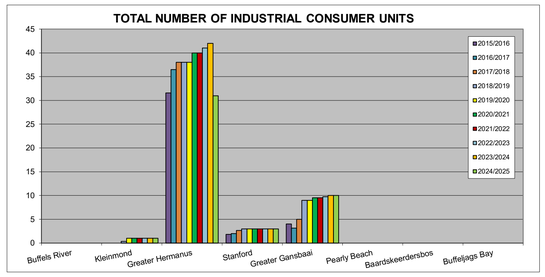
2019/2020					
Description	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffels River	3 558	119	0	30	3 707
Kleinmond	3 633	307	1	71	4 012
Greater Hermanus	20 099	1 209	38	541	21 887
Stanford	1 268	76	3	18	1 366
Greater Gansbaai	5 918	375	9	198	6 499
Pearly Beach	1 658	9	0	8	1 674
Baardskeerdersbos	65	2	0	3	70
Buffeljags Bay	30	0	0	6	36
TOTALS	36 228	2 097	51	875	39 250

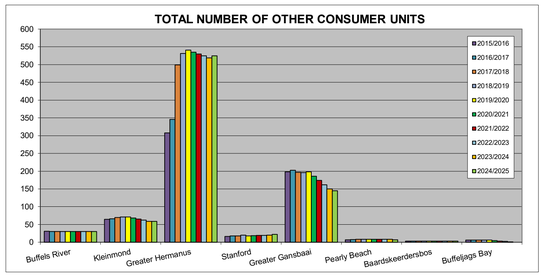
2021/2022					
Description	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffels River	3 773	118	0	30	3 921
Kleinmond	3 692	306	1	65	4 064
Greater Hermanus	20 432	1 228	40	530	22 230
Stanford	1 374	76	3	19	1 471
Greater Gansbaai	6 746	381	10	174	7 310
Pearly Beach	1 739	9	0	8	1 756
Baardskeerdersbos	79	2	0	3	84
Buffeljags Bay	30	0	0	4	33
TOTALS	37 864	2 120	54	832	40 870

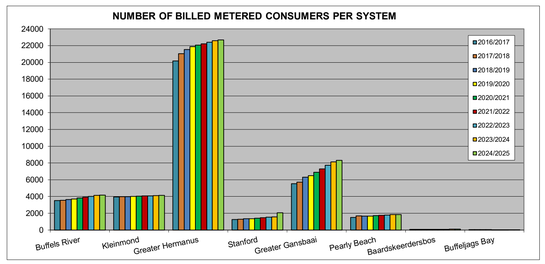
2023/2024					
Description	**Residential**	**Commercial**	**Industrial**	**Other**	**Total**
Buffels River	3 988	117	0	30	4 135
Kleinmond	3 751	306	1	59	4 117
Greater Hermanus	20 765	1 247	42	519	22 573
Stanford	1 479	75	3	20	1 577
Greater Gansbaai	7 574	387	10	150	8 121
Pearly Beach	1 821	9	0	8	1 838
Baardskeerdersbos	93	2	0	3	98
Buffeljags Bay	29	0	0	1	30
TOTALS	39 500	2 143	56	790	42 489

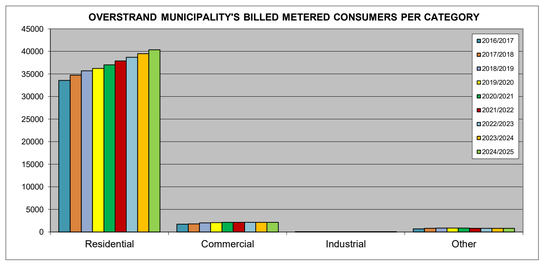












SEWERAGE USERS

Description	Mar-15		Apr-15		May-15		Jun-15		Average		
	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Total
Buffels River	999	2 701	1 010	2 707	1 024	2 713	1 034	2 718	1 017	2 710	3 727
Kleinmond	3 544	1 234	3 552	1 238	3 562	1 236	3 575	1 238	3 558	1 237	4 795
Greater Hermanus	18 635	1 486	18 661	1 484	18 633	1 485	18 680	1 485	18 652	1 485	20 137
Stanford	1 780	175	1 781	175	1 783	174	1 790	173	1 784	174	1 958
Greater Gansbaai	2 521	3 208	2 524	3 213	2 525	3 216	2 524	3 215	2 524	3 213	5 737
Pearly Beach	458	731	458	727	458	726	460	726	459	728	1 186
Baardskeerdersbos	3	68	3	68	3	68	3	68	3	68	71
Buffeljags Bay	55	0	55	0	55	0	55	0	55	0	55
TOTALS	**27 995**	**9 603**	**28 044**	**9 612**	**28 043**	**9 618**	**28 121**	**9 623**	**28 051**	**9 614**	**37 665**

Description	Jul-15		Aug-15		Sep-15		Oct-15		Nov-15		Dec-15		Jan-16		Feb-16		Mar-16		Apr-16		May-16		Jun-16		Average		
	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Total
Code	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	
Buffels River	862	2 417	868	2 414	877	2 410	881	2 410	886	2 408	886	2 408	893	2 407	897	2 407	901	2 407	907	2 405	914	2 404	918	2 403	891	2 408	3 299
Kleinmond	2 709	1 135	2 724	1 124	2 726	1 121	2 726	1 121	2 728	1 120	2 730	1 118	2 733	1 117	2 738	1 117	2 740	1 116	2 743	1 115	2 749	1 113	2 749	1 113	2 733	1 119	3 852
Greater Hermanus	16 371	1 409	16 379	1 402	16 388	1 399	16 395	1 396	16 397	1 396	16 405	1 396	16 414	1 396	16 565	1 395	16 572	1 395	16 583	1 396	16 679	1 396	16 789	1 396	16 495	1 398	17 892
Stanford	1 074	152	1 075	151	1 076	150	1 081	146	1 081	146	1 081	146	1 081	146	1 083	146	1 087	145	1 091	144	1 093	142	1 094	142	1 083	146	1 229
Greater Gansbaai	1 754	2 881	1 763	2 876	1 771	2 871	1 777	2 868	1 779	2 867	1 778	2 868	1 784	2 868	1 784	2 870	1 784	2 871	1 784	2 871	1 787	2 869	1 789	2 870	1 778	2 871	4 649
Pearly Beach	249	621	248	621	250	621	253	620	252	620	252	620	252	620	252	620	252	620	252	620	252	620	252	619	251	620	872
Baardskeerdersbos	2	62	2	62	2	62	2	62	2	62	2	62	2	62	2	62	2	62	2	62	2	62	2	62	2	62	64
Buffeljags Bay	30	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29
TOTALS	**23 051**	**8 677**	**23 088**	**8 650**	**23 119**	**8 634**	**23 144**	**8 623**	**23 154**	**8 619**	**23 163**	**8 618**	**23 188**	**8 616**	**23 350**	**8 617**	**23 367**	**8 616**	**23 391**	**8 613**	**23 505**	**8 606**	**23 622**	**8 605**	**23 262**	**8 625**	**31 886**

Description	Jul-16		Aug-16		Sep-16		Oct-16		Nov-16		Dec-16		Jan-17		Feb-17		Mar-17		Apr-17		May-17		Jun-17		Average		
	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Total
Code	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	
Buffels River	939	2 389	955	2 381	970	2 373	974	2 371	979	2 371	984	2 370	988	2 370	990	2 370	997	2 369	1 002	2 368	1 016	2 365	1 019	2 365	984	2 372	3 356
Kleinmond	2 775	1 099	2 781	1 095	2 787	1 090	2 788	1 090	2 794	1 089	2 795	1 089	2 798	1 087	2 799	1 086	2 800	1 085	2 800	1 085	2 808	1 084	2 808	1 084	2 794	1 089	3 883
Greater Hermanus	16 837	1 385	16 847	1 383	16 856	1 381	16 867	1 380	16 936	1 379	17 074	1 378	17 096	1 378	17 116	1 377	17 146	1 376	17 423	1 376	17 447	1 375	17 467	1 374	17 093	1 379	18 471
Stanford	1 097	145	1 099	149	1 101	153	1 105	143	1 120	139	1 124	139	1 127	140	1 130	138	1 134	137	1 136	137	1 142	133	1 142	133	1 121	141	1 262
Greater Gansbaai	1 814	2 855	1 827	2 847	1 840	2 839	1 841	2 834	1 855	2 832	1 863	2 838	1 866	2 838	1 871	2 838	1 887	2 838	1 907	2 838	1 919	2 838	1 925	2 838	1 868	2 839	4 707
Pearly Beach	254	618	255	618	256	618	256	617	256	614	257	619	258	619	258	619	259	619	259	619	259	619	260	618	257	618	875
Baardskeerdersbos	2	62	2	63	2	63	2	63	2	63	2	63	2	63	2	63	2	63	2	63	2	63	2	63	2	63	65
Buffeljags Bay	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29
TOTALS	**23 747**	**8 553**	**23 794**	**8 535**	**23 841**	**8 517**	**23 862**	**8 498**	**23 971**	**8 487**	**24 128**	**8 496**	**24 164**	**8 495**	**24 195**	**8 491**	**24 254**	**8 487**	**24 558**	**8 486**	**24 622**	**8 477**	**24 652**	**8 475**	**24 149**	**8 500**	**32 649**

939

Description	Jul-17		Aug-17		Sep-17		Oct-17		Nov-17		Dec-17		Jan-18		Feb-18		Mar-18		Apr-18		May-18		Jun-18		Average		
	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Total
Code	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	
Buffels River	1 040	2 348	1 050	2 340	1 061	2 335	1 073	2 331	1 074	2 330	1 085	2 329	1 096	2 327	1 100	2 326	1 108	2 325	1 113	2 326	1 122	2 325	918	2 403	1 070	2 337	3 407
Kleinmond	2 819	1 075	2 823	1 071	2 828	1 068	2 831	1 066	2 832	1 065	2 836	1 063	2 841	1 062	2 844	1 062	2 844	1 062	2 843	1 062	2 847	1 062	2 749	1 113	2 828	1 069	3 897
Greater Hermanus	17 482	1 369	17 491	1 366	17 501	1 362	17 502	1 362	17 526	1 368	17 567	1 363	17 579	1 363	17 674	1 361	17 694	1 361	17 732	1 362	17 750	1 362	16 789	1 396	17 524	1 366	18 890
Stanford	1 144	132	1 148	132	1 155	128	1 167	122	1 173	116	1 177	115	1 181	113	1 187	113	1 188	112	1 192	110	1 196	110	1 094	142	1 167	120	1 287
Greater Gansbaai	1 942	2 826	1 952	2 822	1 966	2 815	1 974	2 814	1 977	2 813	1 986	2 811	1 989	2 811	1 997	2 811	2 005	2 811	2 006	2 811	2 011	2 811	1 795	2 871	1 967	2 819	4 786
Pearly Beach	265	614	267	613	267	613	267	613	268	613	269	613	270	613	273	613	284	613	284	613	285	613	253	619	271	614	885
Baardskeerdersbos	3	62	3	62	3	62	3	62	3	62	3	62	3	62	3	62	3	62	3	62	3	62	2	62	3	62	65
Buffeljags Bay	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29
TOTALS	**24 724**	**8 426**	**24 763**	**8 406**	**24 810**	**8 383**	**24 846**	**8 370**	**24 882**	**8 367**	**24 952**	**8 356**	**24 988**	**8 351**	**25 107**	**8 348**	**25 155**	**8 346**	**25 202**	**8 346**	**25 243**	**8 345**	**23 629**	**8 606**	**24 858**	**8 388**	**33 246**

Description	Jul-18		Aug-18		Sep-18		Oct-18		Nov-18		Dec-18		Jan-19		Feb-19		Mar-19		Apr-19		May-19		Jun-19		Average		
	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Total
Code	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	
Buffels River	1 146	2 316	1 165	2 306	1 177	2 300	1 184	2 298	1 196	2 297	1 129	2 325	1 210	2 295	1 224	2 294	1 224	2 294	1 224	2 294	1 233	2 294	1 245	2 294	1 196	2 301	3 497
Kleinmond	2 855	1 057	2 859	1 054	2 865	1 049	2 872	1 045	2 878	1 043	2 848	1 064	2 884	1 042	2 885	1 042	2 886	1 041	2 887	1 041	2 888	1 041	2 889	1 041	2 875	1 047	3 921
Greater Hermanus	17 800	1 359	17 796	1 356	17 811	1 356	17 958	1 355	17 983	1 356	17 793	1 361	18 001	1 355	18 005	1 354	18 038	1 355	18 042	1 354	18 046	1 354	18 016	1 354	17 941	1 356	19 297
Stanford	1 231	80	1 232	79	1 235	78	1 239	78	1 240	78	1 199	110	1 242	78	1 242	78	1 245	78	1 248	78	1 249	78	1 250	78	1 238	81	1 319
Greater Gansbaai	2 037	2 800	2 054	2 788	2 066	2 785	2 078	2 782	2 081	2 782	2 028	2 811	2 088	2 782	2 097	2 782	2 101	2 782	2 115	2 780	2 115	2 781	2 121	2 781	2 082	2 786	4 868
Pearly Beach	286	613	286	613	288	613	291	612	292	612	285	613	292	612	292	612	293	611	295	611	295	611	295	611	291	612	903
Baardskeerdersbos	3	62	3	62	3	62	3	62	3	62	3	62	3	62	3	62	3	62	3	62	3	62	3	62	3	62	65
Buffeljags Bay	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29
TOTALS	**25 387**	**8 287**	**25 424**	**8 258**	**25 474**	**8 243**	**25 654**	**8 232**	**25 702**	**8 230**	**25 314**	**8 346**	**25 749**	**8 226**	**25 777**	**8 224**	**25 819**	**8 223**	**25 843**	**8 220**	**25 858**	**8 221**	**25 848**	**8 221**	**25 654**	**8 244**	**33 898**

Description	Jul-19		Aug-19		Sep-19		Oct-19		Nov-19		Dec-19		Jan-20		Feb-20		Mar-20		Apr-20		May-20		Jun-20		Average		
	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Total
Code	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	
Buffels River	1 258	2 281	1 268	2 273	1 272	2 270	1 279	2 267	1 300	2 266	1 303	2 265	1 306	2 266	1 324	2 265							1 334	2 260	1 294	2 268	3 562
Kleinmond	2 902	1 032	2 904	1 029	2 908	1 027	2 910	1 025	2 923	1 022	2 924	1 021	2 926	1 021	2 927	1 021							2 926	1 021	2 917	1 024	3 941
Greater Hermanus	18 028	1 345	18 030	1 347	18 034	1 347	18 064	1 350	18 072	1 350	18 143	1 349	18 143	1 349	18 157	1 349							18 161	1 348	18 092	1 348	19 441
Stanford	1 252	77	1 253	77	1 253	77	1 254	76	1 255	76	1 256	75	1 256	75	1 260	74							1 264	72	1 256	75	1 331
Greater Gansbaai	2 142	2 768	2 150	2 760	2 161	2 753	2 167	2 754	2 169	2 754	2 173	2 755	2 175	2 755	2 179	2 754							2 184	2 754	2 167	2 756	4 923
Pearly Beach	298	610	301	609	306	606	309	605	310	605	310	605	310	604	310	605							310	605	307	606	913
Baardskeerdersbos	5	61	5	61	5	61	6	61	6	61	6	61	6	61	6	61							6	61	6	61	67
Buffeljags Bay	29	0	29	0	29	0	29	0	29	0	29	0	29	0	29	0							29	0	29	0	29
TOTALS	**25 914**	**8 174**	**25 940**	**8 156**	**25 968**	**8 141**	**26 018**	**8 138**	**26 064**	**8 134**	**26 144**	**8 131**	**26 151**	**8 131**	**26 192**	**8 129**	**0**	**0**	**0**	**0**	**0**	**0**	**26 214**	**8 121**	**26 067**	**8 139**	**34 207**

Description	Jul-20		Aug-20		Sep-20		Oct-20		Nov-20		Dec-20		Jan-21		Feb-21		Mar-21		Apr-21		May-21		Jun-21		Average (Estimate)		
	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Total
Code	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	
Buffels River																									1 458	2 215	3 673
Kleinmond																									2 971	999	3 970
Greater Hermanus																									18 359	1 332	19 691
Stanford																									1 308	72	1 380
Greater Gansbaai																									2 676	2 669	5 345
Pearly Beach																									344	587	931
Baardskeerdersbos																									13	61	74
Buffeljags Bay																									29	0	29
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27 158**	**7 934**	**35 092**

Description	Jul-21		Aug-21		Sep-21		Oct-21		Nov-21		Dec-21		Jan-22		Feb-22		Mar-22		Apr-22		May-22		Jun-22		Average (Estimate)		
	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Total
Code	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	
Buffels River																									1 621	2 162	3 783
Kleinmond																									3 025	974	3 999
Greater Hermanus																									18 626	1 316	19 942
Stanford																									1 360	68	1 428
Greater Gansbaai																									3 185	2 582	5 767
Pearly Beach																									381	567	948
Baardskeerdersbos																									20	61	81
Buffeljags Bay																									30	0	30
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**28 249**	**7 729**	**35 978**

Description	Jul-22		Aug-22		Sep-22		Oct-22		Nov-22		Dec-22		Jan-23		Feb-23		Mar-23		Apr-23		May-23		Jun-23		Average (Estimate)		
	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Total
Code	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	
Buffels River																									1 785	2 109	3 894
Kleinmond																									3 079	949	4 028
Greater Hermanus																									18 893	1 299	20 192
Stanford																									1 413	64	1 477
Greater Gansbaai																									3 695	2 494	6 189
Pearly Beach																									418	548	966
Baardskeerdersbos																									28	60	88
Buffeljags Bay																									30	0	30
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29 340**	**7 523**	**36 863**

Description	Jul-23		Aug-23		Sep-23		Oct-23		Nov-23		Dec-23		Jan-24		Feb-24		Mar-24		Apr-24		May-24		Jun-24		Average (Estimate)		
	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Total
Code	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	
Buffels River																							1 949	2 056	1 949	2 056	4 005
Kleinmond																							3 133	924	3 133	924	4 057
Greater Hermanus																							19 160	1 283	19 160	1 283	20 443
Stanford																							1 465	60	1 465	60	1 525
Greater Gansbaai																							4 204	2 407	4 204	2 407	6 611
Pearly Beach																							455	528	455	528	983
Baardskeerdersbos																							35	60	35	60	95
Buffeljags Bay																							30	0	30	0	30
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**30 431**	**7 318**	**30 431**	**7 318**	**37 749**

Description	Jul-24		Aug-24		Sep-24		Oct-24		Nov-24		Dec-24		Jan-25		Feb-25		Mar-25		Apr-25		May-25		Jun-25		Average (Estimate)		
	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Waterborne	Septic Tanks	Total
Code	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	SE8A & SE8E	SE8D	
Buffels River																							2 030	2 015	2 030	2 015	4 045
Kleinmond																							3 156	908	3 156	908	4 064
Greater Hermanus																							19 011	1 284	19 011	1 284	20 295
Stanford																							1 928	56	1 928	56	1 984
Greater Gansbaai																							4 404	2 370	4 404	2 370	6 774
Pearly Beach																							467	522	467	522	989
Baardskeerdersbos																							40	59	40	59	99
Buffeljags Bay																							30	0	30	0	30
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**31 066**	**7 214**	**31 066**	**7 214**	**38 280**

SE8A	Developed Sites
SE8B	Undeveloped Sites Cannot Connect
SE8C	Undeveloped Sites Can Connect
SE8D	Developed Sites Septic Tanks
SE8E	Low Cost Housing Single Quarters

OVERSTRAND MUNICIPALITY

Buffels River Distribution System (Betty's Bay, Pringle Bay and Rooi Els)

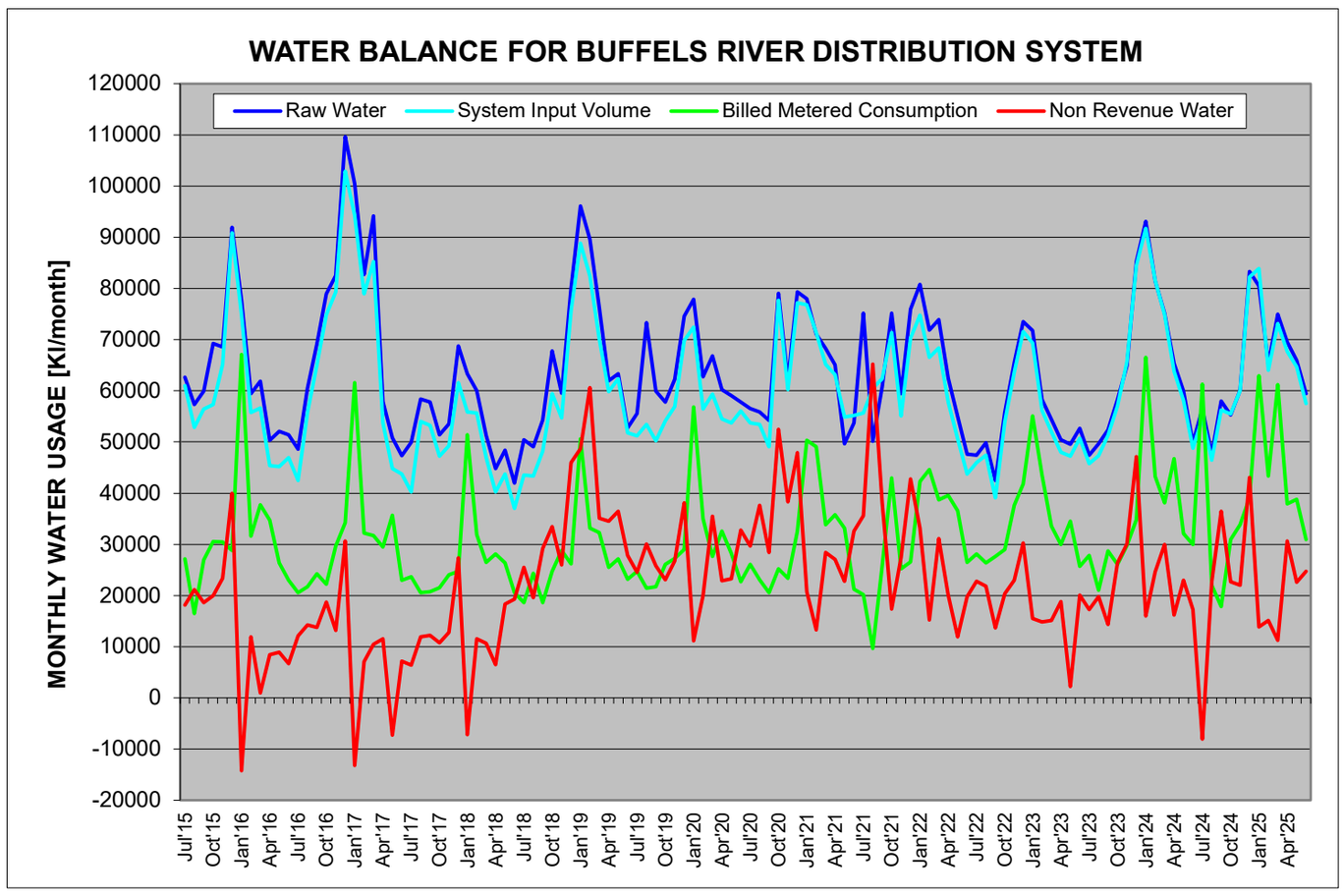
Month	Year	BULK WATER SUPPLY						TREATED BULK WATER SUPPLY										TREATED WATER SUPPLY																					
		Raw Water	System Input Volume	Treatment Losses				System Input Volume for Three Areas					Bulk Distribution Losses				Revenue Water												Non Revenue Water (NRW)									
																	Billed Metered Consumption					Billed Un-metered Consumption for all Three Areas	Betty's Bay		Pringle Bay		Rooi Els		Totals for all Three Areas				Unbilled Metered Consumption	Unbilled Un-metered Consumption	Apparent Losses			Real Losses						
		Inlet	Outlet	Monthly Treatment Losses	Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Betty's Bay	Pringle Bay	Rooi Els	Farms	Totals	Monthly Bulk Distribution Losses	Monthly Bulk Distribution Losses	Annual Bulk Distribution Losses	Annual Bulk Distribution Losses	Betty's Bay	Pringle Bay	Rooi Els	Farms	Totals		Annual NRW	Annual NRW	Annual NRW	Annual NRW	Annual NRW	Annual NRW	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW			Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
								Voorberg	Disa																							Estimated Percentages (Variables)							
																																2%	4%	1%	93%				
		[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]		[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]
Jan/01	2000/2001	72370	62490	9880	13.7	41835	11.7%	30530	4472	16180	5794		61976	914	0.9	19163	6.1%	27160	10227	3639	414	41440	0	84962	43.1%	27709	36.2%	6254	29.1%	20536	33.1	116441	39.5%															
Feb/01		60390	52950	7440	12.3			32830	305	13260	4497		50986	1064	3.7			21640	11260	2573	414	35910	0							15076	29.6															
Mrt/01		80800	68970	11830	14.6			45400	1607	16010	5095		68112	858	1.2			28904	10701	4964	414	42983	0							25129	36.9															
Apr/01		65400	61365	2035	4.7			28240	815	11540	4122		44717	8648	16.2			14525	6798	1564	414	23301	0							21476	48.0															
May/01		45600	43680	1920	4.2			24440	2352	8500	372		35864	7816	17.9			11270	5630	1165	414	18479	0							17385	48.5															
Jun/01		45600	43770	1160	1.9			20700	240	11110	1351		33401	-637	-1.9			10480	4352	1410	414	16658	0							18923	52.4															
Jul/01		54450	46290	9060	16.3			26250	723	9620	4369		40962	468	1.0			9414	5845	1174	414	16847	0							29075	63.3															
Aug/01		49940	38700	11240	18.7			25950	750	9960	5776		42436	3434	8.8			8471	6024	1104	414	16013	0							26353	56.0															
Sep/01		47440	36770	10670	22.5			21730	0	12230	3775		37735	1974	5.4			11312	5480	1462	414	19068	0							15128	41.5															
Okt/01		56700	49940	6760	11.7			30760	105	14420	2524		47809	2471	5.0			13203	7480	1740	414	22966	0							24223	51.3															
Nov/01		65250	53880	11370	17.7			34220	0	16870	4672		55762	2958	5.5			21709	9990	2262	414	34375	0							30977	55.6															
Dec/01	2001/2002	65550	59940	5610	10.3	112150	15.7%	39760	3040	22000	6629		71429	-1688	-2.7	7186	1.2%	28120	20395	4387	414	53397	0	198582	50.8%	57092	34.6%	8516	23.9%	6941	11.1	261706	44.0%															
Jan/02		67590	56260	11330	17.1			30900	830	12750	4908	68	56585	-325	-0.6			16945	10225	2526	68	29465	0							27120	47.9															
Feb/02		59810	51120	8590	14.1			30200	3140	14700	4997	1523	53960	-2960	-5.6			19556	13426	3330	1523	37844	0							16156	29.9															
Mrt/02		78120	63930	14190	18.2			34560	2437	19040	6334	1132	63803	847	1.3			22417	11145	2748	1132	37442	0							29041	49.8															
Apr/02		60730	52920	6810	11.2			32510	4599	13330	3149	138	53726	194	0.4			12345	6348	2034	138	20765	0							32965	61.4															
May/02		41400	36700	4700	8.4			26990	0	8940	734	27	36667	460	1.3			6558	4266	1014	27	11865	0							20960	56.8															
Jun/02		30600	30030	570	1.9			24960	3522	8990	1224	41	34697	-597	-1.2			5558	4266	1014	41	10879	0							27050	66.8															
Jul/02		43560	44460	12110	30.1			30240	657	9990	1264	36	39992	5168	11.6			9414	5555	1359	36	16367	0							27625	63.3															
Aug/02		54180	53550	1090	2.0			34640	0	11160	1907	17	47724	5346	10.1			10499	6252	1382	17	18090	0							29634	62.1															
Sep/02		39770	42960	8280	17.7			39530	13298	12810	3990	0	67628	-5138	-8.2			15104	7716	1808	0	24628	0							24642	53.5															
Okt/02		77950	61544	16110	20.8			38300	2511	16220	3924	0	60235	-1651	-2.7			16177	9554	2541	0	28272	0							33678	53.9															
Nov/02		78590	61940	16650	21.2			39130	1586	16220	3424	0	60779	7861	12.7			23125	14418	3818	0	41362	0							37228	52.9															
Dec/02	2002/2003	106590	86190	20400	19.1	158876	18.4%	40380		24970	6468	10	86158	5424	6.3	18772	2.7%	41480	21265	6273	10	69026	0	247186	52.6%	55546	31.7%	9435	22.7%	12041	14.0	312240	45.4%															
Jan/03		87360	66960	20910	23.9			43960	4977	21130	5268	120	75155	-8505	-12.8			28799	12000	3177	120	44096	0							32569	43.3															
Feb/03		73230	60270	12960	17.7			38930		14490	3593	52	57065	3204	5.3			20354	11053	3060	52	34519	0							22546	39.5															
Mrt/03		78610	62790	15780	16.9			38830		17510	4059	47	60296	2274	3.8			17880	9259	2507	47	29693	0							30613	51.0															
Apr/03		68160	55770	12390	18.2			35700		13960	4628	188	54676	1394	2.5			15090	8839	2285	188	20372	0							28304	51.8															
May/03		56520	49950	6570	11.6			33200		10490	3819	63	47372	2358	4.7			10554	5535	1599	63	17751	0							29620	62.5															
Jun/03		50730	40890	9840	19.5			27270		9280	2893	43	39384	5416	9.9			13654	7194	2011	43	22902	0							16480	41.9															
Jul/03		47880	44460	12150	20.1			24960		8640	2398	36	36034	674	1.5			9968	5555	1359	36	16917	0							27043	61.9															
Aug/03		53610	42710	10900	20.3			27290		8140	3368	5	38443	3167	9.3			9968	7305	1476	4058	22890	0							15553	41.2															
Sep/03		66130	51430	14700	22.8			38100		12810	3990	0	47628	2125	4.2			12450	7162	1808	0	24561	0							24264	53.5															
Okt/03		75240	59920	15320	24.7			45210		16620	3654	0	64971	1703	3.0			16177	9554	2541	0	28273	0							29368	54.3															
Nov/03		81440	72940	8500	10.5			44550		14550	4968	52	64204	36	0.1			20178	14033	3818	52	44080	0							37470	51.6															
Dec/03	2003/2004	94270	73600	20670	21.9	135600	17.5%	46040		19720	7466	5	73231	848	0.9	21123	3.3%	33813	16027	4416	5	55196	0	201233	49.5%	45745	28.5%	16021	32.8%	18075	24.7	250828	40.7%															
Jan/04		72830	62750	10080	13.8			44060		21280	6748	0	72132	3183	4.4			24045	11973	4897	64	43824	0							28428	39.4															
Feb/04		66430	56950	9480	14.3			33000		16860	5578	120	55558	2271	4.1			18211	10574	3581	120	32486	0							23072	41.5															
Mrt/04		68880	56030	12850	18.7			31890		16070	5045	24	53029	2529	4.8			15780	9259	3223	24	28287	0							24742	47.7															
Apr/04		56210	45860	10350	18.4			28300		13370	3372	47	45089	1711	3.7			15839	7438	1901	47	25225	0							19864	44.1															
May/04		47210	41660	5550	11.8			29020		12900	2940	28	44888	5692	11.4			12903	7225	2268	28	22424	0							22464	50.0															
Jun/04		52650	43000	12650	24.0			27170		9640	1692	23	38525	5493	14.3			13821	7486	1899	23	23229	0							13892	36.0															
Jul/04		61860	52440	9420	15.2			31160		11670	3780	0	46610	5903	17.0			17048	9466	2541	0	29055	0							17555	37.7															
Aug/04		66810	55860	9030	10.4			33190		11670	1328	203	46391	3488	9.3			11118	7894	1987	1657	22656	0							23735	51.2															
Sep/04		76130	64770	11360	12.5			40020		13480	2712	91	56303	6447	9.5			12450	7162	1546	2104	23261	0							29634	58.8															
Okt/04		60840	55590	5250	8.6			34150		11310	2546	70	48076	8514	15.0			12438	8714	2210	2318	25680	0							22395	46.6															
Nov/04		51450	44670	6900	13.4			30360		14550	4111	102	49123	1057	2.2			10780	5050	2751	2318	20899	0							29014	43.6															
Dec/04	2004/2005	95640	88910	6730	7.0	93042	10.9%	48730		28130	5671	193	82724	6205	9.8	78301	10.3%	29241	19190	5218	2815	56464	0	277913	60.4%	77924	42.4%	6028	16.0%	26260	31.7	338101	49.5%															
Jan/05		84490	77870	6620	7.8			49430		19540	3988	47	72925	6446	8.8			19157	11937	3982	2815	37891	0							29944	43.6															
Feb/05		71870	62850	9020	12.6			38770		15810	3712	72	58364	4459	7.1			15842	8026	2854	2815	29537	0							28627	49.4															
Mrt/05		74780	64270	10510	14.0			40190		15810	4661	100	60811	3459	5.4			13759	10082	3783	2149	33791	0							27050	44.5															
Apr/05		71850	68930	2920	4.1			41520		17460	2716	80	61776	7154	10.4			11675	5880	2025	2149	22815	0							38961	63.1															
Mei/05		68360	63440	4920	7.2			32280		15430	2625	308	47443	3300	6.5			9658	5349	1944	2149	19100	0							28343	60.5															
Jun/05		61165	51990	9175	15.0			34900		11580	2068	41	48589	3411	6.5			12308	6731	1736	0	20775	0							27814	57.3															
Jul/05		64010	54740	9270	14.5			34140		11580	3440	0	49160	5431	11.0			10405	6263	1736	0	18404	0							30577	62.3															
Aug/05		87796	76345	11451	13.0			45070		23660	2540	80	71350	4995	6.5			10672	6263	1831	2512	21278	0							50072	70.2															
Sep/05		95810	84872	10938	8.3			50640		26470	2614	70	79794	5558	10.1			10637	6808	1781	0	19152	0							60658	76.0															
Okt/05		66260	61260	5000	7.5			39020		13020	3708	66	57252	8343	14.6			18134	8343	2435	0	28912	0							28340	49.5															
Nov/05		80130	70920	9210	11.5			39770		12720	4443	80	56993	11007	19.3			12121	7263	1831	4408	25624	0							39776	69.8															
Dec/05	2005/2006	104940	96540	8395	8.0	88469	8.9%	56680		27390	8138	62	92268	4077	4.4	75413	8.3%	43012	20896	5323		69231	0	335490	60.7%	96219	43.5%	17417	32.3%	23037	25.0	431011	52.0%															
Jan/06		110370	101550	8820	7.9			55730		30390	8038	341	94499	2357	2.5			26767	16008	5245	0	48520	0							45979	48.7															
Feb/06		90670	83680	6990	7.7			51660		19960	4993	320	77623	6057	7.2			20129	11363	2970	7955	42417	0							35206	45.4															
Mrt/06		105990	93470	12520	11.8			60000		19780	5456	270	85506	7954	8.5			20915	11812	3857		36584	0							49586	58.0															
Apr/06		86510	72020	8490	10.5			48370		15190	4469	255	68284	3796	5.3			15707	9901	2691		28299	0							39985	58.6															
Mei/06		73170	68820	4350	5.9			43740		14790	3318		61848	6297	12.1			11468	6237	2094	3486	24485	0							36644	59.4															
Jun/06		62260	59400	2860	4.6			37730		9870	3327		50928	8472	14.3			12696	6631	2032		21362	0							29566	58.1															
Jul/06		70480	68940	1540	2.2			42050		15330	3148	540	61068	8612	12.3			14063	6263	1709		22035	0							41725	66.3															
Aug/06		81470	77980	3490	4.3			51630		14900	3740		69970	8910	10.3			20264	6730	1400	2892	19286	0							50984	72.4															
Sep/06		90410	86230	4180	4.9			49410		17460	4164	270	66540	4106	6.0			9561	8796	2173		20530	0							35954	53.4															
Okt/06		72170	66610	5560	7.7			42420		15250	4314		61984	4263	6.9			32654	10637	2608	1679	47778	0							14206	22.9															
Nov/06		62860	62100	760	1.2			52460		19960	3982		76402	14458	18.9			21808	13982	2930	3264	42152	0							34250	44.8															
Dec/06	2006/2007	112780	106560	6220	5.5	91960	8.7%	60370		31820	8735		100925	5835	5.8	70549	7.3%	40551	22554	5613	2727	71445	0	364826	59.9%	81242	35.9%	22848	40.3%	29480	29.2	453189	50.7%															
Jan/07		115170	109350	5820	5.1			62950		30910	7028	87	100425	4498	4.5			26645	14744	4956	1343	52292	0							34144	46.7															
Feb/07		96620	88070	10560	10.7			58530		20720	4649	43	83942	4318	5.1			23145	13054	4286	1183	39668	0							45274	53.9															
Mrt/07		117420	98550	18870	16.1			56050		20630	4756	34	81474	4075	5.0			24104	13755	4129	839	42827	0							38851	48.5															
Apr/07		79750	76080	3670	4.6			44690		19650	4641	24	69005	7076	9.3			18449	12947	3665	2683	37744	0							31261	45.3															
Mei/07		77120	71770	5350	6.9			45990		16330	3365	5	65690	6685	9.5			14038	9763	2744	998	27543	0							38237	58.2															
Jun/07		74940	70400	4540	6.1			50250		11040	2904	1	64201	6199	8.8			11490	8602	1946	863	22901	0							43700	68.1															
Jul/07		94090	78850	15240	14.5			54390		13140	3303	4	68784	4579	6.3			12619	7985	1795	1795	23331	0							54433	66.1															
Aug/07		78800	79680	-1680	-2.4			59350		10580	4249	2	74181	5469	6.9			13101	6694	2464	563	20652	0							53529	72.2															
Sep/07		89810	84240	5570	6.2			61210		12610	4512	2	78334	4153	5.3			12935	7781	2116	1614	24446	0							51796	67.1															
Okt/07		90860	81140	9720	10.7			56780		15990	3890	38	76698	4442	5.5			17884	12102	3270	1500	34756	0							41942	54.7															
Nov/07		84900	76410	8490	10.0			53630		21800	3980	38	79448	2750	3.5			17595	12067	3270	1500	34432	0							38529	50.8															
Dec/07	2007/2008	113300	101970	11330	10.0	85843	7.3%	59460		27530	6747	33	100770	1208	1.2	56152	5.2%	35525	25345	5332	2541	68743	0	494746	66.8%	82740	35.3%	16175	27.9%	34027	33.8	573855	55.5%															
Jan/08		113810	112744	1066	0.9			66250		29460	7729	56	103435	2335	2.3			28407	16775	5245	1343	52250	0							51143	49.4															
Feb/08		110060	105672	4388	4.0			63610		27330	5958	49	96947	6725	8.3			21055	13791	4624	2227	41697	0							55250	57.0															
Mrt/08		104990	96979	8011	8.3			64960		26160	5911	38	96968	3723	3.7			24804	15260	5245	1525	46389	0							49269	51.5															
Apr/08		110010	92255	17755	16.1			60010		24570	4500	53	89133	3122	3.4			24810	16080	3974	1525	46389	0							42744	48.0															
Mei/08		104320	94416	9904	9.5			68140		18480	4500	58	91178	2038	2.4			19799	13339	3667	1901	38805	0							52373	57.4															
Jun/08		97366	89327	8039	8.3			67510		13460	3000		84370	4957	5.5			14811	7568	2284	1851	26004	0							57866	68.6															
Jul/08		82582	75764	6819	8.3			54520		13930	3000		71450	4614	6.5			14996	8750	2207	1536	29953	0							45497	63.7															
Aug/08		80040	73431	6609	8.3			53960		11860	3000		68820	4611	6.3			13148	7018	1736	1568	21902	0							46918	68.2															
Sep/08		74213	69279	4937	6.7			49770		11810	3000		63556	5720	8.3			13099	10061	1950	1647	26757	0							36914	55.6															
Okt/08		82388	77287	5101	6.2			59670		13450	4250	10	73380	3907	5.1			12813	7568	2284	1851	26004	0							57866	68.6															
Nov/08		97999	91162	6837	6.7			54520		13930	3000		71450	4314	5.7			14996	8750	2207	1536	29953	0							45497	63.7															
Dec/08	2008/2009	122250	116025	6225	5.1	85474	7.2%	71290		28500	7340		107130	8895	7.7	57479	5.2%	18400	11390	3309	3305	33099	0	507375	66.6%	72576	31.4%	16063	29.8%	74031	69.1	596024	57.0%															
Jan/09		132289	131619	6670	5.1			77850		31580	8200		117630	10460	8.9			21132	12402	4418	842	38952	0							23040	38.1															
Feb/09		121222	114957	6265	5.2			74500		28110	5840		108450	6507	5.7			28144	18210	4360	3082	50714	0							57736	53.2															
Mrt/09		129139	115360	13779	10.7			75260		27590	5850		108630	6530	6.0			27732	18993	4213	1925	47791	0							51039	56.1															
Apr/09		97872	92276	5596	5.5			64250		19750	4500		88500	3776	4.1			27418	13963	4415	1391	45796	0							42704	48.3															
May/09		76773	72328	4435	5.8			50030		17630	3570		71230	308	0.4			21783	14973	3066	979	40802	0							31708	44.5															
Jun/09		93072	86372	4700	5.0			72220		12700	3100		88020	352	0.4			13179	9690	1814	1311	24483	0							63537	72.2															
Jul/09		97427	90418	7011	7.2			66350		14910	3570		84830	3696	4.0			14913	8572	2153	763	26578	0							61182	70.5															
Aug/09		95803	83738	12065	12.6			63470		16120	2960	854	83404	334	0.4			13958	7229	1559	136	22746	0							60658	72.7															
Sep/09		91540	82960	8580	9.4			62360		12560	3110		87210	6049	8.3			11440	8201	1934	139	21464	0							45896	66.2															
Okt/09		79239	69596	9643	12.2			45610		16200	4350	139	66299	3297	4.7			15581	9419	2127	1160	27127	0							39172	59.1															
Nov/09		88897	77412	11485	12.9			51160		18710	5290	72	75232	2180	2.8			18055	9844	3240	50	31139	0							44093	58.6															
Dec/09	2009/2010	126260	105131	21129	16.7	196769	16.9%	67890		25950	6600	50	100490	4641	4.4	45286	4.7%	21049	10075	2720	94	33944	0	418490	63.5%	60038	28.9%	18459	33.5%	66646	66.3	498478	54.0%															
Jan/10		120913	104093	16820	12.3			69440		24140	6410	94	100084	6005	5.7			43443	21957	5615	1656	73215	0							24899

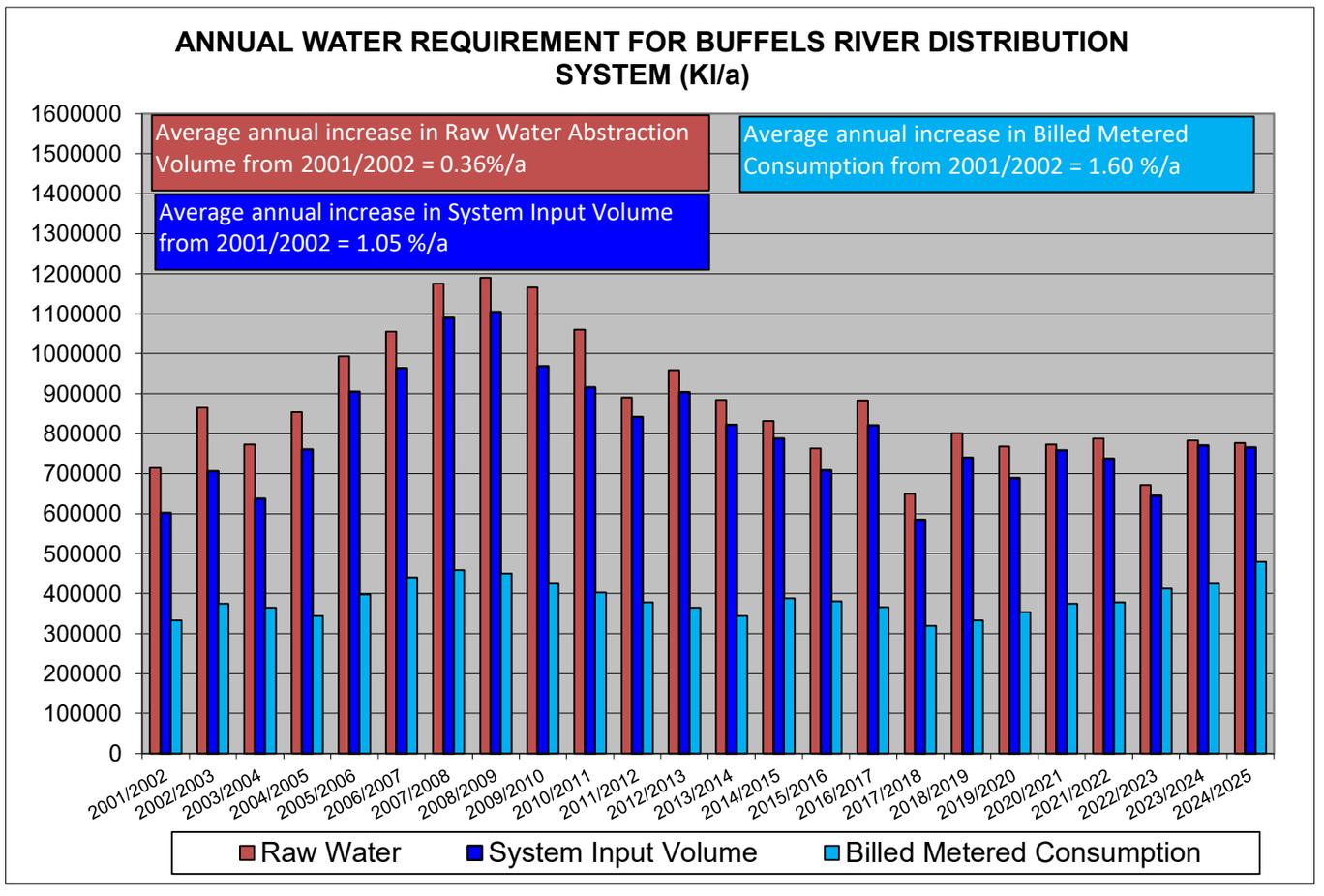
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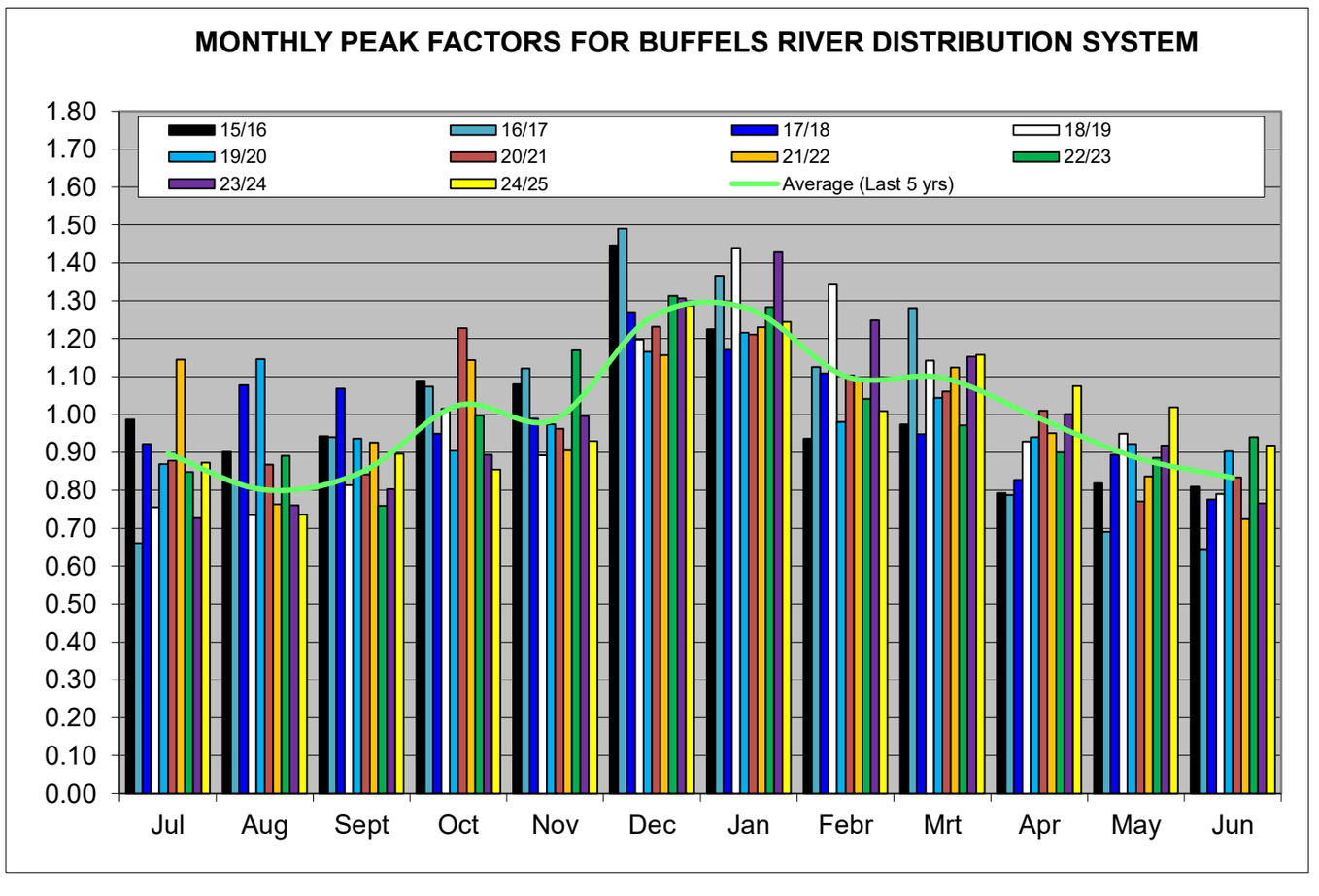
Buffels River Distribution System (Betty's Bay, Pringle Bay and Rooi Els)

Month	Year	BULK WATER SUPPLY		TREATED BULK WATER SUPPLY												TREATED WATER SUPPLY																					
		Raw Water	System Input Volume	Treatment Losses				System Input Volume for Three Areas						Bulk Distribution Losses		Revenue Water							Non Revenue Water (NRW)													
																Billed Metered Consumption					Billed Un-metered Consumption for all Three Areas	Betty's Bay		Pringle Bay		Rooi Els		Totals for all Three Areas				Unbilled Metered Consumption	Unbilled Un-metered Consumption	Apparent Losses			Real Losses					
		Inlet	Outlet	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Betty's Bay		Pringle Bay	Rooi Els	Farms	Totals	Monthly Bulk Distribution Losses	Annual Bulk Distribution Losses	Annual Bulk Distribution Losses	Betty's Bay	Pringle Bay	Rooi Els	Farms	Totals		Annual NRW	Annual NRW	Annual NRW	Annual NRW	Annual NRW	Annual NRW	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW			Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
								Voorberg	Disa																							Estimated Percentages (Variables)							
																																2%	4%	1%	93%				
		[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[%]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
Jul'15	2015/2016	62698	61041	1657	2.6	54157	7.1%	32505		9265	3578	-	45348	15693	25.7	163599	23.1%	14187	11265	1718		27170	0							18178	40.1	162447	29.8%	0	122	361	722	181	16792	18056	39.8%		
Aug'15		57285	52850	4435	7.7			24654		8648	4137	-	37439	15211	28.8			4702	9627	2131		16460	0							21179	56.3			0	106	421	843	211	19598	21073	56.0%		
Sep'15		59888	56448	3442	5.7			32115		9705	3777	-	45597	10849	19.2			17451	7776	1774		27001	0							18596	40.8			0	113	370	739	185	17189	18483	40.5%		
Oct'15		69239	57339	11900	17.2			34900		10873	4803	-	50576	6763	11.8			18455	9961	2170		30586	0							19900	39.5			0	115	398	795	199	18484	19875	39.3%		
Nov'15		68600	65170	3430	5.0			37018		11724	5026	-	53768	11404	17.5			18215	9769	2459		30443	0							23323	43.4			0	130	464	928	232	21569	23193	43.1%		
Dec'15		91917	90895	1022	1.1			48023		13635	7098	-	68756	22139	24.4			16097	10114	2601		28812	0							39944	58.1			0	182	795	1590	398	36979	39762	57.8%		
Jan'16		77824	74640	2984	3.8			37119		7558	8187	-	52864	21976	29.4			37069	23605	6423		67094	0							-14230	-26.9			0	150	-288	-575	-144	-13373	-14380	-27.2%		
Feb'16		59485	55733	3752	6.3			27593		9706	6250	-	43549	12184	21.9			16331	12513	2796		31640	0							11909	27.3			0	111	236	472	118	10972	11798	27.1%		
Mar'16		61882	56681	5201	8.4			25100		8313	5313	-	38726	13147	31.7			20732	14028	2958		37748	0							987	2.5			0	113	17	35	9	812	874	2.3%		
Apr'16		50365	45377	4988	9.9			26750		10980	5334	-	43064	2313	5.1			17019	15089	2571		34679	0							8385	19.5			0	91	166	332	83	7714	8294	19.3%		
May'16		52033	45207	6826	13.1			21893		9099	4325	-	35317	9890	21.9			14304	10146	1874		26414	0							8903	25.2			0	90	176	353	88	8196	8813	25.0%		
Jun'16		51443	46933	4510	8.8			20737		5274	3691	-	29702	17231	36.7			12002	9116	1884		23002	0							6700	22.6			0	94	132	264	66	6144	6606	22.2%		
Jul'16		48587	42479	6108	12.6			23003		5700	3945	-	32648	9631	23.1			12524	5465	1547		20536	0							12112	37.1			0	65	241	481	120	11185	12027	36.8%		
Aug'16		60539	55805	4734	7.8			21092		10900	3951	-	35943	19862	35.6			11619	8639	1449		21707	0							14236	39.6			0	112	282	565	141	13136	14124	39.3%		
Sep'16		69150	65110	4040	5.8			22500		11500	4031	-	38031	27079	41.6			13460	8809	1958		24227	0							13804	36.3			0	130	273	547	137	12717	13674	36.0%		
Oct'16		78933	74862	4071	5.2			23449		12500	4957	-	40906	33956	45.4			11966	8507	1721		22194	0							18712	45.7			0	150	371	742	186	17263	18562	45.4%		
Nov'16		82499	79371	3128	3.8			24043		13500	5291	-	42834	36537	46.0			15188	11879	2569		29636	0							13198	30.8			0	159	261	522	130	12127	13039	30.4%		
Dec'16		106658	102901	6757	6.2			40643		14000	10255	-	64898	38003	36.9			19681	12128	2448		34257	0							30641	47.2			0	206	609	1217	304	28305	30435	46.9%		
Jan'17		100516	94250	6266	6.2			30752		11254	6364	-	48370	41600	48.7			34338	21806	5453		61597	0							-13207	-27.3			0	189	-265	-536	-134	-12458	-13396	-27.7%		
Feb'17		82772	78962	3810	4.6			22188		11366	5800	-	39354	39908	50.2			18029	11496	2707		32232	0							7122	18.1			0	158	139	279	70	6477	6964	17.7%		
Mar'17		94197	89248	4949	5.5			28700		8313	5088	-	42101	43147	50.6			13782	11641	2635		31958	0							10433	24.8			0	170	205	411	103	9544	10353	24.4%		
Apr'17		57902	53734	4168	7.2			26750		10390	3837	-	40977	12757	23.7			17076	10091	2320		29487	0							11490	28.0			0	107	228	455	114	10586	11383	27.8%		
May'17		52788	44819	7969	11.8			19370		12705	3582	-	28357	16462	36.7			19326	13123	2476		35653	0							-7296	-25.7			0	90	-148	-295	-74	-6869	-7386	-26.0%		
Jun'17		47292	43711	3581	7.6			12476		13720	3982	-	30178	13533	31.0			12640	8546	1786		22972	0							7206	23.9			0	87	142	285	71	6620	7119	23.6%		
Jul'17		49926	40280	9646	19.3			14962		10698	4391	-	30081	10199	25.3			11699	10153	1831		23683	0							6398	21.3			0	81	126	253	63	5875	6317	21.0%		
Aug'17		58353	54031	4322	7.4			17905		14373	3187	-	35464	21567	39.9			11488	7942	1123		20553	0							11911	36.7			0	108	236	472	118	10977	11803	36.4%		
Sep'17		57837	53210	4627	8.0			14307		14161	4498	-	32966	20244	38.0			11166	8051	1507		20724	0							12242	37.1			0	106	243	485	121	11286	12136	36.8%		
Oct'17		51372	47253	4119	8.0			11361		16048	4941	-	32350	18012	31.8			11711	8191	1632		21534	0							13196	33.2			0	95	212	425	106	9878	10621	32.9%		
Nov'17		53545	49261	4284	8.0			15366		18100	3367	-	36833	12428	25.2			12191	9617	2251		24059	0							12774	34.7			0	99	254	507	127	11788	12675	34.4%		
Dec'17	2017/2018	66776	61553	7223	10.5	64571	9.9%	25903		20942	5507	-	52052	36911	41.5	124586	21.3%	12713	9858	2173		24744	0	20623	10.7%	84048	40.5%	35847	58.8%	77308	52.5	140518	30.5%	0	123	544	1087	272	25282	27185	52.2%	139348	30.3%
Jan'18		63361	56857	7504	11.8			17170		18926	8134	-	44230	11627	20.8			29689	17746	3957		51392	0							-7162	-16.2			0	112	-145	-291	-73	-6765	-7274	-18.4%		
Feb'18		59983	55715	4268	7.1			12015		19519	11863	-	43397	12128	22.1			16804	12334	2635		31876	0							11521	26.5			0	111	228	456	114	10611	11410	26.3%		
Mar'18		51336	46897	4439	8.6			13302		19188	4663	-	37153	9744	20.8			13644	10678	2130		26452	0							10701	28.8			0	94	212	424	106	9865	10607	28.6%		
Apr'18		44819	40229	4593	10.2			12874		17733	3988	-	34595	5631	14.0			14294	11375	2438		28107	0							6488	18.8			0	80	128	256	64	5959	6408	18.5%		
May'18		48377	43783	4594	9.5			16259		22817	3568	-	44644	-861	-2.0			15743	8909	1684		26336	0							18308	41.0			0	88	364	729	182	16945	18220	40.8%		
Jun'18		41084	37023	4061	11.8			18935		18072	2640	-	39647	-2284	-7.6			10344	8674	1515		20534	0							19113	48.5			0	74	385	770	192	17892	19239	48.3%		
Jul'18		50445	43582	6863	13.6			23202		17942	3029	-	44173	-591	-1.4			11080	6597	955		18632	0							25541	57.8			0	148	408	360	204	19421	20393	46.2%		
Aug'18		49035	43370	5665	11.6			23059		18127	2765	-	43951	-581	-1.3			10534	13715	1459		24318	0							19633	44.7			0	148	290	470	145	13581	14465	33.0%		
Sep'18		54265	48173	6092	11.2			24432		20649	2747	-	47828	345	0.7			8761	8189	1714		18664	0							29164	61.0			0	148	480	360	240	22935	24016	50.2%		
Oct'18		57758	53473	4285	7.4			30136		24706	3382	-	58224	1249	2.1			13798	9133	1883		24814	0							33460	57.5			0	148	566	478	283	26984	28312	48.6%		
Nov'18		59579	54714	4865	8.2			32628		17186	4942	-	54756	-42	-0.1			16209	10438	2112		28759	0							25997	47.5			0	148	417	555	208	19668	20849	38.1%		
Dec'18		79976	75659	4317	5.4			41366		25102	5726	-	72194	34651	47.6			14767	9028	2422		26217	0							45977	63.7			0	148	817	506	408	39088	40629	56.6%		
Jan'19	2018/2019	96092	88839	7253	7.5	60724	7.6%	60930		26093	12314	-	99337	-10498	-11.8	-15969	-2.2%	26796	19270	4591		50657	0	239111	57.5%	130504	50.2%	53410	66.7%	48680	49.0	423025	55.9%	0	148	871	978	435	41248	43532	43.8%	361245	47.8%
Feb'19		89640	82469	7171	8.0			57450		26626	7171	-	91247	33664	-13375			16860	27728	8626		53214	0							60620	64.6			0	148	1109	641	555	53187	55472	59.1%		
Mar'19		76235	70136	6099	8.0			36038		21737	9590	-	67365	2771	4.0			17800	11656	2798		32254	0							35111	52.1			0	148	599	623	300	28441	29963	44.5%		
Apr'19		61999	56915	5084	8.2			34357		22340	9544	-	66039	-224	-0.4			13437	10550	1950		25937	0							34552	57.5			0	148	588	492	294	28029	29434	49.0%		
May'19		63377	62373	1004	1.6			29746		23033	10879	-	63658	-1285	-2.1			15052	10009	2088		27189	0							36469	57.3			0	148	626	525	313	29856	31321	49.2%		
Jun'19		52719	51793	926	1.8			29000		15476	6660	-	51036	737	1.5			11898	9497	1830		23225	0							27801	54.5			0	148	453	448	227	21544	22673	44.4%		
Jul'19		55604	51251	4353	7.8			29000		16461	3800	-	49261	1990	3.9			13497	8343	2921		24761	0							24500	49.7			0	148	439	989	218	20166	21808	44.3%		
Aug'19		73350	63450	9900	27.2			26047		20909	4562	-	51518	11932	23.4			11708	8630	1994		22332	0							30096	58.4			0	148	554	555	274	25727	27404	53.2%		
Sep'19		59950	52060	9890	16.2			26568		13799	4500	-	47567	2693	5.4			11108	8538	1994		21730	0							29837	54.3			0	148	453	857	231	21583	23145	48.7%		
Oct'19		57822	54158	3664	6.3			30514		13189	5532	-	49215	4943	9.1			13677	9972	2448		26097	0							23118	47.0			0	148	482	409	1042	204	18772	20426	41.5%		
Nov'19		62303	56992	5311	8.7			31085		16992	7120	-	55564	2508	5.1			14822	10138	2291		27249	0							29735	49.5			0	148	481	1088	240	22234	24043	44.9%		
Dec'19	2019/2020	74547	69811	4736	6.4	79606	10.4%	40003		20215	6877	-	67095	2716	3.9	21338	3.1%	16328	10333	2289		28950	0	188415	49.8%	95132	41.8%	30386	49.8%	38145	56.9	313933	47.1%	0	148	709	1156	355	33234	35453	52.8%	281633	42.2%
Jan'20		77837	72410	5427	7.0			37977		23927	6467	-	67565	1530	2.3			31065	19595	5344		55845	0							11120	16.4			0	148	453	448	227	21544	22673	44.4%		
Feb'20		62738	56490	6248	10.0			29701		19608	5613	-	54922	1568	2.8			19348	12961	2756		34965	0							19957	36.3			0	148	345	1396	173	15351	17265	31.4%		
Mar'20		66799	62599	4200	6.3			36964		21650	4568	-	63182	-3783	-6.4			12273	12139	2469		27880	0							35502	56.2			0	148	656	1105	328	30721	32181	51.9%		
Apr'20		60195	54545	5650	9.4			29370		21900	4197	-	55467	-922	-1.7			16771	12994	2776		32541	0							22926	41.3			0	148	205	1299	202	18328	20234	36.5%		
May'20		59054	53745	5309	9.0			31180		18273	4073	-	53453	2092	4.3			16893	8873	2420		28186	0							23287	45.2			0	148	412	1125	206	18833	20575	40.0%		
Jun'20		57794	56026	1768	3.1			27180		23040	5200	-	55420	606	1.1			11447	9411	1832		22690	0							32730	59.1			0	148	601	906	300	28231	30038	54.2%		
Jul'20		56575	53682	2893	5.1			28510		22980	4252	-	55772	-2090	-3.9			14546	9663	1865		26074	0							29698	53.2			0	148	506	480	253	24074	25314	45.4%		
Aug'20		55909	53399	2510	4.5			27720		28630	4323	-	60673	-7274	-13.6			13946	7763	1322		23031	0							37642	62.0			0	148	565	424	333	31836	33258	54.8%		
Sep'20		54206	49113	5093	9.4			30170		14780	4035	-	48985	128	0.3			10683	8350	1550		20583	0							28407	58.0			0	148	379	240	379	32023	32923	49.0%		
Oct'20		79080	77636	1444	1.8			48647		24232	4770	-	77649	-13	0.0			14240	8482	2503		25225	0							52424	67.5			0	148	482	961	464	480	48040	61.9%		
Nov'20		81959	80222	1737	2.8			30133		25649	5890	-	61672	1450	-2.4			13213	9813	1548		23727	0							38300	62.1			0	148	678	439	339	32468	33916	55.0%		
Dec'20	2020/2021	79323	77240	2083	2.6	14959	1.9%	37172		36600	6788	-	80560	-3320	-4.3	4265	0.6%	15042	14208	3380		32630	0	190031	48.1%	150490	51.9%	38671	56.1%	47930	59.5	379192	50.3%	3	148	871	601	435	41639	43546	54.1%	326580	43.3%
Jan'21		77931	76193	1738	2.2			37011		26184	7837	-	71032	5748	7.5			28600	17027	4685		50312	0							20720	29.2			3	148	327	926	163	14920	16336	23.0%		
Feb'21		71057	71363	-306	-0.4			34769		21531	6128	-	62428	8935	12.5			24979	20091	4041		49111	0							13317	21.3			3	148	179	904	89	7761	8693	14.3%		
Mar'21		68265	65211	3054	4.5			35360		20763	6004	-	62185	3026	4.6			18912	15616	2033		35761	0							29380	45.6			3	148	382	480	622	240	28054	29996	38.6%		
Apr'21		65083	63138	1945	3.0			32180		22826	7763	-	62769	369	0.6			18112	15616	2033		35761	0							27008	43.0			3	148	382	452	658	226	21287	22624	36.0%		
May'21		78232	73727	4505	5.8			27560		22826	5570	-	55956	-1088	-2.0			19428	13892	3284		53212	0							27744	40.6			3	148	367	611	184	17198	18360	32.8%		
Jun'21		53743	53138	-1395	-2.6			25489		22826	5531	-	53846	1292	2.3			11988	8143	1093		21224	0							32622	60.6			3	148	362	565	391	282	27000	28238	52.4%		
Jul'21		75188	59740	15448	20.5			32526		8428	3908	-	44862	14326	31.9			10078	7748	1203		20153	0							39035	63.8			3	148	606	371	186	3024	3033	5.4%		
Aug'21		50139	60548	-10409	-20.8			32730		33701	8428	-	74859	-14311	-23.6			10005	-133	-219		9653	0							65206	87.1			3	148	1199	178	599	57963	59939	80.1%		
Sep'21		60841	62320	-1479	-2.4			34961		19499	5852	-	60312	-1450	-2.6			15194	9527	1093		25814	0							21883	45.3			3	148	657	475	328	31381	32841	51.4%		
Oct'21		75124	71350	3774	5.0			37459		18330	4497	-	60286	11064	15.5			18461	19551	4941		42913	0							17373	28.8			3	148	242	790	121	10953	12106	20.1%		
Nov'21		59479	59073	4406	7.4			31470		16250	5030	-	52710	2363	4.3			14547	9765	922		25234	0							27476	52.1			3	148	444	464	222	21078	22029	42.1%		
Dec'21	2021/2022	75967	70340	5627	7.4	51005	6.5%	36720		25850	6780	-	69350	690	1.0	920	0.1%	15987	9570	1354		26911	0	188805	47.2%	114155	45.1%	54798	65.9%	42739	61.6	357758	48.6%	3	148	749	749	450	375	35858	37472	54.0%	294551	40.0%
Jan'22		80770	74797	5983	7.4			44510		24430	6422	-	75362	-575	-0.8			23968	15171	3106		42245	0							33117	43.9			3	148	557	778	278	26237	27850	37.0%		
Feb'22		71830	66509	5321	7.4			35160		18750	6001	-	59911	6598	9.9			25267	15937	3444		44648	0							15263	25.5			3	148	200	822	100	8874	9996	16.7%		
Mar'22		72858	66387	5471	7.4			37610		21950	10293	-	69853	-1466	-2.1			22038	12940	3749		38727	0							31126	44.6			3	148	517	713	259	24370	25859	37.0%		
Apr'22		62473	57845	4628	7.4			32950		18983	7701	-	59634	-1789	-3.1			23100	12957	3466		39523	0							20111	33.7			3	148	297	727	148	13671	14844	24.9%		
May'22		54983	50585	4398	8.0			27140		16542	4816	-	48498	2697	4.1			19488	14140	2954		36582	0							11916	24.6			3	148	133	673	66	5776	6649	13.7%		
Jun'22		47580	43773	3807	8.0			25510		15775	4912	-	46197	-2424	-5.5			13163	11558	1735		26456	0							19741	42.7			3	148	289	487	145	13553	14474	31.3%		
Jul'22		47468	45922	1546	3.3			26170		19977	4807	-	50954	-4784	-10.9			15287	10471	2362		28120	0							22887	44.8			2	5211	352	518	176	16569	18615	40.8%		
Aug'22		49867	47400	2467	4.9			29800		18152	4311	-	48263	-863	-1.8			14854	9904	1652		26410	0							21853	45.3			2	5211	333	486	166	15656	16641	34.5%		
Sep'22		42503	39103	3400	8.0			24750		13387	3212	-	41349	-2246	-5.7			16074	9942	1625		27641	0							13708	33.2			2	5211	170	509	85	7732	8496	20.5%		
Oct'22		55779	53874	1905	3.4			26990		18388	4012	-	49390	4484	8.3			16024	10632	2351		29007	0							20383	41.3			2	5211	303	534	152	14182	15171	30.7%		
Nov'22		65430	63647	1783	2.7			34510		18730	7319	-	60559	1368	4.9			20805	13934	2859		37598	0							22961	37.9			2	5211	355	692	177	16824	17749	29.3%		
Dec'22	2022/2023	73498	71603	1895	2.6	26640	4.0%	38750		25480	7880	-	72110	-507	-0.7	13523	2.1%	23109	15298	3412		41819	0	113177	33.1%	71894	32.0%	33497	51.1%	30291	42.0	218568	34.6%	2	5211	502	770	251	23557	25079	34.8%	156023	24.7%
Jan'23		71788	69350	2438	3.4			39150		23900	7545	-	70595	-1245	-1.8			30196	20906	4003		55105	0							15490	21.9			2	5211	206	1014	103	8955	10078	14.6%		
Feb'23		58289	56142	2147	3.7			28130		24050	6213	-	58393	-2251	-4.0			23209	16241	4094		43544	0							14849	25.4			2	5211	193	802	96	8546	9637	16.5%		
Mar'23		54368	52013	2355	4.3			24030		18360	6225	-	48615	3398	6.5			18448	12427	3046		33521	0							15094	31.0			2	5211	198	617	99	8968	9582	20.3%		
Apr'23		50391	48019	2372	4.7			29640		18100	5048	-	48788	-769	-1.6			13887	12788	3290		29965	0							18823	38.6			2	5211	272	552	136	12651	13611	27.9%		
May'23		49599	47193	2406	4.9			19342		12489	4868	-	36699	10494	22.2			20880	13881	3209		34475	0							2224	6.1			2	5211	-60	635	-30	3533	-2988	-8.1%		
Jun'23		52618	50692	1926	3.7			28225		13329	4173	-	45727	4965	9.8			15537	8512	1613		25662	0						

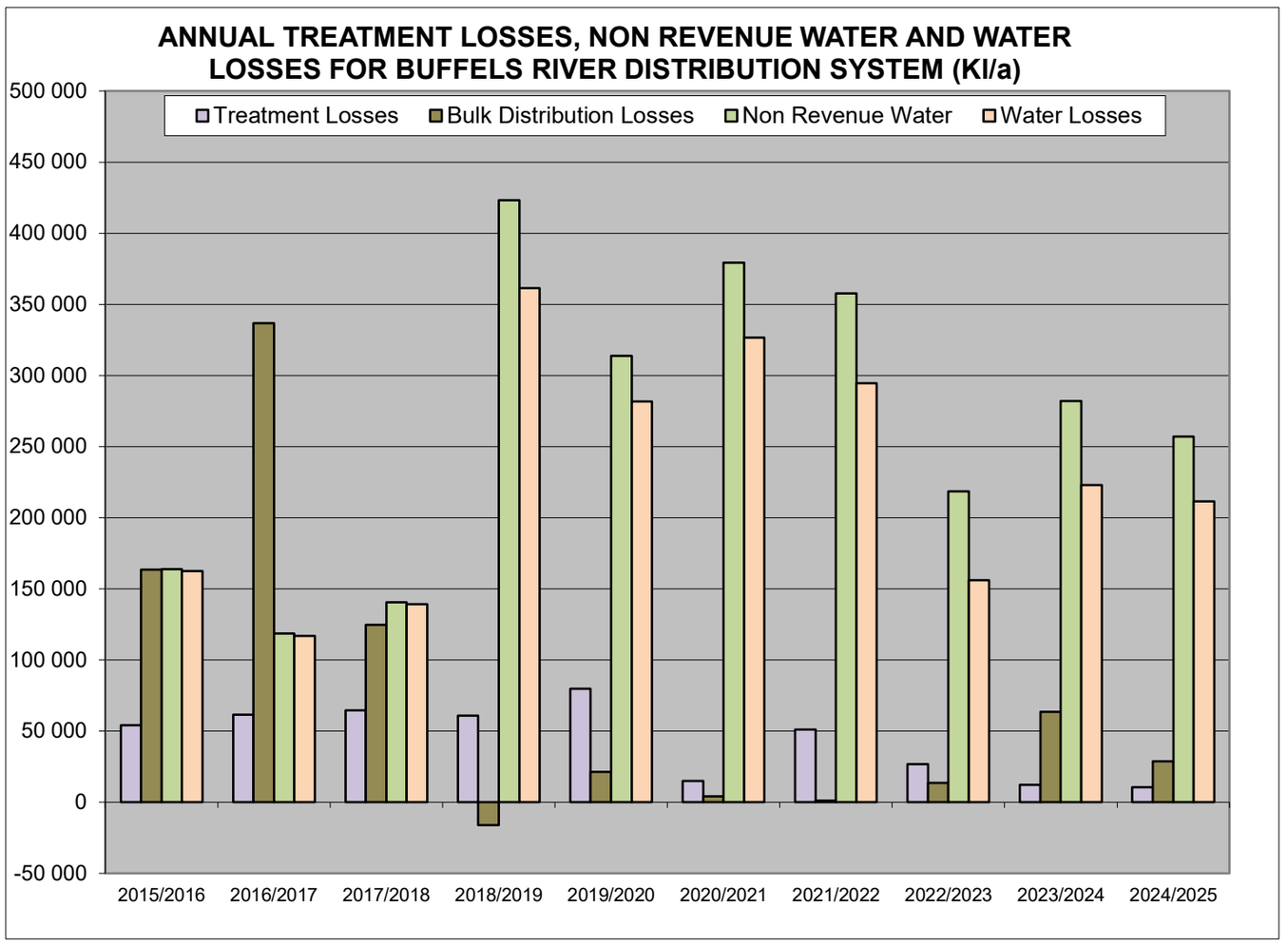
WATER BALANCE AND USAGE FOR THE BUFFELS RIVER DISTRIBUTION SYSTEM

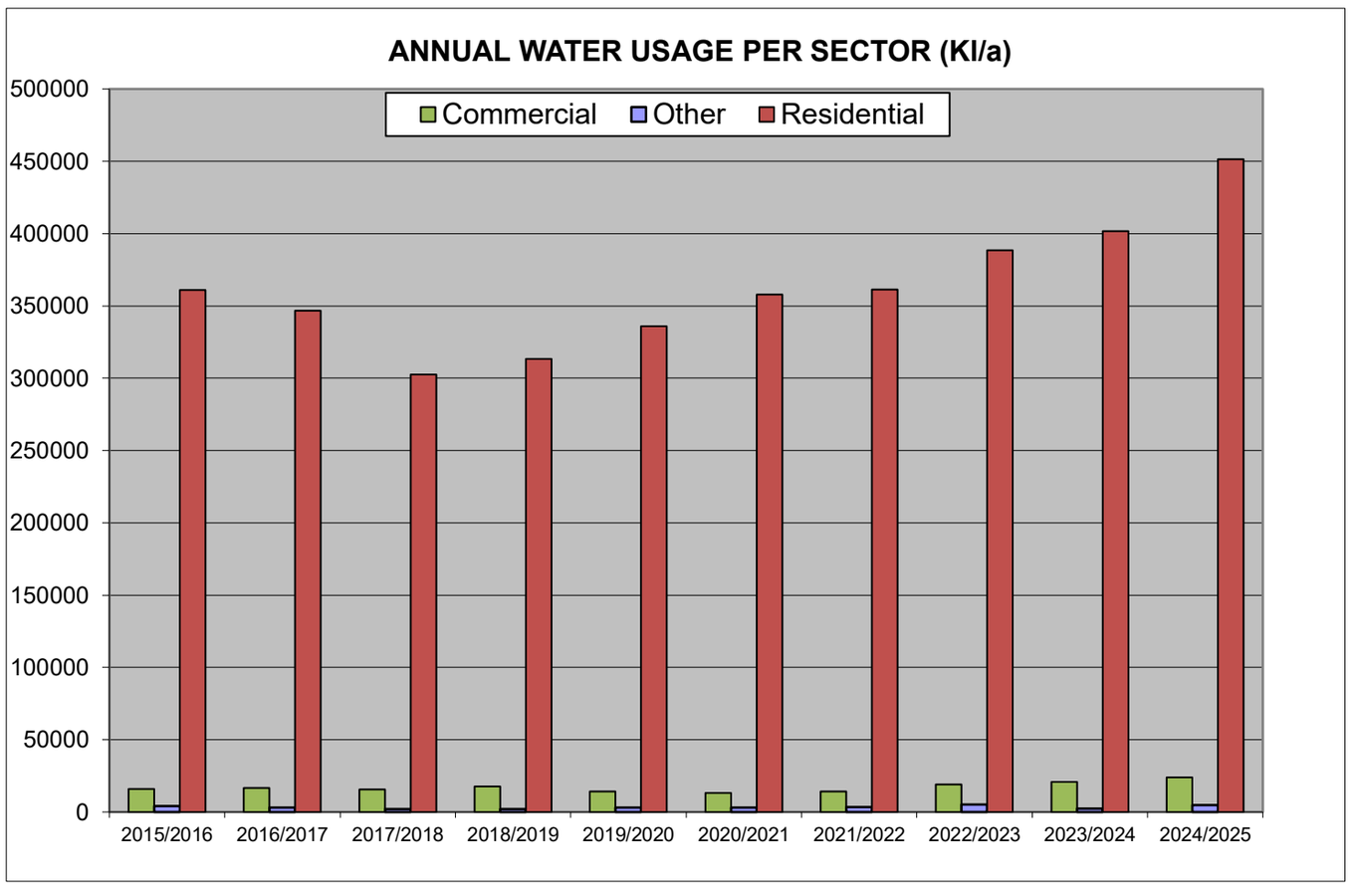


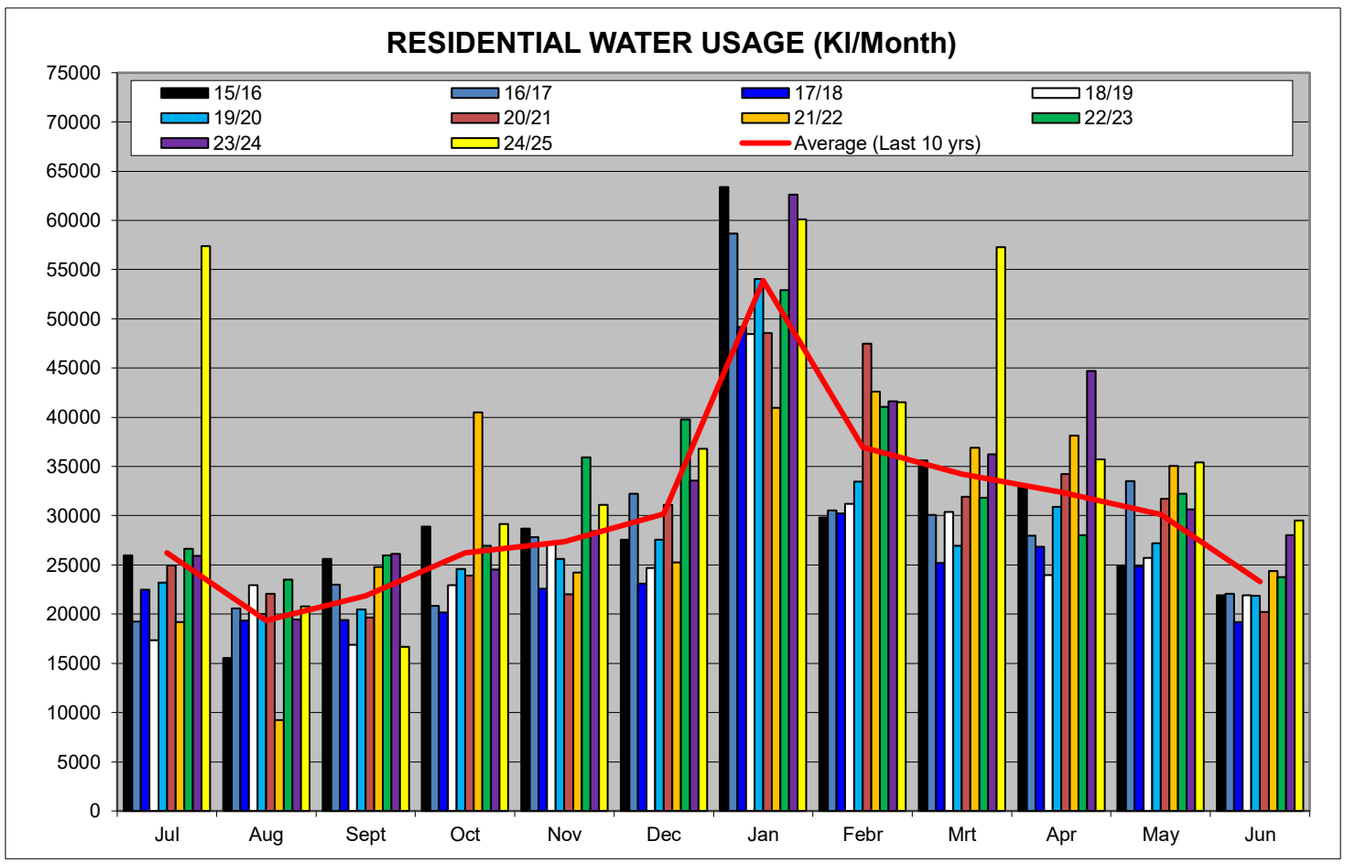




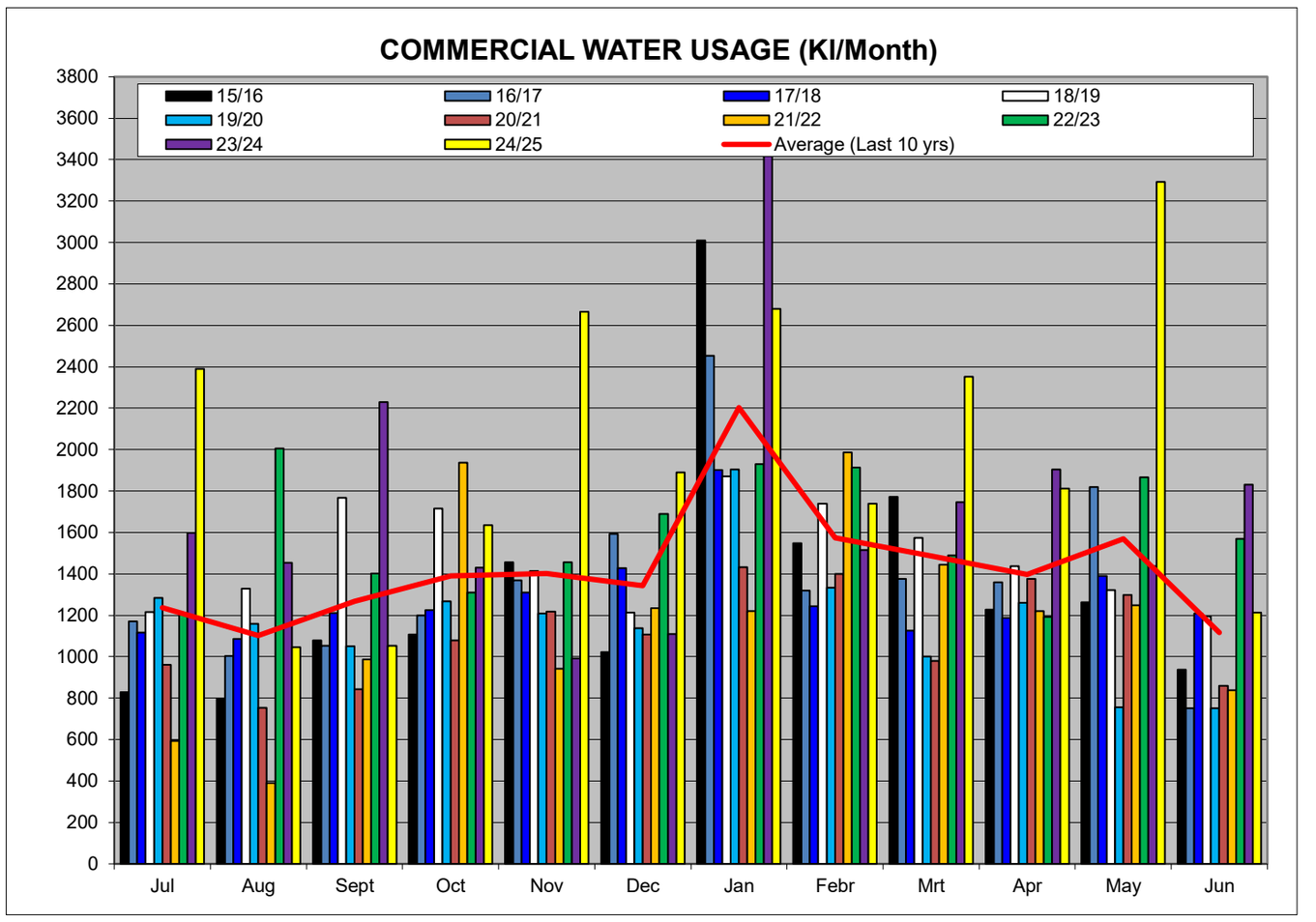
WATER BALANCE AND USAGE FOR THE BUFFELS RIVER DISTRIBUTION SYSTEM

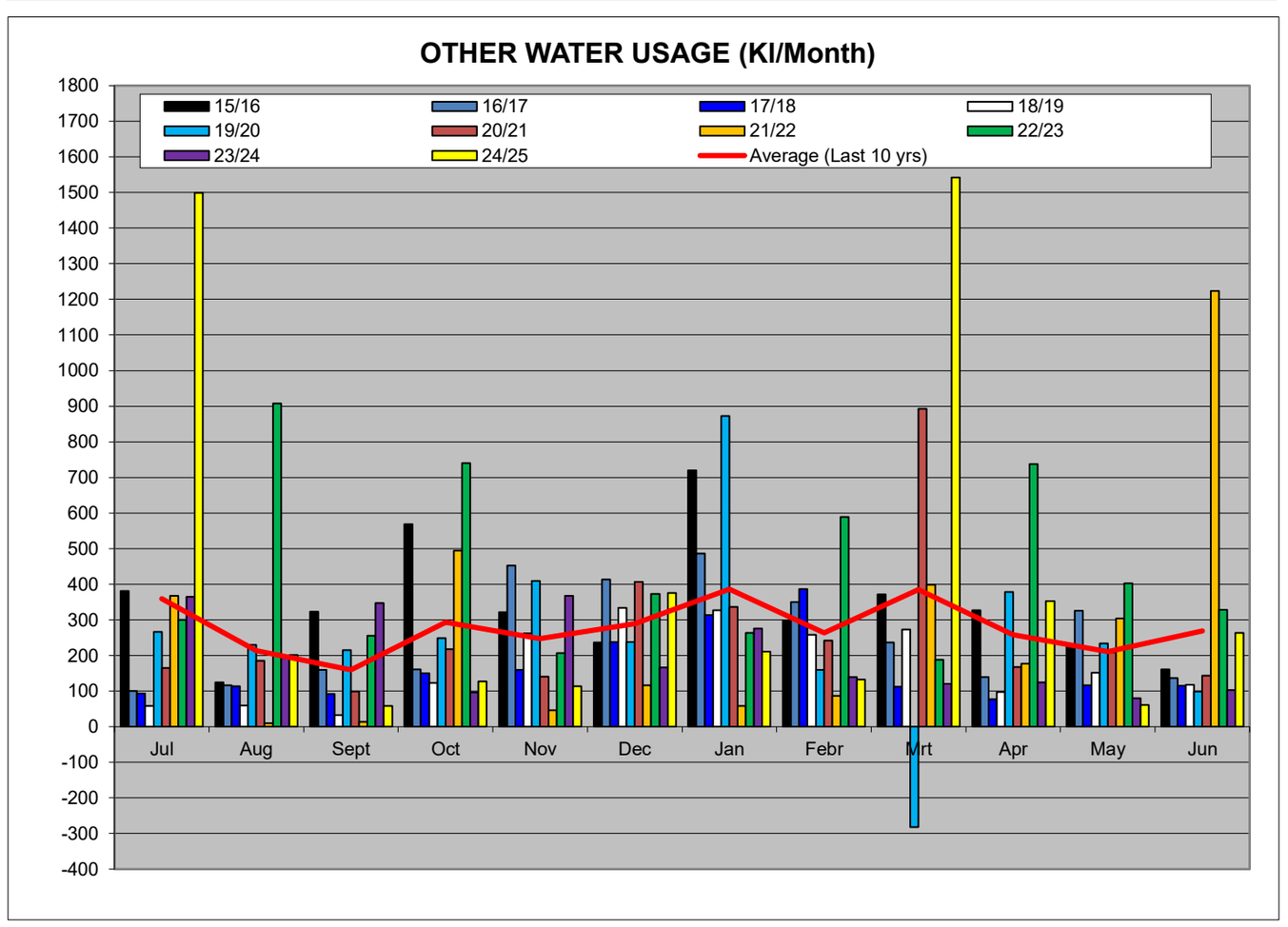






WATER BALANCE AND USAGE FOR THE BUFFELS RIVER DISTRIBUTION SYSTEM





OVERSTRAND MUNICIPALITY

Kleinmond Distribution System

Month	Year	BULK WATER SUPPLY										TREATED WATER SUPPLY																			
		Raw Water Supply			System Input Volume			Treatment Losses				System Input Volume			Revenue Water		Non Revenue Water (NRW)														
																								Apparent Losses			Real Losses				
																								Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.				
																								Estimated Percentages (Variables)							
		Palmiet	Borehole	Total	Meinecke Meter	Kent Meter	Total	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated water from WTW	Fountain	Total	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	2%	4%	1%	93%	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
		[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
Jan'01	2000/2001	120515	8843	129358	56383	60830	117213	15187	11.5	59435	12.0%	117213	3042	117213	69290	0	47923	40.9	155316	35.6%	0	234	954	1908	477	44350	47689	40.7%	154442	35.4%
Feb'01		79014	2767	81781	13233	42760	55993	28489	33.7			55993	2701	55993	57125	0	-1132	-2.0			0	112	-25	-50	-12	-1157	-1244	-2.2%		
Mrt'01		95335	3205	98540	43843	45560	89403	11488	11.4			89403	2351	89403	48927	0	40476	45.3			0	179	806	1612	403	37476	40297	45.1%		
Apr'01		60159	591	60750	31299	31780	63079	-244	-0.4			63079	2085	63079	48400	0	14679	23.3			0	126	291	582	146	13534	14553	23.1%		
May'01		61967	949	62916	31616	31770	63386	1825	2.8			63386	2295	63386	30424	0	32962	52.0			0	127	657	1313	328	30537	32835	51.8%		
Jun'01		44892	3472	48364	22857	24840	47697	2690	5.3			47697	2023	47697	27289	0	20408	42.8			0	95	406	813	203	18891	20313	42.6%		
Jul'01	2001/2002	44032	6765	50797	21475	22080	43555	9552	18.0	51707	6.3%	43555	2310	43555	36109	0	7446	17.1	152542	19.9%	0	87	147	294	74	6844	7359	16.9%	151012	19.7%
Aug'01		39444	20019	59463	26013	26360	52373	7090	11.9			52373	0	52373	30288	0	22085	42.2			0	105	440	879	220	20442	21980	42.0%		
Sep'01		39889	18557	58446	27193	26310	53503	4943	8.5			53503	0	53503	39801	0	13702	25.6			0	107	272	544	136	12643	13595	25.4%		
Oct'01		44173	18579	62752	29578	29370	58948	3804	6.1			58948	0	58948	46271	0	12677	21.5			0	118	251	502	126	11680	12559	21.3%		
Nov'01		58708	17931	76639	36394	34755	71149	5490	7.2			71149	0	71149	57653	0	13496	19.0			0	142	267	534	134	12419	13354	18.8%		
Dec'01		105363	8657	114020	46763	62095	108858	5162	4.5			108858	0	108858	111578	0	-2720	-2.5			0	218	-59	-118	-29	-2732	-2938	-2.7%		
Jan'02		66739	16174	82913	37797	42970	80767	4098	4.8			80767	1952	80767	71423	0	9344	11.6			0	162	184	367	92	8540	9182	11.4%		
Feb'02		51883	19386	71269	33234	38290	71524	1290	1.8			71524	1545	71524	65262	0	6262	8.8			0	143	122	245	61	5691	6119	8.6%		
Mrt'02		60816	21911	82727	37021	41660	78681	6824	8.0			78681	2778	78681	58183	0	20498	26.1			0	157	407	814	203	18917	20341	25.9%		
Apr'02		31878	22090	53968	26582	29940	56522	912	1.6			56522	3466	56522	38784	0	17738	31.4			0	113	352	705	176	16391	17625	31.2%		
May'02		20106	21658	41764	19446	22370	41816	3633	8.0			41816	3685	41816	27546	0	14270	34.1			0	84	284	567	142	13193	14186	33.9%		
Jun'02		22712	19405	42117	18441	29030	47471	-1091	-2.4			47471	4263	47471	29727	0	17744	37.4			0	95	353	706	176	16414	17649	37.2%		
Jul'02	2002/2003	27259	14252	41511	15178	24690	39868	3080	7.2	67214	8.3%	39868	1437	39868	30965	0	8903	22.3	73387	9.9%	0	80	176	353	88	8206	8823	22.1%	71906	9.7%
Aug'02		19109	19420	38529	19264	22030	41294	3553	7.9			41294	6318	41294	31922	0	9372	22.7			0	83	186	372	93	8639	9289	22.5%		
Sep'02		18942	18022	36964	20841	23890	44731	-340	-0.8			44731	7427	44731	44953	0	-222	-0.5			0	89	-6	-12	-3	-290	-311	-0.7%		
Oct'02		32770	22259	55029	29502	30154	59656	2171	3.5			59656	6798	59656	58769	0	887	1.5			0	119	15	31	8	714	768	1.3%		
Nov'02		53277	18287	71564	30230	31671	61901	15362	19.9			61901	5699	61901	73254	0	-11353	-18.3			0	124	-230	-459	-115	-10673	-11477	-18.5%		
Dec'02		115089	6598	121687	62640	50602	113242	9824	8.0			113242	1379	113242	117709	0	-4467	-3.9			0	226	-94	-188	-47	-4365	-4693	-4.1%		
Jan'03		95707	3727	99434	49120	39918	89038	10616	10.7			89038	220	89038	75057	0	13981	15.7			0	178	276	552	138	12837	13803	15.5%		
Feb'03		83917	2340	86257	43660	35879	79539	6718	7.8			79539	0	79539	72854	0	6685	8.4			0	159	131	261	65	6069	6526	8.2%		
Mrt'03		78730	0	78730	39750	32994	72744	5986	7.6			72744	0	72744	52194	0	20550	28.2			0	145	408	816	204	18976	20405	28.0%		
Apr'03		59079	0	59079	29770	24473	54243	4836	8.2			54243	0	54243	40710	0	13533	24.9			0	108	268	537	134	12485	13425	24.7%		
May'03		46429	0	46429	23510	18884	42394	4035	8.7			42394	0	42394	30960	0	11434	27.0			0	85	227	454	113	10555	11349	26.8%		
Jun'03		43007	0	43007	22940	18694	41634	1373	3.2			41634	0	41634	37550	0	4084	9.8			0	83	80	160	40	3721	4001	9.6%		
Jul'03	2003/2004	51732	0	51732	26910	22064	48974	2758	5.3	60436	7.1%	48974	0	48974	32452	0	16522	33.7	87098	10.9%	0	98	328	657	164	15274	16424	33.5%	85505	10.7%
Aug'03		41096	2861	43957	23000	18884	41884	2073	4.7			41884	0	41884	44286	0	-2402	-5.7			0	84	-50	-99	-25	-2312	-2486	-5.9%		
Sep'03		41680	6477	48157	24230	19676	43906	4251	8.8			43906	0	43906	38183	0	5723	13.0			0	88	113	225	56	5241	5635	12.8%		
Oct'03		47450	21198	68648	33910	27918	61828	8313	11.9			61828	1493	61828	62803	0	-975	-1.6			0	124	-22	-44	-11	-1022	-1099	-1.8%		
Nov'03		58648	26581	85229	41790	35739	77529	9909	11.3			77529	2209	77529	80472	0	-2943	-3.8			0	155	-62	-124	-31	-2881	-3098	-4.0%		
Dec'03		110592	2578	113170	59970	40661	100631	14567	12.6			100631	2028	100631	121185	0	-20554	-20.4			0	201	-415	-830	-208	-19302	-20755	-20.6%		
Jan'04		83594	11460	95054	51490	43386	94876	1986	2.1			94876	1808	94876	84603	0	10273	10.8			0	190	202	403	101	9377	10083	10.6%		
Feb'04		91158	5283	96441	50750	42957	93707	3965	4.1			93707	1231	93707	61082	0	32625	34.8			0	187	649	1298	324	30167	32438	34.6%		
Mrt'04		76942	79	77021	41900	32980	74880	2601	3.4			74880	460	74880	58448	0	16432	21.9			0	150	326	651	163	15142	16282	21.7%		
Apr'04		62908	0	62908	33830	26232	60062	2846	4.5			60062	0	60062	48925	0	11137	18.5			0	120	220	441	110	10246	11017	18.3%		
May'04		56691	0	56691	30020	23123	53143	3548	6.3			53143	0	53143	42948	0	10195	19.2			0	106	202	404	101	9383	10089	19.0%		
Jun'04		48490	0	48490	25610	19261	44871	3619	7.5			44871	0	44871	33806	0	11065	24.7			0	90	220	439	110	10207	10975	24.5%		
Jul'04	2004/2005	48231	0	48231	26725	18786	45511	2720	5.6	29327	3.3%	45511	0	45511	38665	0	6846	15.0	234935	27.5%	0	91	135	270	68	6282	6755	14.8%	233229	27.3%
Aug'04		48943	0	48943	26745	21360	48105	1270	2.6			48105	432	48105	36246	0	11859	24.7			0	96	235	471	118	10939	11763	24.5%		
Sep'04		62488	0	62488	33780	26423	60203	2285	3.7			60203	0	60203	44492	0	15711	26.1			0	120	312	624	156	14499	15591	25.9%		
Oct'04		69621	0	69621	37730	29287	67017	2604	3.7			67017	0	67017	53603	0	13414	20.0			0	134	266	531	133	12350	13280	19.8%		
Nov'04		85121	0	85121	46660	34849	81509	3612	4.2			81509	0	81509	68700	0	12809	15.7			0	163	253	506	126	11761	12646	15.5%		
Dec'04		114814	0	114814	63260	49641	112901	1913	1.7			112901	0	112901	88023	0	24878	22.0			0	226	493	986	247	22927	24652	21.8%		
Jan'05		107991	496	108487	62140	46815	108955	787	0.7			108955	1255	108955	65128	0	43827	40.2			0	218	872	1744	436	40556	43609	40.0%		
Feb'05		75683	950	76633	44640	30941	75581	1703	2.2			75581	651	75581	55029	0	20552	27.2			0	151	408	816	204	18973	20401	27.0%		
Mrt'05		78901	0	78901	40430	32912	73342	6314	7.9			73342	755	73342	62944	0	10398	14.2			0	147	205	410	103	9534	10251	14.0%		
Apr'05		68107	0	68107	37470	27501	64971	3462	5.1			64971	326	64971	36916	0	28055	43.2			0	130	559	1117	279	25970	27925	43.0%		
May'05		54324	0	54324	32310	21943	54253	1801	3.2			54253	1730	54253	36802	0	17451	32.2			0	109	347	694	173	16129	17342	32.0%		
Jun'05		52042	0	52042	35650	25118	60768	856	1.4			60768	9582	60768	31633	0	29135	47.9			0	122	580	1161	290	26983	29013	47.7%		
Jul'05	2005/2006	56523	0	56523	35580	25476	61056	486	0.8	20057	2.2%	61056	5019	61056	42124	0	18932	31.0	250533	27.7%	0	122	376	752	188	17493	18810	30.8%	248728	27.5%
Aug'05		53020	0	53020	32790	23189	55979	3334	5.6			55979	6293	55979	31326	0	24653	44.0			0	112	491	982	245	22823	24541	43.8%		
Sep'05		49613	0	49613	33960	24708	58668	435	0.7			58668	9490	58668	38142	0	20526	35.0			0	117	408	816	204	18980	20409	34.8%		
Oct'05		66602	0	66602	41820	29290	71110	1694	2.3			71110	6202	71110	50303	0	20807	29.3			0	142	413	827	207	19218	20665	29.1%		
Nov'05		78238	0	78238	46640	32868	79508	4103	4.9			79508	5373	79508	62103	0	17405	21.9			0	159	345	690	172	16039	17246	21.7%		
Dec'05		115000	0	115000	69120	48962	118082	1593	1.3			118082	4675	118082	108586	0	9496	8.0			0	236	185	370	93	8612	9260	7.8%		
Jan'06		103563	3936	107499			107522	3837	3.4			107522	3860	107522	82270	0	25252	23.5			0	215	501	1001	250	23285	25037	23.3%		
Feb'06		85614	1052	86666			92297	-2578	-2.9			92297	3053	92297	62895	0	29402	31.9			0	185	584	1169	292	27173	29218	31.7%		
Mrt'06		79490	0	79490			89809	-7151	-8.7			89809	3168	89809	52306	0	37503	41.8			0	180	746	1493	373	34711	37323	41.6%		
Apr'06		66282	0	66282			60731	7667	11.2			60731	2116	60731	49944	0	10787	17.8			0	121	213	427	107	9919	10665	17.6%		
May'06		60612	0	60612			59001	4026	6.4			59001	2415	59001	35887	0	23114	39.2			0	118	460	920	230	21386	22996	39.0%		
Jun'06		48096	1295	49391			49062	2611	5.1			49062	2282	49062	36406	0	12656	25.8			0	98	251	502	126	11679	12558	25.6%		
Jul'06	2006/2007	52201	1295	53496			52753	4032	7.1	37348	4.1%	52753	3289	52753	31026	0	21727	41.2	192272	22.1%	0	106	432	865	216	20108	21622	41.0%	190536	21.9%
Aug'06		41770	0	41770			44285	3678	7.7			44285	6193	44285	37852	0	6433	14.5			0	89	127	254	63	5901	6345	14.3%		
Sep'06		57267	0	57267			55487	4876	8.1			55487	3096	55487	45159	0	10328	18.6			0	111	204	409	102	9502	10217	18.4%		
Oct'06		66378	0	66378			66295	2813	4.1			66295	2730	66295	56740	0	9555	14.4			0	133	188	377	94	8763	9423	14.2%		
Nov'06		64405	4923	69328			72847	-711	-1.0			72847	2808	72847	66246	0	6601	9.1			0	146	129	258	65	6004	6456	8.9%		
Dec'06		95211	4858	100069			102446	19	0.0			102446	2396	102446	101680	0	766	0.7			0	205	11	22	6	521	561	0.5%		
Jan'07		115284	3026	118310			116768	3666	3.0			116768	2124	116768	78695	0	38073	32.6			0	234	757	1514	378	35191	37840	32.4%		
Feb'07		90816	0	90816			85942	6657	7.2			85942	1783	85942	64373	0	21569	25.1			0	172	428	856	214	19900	21397	24.9%		
Mrt'07		88678	0	88678			83615	6921	7.6			83615	1858	83615	66702	0	16913	20.2			0	167	335	670	167	15574	16746	20.0%		
Apr'07		71823	1342	73165			72031	2875	3.8			72031	1741	72031	50660	0	21371	29.7			0	144	425	849	212	19741	21227	29.5%		
May'07		61970	261	62231			63772	359	0.6			63772	1900	63772	39833	0	23939	37.5			0	128	476	952	238	22145	23812	37.3%		
Jun'07		49813	920	50733			52074	2164	4.0			52074	3505	52074	37078	0	14996	28.8			0	104	298	596	149	13849	14892	28.6%		
Jul'07	2007/2008	48052	0	48052	30814	24603	55417	872	1.5	82361	8.5%	55417	8237	55417	34224	0	21193	38.2	213977	24.3%	0	111	422	843	211	19606	21082	38.0%	212212	24.1%
Aug'07		50479	0	50479	30789	24646	55435	4830	8.0			55435	9786	55435	31172	0	24263	43.8			0	111	483	966	242	22461	24152	43.6%		
Sep'07		54555	475	55030	29332	23886	53218	5917	10.0			53218	4105	53218	43030	0	10188	19.1			0	106	202	403	101	9376	10082	18.9%		
Oct'07		70710	0	70710	34125	30491	64616	11183	14.8			64616	5089	64616	55250	0	9366	14.5			0	129	185	369	92	8590	9237	14.3%		
Nov'07		68310	0	68310	36060	33403	69463	4458	6.0			69463	5611	69463	58449	0	11014	15.9			0	139	218	435	109	10114	10875	15.7%		
Dec'07		96026	0	96026	49902	48007	97909	3779	3.7			97909	5662	97909	85878	0	12031	12.3			0	196	237	473	118	11007	11835	12.1%		
Jan'08		105183	3649	108832	51706	48577	100283	13016	11.5			100283	4467	100283	78683	0	21600	21.5			0	201	428	856	214	19901	21399	21.3%		
Feb'08		91741	769	92510	56099	31825	87924	8425	8.7			87924	3839	87924	67297	0	20627	23.5			0	176	409	818	205	19020	20451	23.3%		
Mrt'08		89465	0	89465	56679	30472	87151	5946	6.4			87151	3632	87151	59885	0	27266	31.3			0	174	542	1084	271	25195	27092	31.1%		
Apr'08		77292	0	77292	47201	24870	72071	8360	10.4			72071	3139	72071	59885	0	12186	16.9			0	144	241	482	120	11199	12042	16.7%		
May'08		62086	2745	64831	42354	21878	64232	3420	5.1			64232	2821	64232	56044	0	8188	12.7			0	128	161	322	81	7495	8060	12.5%		
Jun'08		83999	0	83999	44309	30330	74639	12155	14.0			74639	2795	74639	38584	0	36055	48.3			0	149	718	1436	359	33392	35906	48.1%		
Jul'08	2008/2009	50947	0	50947	17723	35684	53407	3420	6.0	89992	9.4%	53407	5880	53407	37806	0	15601	29.2	212481	24.6%	0	107	310	620	155	14410	15494	29.0%	210754	24.4%
Aug'08		56640	0	56640	18789	38949	57738	4513	7.2			57738	5611	57738	35012	0	22726	39.4			0	115	452	904	226	21028	22611	39.2%		
Sep'08		44580	0	44580	16858	39849	56707	5979	9.5			56707	18106	56707	35378	0	21329	37.6			0	113	424	849	212	19730	21216	37.4%		
Oct'08		51044	0	51044	20083	47347	67430	435	0.6			67430	16821	67430	33578	0	33852	50.2			0	135	674	1349	337	31357	33717	50.0%		
Nov'08		53336	0	53336	21038	45731	66769	2256	3.3			66769	15689	66769	49237	0	17532	26.3			0	134	348	696	174	16181	17398	26.1%		
Dec'08		115085	0	115085	39595	74434	114029	11635	9.3			114029	10579	114029	48279	0	65750	57.7			0	228	1310	2621	655	60935	65522	57.5%		
Jan'09		103107	2100	105207	35215	66231	101446	14091	12.2			101446	10330	101446	98328	0	3118	3.1			0	203	58	117	29	2711	2915	2.9%		
Feb'09		84915	0	84915	28032	51480	79512	11805	12.9			79512	6402	79512	80450	0	-938	-1.2			0	159	-22	-44	-11	-1020	-1097	-1.4%		
Mrt'09		87108	0	87108	29540	51804	81344	11987	12.8			81344	6223	81344	76319	0	5025	6.2			0	163	97	194	49	4522	4862	6.0%		
Apr'09		74839	0	74839	25961	43200	69161	10851	13.6			69161	5173	69161	60038	0	9123	13.2			0	138	180	359	90	8356	8985	13.0%		
May'09		62035	0	62035	20458	37693	58151	8809	13.2			58151	4925	58151	55093	0	3058	5.3			0	116	59	118	29	2736	2942	5.1%		
Jun'09		55832	0	55832	34110	23865	57975	4211	6.8			57975	6354	57975	41670	0	16305	28.1			0	116	324	648	162	15056	16189	27.9%		
Jul'09	2009/2010	53568	0	53568	19490	33734	53224	8997	14.5	72113	7.7%	53224	8653	53224	36303	0	16921	31.8	268918	31.1%	0	106	336	673	168	15638	16815	31.6%	267189	30.9%
Aug'09		55400	0	55400	18823	37280	56103	6527	10.4			56103	7230	56103	32535	0	23568	42.0			0	112	469	938	235	21814	23456	41.8%		
Sep'09		56594	0	56594	24448	32245	56693	6560	10.4			56693	6659	56693	33326	0	23367	41.2			0	113	465	930	233	21626	23254	41.0%		
Oct'09		68707	0	68707	31078	35321	66399	10147	13.3			66399	7839	66399	34977	0	31422	47.3			0	133	626	1252	313	29099	31289	47.1%		
Nov'09		75686	0	75686	33851	40528	74379	6996	8.6			74379	5689	74379	46261	0	28118	37.8			0	149	559	1119	280	26011	27969	37.6%		
Dec'09		111504	0	111504	52502	59749	112251	4526	3.9			112251	5273	112251	53323	0	58928	52.5			0	225	1174	2348	587	54594	58703	52.3%		
Jan'10		101000	0	101000	48976	54030	103006	2680	2.5			103006	4686	103006	91008	0	11998	11.6			0	206	236	472	118	10967	11792	11.4%		
Feb'10		77404	0	77404	37582	41023	78605	2456	3.0			78605	3657	78605	102036	0	-23431	-29.8			0	157	-472	-944	-236	-21937	-23588	-30.0%		
Mrt'10		86575	0	86575	40524	44336	84860	5753	6.3			84860	4038	84860	34789	0	50071	59.0			0	170	998	1996	499	46408	49901	58.8%		
Apr'10		70420	0	70420	32956	37422	70378	3765	5.1			70378	3723	70378	52888	0	17490	24.9			0	141	347	694	173	16135	17349	24.7%		
May'10		54384	0	54384	23921	28851	52772	6910	11.6			52772	5298	52772	43325	0	9447	17.9			0	106	187	374	93	8688	9341	17.7%		
Jun'10		56097	0	56097	25442	30523	55965	6796	10.8			55965	6664	55965	34946	0	21019	37.6			0	112	418	836	209	19444	20907	37.4%		
Jul'10	2010/2011	49084	0	49084	25607	30556	56163	3995	6.6	74069	8.6%	56163	11074	56163	39714	0	16449	29.3	198745	25.1%	0	112	327	653	163	15193	16337	29.1%	197163	24.9%
Aug'10		59794	0	59794	27202	32342	59544	7363	11.0			59544	7113	59544	38309	0	21235	35.7			0	119	422	845	211	19638	21116	35.5%		
Sep'10		58978	0	58978	26368	31257	57625	8065	12.3			57625	6712	57625	37461	0	20164	35.0			0	115	401	802	200	18645	20049	34.8%		
Oct'10		68950	0	68950	29953	36287	66240	9040	12.0			66240	6330	66240	49780	0	16460	24.8			0	132	327	653	163	15185	16328	24

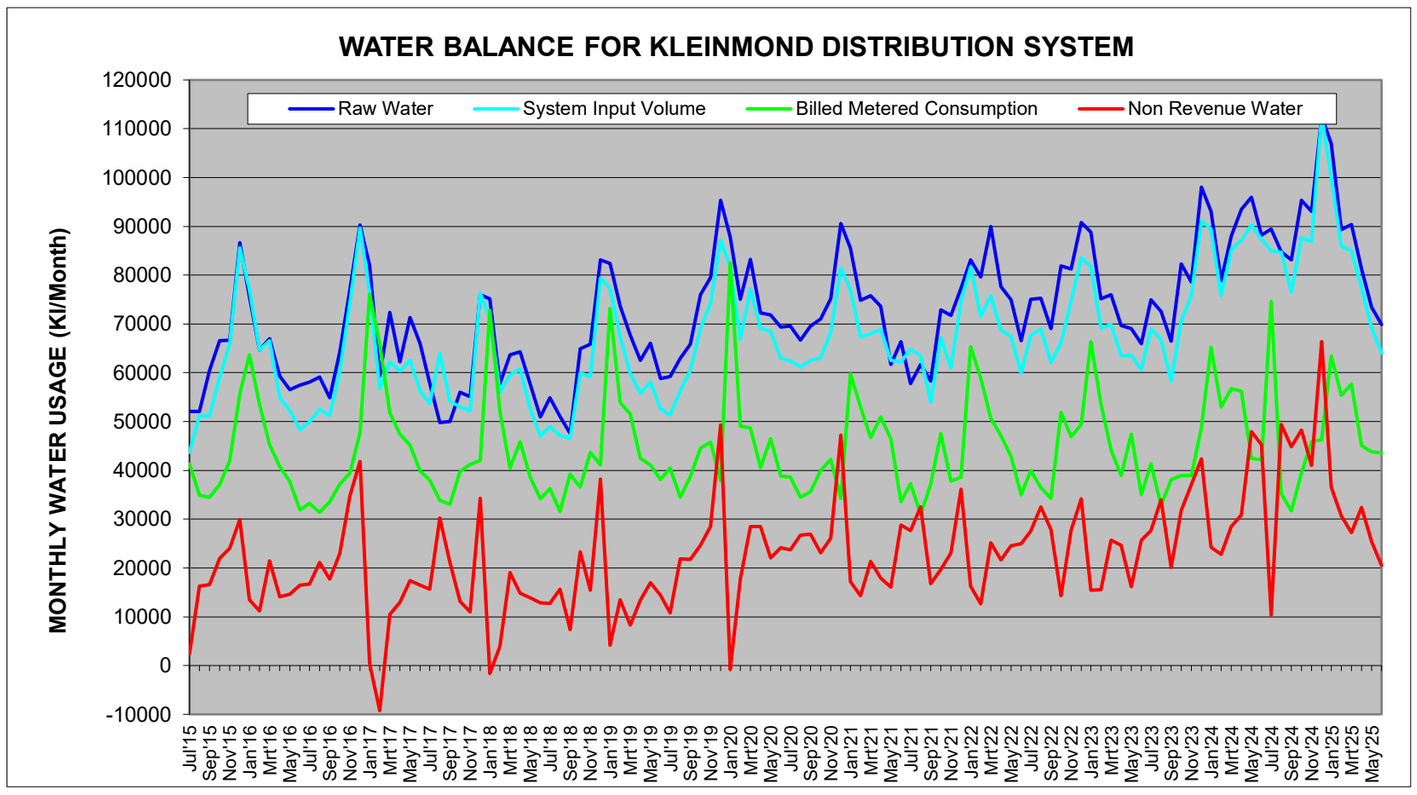
OVERSTRAND MUNICIPALITY

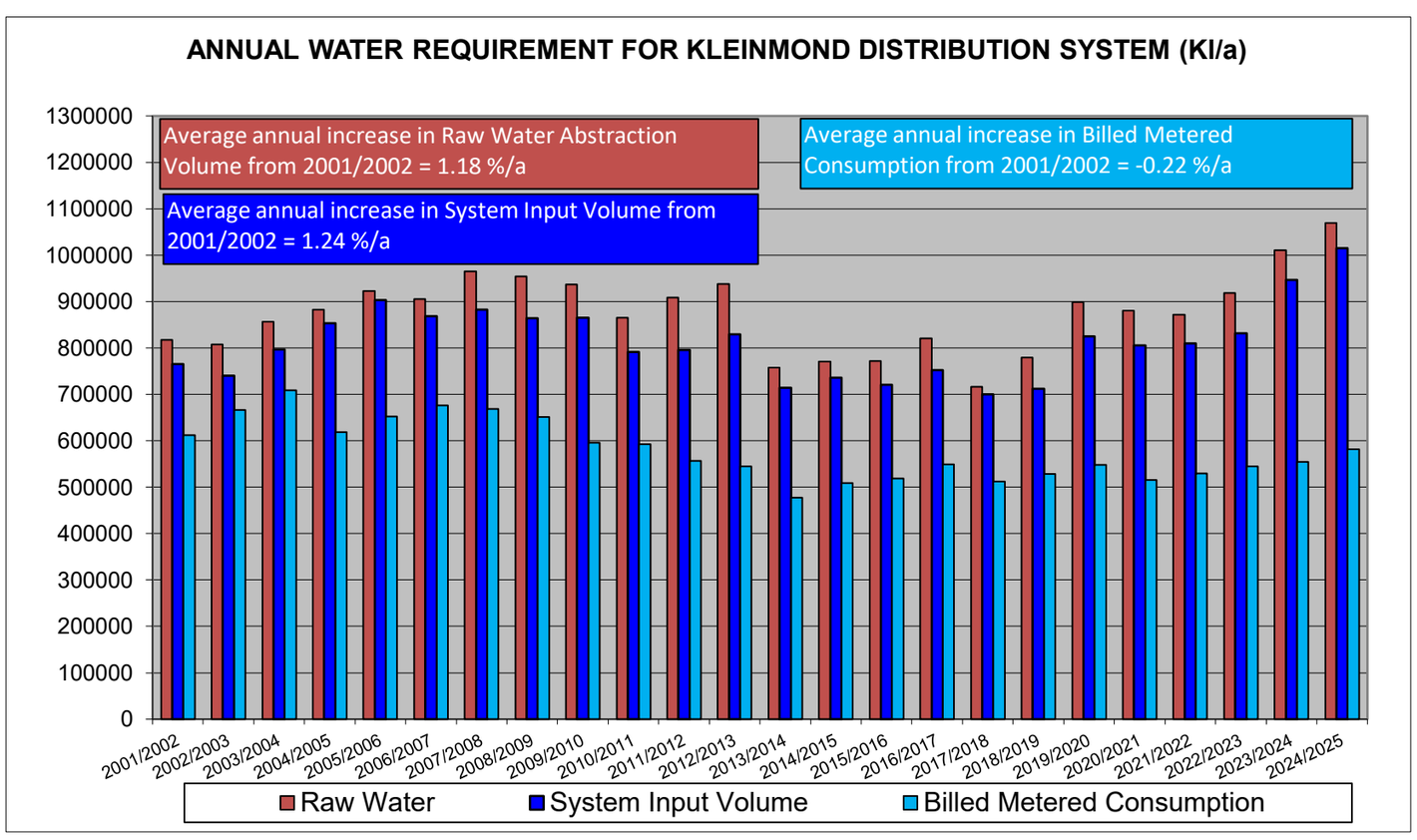
Kleinmond Distribution System

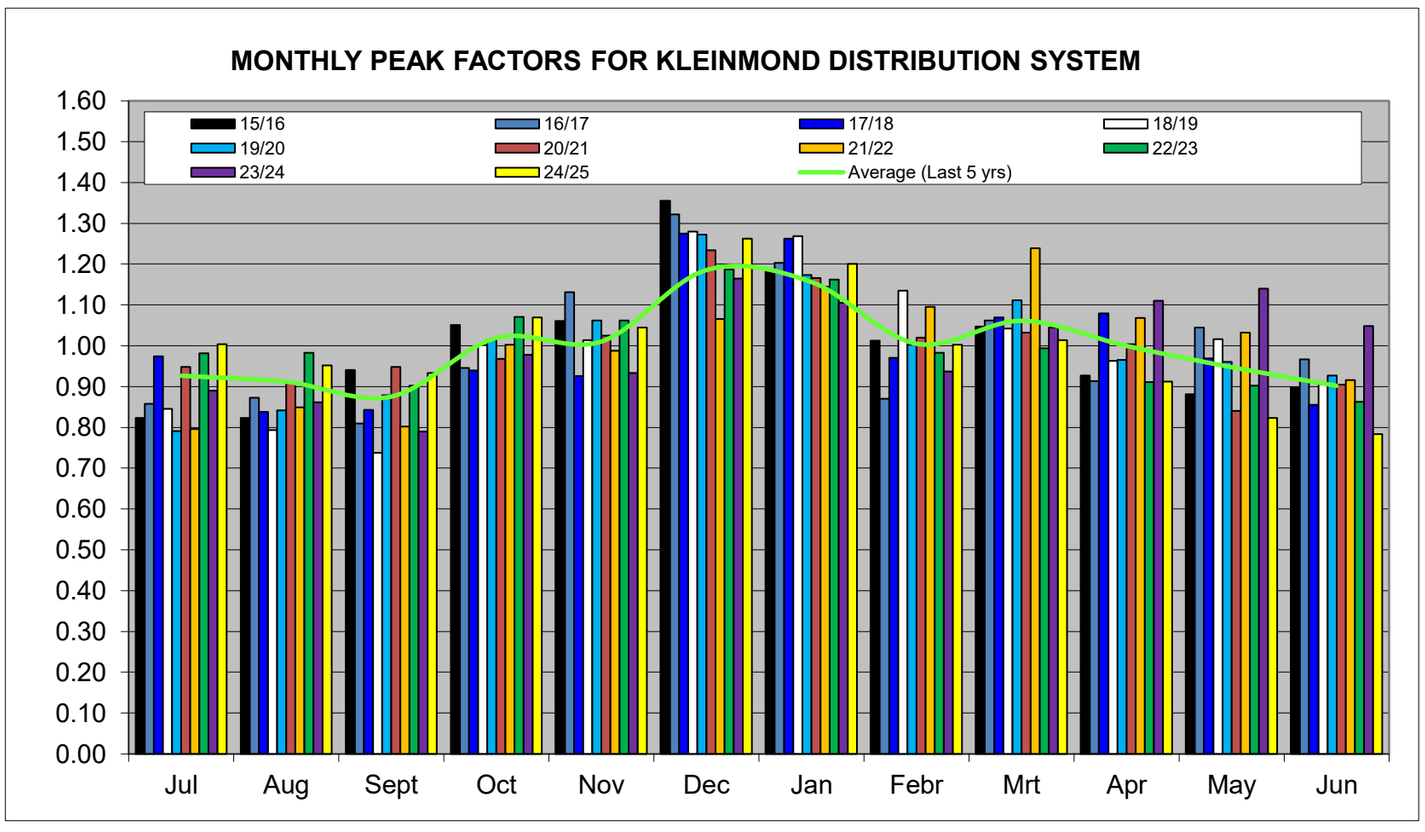
Month	Year	BULK WATER SUPPLY										TREATED WATER SUPPLY																			
		Raw Water Supply			System Input Volume			Treatment Losses				System Input Volume			Revenue Water		Non Revenue Water (NRW)														
																								Apparent Losses			Real Losses				
																								Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.				
																								Estimated Percentages (Variables)							
		Palmiet	Borehole	Total	Meinecke Meter	Kent Meter	Total	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated water from WTW	Fountain	Total	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	2%	4%	1%	93%	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
		[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
Jul'16	2016/2017	58130	0	58130	33781	16115	49896	8826	15.0	68368	8.3%	49896	592	49896	33237	0	16659	33.4	203625	27.1%	0	100	331	662	166	15400	16559	33.2%	202120	26.9%
Aug'16		59135	0	59135	35676	16853	52529	7197	12.1			52529	591	52529	31364	0	21165	40.3			0	105	421	842	211	19586	21060	40.1%		
Sep'16		54879	0	54879	34843	16430	51273	4122	7.4			51273	516	51273	33562	0	17711	34.5			0	103	352	704	176	16376	17608	34.3%		
Oct'16		64320	0	64320	41217	19026	60243	4486	6.9			60243	409	60243	37205	0	23038	38.2			0	120	458	917	229	21313	22918	38.0%		
Nov'16		77129	0	77129	38143	20461	74315	3104	4.0			74315	290	74315	39499	0	34816	46.8			0	149	693	1387	347	32241	34667	46.6%		
Dec'16		90250	0	90250	25102	26943	89612	850	0.9			89612	212	89612	47775	0	41837	46.7			0	179	833	1666	417	38742	41658	46.5%		
Jan'17		82033	0	82033	52195	24301	76496	5820	7.1			76496	283	76496	76118	0	378	0.5			0	153	5	9	2	209	225	0.3%		
Feb'17		59294	0	59294	38382	18354	56736	2811	4.7			56736	253	56736	65989	0	-9253	-16.3			0	113	-187	-375	-94	-8711	-9366	-16.5%		
Mrt'17		72390	0	72390	41607	20618	62225	10400	14.3			62225	235	62225	51783	0	10442	16.8			0	124	206	413	103	9595	10318	16.6%		
Apr'17		62252	0	62252	40772	19590	60362	2095	3.4			60362	205	60362	47446	0	12916	21.4			0	121	256	512	128	11900	12795	21.2%		
May'17		71302	0	71302	42568	19990	62558	8900	12.5			62558	156	62558	45147	0	17411	27.8			0	125	346	691	173	16076	17286	27.6%		
Jun'17		65913	0	65913	8643	11581	56343	9757	14.8			56343	187	56343	39838	0	16505	29.3			0	113	328	656	164	15245	16392	29.1%		
Jul'17	2017/2018	57923	0	57923			53632	4502	7.7	16091	2.2%	53632	211	53632	37964	0	15668	29.2	188379	26.9%	0	107	311	622	156	14471	15561	29.0%	186978	26.7%
Aug'17		49759	0	49759	36060	27957	64017	-13990	-28.0			64017	268	64017	33822	0	30195	47.2			0	128	601	1203	301	27962	30067	47.0%		
Sep'17		50051	0	50051	28447	25665	54112	-3829	-7.6			54112	232	54112	32991	0	21121	39.0			0	108	420	841	210	19542	21013	38.8%		
Oct'17		55984	0	55984	26042	26920	52962	3142	5.6			52962	120	52962	39781	0	13181	24.9			0	106	262	523	131	12160	13075	24.7%		
Nov'17		55033	0	55033	25708	26488	52196	3048	5.5			52196	211	52196	41208	0	10988	21.1			0	104	218	435	109	10122	10884	20.9%		
Dec'17		75979	0	75979	37611	38732	76343	-228	-0.3			76343	136	76343	42055	0	34288	44.9			0	153	683	1365	341	31746	34135	44.7%		
Jan'18		75205	0	75205	35111	36073	71184	4148	5.5			71184	127	71184	72824	0	-1640	-2.3			0	142	-36	-71	-18	-1658	-1782	-2.5%		
Feb'18		57798	0	57798	27653	28335	55988	1945	3.4			55988	135	55988	52081	0	3907	7.0			0	112	76	152	38	3529	3795	6.8%		
Mrt'18		63696	0	63696	29328	31194	59522	4325	6.8			59522	151	59522	40435	0	19087	32.1			0	119	379	759	190	17640	18968	31.9%		
Apr'18		64327	0	64327	29891	30848	60739	3697	5.7			60739	109	60739	45885	0	14854	24.5			0	121	295	589	147	13701	14733	24.3%		
May'18		57688	0	57688	25738	26835	52573	5245	9.1			52573	130	52573	38639	0	13934	26.5			0	105	277	553	138	12861	13829	26.3%		
Jun'18		50947	0	50947	22597	24402	46999	4086	8.0			46999	138	46999	34203	0	12796	27.2			0	94	254	508	127	11813	12702	27.0%		
Jul'18	2018/2019	54836	0	54836	23637	25292	48929	6015	10.9	67349	8.6%	48929	108	48929	36204	0	12725	26.0	183409	25.8%	0	427	246	428	123	11501	12298	25.1%	178280	25.0%
Aug'18		51066	0	51066	22804	24355	47159	4357	8.5			47159	450	47159	31532	0	15627	33.1			0	427	304	373	152	14371	15200	32.2%		
Sep'18		47543	0	47543	22685	23951	46636	1292	2.7			46636	385	46636	39285	0	7351	15.8			0	427	138	464	69	6252	6924	14.8%		
Oct'18		64949	0	64949	29428	30494	59922	5100	7.8			59922	73	59922	36587	0	23335	38.9			0	427	458	432	229	21788	22908	38.2%		
Nov'18		65830	0	65830	29274	29914	59188	6669	10.1			59188	27	59188	43744	0	15444	26.1			0	427	300	517	150	14049	15017	25.4%		
Dec'18		83143	0	83143	39059	40304	79363	3780	4.5			79363	0	79363	41140	0	38223	48.2			0	427	756	486	378	36175	37796	47.6%		
Jan'19		82459	0	82459	38386	38944	77330	5129	6.2			77330	0	77330	73194	0	4136	5.3			0	427	74	865	37	2732	3709	4.8%		
Feb'19		73712	0	73712	33509	33966	67475	6237	8.5			67475	0	67475	53981	0	13494	20.0			0	427	261	638	131	12037	13067	19.4%		
Mrt'19		67676	0	67676	29485	30357	59842	7834	11.6			59842	0	59842	51531	0	8311	13.9			0	427	158	609	79	7038	7884	13.2%		
Apr'19		62560	0	62560	27613	28185	55798	6762	10.8			55798	0	55798	42434	0	13364	24.0			0	427	259	502	129	12047	12937	23.2%		
May'19		66002	0	66002	28827	29238	58065	7937	12.0			58065	0	58065	41064	0	17001	29.3			0	427	331	485	166	15591	16574	28.5%		
Jun'19		58791	0	58791	25880	26674	52554	6237	10.6			52554	0	52554	38156	0	14398	27.4			0	427	279	451	140	13100	13971	26.6%		
Jul'19	2019/2020	59215	0	59215	25057	26277	51334	7881	13.3	73584	8.2%	51334	0	51334	40509	0	10825	21.1	276922	33.6%	17	303	210	1249	105	8942	10506	20.5%	273090	33.1%
Aug'19		62986	0	62986	28145	28169	56314	6672	10.6			56314	0	56314	34441	0	21873	38.8			17	303	431	1062	216	19845	21554	38.3%		
Sep'19		65814	0	65814	30136	30309	60445	5369	8.2			60445	0	60445	38694	0	21751	36.0			17	303	429	1193	214	19596	21432	35.5%		
Oct'19		76033	0	76033	34682	34400	69082	6951	9.1			69082	0	69082	44479	0	24603	35.6			17	303	486	1371	243	22184	24284	35.2%		
Nov'19		79474	0	79474	37329	36946	74275	5199	6.5			74275	0	74275	45786	0	28489	38.4			17	303	563	1411	282	25913	28170	37.9%		
Dec'19		95302	0	95302	43765	43387	87152	8150	8.6			87152	0	87152	37910	0	49242	56.5			17	303	978	1169	489	46286	48923	56.1%		
Jan'20		87837	0	87837	40738	40994	81732	6105	7.0			81732	0	81732	82510	0	-778	-1.0			17	303	-22	2544	-11	-3608	-1097	-1.3%		
Feb'20		75063	0	75063	33360	33519	66879	8184	10.9			66879	0	66879	49117	0	17762	26.6			17	303	349	1514	174	15405	17443	26.1%		
Mrt'20		83203	0	83203	38308	38798	77106	6097	7.3			77106	0	77106	48630	0	28476	36.9			17	303	563	1499	282	25813	28157	36.5%		
Apr'20		72310	0	72310	34254	34846	69100	3210	4.4			69100	0	69100	40603	0	28497	41.2			17	303	564	1252	282	26081	28178	40.8%		
May'20		71871	0	71871	34220	34345	68565	3306	4.6			68565	0	68565	46484	0	22081	32.2			17	303	435	1433	218	19676	21762	31.7%		
Jun'20		69381	0	69381	31350	31571	62921	6460	9.3			62921	0	62921	38820	0	24101	38.3			17	303	476	1197	238	21872	23782	37.8%		
Jul'20	2020/2021	69582	0	69582	28815	33614	62429	7153	10.3	75267	8.5%	62429	0	62429	38663	0	23766	38.1	289372	35.9%	7	528	465	103	232	22431	23232	37.2%	282963	35.1%
Aug'20		66676	0	66676	30465	32169	61171	5505	8.3			61171	0	61171	34454	0	26717	43.7			7	528	524	92	262	25305	26183	42.8%		
Sep'20		69570	0	69570	29841	32710	62551	7019	10.1			62551	0	62551	35596	0	26955	43.1			7	528	528	95	264	25533	26421	42.2%		
Oct'20		71031	0	71031	27892	35134	63026	8005	11.3			63026	0	63026	39969	0	23057	36.6			7	528	450	107	225	21740	22523	35.7%		
Nov'20		75197	0	75197	16872	25821	68361	6836	9.1			68361	0	68361	42239	0	26122	38.2			7	528	512	113	256	24707	25588	37.4%		
Dec'20		90546	0	90546	25603	55888	81491	9055	10.0			81491	0	81491	34316	0	47175	57.9			7	528	933	92	466	45150	46641	57.2%		
Jan'21		85558	0	85558	36893	40109	77002	8556	10.0			77002	0	77002	59766	0	17236	22.4			7	528	334	160	167	16041	16702	21.7%		
Feb'21		74803	0	74803	30975	36348	67323	7480	10.0			67323	0	67323	52987	0	14336	21.3			7	528	276	142	138	13246	13802	20.5%		
Mrt'21		75747	0	75747	26811	41253	68064	7683	10.1			68064	0	68064	46736	0	21328	31.3			7	528	416	125	208	20045	20794	30.6%		
Apr'21		73619	0	73619	26690	42210	68900	4719	6.4			68900	0	68900	50976	0	17924	26.0			7	528	348	136	174	16732	17390	25.2%		
May'21		61668	0	61668	24175	38373	62548	-880	-1.4			62548	0	62548	46534	0	16014	25.6			7	528	310	125	155	14891	15480	24.7%		
Jun'21		66393	0	66393	24082	38175	62257	4136	6.2			62257	0	62257	33515	0	28742	46.2			7	528	564	90	282	27272	28208	45.3%		
Jul'21	2021/2022	57772	0	57772	25182	39663	64845	-7073	-12.2	61360	7.0%	64845	0	64845	37232	0	27613	42.6	281074	34.7%	29	898	534	100	267	25786	26687	41.2%	269958	33.3%
Aug'21		61665	0	61665	24580	38838	63418	-1753	-2.8			63418	0	63418	30939	0	32479	51.2			29	898	631	83	316	30523	31553	49.8%		
Sep'21		58293	0	58293	26987.5	26987.5	53975	4318	7.4			53975	0	53975	37192	0	16783	31.1			29	898	317	100	159	15281	15857	29.4%		
Oct'21		72853	0	72853	26277	40895	67172	5681	7.8			67172	0	67172	47484	0	19688	29.3			29	898	375	127	188	18072	18762	27.9%		
Nov'21		71742	0	71742	23424	37515	60939	10803	15.1			60939	0	60939	37843	0	23096	37.9			29	898	443	101	222	21403	22170	36.4%		
Dec'21		77352	0	77352	28575	46179	74754	2598	3.4			74754	0	74754	38584	0	36170	48.4			29	898	705	103	352	34083	35244	47.1%		
Jan'22		83171	0	83171	31270	50390	81660	1511	1.8			81660	0	81660	65356	0	16304	20.0			29	898	308	175	154	14741	15378	18.8%		
Feb'22		79592	0	79592	27860	44122	71540	8052	10.1			71540	0	71540	58892	0	12648	17.7			29	898	234	158	117	11212	11722	16.4%		
Mrt'22		89975	0	89975	28863	46909	75772	14203	15.8			75772	0	75772	50610	0	25162	33.2			29	898	485	135	242	23373	24236	32.0%		
Apr'22		77610	0	77610	26319	42420	68739	8871	11.4			68739	0	68739	47128	0	21611	31.4			29	898	414	126	207	19938	20685	30.1%		
May'22		74942	0	74942	33724	33724	67448	7494	10.0			67448	0	67448	42867	0	24581	36.4			29	898	473	115	237	22830	23655	35.1%		
Jun'22		66555	0	66555	29950	29950	59900	6655	10.0			59900	0	59900	34961	0	24939	41.6			29	898	480	94	240	23199	24013	40.1%		
Jul'22	2022/2023	75066	0	75066	33780	33779	67559	7507	10.0	86275	9.4%	67559	0	67559	39968	0	27591	40.8	287316	34.5%	10	322	545	107	273	26334	27259	40.3%	283332	34.1%
Aug'22		75225	0	75225	34490	34490	68980	6245	8.3			68980	0	68980	36499	0	32481	47.1			10	322	643	98	321	31087	32149	46.6%		
Sep'22		69061	0	69061	31078	31077	62155	6906	10.0			62155	0	62155	34282	0	27873	44.8			10	322	551	92	275	26623	27541	44.3%		
Oct'22		81899	0	81899	29760	36394	66154	15745	19.2			66154	0	66154	51870	0	14284	21.6			10	322	279	139	140	13395	13952	21.1%		
Nov'22		81245	0	81245	37373	37373	74746	6499	8.0			74746	0	74746	46941	0	27805	37.2			10	322	549	126	275	26523	27473	36.8%		
Dec'22		90820	0	90820	31527	36299	83554	7266	8.0			83554	0	83554	49363	0	34191	40.9			10	322	677	132	339	32711	33859	40.5%		
Jan'23		88877	0	88877	40883.5	40883.5	81767	7110	8.0			81767	0	81767	66369	0	15398	18.8			10	322	301	178	151	14436	15066	18.4%		
Feb'23		75208	0	75208	34595.5	34595.5	69191	6017	8.0			69191	0	69191	53639	0	15552	22.5			10	322	304	144	152	14620	15220	22.0%		
Mrt'23		75999	0	75999	34959.5	34959.5	69919	6080	8.0			69919	0	69919	44263	0	25656	36.7			10	322	506	118	253	24446	25324	36.2%		
Apr'23		69697	0	69697	31799.5	31799.5	63599	6098	8.7			63599	0	63599	38948	0	24651	38.8			10	322	486	104	243	23485	24319	38.2%		
May'23		69069	0	69069	31772	31772	63544	5525	8.0			63544	0	63544	47384	0	16160	25.4			10	322	317	127	158	15226	15828	24.9%		
Jun'23		65958	0	65958	30340.5	30340.5	60681	5277	8.0			60681	0	60681	35007	0	25674	42.3			10	322	507	94	253	24488	25342	41.8%		
Jul'23	2023/2024	74914	0	74914	34461	34461	68921	5993	8.0	63585	6.3%	68921	0	68921	41316	0	27605	40.1	392380	41.4%	31	608	539	111	270	26046	26966	39.1%	384712	40.6%
Aug'23		72586	0	72586	33390	33390	66779	5807	8.0			66779	0	66779	32861	0	33918	50.8			31	608	666	88	333	32193	33279	49.8%		
Sep'23		66482	0	66482	29125	29125	58250	8232	12.4			58250	0	58250	38144	0	20106	34.5			31	608	389	102	195	18781	19467	33.4%		
Oct'23		82340	0	82340	35330	35330	70660	11680	14.2			70660	0	70660	38904	0	31756	44.9			31	608	622	104	311	30079	31117	44.0%		
Nov'23		78616	0	78616	37482	38443	75925	2691	3.4			75925	0	75925	38888	0	37037	48.8			31	608	728	104	364	35202	36398	47.9%		
Dec'23		98042	0	98042	44986	46141	91127	6915	7.1			91127	0	91127	48785	0	42342	46.5			31	608	834	131	417	40321	41703	45.8%		
Jan'24		93110	0	93110	44052	45389	89441	3669	3.9			89441	0	89441	65222	0	24219	27.1			31	608	472	175	236	22698	23580	26.4%		
Feb'24		78862	0	78862	37393	38404	75797	3065	3.9			75797	0	75797	52962	0	22835	30.1			31	608	444	142	222	21388	22196	29.3%		
Mrt'24		87949	0	87949	42001	43240	85241	2708	3.1			85241	0	85241	56729	0	28512	33.4			31	608	557	152	279	26885	27873	32.7%		
Apr'24		93456	0	93456	41421	45726	87147	6309	6.8			87147	0	87147	56261	0	30886	35.4			31	608	605	151	302	29189	30247	34.7%		
May'24		96004	0	96004	42616	47710	90326	5678	5.9			90326	0	90326	42426	0	47900	53.0			31	608	945	114	473	45730	47261	52.3%		
Jun'24		88255	0	88255	41555	45862	87417	838	0.9			87417	0	87417	42153	0	45264	51.8			31	608	892	113	446	43173	44625	51.0%		
Jul'24	2024/2025	89458	0	89458	41767	43258	85025	4433	5.0	54624	5.1%	85025	0	85025	74686	0	10339	12.2	433103	42.7%	36	742	191	200	96	9074	9561	11.2%	423765	41.7%
Aug'24		84804	0	84804	42801	41846	84647	157	0.2			84647	0	84647	35232	0	49415	58.4			36	742	973	94	486	47083	48637	57.5%		
Sep'24		83183	0	83183	34842	41686	76528	6655	8.0			76528	0	76528	31649	0	44879	58.6			36	742	882	85	441	42693	44101	57.6%		
Oct'24		95368	0	95368	44297	43442	87739	7629	8.0			87739	0	87739	39502	0	48237	55.0			36	742	949	106	475	45929	47459	54.1%		
Nov'24		93111	0	93111	30254	41501	86848	6263	6.7			86848	0	86848	45849	0	40999	47.2			36	742	804	123	402	38892	40221	46.3%		
Dec'24		112525	0	112525	66802	45920	112722	-197	-0.2			112722	0	112722	46325	0	66397	58.9			36	742	1312	124	656	63526	65619	58.2%		
Jan'25		106984	0	106984	59811	40166	99977	7007	6.5			99977	0	99977	63420	0	36557	36.6			36	742	716	170	358	34536	35779	35.8%		
Feb'25		89357	0	89357	51286	34693	85979	3378	3.8			85979	0	85979	55344	0	30635	35.6			36	742	597	148	299	28813	29857	34.7%		
Mrt'25		90382	0	90382	49913	35045	84958	5424	6.0			84958	0	84958	57714	0	27244	32.1			36	742	529	154	265	25517	26466	31.2%		
Apr'25		81301	0	81301	44474	32979	77453	3848	4.7			77453	0	77453	44996	0	32457	41.9			36	742	634	120	317	30608	31679	40.9%		
May'25		73408	0	73408	38959	30208	69167	4241	5.8			69167	0	69167	43760	0	25407	36.7			36	742	493	117	246	23773	24629	35.6%		
Jun'25		69866	0	69866	36730	27350	64080	5786	8.3			64080	0	64080	43543	0	20537	32.0			36	742	395	117	198	19050	19759	30.8%		

Year	ANNUAL TOTALS																													
	Raw Water Supply			System Input Volume			Treatment Losses				System Input Volume			Revenue Water		Non Revenue Water (NRW)														
																							Apparent Losses			Real Losses				
																							Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.				
	Palmiet	Borehole	Total	Meinecke Meter	Kent Meter	Total	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated water from WTW	Fountain	Total	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
2001/2002	585743	211132	796875	359937	405230	765167			51707	6.3%	765167	19999	765167	612625	0			152542	19.9%	0	1530	3020	6040	1510	140441			151012	19.7%
2002/2003	673315	104905	778220	386405	353879	740284			67214	8.3%	740284	29278	740284	666897	0			73387	9.9%	0	1481	1438	2876	719	66873			71906	9.7%
2003/2004	770981	76517	847498	443410	352881	796291			60436	7.1%	796291	9229	796291	709193	0			87098	10.9%	0	1593	1710	3420	855	79520			85505	10.7%
2004/2005	866266	1446	867712	487540	365576	853116			29327	3.3%	853116	14731	853116	618181	0			234935	27.5%	0	1706	4665	9329	2332	216903			233229	27.3%
2005/2006	862653	6283	868936	259910	184493	902825			20057	2.2%	902825	53946	902825	652292	0			250533	27.7%	0	1806	4975	9949

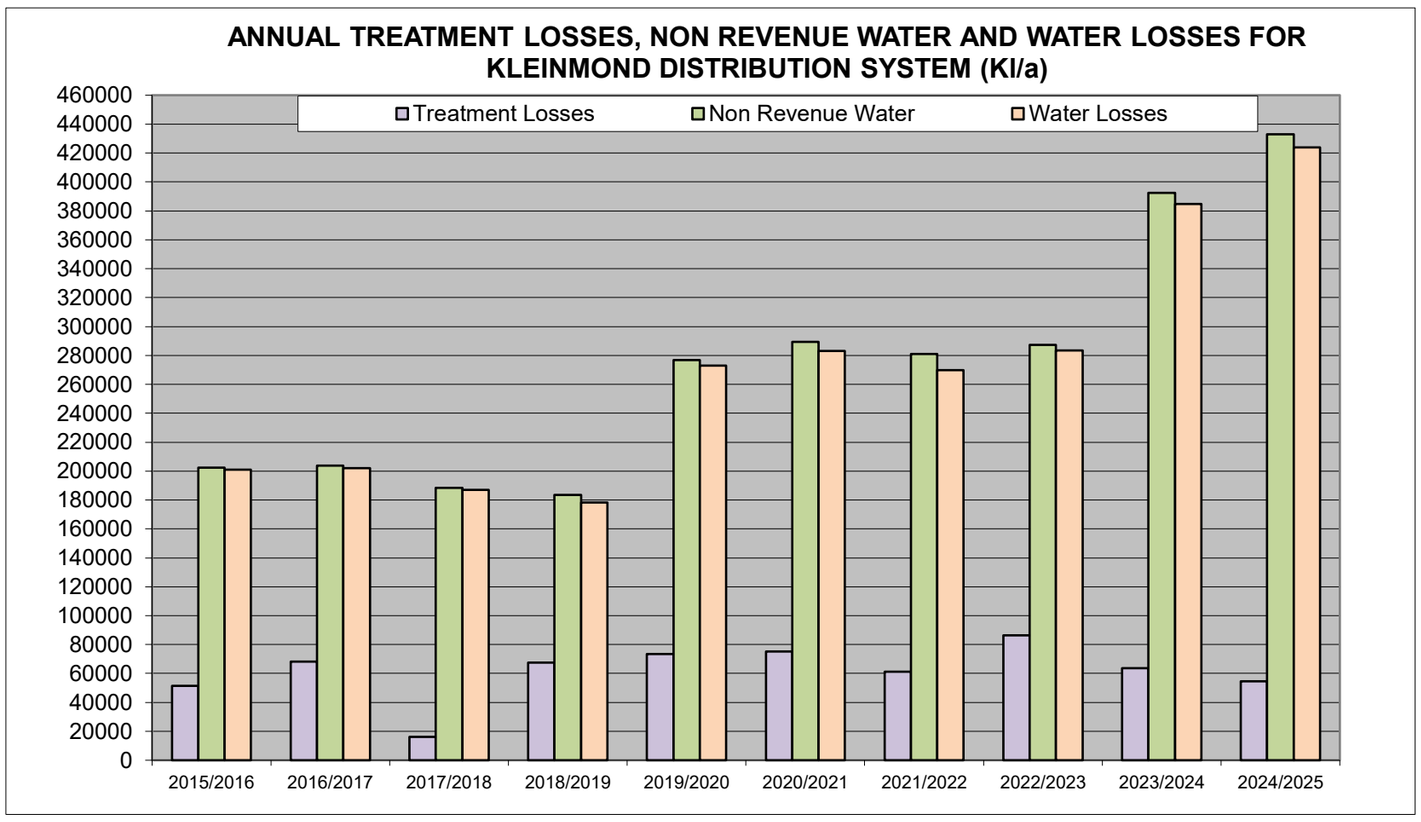
WATER BALANCE AND USAGE FOR KLEINMOND DISTRIBUTION SYSTEM

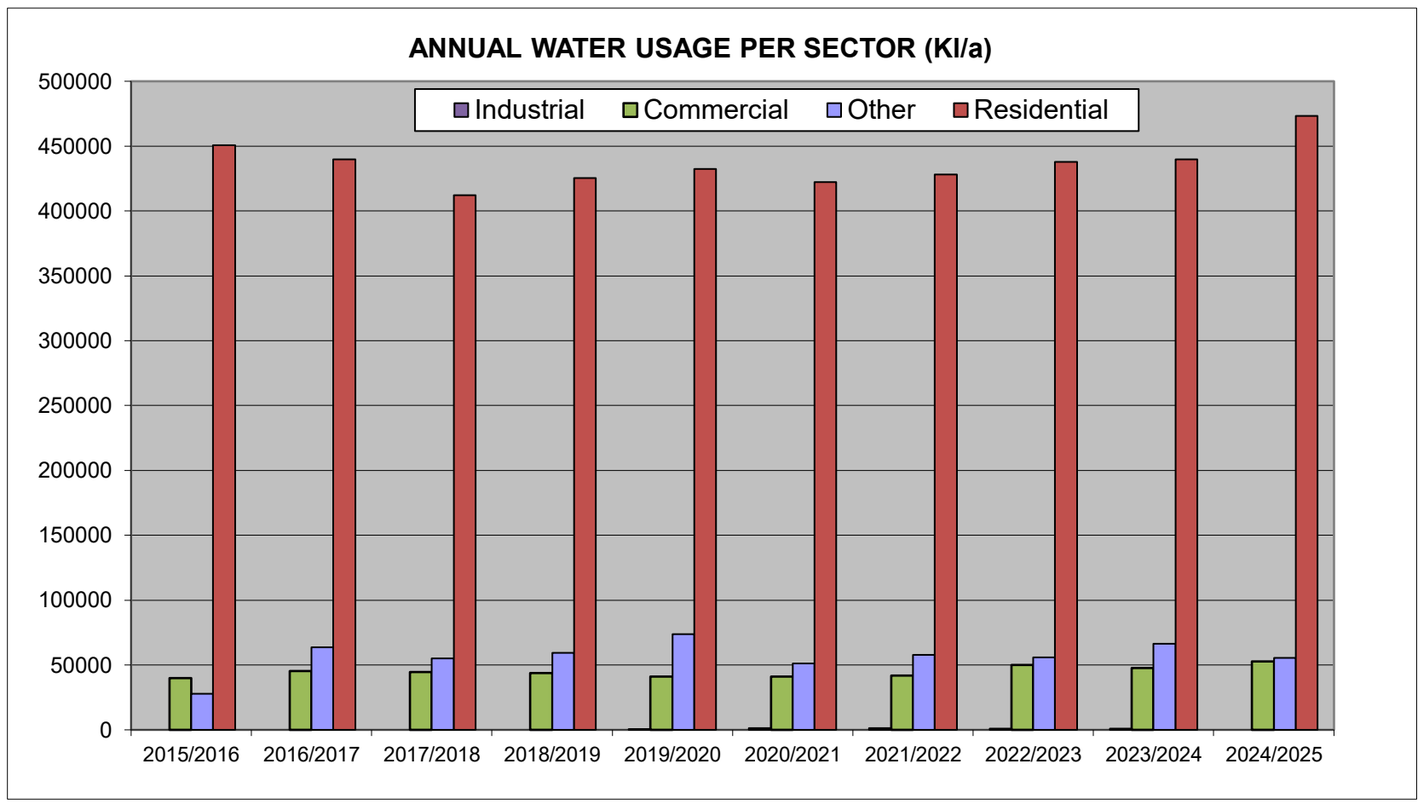


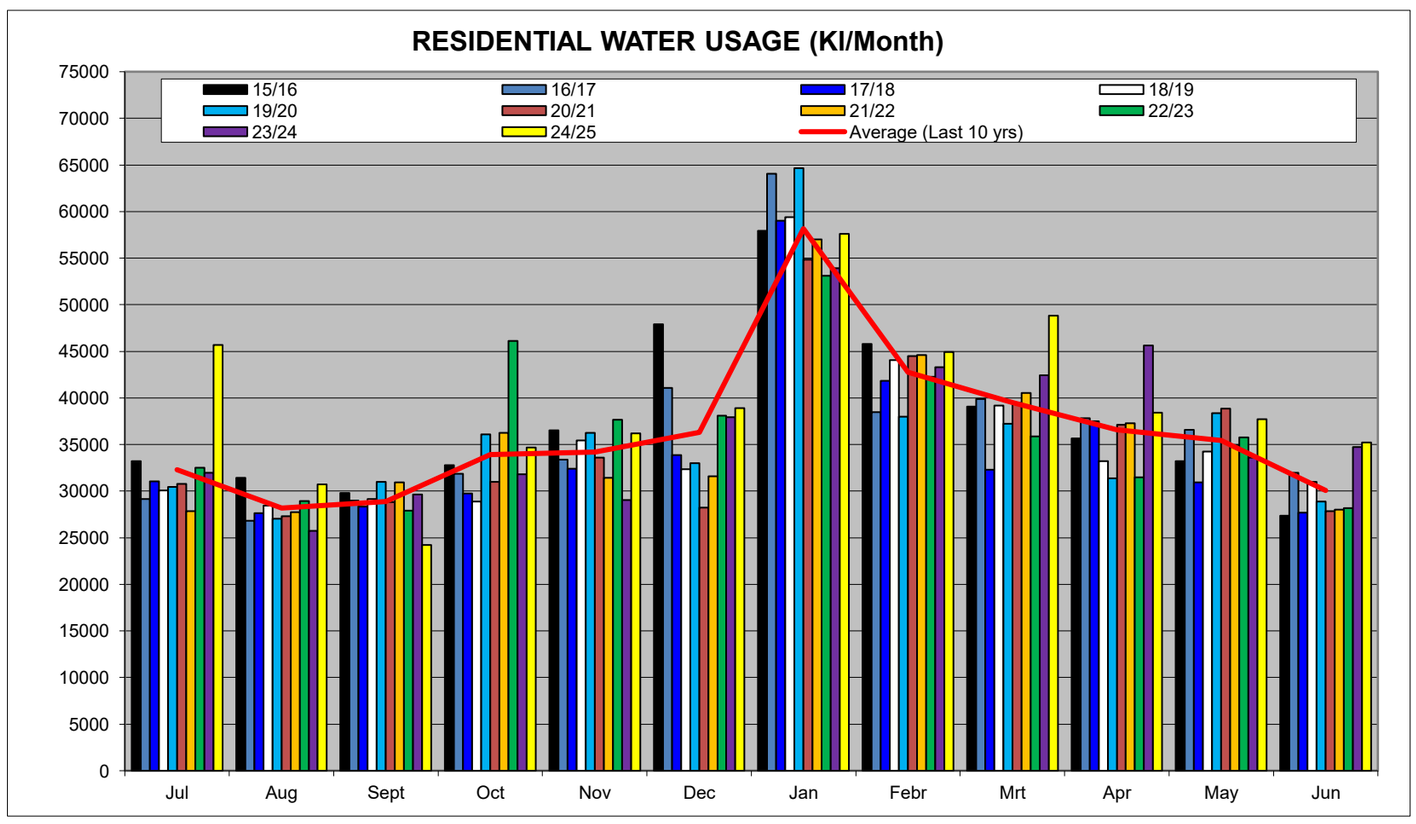




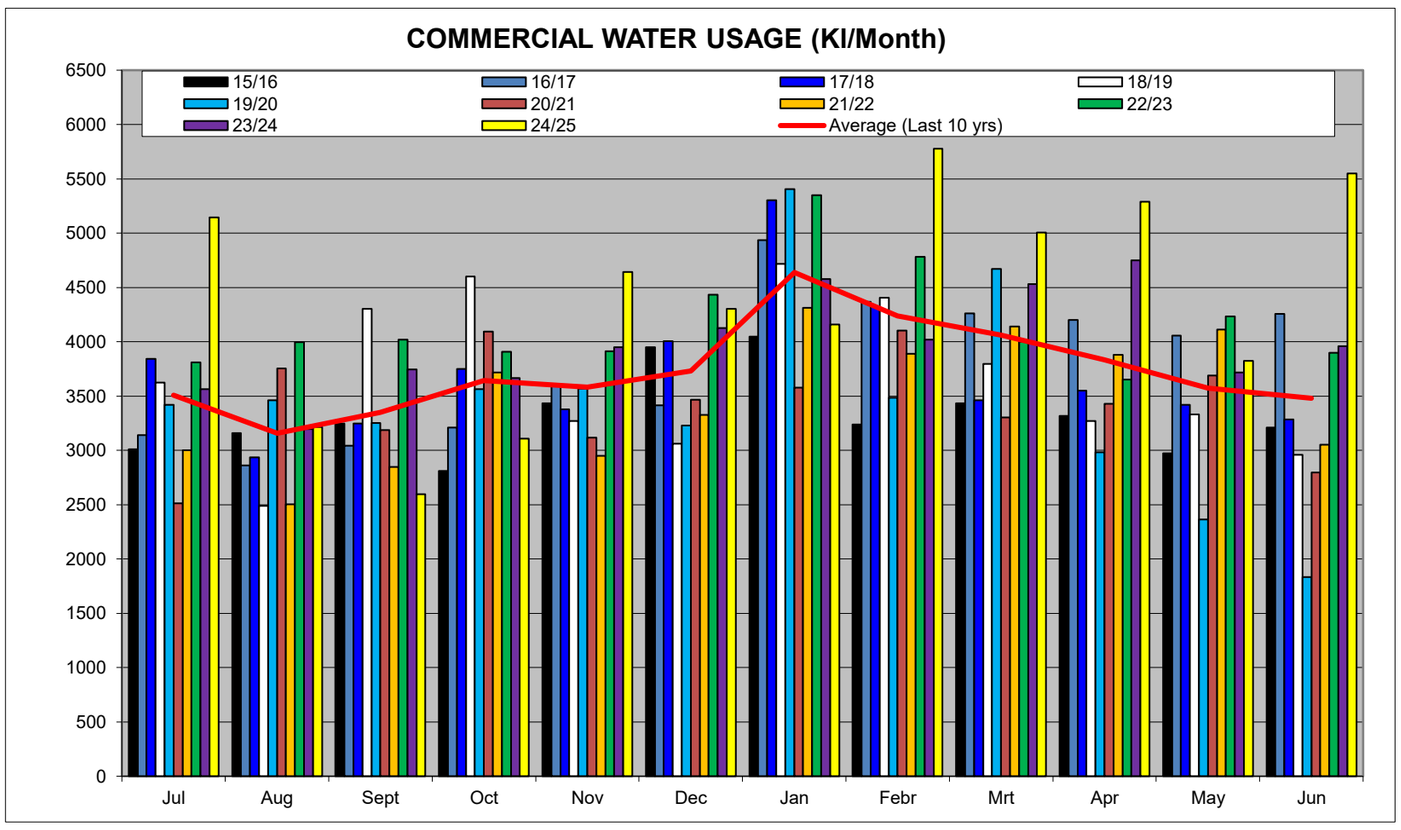
WATER BALANCE AND USAGE FOR KLEINMOND DISTRIBUTION SYSTEM

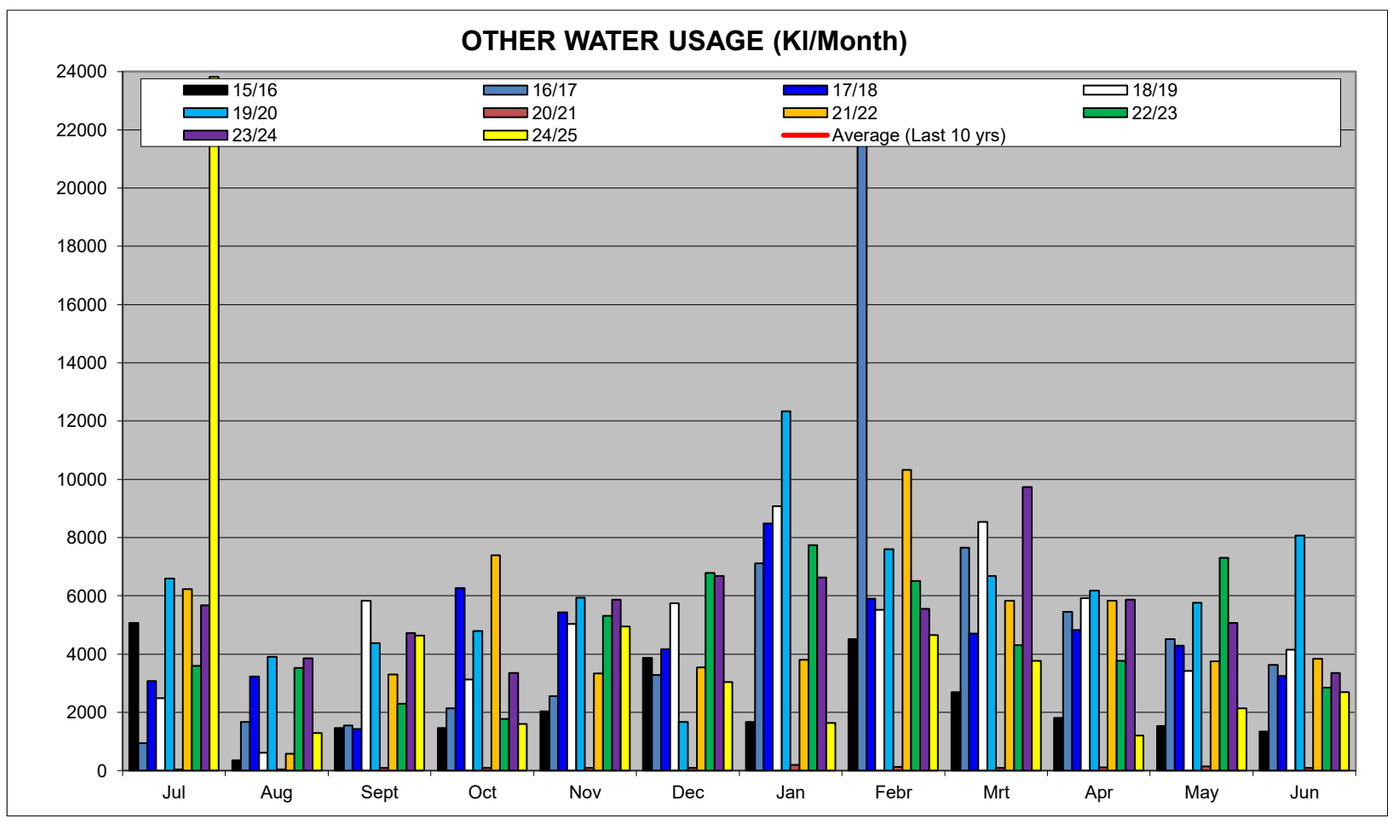






WATER BALANCE AND USAGE FOR KLEINMOND DISTRIBUTION SYSTEM





OVERSTRAND MUNICIPALITY

Hermanus

Month	Year	RAW WATER ABSTRACTED			BULK WATER SUPPLY									TREATED WATER SUPPLY																
					Raw Water Supply				System Input Volume	Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)													
																					Apparent Losses			Real Losses					
																					Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
																					Estimated Percentages (Variables)							
																					2%	4%	1%	93%				
		[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
Jan'02	2001/2002								280964					280964																
Feb'02									242860					242860																
Mrt'02									275505					275505																
Apr'02									227631					227631																
May'02									185755					185755																
Jun'02									168300					168300																
Jul'02	2002/2003								172634					172634																
Aug'02									182780					182780																
Sep'02									213887					213887																
Oct'02									257248					257248																
Nov'02									286780					286780																
Dec'02									358452					358452																
Jan'03									395455					395455																
Feb'03									310480					310480																
Mrt'03									298696					298696																
Apr'03									258820					258820																
May'03									231445					231445																
Jun'03									195902					195902																
Jul'03	2003/2004								203646					203646																
Aug'03									211160					211160																
Sep'03									211160					211160																
Oct'03									267988					267988																
Nov'03									351062					351062																
Dec'03									421401					421401																
Jan'04									393009					393009																
Feb'04									324988					324988																
Mrt'04									299151					299151																
Apr'04									266641					266641																
May'04									247842					247842																
Jun'04									217700					217700																
Jul'04	2004/2005								214141					214141	193433	0	20708	9.7	539296	16.4%	0	428	406	811	203	18860	20280	9.5%	532711	16.2%
Aug'04									214529					214529	182920	0	31609	14.7			0	429	624	1247	312	28998	31180	14.5%		
Sep'04									245814					245814	188110	0	57704	23.5			0	492	1144	2289	572	53208	57213	23.3%		
Oct'04									258751					258751	217341	0	41410	16.0			0	518	818	1636	409	38030	40892	15.8%		
Nov'04									309129					309129	222656	0	86473	28.0			0	618	1717	3434	859	79845	85855	27.8%		
Dec'04									375135					375135	255223	0	119912	32.0			0	750	2383	4766	1192	110820	119162	31.8%		
Jan'05									341263					341263	380806	0	-39543	-11.6			0	683	-805	-1609	-402	-37410	-40226	-11.8%		
Feb'05									294749					294749	247154	0	47595	16.1			0	589	940	1880	470	43715	47006	15.9%		
Mrt'05									332895					332895	247052	0	85843	25.8			0	666	1704	3407	852	79215	85177	25.6%		
Apr'05									269771					269771	262487	0	7284	2.7			0	540	135	270	67	6272	6744	2.5%		
May'05									229852					229852	194570	0	35282	15.4			0	460	696	1393	348	32385	34823	15.2%		
Jun'05									206436					206436	161418	0	45018	21.8			0	413	892	1784	446	41483	44605	21.6%		
Jul'05	2005/2006								251726					251726	172599	0	79127	31.4	829864	20.6%	0	503	1572	3145	786	73120	78624	31.2%	821826	20.4%
Aug'05									245657					245657	181734	0	63923	26.0			0	491	1269	2537	634	58991	63432	25.8%		
Sep'05									260240					260240	199780	0	60460	23.2			0	520	1199	2398	599	55744	59940	23.0%		
Oct'05									317015					317015	220730	0	96285	30.4			0	634	1913	3826	957	88955	95651	30.2%		
Nov'05									344751					344751	257068	0	87683	25.4			0	690	1740	3480	870	80904	86993	25.2%		
Dec'05									504732					504732	310746	0	193986	38.4			0	1009	3860	7719	1930	179468	192977	38.2%		
Jan'06									478490					478490	438996	0	39494	8.3			0	957	771	1541	385	35839	38537	8.1%		
Feb'06									377899					377899	354123	0	23776	6.3			0	756	460	921	230	21409	23020	6.1%		
Mrt'06									391526					391526	318513	0	73013	18.6			0	783	1445	2889	722	67174	72230	18.4%		
Apr'06									313709					313709	280253	0	33456	10.7			0	627	657	1313	328	30531	32829	10.5%		
May'06									278126					278126	243326	0	34800	12.5			0	556	685	1370	342	31847	34244	12.3%		
Jun'06									255092					255092	211231	0	43861	17.2			0	510	867	1734	434	40316	43351	17.0%		
Jul'06	2006/2007								263910					263910	202638	0	61272	23.2	734043	17.2%	0	528	1215	2430	607	56492	60744	23.0%	725505	17.0%
Aug'06									265521					265521	196606	0	68915	26.0			0	531	1368	2735	684	63597	68384	25.8%		
Sep'06									288907					288907	204554	0	84353	29.2			0	578	1676	3351	838	77911	83775	29.0%		
Oct'06									360766					360766	229886	0	130880	36.3			0	722	2603	5206	1302	121047	130158	36.1%		
Nov'06									373288					373288	521652	0	-148364	-39.7			0	747	-2982	-5964	-1491	-138673	-149111	-39.9%		
Dec'06									521524					521524	313798	0	207726	39.8			0	1043	4134	8267	2067	192215	206683	39.6%		
Jan'07					504221			504221	489094	15127	3.0	67889	3.0%	489094	264242	0	224852	46.0			0	978	4477	8955	2239	208203	223874	45.8%		
Feb'07					407784			407784	395550	12234	3.0			395550	397001	0	-1451	-0.4			0	791	-45	-90	-22	-2085	-2242	-0.6%		
Mrt'07					425504			425504	412739	12765	3.0			412739	336139	0	76600	18.6			0	825	1515	3031	758	70470	75774	18.4%		
Apr'07					365862			365862	354886	10976	3.0			354886	360910	0	-6024	-1.7			0	710	-135	-269	-67	-6262	-6734	-1.9%		
May'07					310163			310163	300858	9305	3.0			300858	255394	0	45464	15.1			0	602	897	1794	449	41722	44862	14.9%		
Jun'07					249422			249422	241939	7483	3.0			241939	252120	0	-10181	-4.2			0	484	-213	-427	-107	-9918	-10665	-4.4%		
Jul'07	2007/2008				251690			251690	244139	7551	3.0	121754	3.0%	244139	213755	0	30384	12.4	311620	7.9%	0	488	598	1196	299	27803	29896	12.2%	303747	7.7%
Aug'07					240511			240511	233296	7215	3.0			233296	197939	0	35357	15.2			0	467	698	1396	349	32448	34890	15.0%		
Sep'07					277735			277735	269403	8332	3.0			269403	204938	0	64465	23.9			0	539	1279	2557	639	59451	63926	23.7%		
Oct'07					330930			330930	321002	9928	3.0			321002	252501	0	68501	21.3			0	642	1357	2714	679	63109	67859	21.1%		
Nov'07					357063			357063	346351	10712	3.0			346351	321079	0	25272	7.3			0	693	492	983	246	22859	24580	7.1%		
Dec'07					465153			465153	451198	13955	3.0			451198	293351	0	157847	35.0			0	902	3139	6278	1569	145959	156945	34.8%		
Jan'08					477309			477309	462990	14319	3.0			462990	488297	0	-25307	-5.5			0	926	-525	-1049	-262	-24397	-26233	-5.7%		
Feb'08					398958			398958	386989	11969	3.0			386989	371880	0	15109	3.9			0	774	287	573	143	13332	14335	3.7%		
Mrt'08					426862			426862	414056	12806	3.0			414056	342202	0	71854	17.4			0	828	1421	2841	710	66054	71026	17.2%		
Apr'08					246238	14898		261136	253302	7834	3.0			253302	317036	0	-63734	-25.2			0	507	-1285	-2570	-642	-59744	-64241	-25.4%		
May'08					293383	36650		330033	320132	9901	3.0			320132	360422	0	-40290	-12.6			0	640	-819	-1637	-409	-38065	-40930	-12.8%		
Jun'08					199671	41414		241085	233852	7233	3.0			233852	261691	0	-27839	-11.9			0	468	-566	-1132	-283	-26325	-28306	-12.1%		
Jul'08	2008/2009				193747			193747	187935	5812	3.0	149885	3.0%	187935	262874	0	-74939	-39.9	805122	16.6%	0	376	-1506	-3013	-753	-70043	-75315	-40.1%	795429	16.4%
Aug'08					289496			289496	280811	8685	3.0			280811	257062	0	23749	8.5			0	562	464	927	232	21564	23187	8.3%		
Sep'08					257270			257270	249552	7718	3.0			249552	207830	0	41722	16.7			0	499	824	1649	412	38337	41223	16.5%		
Oct'08					378144			378144	366800	11344	3.0			366800	252440	0	114360	31.2			0	734	2273	4545	1136	105673	113626	31.0%		
Nov'08					418976			418976	406407	12569	3.0			406407	327010	0	79397	19.5			0	813	1572	3143	786	73083	78584	19.3%		
Dec'08					576741			576741	559439	17302	3.0			559439	302157	0	257282	46.0			0	1119	5123	10247	2562	238232	256163	45.8%		
Jan'09					575011			575011	557761	17250	3.0			557761	543843	0	13918	2.5			0	1116	256	512	128	11906	12802	2.3%		
Feb'09					525372			525372	509611	15761	3.0			509611	400307	0	109304	21.4			0	1019	2166	4331	1083	100705	108285	21.2%		
Mrt'09					584037			584037	566516	17521	3.0			566516	410257	0	156259	27.6			0	1133	3103	6205	1551	144267	155126	27.4%		
Apr'09					480621			480621	466202	14419	3.0			466202	367246	0	98956	21.2			0	932	1960	3921	980	91162	98024	21.0%		
May'09					397313			397313	385394	11919	3.0			385394	439229	0	-53835	-14.0			0	771	-1092	-2184	-546	-50783	-54606	-14.2%		
Jun'09					319433			319433	309850	9583	3.0			309850	270901	0	38949	12.6			0	620	767	1533	383	35646	38329	12.4%		
Jul'09	2009/2010				302806			302806	293722	9084	3.0	138133	3.0%	293722	262399	0	31323	10.7	593867	13.3%	0	587	615	1229	307	28584	30736	10.5%	584934	13.1%
Aug'09					286395			286395	277803	8592	3.0			277803	242362	0	35441	12.8			0	556	698	1395	349	32443	34885	12.6%		
Sep'09					288788			288788	280124	8664	3.0			280124	207918	0	72206	25.8			0	560	1433	2866	716	66631	71646	25.6%		
Oct'09					328901			328901	319034	9867	3.0			319034	248695	0	70339	22.0			0	638	1394	2788	697	64822	69701	21.8%		
Nov'09					371936			371936	360778	11158	3.0			360778	297756	0	63022	17.5			0	722	1246	2492	623	57939	62300	17.3%		
Dec'09					548772			548772	532309	16463	3.0			532309	349986	0	182323	34.3			0	1065	3625	7250	1813	168570	181258	34.1%		
Jan'10					564095			564095	547172	16923	3.0			547172	552721	0	-5549	-1.0			0	1094	-133	-266	-66	-6178	-6643	-1.2%		
Feb'10					430364			430364	417453	12911	3.0			417453	420188	0	-2735	-0.7			0	835	-71	-143	-36	-3320	-3570	-0.9%		
Mrt'10					444423			444423	431090	13333	3.0			431090	398602	0	32488	7.5			0	862	633	1265	316	29412	31626	7.3%		
Apr'10					348734			348734	338272	10462	3.0			338272	368121	0	-29849	-8.8			0	677	-611	-1221	-305	-28389	-30526	-9.0%		
May'10					359921			359921	349123	10798	3.0			349123	271375	0	77748	22.3			0	698	1541	3082	770	71656	77050	22.1%		
Jun'10					329312			329312	319433	9879	3.0			319433	252323	0	67110	21.0			0	639	1329	2659	665	61818	66471	20.8%		
Jul'10	2010/2011				268760			268760	260697	8063	3.0	117655	3.0%	260697	246162	0	14535	5.6	594352	15.6%	0	521	280	561	140	13033	14014	5.4%	586743	15.4%
Aug'10					289565			289565	280878	8687	3.0			280878	247208	0	33670	12.0			0	562	662	1324	331	30791	33108	11.8%		
Sep'10					292764			292764	283981	8783	3.0			283981	212846	0	71135	25.0			0	568	1411	2823	706	65627	70567	24.8%		
Oct'10					358939			358939	348171	10768	3.0			348171	273869	0	74302	21.3			0	696	1472	2944	736	68453	73606	21.1%		
Nov'10					309637			309637	300348	9289	3.0			300348	268075	0	32273	10.7			0	601	633	1267	317	29455	31672	10.5%		
Dec'10					469395			469395	455313	14082	3.0			455313	281839	0	173474	38.1			0	911	3451	6903	1726	160484	172563	37.9%		
Jan'11					409643			409643	397354	12289	3.0			397354	387156	0	10198	2.6			0	795	188	376	94	8745	9403	2.4%		
Feb'11					389982			389982	378283	11699	3.0			378283	307100	0	71183	18.8			0	757	1409	2817	704	65497	70426	18.6%		
Mrt'11					308399	61243		369642	358553	11089	3.0			358553	287197	0	71356	19.9			0	717	1413	2826	706	65694	70639	19.7%		
Apr'11					252760	42586		295346	286486	8860	3.0			286486	273874	0	12612	4.4			0	573	241	482	120	11196	12039	4.2%		
May'11					236784	13648		250432	242919	7513	3.0			242919	229075	0	13844	5.7			0	486	267	534	134	12423	13358	5.5%		
Jun'11					203105	14623		217728	211196	6532	3.0			211196	195426	0	15770	7.5			0	422	307	614	153	14273	15348	7.3%		
Jul'11	2011/2012				218846	12779		231625	224676	6949	3.0	101257	3.0%	224676	189696	0	34980	15.6	317241	9.7%	0	449	691	1381	345	32114	34531	15.4%	310693	9.5%
Aug'11					229174	12259		241433	234190	7243	3.0			234190	196037	0	38153	16.3			0	468	754	1507	377	35047	37685	16.1%		
Sep'11					237258	38466		275724	267452	8272	3.0			267452	194566	0	72886	27.3			0	535	1447	2894	724	67287	72351	27.1%		
Oct'11					230023	65239		295262	286404	8858	3.0			286404	240579	0	45825	16.0			0	573	905	1810	453	42085	45252	15.8%		
Nov'11					205288	77992		283280	274782	8498	3.0			274782	232527	0	42255	15.4			0	550	834	1668	417	38786	41705	15.2%		
Dec'11					276336	72845		349181	338706	10475	3.0			338706	258801	0	79905	23.6			0	677	1585	3169	792	73681	79227	23.4%		
Jan'12					293588	56694		350282	339774	10508	3.0			339774	392595	0	-52821	-15.5			0	680	-1070	-2140	-535	-49756	-53501	-15.7%		
Feb'12					239400	49160		288560	279903	8657	3.0			279903	277124	0	2779	1.0			0	560	44	89	22	2064	2219	0.8%		
Mrt'12					231744	66972		298716	289755	8961	3.0			289755	283118	0	6637	2.3			0	580	121	242	61	5633	6057	2.1%		
Apr'12					195032	79589		274621	266382	8239	3.0			266382	258770	0	7612	2.9			0	533	142	283	71	6584	7080	2.7%		
May'12					177604	81086		258690	250929	7761	3.0			250929	233079	0	17850	7.1			0	502	347	694	173	16134	17348	6.9%		
Jun'12					155240	72624		227864	221028	6836	3.0			221028	199848	0	21180	9.6			0	442	415	830	207	19286	20738	9.4%		
Jul'12	2012/2013				165565	31648		197213	191297	5916	3.0	110967	3.0%	191297	197434	0	-6137	-3.2	324189	9.0%	0	383	-130	-261	-65	-6064	-6520	-3.4%	317013	8.8%
Aug'12					159419	59092		218511	211956	6555	3.0			211956	188787	0	23169	10.9			0	424	455	910	227	21153	22745	10.7%		
Sep'12					173623	92512		266135	258151	7984	3.0			258151	186115	0	72036	27.9			0	516	1430	2861	715	66513	71520	27.7%		
Oct'12					205334	64230		269564	261477	8087	3.0			261477	223337	0	38140	14.6			0	523	752	1505	376	34984	37617	14.4%		
Nov'12					339107	0		339107	328934	10173	3.0			328934	273997	0	54937	16.7			0	658	1086	2171	543	50479	54279	16.5%		
Dec'12					386381	43235		429616	416728	12888	3.0			416728	289426	0	127302	30.5			0	833	2529	5059	1265	117615	126468	30.3%		
Jan'13					337332	84606		421938	409280	12658	3.0			409280	486422	0	-77142	-18.8			0	819	-1559	-3118	-780	-72503	-77961	-19.0%		
Feb'13					273572	77700		351272	340734	10538	3.0			340734	343208	0	-2474	-0.7			0	681	-63	-126	-32	-2935	-3156	-0.9%		
Mrt'13					235861	139500		375361	364100	11261	3.0			364100	315013	0	49087	13.5			0	728	967	1934	484	44974	48359	13.3%		
Apr'13					179764	111600		291364	282623	8741	3.0			282623	321090	0	-38467	-13.6			0	565	-781	-1561	-390	-36300	-39032	-13.8%		
May'13					212812	70000		282812	274328	8484	3.0			274328	229351	0	44977	16.4			0	549	889	1777	444	41318	44428	16.2%		
Jun'13					162601	93400		256001	248321	7680	3.0			248321	209558	0	38763	15.6			0	497	765	1531	383	35588	38266	15.4%		
Jul'13	2013/2014				232808	0		232808	225824	6984	3.0	525115	13.1%	225824	209246	0	16578	7.3	380399	10.9%	0	452	323	645	161	14997	16126	7.1%	373425	10.7%
Aug'13					258075	0		258075	250333	7742	3.0			250333	182371	0	67962	27.1			0	501	1349	2698	675	62739	67461	26.9%		
Sep'13					244331	0		244331	237001	7330	3.0			237001	199655	0	37346	15.8			0	474	737	1475	369	34291	36872	15.6%		
Oct'13					258717	0	13797	272514	268421	4093	1.5			268421	208721	0	59700	22.2			0	537	1183	2367	592	55022	59163	22.0%		
Nov'13					271060	0	70703	341763	304149	37614	11.0			304149	237553	0	66596	21.9			0	608	1320	2640	660	61369	65988	21.7%		
Dec'13					353639	21808	52705	428152	399739	28413	6.6			399739	268023	0	131716	33.0			0	799	2618	5237	1309	121752	130917	32.8%		
Jan'14					368368	38907	38933	446208	368197	78011	17.5			368197	432675	0	-64478	-17.5			0	736	-1304	-2609	-652	-60649	-65214	-17.7%		
Feb'14					314139	41338	55896	411373	325290	86083	20.9			325290	312829	0	12461	3.8			0	651	236	472	118	10984	11810	3.6%		
Mrt'14					286932	34231	57853	379016	311420	67596	17.8			311420	282799	0	28621	9.2			0	623	560	1120	280	26038	27998	9.0%		
Apr'14					303265	758	40094	344117	302150	41967	12.2			302150	285417	0	16733	5.5			0	604	323	645	161	15000	16129	5.3%		
May'14					257417	33131	61111	351659	269400	82259	23.4			269400	297169	0	-27769	-10.3			0	539	-566	-1132	-283	-26326	-28308	-10.5%		
Jun'14					230668	53778	17567	302013	224990	77023	25.5			224990	190057	0	34933	15.5			0	450	690	1379	345	32069	34483	15.3%		
Jul'14	2014/2015				263792	90253	6331	360376	244760	115616	32.1	672217	14.6%	244760	236706	0	8054	3.3	359729	9.1%	0	490	151	303	76	7035	7564	3.1%	351849	8.9%
Aug'14					243786	16231	23262	283279	245010	38269	13.5			245010	194391	0	50619	20.7			0	490	1003	2005	501	46620	50129	20.5%		
Sep'14					257568	47939	54971	360478	262240	98238	27.3			262240	212069	0	50171	19.1			0	524	993	1986	496	46171	49647	18.9%		
Oct'14					244561	29609	81385	355555	316670	38885	10.9			316670	242120	0	74550	23.5			0	633	1478	2957	739	68742	73917	23.3%		
Nov'14					257324	35395	75950	368669	330710	37959	10.3			330710	300047	0	30663	9.3			0	661	600	1200	300	27901	30002	9.1%		
Dec'14					392496	54522	39733	486751	447820	38931	8.0			447820	310729	0	137091	30.6			0	896	2724	5448	1362	126662	136195	30.4%		
Jan'15					412891	50848	30535	494274	442290	51984	10.5			442290	464344	0	-22054	-5.0			0

OVERSTRAND MUNICIPALITY

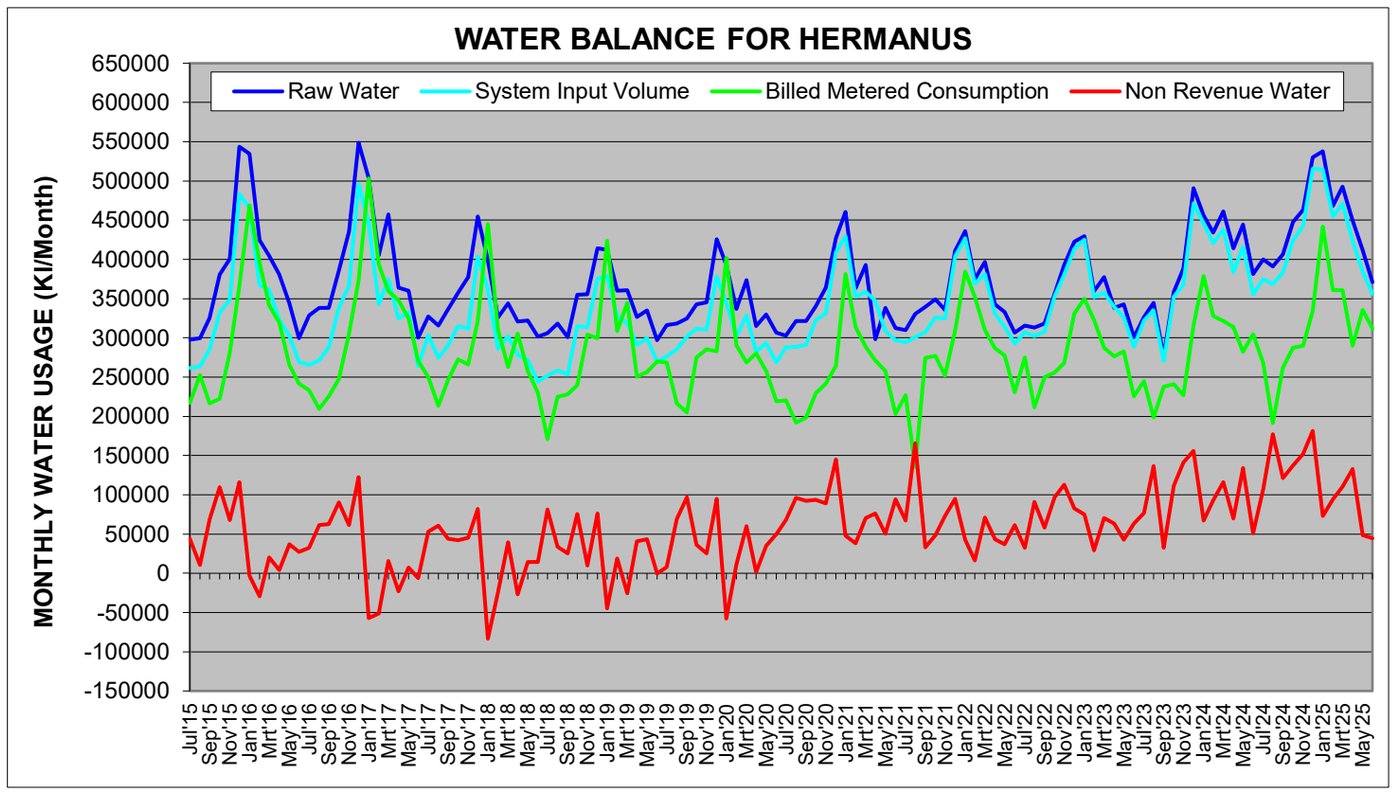
Hermanus

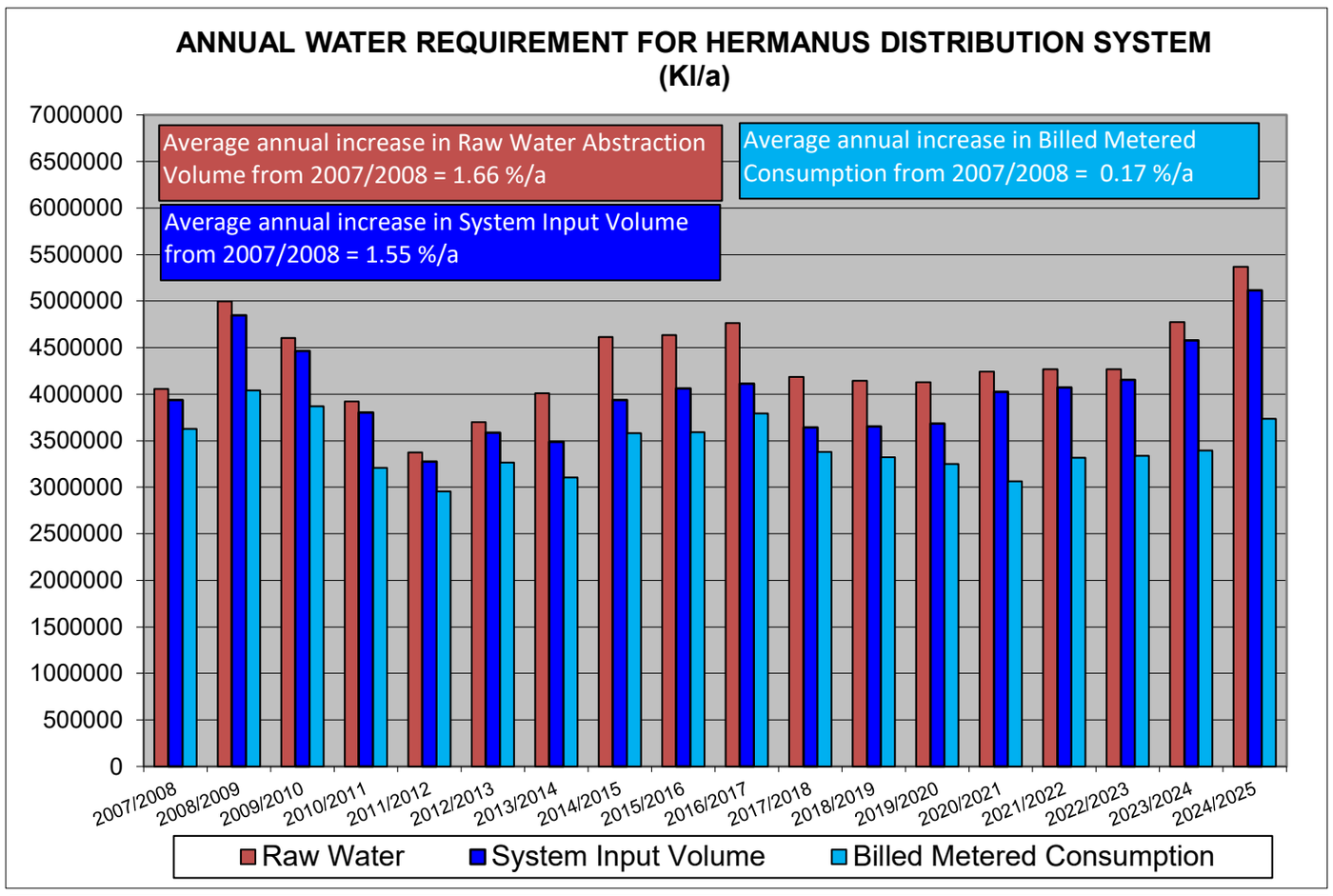
Month	Year	RAW WATER ABSTRACTED			BULK WATER SUPPLY									TREATED WATER SUPPLY																
					Raw Water Supply				System Input Volume	Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)													
																						Apparent Losses			Real Losses				
																						Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.				
																						Estimated Percentages (Variables)							
																						2%	4%	1%	93%				
		[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
Jul'16	2016/2017		37109	11023	282840	35019	11023	328882	265500	63382	19.3	654274	13.7%	265500	233056	0	32444	12.2	317045	7.7%	0	531	638	1277	319	29679	31913	12.0%	308822	7.5%
Aug'16		Meter Fault	31130	11800	296903	29455	11793	338151	271440	66711	19.7			271440	209787	0	61653	22.7			0	543	1222	2444	611	56832	61110	22.5%		
Sep'16			40270	30540	269548	37942	30541	338031	288090	49941	14.8			288090	225490	0	62600	21.7			0	576	1240	2481	620	57682	62024	21.5%		
Oct'16		345071	518022	23420	300441	48562	37064	386067	338380	47687	12.4			338380	247722	0	90658	26.8			0	677	1800	3599	900	83683	89981	26.6%		
Nov'16		362097	32228	39907	317442	29730	88010	435182	366790	68392	15.7			366790	305265	0	61525	16.8			0	734	1216	2432	608	56536	60791	16.6%		
Dec'16		502442	31446	52802	446504	30440	71785	548729	495640	53089	9.7			495640	373306	0	122334	24.7			0	991	2427	4854	1213	112849	121343	24.5%		
Jan'17		452245	42667	16703	393818	41468	68415	503701	446550	57151	11.3			446550	503307	0	-56757	-12.7			0	893	-1153	-2306	-577	-53615	-57650	-12.9%		
Feb'17		365959	43661	21756	314166	41132	50038	405336	342680	62656	15.5			342680	393868	0	-51188	-14.9			0	685	-1037	-2075	-519	-48242	-51873	-15.1%		
Mrt'17		423171	26577	38174	370330	24300	62746	457376	375080	82296	18.0			375080	359295	0	15785	4.2			0	750	301	601	150	13982	15035	4.0%		
Apr'17		323879	6696	53007	287342	6641	69782	363765	324790	38975	10.7			324790	347974	0	-23184	-7.1			0	650	-477	-953	-238	-22165	-23834	-7.3%		
May'17		264973	29867	53142	265258	29519	65156	359933	332226	27707	7.7			332226	324666	0	7560	2.3			0	664	138	276	69	6413	6896	2.1%		
Jun'17			23430	86365	211884	21727	66856	300467	264180	36287	12.1			264180	270565	0	-6385	-2.4			0	528	-138	-277	-69	-6429	-6913	-2.6%		
Jul'17	2017/2018		33315	68596	214544	32674	80201	327419	303166	24253	7.4	539107	12.9%	303166	249863	0	53303	17.6	262270	7.2%	0	606	1054	2108	527	49008	52697	17.4%	254983	7.0%
Aug'17			39323	67840	200574	38284	77074	315932	274280	41652	13.2			274280	213296	0	60984	22.2			0	549	1209	2417	604	56205	60435	22.0%		
Sep'17			48522	54051	223088	47281	66223	336592	290540	46052	13.7			290540	246378	0	44162	15.2			0	581	872	1743	436	40530	43581	15.0%		
Oct'17			42019	54984	253678	45787	57759	357224	314920	42304	11.8			314920	272595	0	42325	13.4			0	630	834	1668	417	38776	41695	13.2%		
Nov'17			19085	74647	277374	24475	75645	377494	311870	65624	17.4			311870	266368	0	45502	14.6			0	624	898	1795	449	41737	44878	14.4%		
Dec'17		401327	38806	78644	333252	41799	79774	454825	403500	51325	11.3			403500	321438	0	82062	20.3			0	807	1625	3250	813	75567	81255	20.1%		
Jan'18		374453	25791	62693	310301	25125	63090	398516	361980	36536	9.2			361980	445390	0	-83410	-23.0			0	724	-1683	-3365	-841	-78245	-84134	-23.2%		
Feb'18		276341	21967	58113	232159	37277	56628	326064	286090	39974	12.3			286090	310384	0	-24294	-8.5			0	572	-497	-995	-249	-23126	-24866	-8.7%		
Mrt'18		249080	54871	70673	213414	59870	70608	343892	302240	41652	12.1			302240	262908	0	39332	13.0			0	604	775	1549	387	36017	38728	12.8%		
Apr'18		216915	58806	65000	199101	56534	64965	320600	278600	42000	13.1			278600	305296	0	-26696	-9.6			0	557	-545	-1090	-273	-25345	-27253	-9.8%		
May'18		210620	53454	60779	202049	55202	65069	322320	272160	50160	15.6			272160	257450	0	14710	5.4			0	544	283	567	142	13174	14166	5.2%		
Jun'18			37658	64363	178656	51154	72015	301825	244250	57575	19.1			244250	229960	0	14290	5.9			0	489	276	552	138	12835	13802	5.7%		
Jul'18	2018/2019		38175	81581	170777	54012	81565	306354	252130	54224	17.7	487283	11.8%	252130	170982	0	81148	32.2	332685	9.1%	0	1364	1596	4474	798	72916	79784	31.6%	316318	8.7%
Aug'18			33816	79815	195474	46770	75813	318057	258180	59877	18.8			258180	224780	0	33400	12.9			0	1364	641	5882	320	25193	32036	12.4%		
Sep'18			17724	91496	198178	31377	71394	300949	253550	47399	15.7			253550	227898	0	25652	10.1			0	1364	486	5964	243	17596	24288	9.6%		
Oct'18		241794	20396	103535	238904	28516	87369	354789	315250	39539	11.1			315250	239959	0	75291	23.9			0	1364	1479	6279	739	65430	73927	23.5%		
Nov'18		253839	31297	81742	239580	29321	86536	355437	313820	41617	11.7			313820	303954	0	9866	3.1			0	1364	170	7954	85	293	8502	2.7%		
Dec'18		336993	12229	123222	324020	10891	79076	413987	375750	38237	9.2			375750	299750	0	76000	20.2			0	1364	1493	7844	746	64553	74636	19.9%		
Jan'19		313585	37588	71927	302584	37588	71927	412099	378660	33439	8.1			378660	423596	0	-44936	-11.9			0	1364	-926	11085	-463	-55996	-46300	-12.2%		
Feb'19			38526	73713	247922	38526	73713	360161	327470	32691	9.1			327470	308854	0	18616	5.7			0	1364	345	8082	173	8652	17252	5.3%		
Mrt'19			33483	73754	253506	33483	73754	360743	319060	41683	11.6			319060	344639	0	-25579	-8.0			0	1364	-539	9019	-269	-35153	-26943	-8.4%		
Apr'19			20291	77751	228704	20291	77751	326746	291420	35326	10.8			291420	250838	0	40582	13.9			0	1364	784	6564	392	31478	39218	13.5%		
May'19			34426	73639	226920	34426	73639	334985	299360	35625	10.6			299360	256208	0	43152	14.4			0	1364	836	6704	418	33830	41788	14.0%		
Jun'19		199572	31890	67698	197658	31890	67698	297246	269620	27626	9.3			269620	270127	0	-507	-0.2			0	1364	-37	7069	-19	-8883	-1871	-0.7%		
Jul'19	2019/2020	232561	36424	72094	207740	36424	72094	316258	276400	39858	12.6	445591	10.8%	276400	268533	0	7867	2.8	430532	11.7%	97	1065	134	6227	67	276	6704	2.4%	416581	11.3%
Aug'19		229902	34450	80944	202830	34450	80944	318224	285280	32944	10.4			285280	216373	0	68907	24.2			97	1065	1355	5017	677	60695	67744	23.7%		
Sep'19		285807	3048	66753	254688	3048	66753	324489	301730	22759	7.0			301730	204727	0	97003	32.1			97	1065	1917	4747	958	88218	95840	31.8%		
Oct'19		275527	28369	70169	244472	28369	70169	343010	311620	31390	9.2			311620	275342	0	36278	11.6			97	1065	702	6385	351	27677	35115	11.3%		
Nov'19		257334	44222	73056	228148	44222	73056	345426	310760	34666	10.0			310760	285682	0	25078	8.1			97	1065	478	6625	239	16573	23915	7.7%		
Dec'19		344596	49898	71270	304644	49898	71270	425812	378020	47792	11.2			378020	283138	0	94882	25.1			97	1065	1874	6566	937	84342	93719	24.8%		
Jan'20		272014	46547	71161	275088	46547	71161	392796	344490	48306	12.3			344490	401909	0	-57419	-16.7			97	1065	-1172	9320	-586	-66144	-58582	-17.0%		
Feb'20		160609	29544	64853	242348	29544	64853	336745	302230	34515	10.2			302230	290784	0	11446	3.8			97	1065	206	6743	103	3232	10283	3.4%		
Mrt'20		277475	32815	71195	269548	32815	71195	373558	328503	45055	12.1			328503	268705	0	59798	18.2			97	1065	1173	6231	586	50645	58635	17.8%		
Apr'20		229790	40687	71267	203416	40687	71267	315370	282289	33081	10.5			282289	280514	0	1775	0.6			97	1065	12	6505	6	-5911	612	0.2%		
May'20		221587	41281	82572	206292	41281	82572	330145	292842	37303	11.3			292842	257959	0	34883	11.9			97	1065	674	5982	337	26727	33720	11.5%		
Jun'20		206042	35830	66206	204836	35830	66206	306872	268950	37922	12.4			268950	218916	0	50034	18.6			97	1065	977	5076	489	42329	48871	18.2%		
Jul'20	2020/2021	246991	16081	19264	224168	16081	19264	302667	287760	14907	4.9	217909	5.1%	287760	220237	0	67523	23.5	960986	23.9%	45	1101	1328	2819	664	61567	66377	23.1%	947239	23.5%
Aug'20		235792	41247	71112	209220	41247	71112	321579	288340	33239	10.3			288340	192357	0	95983	33.3			45	1101	1897	2462	948	89530	94837	32.9%		
Sep'20		236527	20591	71457	229282	20591	71457	321330	291310	30020	9.3			291310	198845	0	92465	31.7			45	1101	1826	2545	913	86035	91319	31.3%		
Oct'20		262476	51470	50114	238614	51470	50114	340198	322750	17448	5.1			322750	229151	0	93599	29.0			45	1101	1849	2933	925	86747	92453	28.6%		
Nov'20		248680	54066	78665	231034	54066	78665	363765	331100	32665	9.0			331100	241916	0	89184	26.9			45	1101	1761	3096	880	82301	88038	26.6%		
Dec'20		331153	42288	89639	295118	42288	89639	427045	409040	18005	4.2			409040	263886	0	145154	35.5			45	1101	2880	3378	1440	136311	144008	35.2%		
Jan'21		325905	64067	80837	315657	64067	80837	460561	429620	30941	6.7			429620	381655	0	47965	11.2			45	1101	936	4885	468	40530	46819	10.9%		
Feb'21		311002	47716	71059	244482	47716	71059	363257	352190	11067	3.0			352190	313908	0	38282	10.9			45	1101	743	4018	371	32005	37136	10.5%		
Mrt'21		268085	61543	78796	252866	61543	78796	393205	359060	34145	8.7			359060	288928	0	70132	19.5			45	1101	1380	3698	690	63219	68986	19.2%		
Apr'21		254958	62829	77019	158434	62829	77019	298282	347410	-49128	-16.5			347410	271197	0	76213	21.9			45	1101	1501	3471	751	69344	75067	21.6%		
May'21		217131	70211	83119	184793	70211	83119	338123	308490	29633	8.8			308490	258009	0	50481	16.4			45	1101	987	3302	493	44553	49335	16.0%		
Jun'21		232657	39473	70390	202324	39473	70390	312187	297220	14967	4.8			297220	203215	0	94005	31.6			45	1101	1857	2601	929	87473	92859	31.2%		
Jul'21	2021/2022	200785	45392	80388	184312	45392	80388	310092	294150	15942	5.1	194527	4.6%	294150	226970	0	67180	22.8	753296	18.5%	152	4111	1258	2905	629	58124	62917	21.4%	702134	17.2%
Aug'21		199896	44572	86136	199896	44572	86136	330604	301100	29504	8.9			301100	135405	0	165695	55.0			152	4111	3229	1733	1614	154855	161432	53.6%		
Sep'21		193243	46805	99275	193243	46805	99275	339323	307380	31943	9.4			307380	274548	0	32832	10.7			152	4111	571	3514	286	24197	28569	9.3%		
Oct'21		220009	38947	90380	220009	38947	90380	349336	326040	23296	6.7			326040	277376	0	48664	14.9			152	4111	888	3550	444	39518	44401	13.6%		
Nov'21		223436	42848	69406	223436	42848	69406	335690	324550	11140	3.3			324550	251746	0	72804	22.4			152	4111	1371	3222	685	63262	68541	21.1%		
Dec'21		296518	39493	75055	296518	39493	75055	411066	403960	7106	1.7			403960	309315	0	94645	23.4			152	4111	1808	3959	904	83711	90382	22.4%		
Jan'22		310239	46359	79350	310239	46359	79350	435948	427130	8818	2.0			427130	384580	0	42550	10.0			152	4111	766	4922	383	32216	38287	9.0%		
Feb'22		264645	41514	68590	264645	41514	68590	374749	368894	5855	1.6			368894	352667	0	16227	4.4			152	4111	239	4514	120	7091	11964	3.2%		
Mrt'22		279619	43473	73525	279619	43473	73525	396617	381040	15577	3.9			381040	310099	0	70941	18.6			152	4111	1334	3969	667	60708	66678	17.5%		
Apr'22		231718	41156	69800	231718	41156	69800	342674	330180	12494	3.6			330180	286511	0	43669	13.2			152	4111	788	3667	394	34556	39406	11.9%		
May'22		237758	40284	55253	237758	40284	55253	333295	314600	18695	5.6			314600	277935	0	36665	11.7			152	4111	648	3557	324	27872	32402	10.3%		
Jun'22		216847	45504	47179	213684	45504	47179	306367	292210	14157	4.6			292210	230786	0	61424	21.0			152	4111	1143	2954	572	52492	57161	19.6%		
Jul'22	2022/2023	239055	28746	47835	239055	28746	47835	315636	307370	8266	2.6	113774	2.7%	307370	274891	0	32479	10.6	816989	19.7%	100	2742	593	3518	296	25230	29638	9.6%	782891	18.8%
Aug'22		205121	32325	75577	205121	32325	75577	313023	302260	10763	3.4			302260	211410	0	90850	30.1			100	2742	1760	2706	880	82662	88009	29.1%		
Sep'22		254288	11523	52340	254288	11523	52340	318151	308210	9941	3.1			308210	250344	0	57866	18.8			100	2742	1100	3204	550	50170	55025	17.9%		
Oct'22		252662	39341	64470	252662	39341	64470	356473	352830	3643	1.0			352830	255900	0	96930	27.5			100	2742	1882	3275	941	87991	94089	26.7%		
Nov'22		288563	43400	60685	288563	43400	60685	392648	380740	11908	3.0			380740	267977	0	112763	29.6			100	2742	2198	3430	1099	103194	109922	28.9%		
Dec'22		328405	35807	58398	328405	35807	58398	422610	413840	8770	2.1			413840	331038	0	82802	20.0			100	2742	1599	4237	800	73325	79961	19.3%		
Jan'23		349318.2	48800	66384	317562	48033	64087	429682	425040	4642	1.1			425040	349856	0	75184	17.7			100	2742	1447	4478	723	65694	72343	17.0%		
Feb'23		281692.4	45851	60199	256084	45095	58180	359359	351650	7709	2.1			351650	322748	0	28902	8.2			100	2742	521	4131	261	21148	26061	7.4%		
Mrt'23		311997.4	37802	59123	283634	36213	57881	377728	357550	20178	5.3			357550	287402	0	70148	19.6			100	2742	1346	3679	673	61609	67307	18.8%		
Apr'23		309233.1	35736	23719	281121	34541	22653	338315	339530	-1215	-0.4			339530	276284	0	63246	18.6			100	2742	1208	3536	604	55056	60405	17.8%		
May'23		325176.5	24385	24797	295615	22481	24488	342584	325770	16814	4.9			325770	283127	0	42643	13.1			100	2742	796	3624	398	34984	39802	12.2%		
Jun'23		295200.4	27476	6890	268364	25682	6989	301035	288680	12355	4.1			288680	225504	0	63176	21.9			100	2742	1207	2886	603	55638	60335	20.9%		
Jul'23	2023/2024	306868	27491	20430	278971	27491	20430	326892	321900	4992	1.5	196668	4.1%	321900	244814	0	77086	23.9	1186105	25.9%	152	2376	1491	3133	746	69188	74558	23.2%	1155771	25.2%
Aug'23		318265	22875	32330	289332	22875	32330	344537	335140	9397	2.7			335140	198574	0	136566	40.7			152	2376	2681	2542	1340	127475	134038	40.0%		
Sep'23		259918	22044	28469	236289	11653	28469	276411	270490	5921	2.1			270490	237801	0	32689	12.1			152	2376	603	3044	302	26213	30161	11.2%		
Oct'23		290242	51885	42809	263856	51885	42809	358550	352590	5960	1.7			352590	240800	0	111790	31.7			152	2376	2185	3082	1093	102902	109262	31.0%		
Nov'23		330331	33063	54762	300301	33063	54762	388126	367960	20166	5.2			367960	226926	0	141034	38.3			152	2376	2770	2904	1385	131447	138506	37.6%		
Dec'23		410628	58457	59320	373298	58457	59320	491075	471770	19305	3.9			471770	315628	0	156142	33.1			152	2376	3072	4040	1536	144966	153614	32.6%		
Jan'24		383684	62775	44695	348804	62775	44695	456274	445650	10624	2.3			445650	378688	0	66962	15.0			152	2376	1289	4847	644	57654	64434	14.5%		
Feb'24		366303	53726	47293	333003	53726	47293	434022	420870	13152	3.0			420870	327802	0	93068	22.1			152	2376	1811	4196	905	83628	90540	21.5%		
Mrt'24		395141	68623	33490	359219	68623	33490	461332	437770	23562	5.1			437770	321786	0	115984	26.5			152	2376	2269	4119	1135	105934	113456	25.9%		
Apr'24		334734	61771	47849	304304	61771	47849	413924	383750	30174	7.3			383750	314054	0	69696	18.2			152	2376	1343	4020	672	61133	67168	17.5%		
May'24		349287	85649	41272	317534	85649	41272	444455	416430	28025	6.3			416430	282405	0	134025	32.2			152	2376	2630	3615	1315	123938	131497	31.6%		
Jun'24		245665	79976	77992	223332	79976	77992	381300	355910	25390	6.7			355910	304847	0	51063	14.3			152	2376	971	3902	485	43177	48535	13.6%		
Jul'24	2024/2025	270402	79510	74531	245820	79510	74531	399861	374900	24961	6.2	255258	4.8%	374900	267745	0	107155	28.6	1380614	27.0%	95	2318	2095	3427	1047	98173	104742	27.9%	1351655	26.4%
Aug'24		270772	71716	73128	246156	71716	73128	391000	368740	22260	5.7			368740	191410	0	177330	48.1			95	2318	3498	2450	1749	167219	174917	47.4%		
Sep'24		262287	79877	88324	238443	79877	88324	406644	383570	23074	5.7			383570	262116	0	121454	31.7			95	2318	2381	3355	1190	112115	119041	31.0%		
Oct'24		302961	80927	91572	275419	80927	91572	447918	424350	23568	5.3			424350	287267	0	137083	32.3			95	2318	2693	3677	1347	126953	134670	31.7%		
Nov'24		342192	65091	86756	311084	65091	86756	462931	442400	20531	4.4			442400	290031	0	152369	34.4			95	2318	2999	3712	1500	141745	149956	33.9%		
Dec'24		389572	81548	94582	354156	81548	94582	530286	515650	14636	2.8			515650	334203	0	181447	35.2			95	2318	3581	4278	1790	169385	179034	34.7%		
Jan'25		398334	78768	96876	362122	78768	96876	537766	514850	22916	4.3			514850	441632	0	73218	14.2			95	2318	1416	5653	708	63028	70805	13.8%		
Feb'25		350614	72544	76771	318740	72544	76771	468055	454880	13175	2.8			454880	360636	0	94244	20.7			95	2318	1837	4616	918	84460	91831	20.2%		
Mrt'25		371511	73743	81070	337737	73743	81070	492550	471050	21500	4.4			471050	360884	0	110166	23.4			95	2318	2155	4619	1078	99901	107753	22.9%		
Apr'25		307735	81561	88306	279759	81561	88306	449626	423240	26386	5.9			423240	290093	0	133147	31.5			95	2318	2615	3713	1307	123099	130734	30.9%		
May'25		279039	71908	85813	253672	71908	85813	411393	384280	27113	6.6			384280	335750	0	48530	12.6			95	2318	922	4297	461	40436	46117	12.0%		
Jun'25		278588	43013	75033	253262	43013	75033	371308	356170	15138	4.1			356170	311699	0	44471	12.5			95	2318	841	3989	421	36807	42058	11.8%		

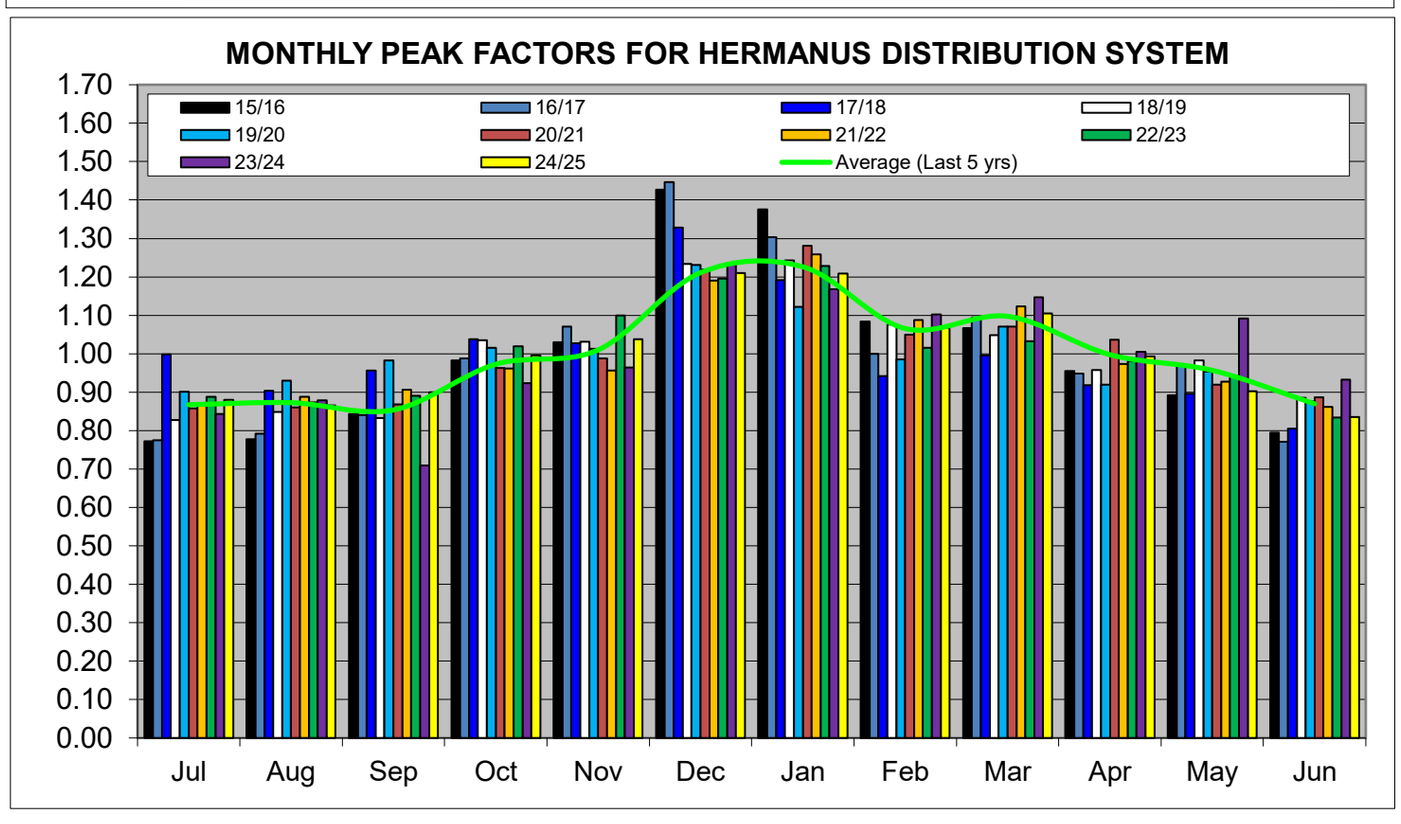
ANNUAL TOTALS

Year	Raw Water Abstracted			Raw Water Supply				System Input Volume	Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)													
																						Apparent Losses			Real Losses				
	De Bos Dam Outlet	Gateway Boreholes Outlet	Hemel en Aarde Boreholes Outlet	De Bos Supply at WTW	Gateway Boreholes at WTW	Hemel en Aarde Boreholes at WTW	Total Inlet at WTW	Treated Water from WTW	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water from WTW	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
2002/2003								3162579					3162579																
2003/2004								3415748					3415748																
2004/2005								3292465					3292465	2753169	0			539296	16.38%	0	6585	10654	21308	5327	495421			532711	16.18%
2005/2006								4018963					4018963	3189099	0			829864	20.65%	0	8038	16437	32873	8218	764298			821826	20.45%
2006/2007								4268983					4268983	3534940	0			734043	17.19%	0	8538	14510	29020	7255	674720			725505

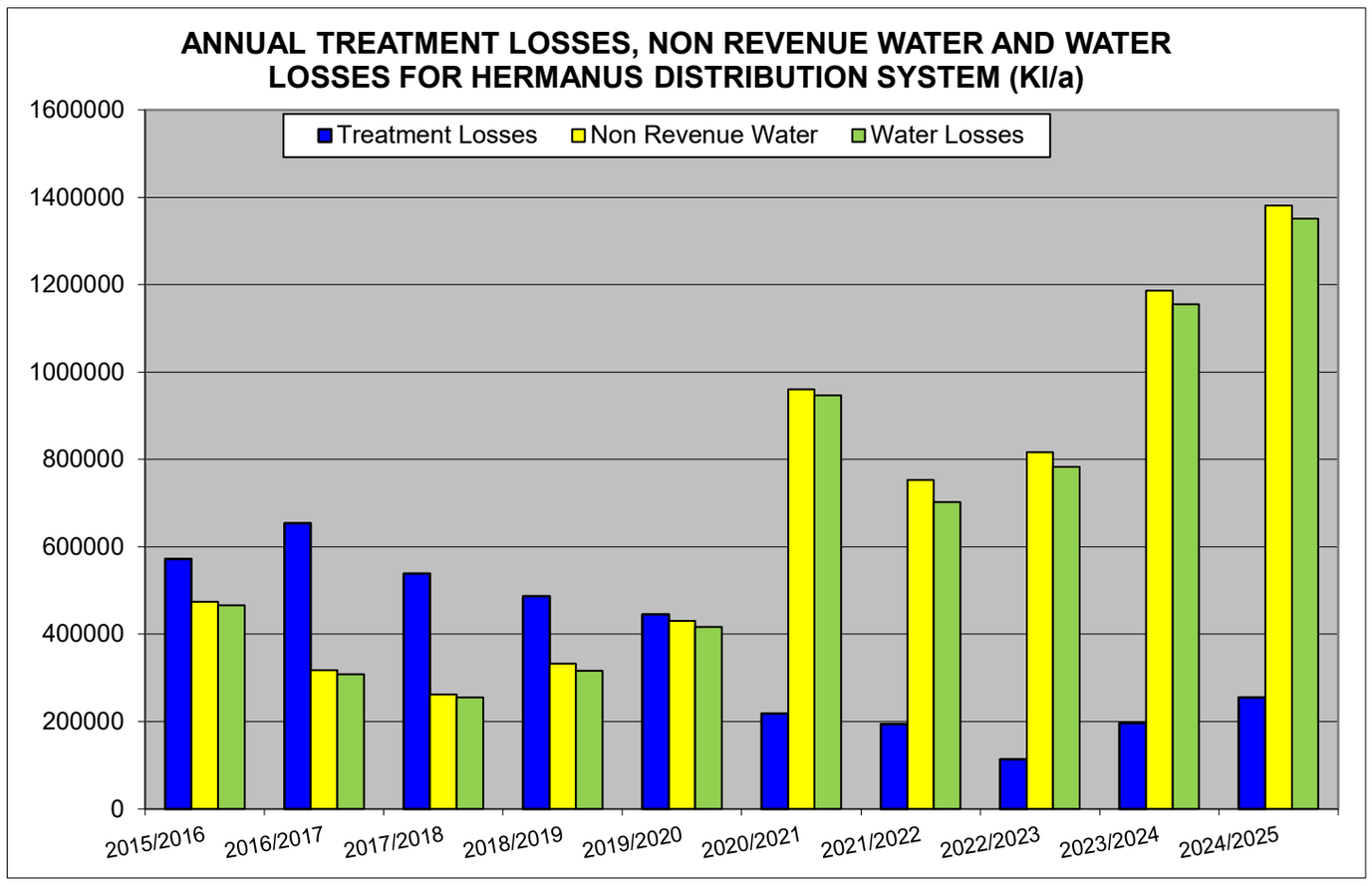
WATER BALANCE AND USAGE FOR THE HERMANUS DISTRIBUTION SYSTEM

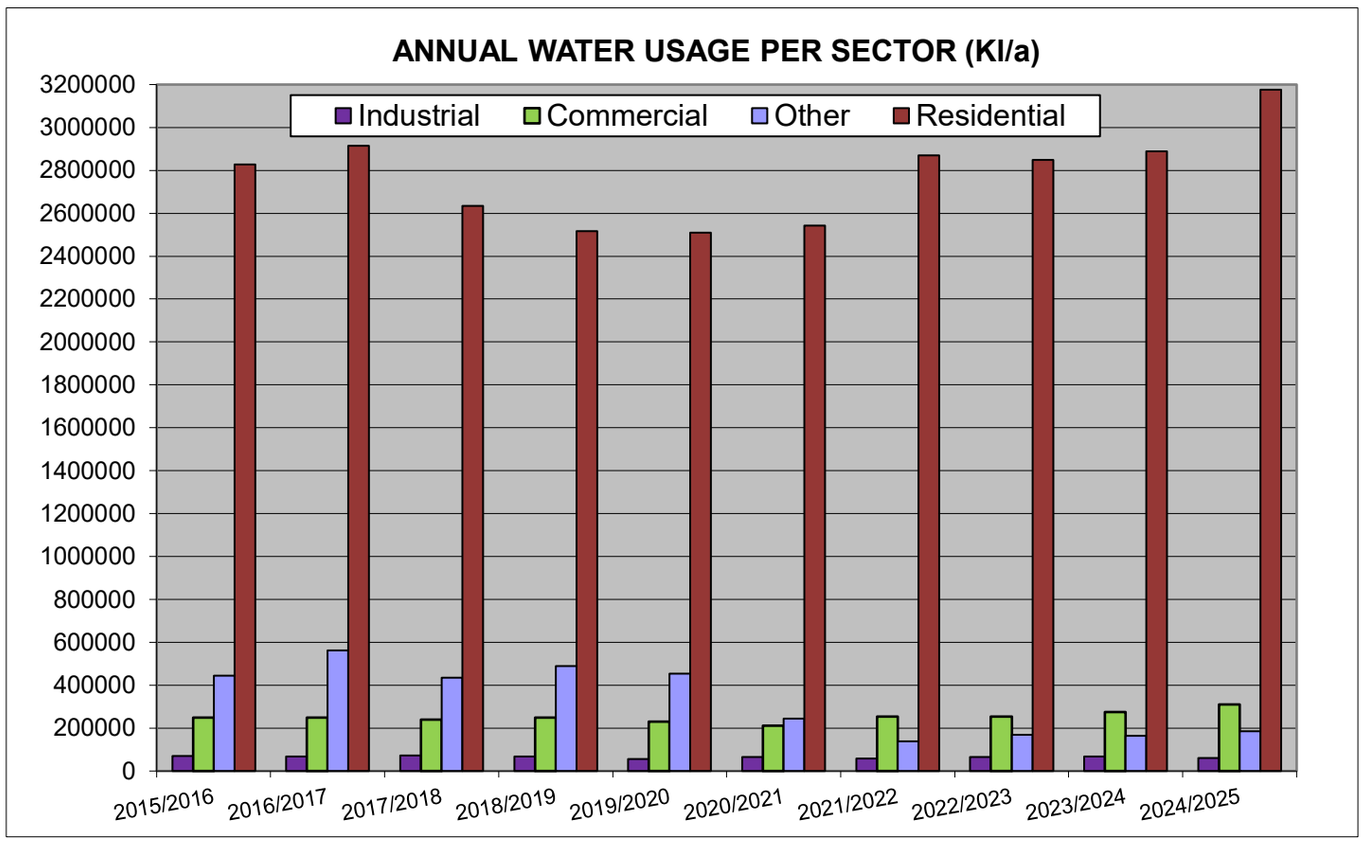


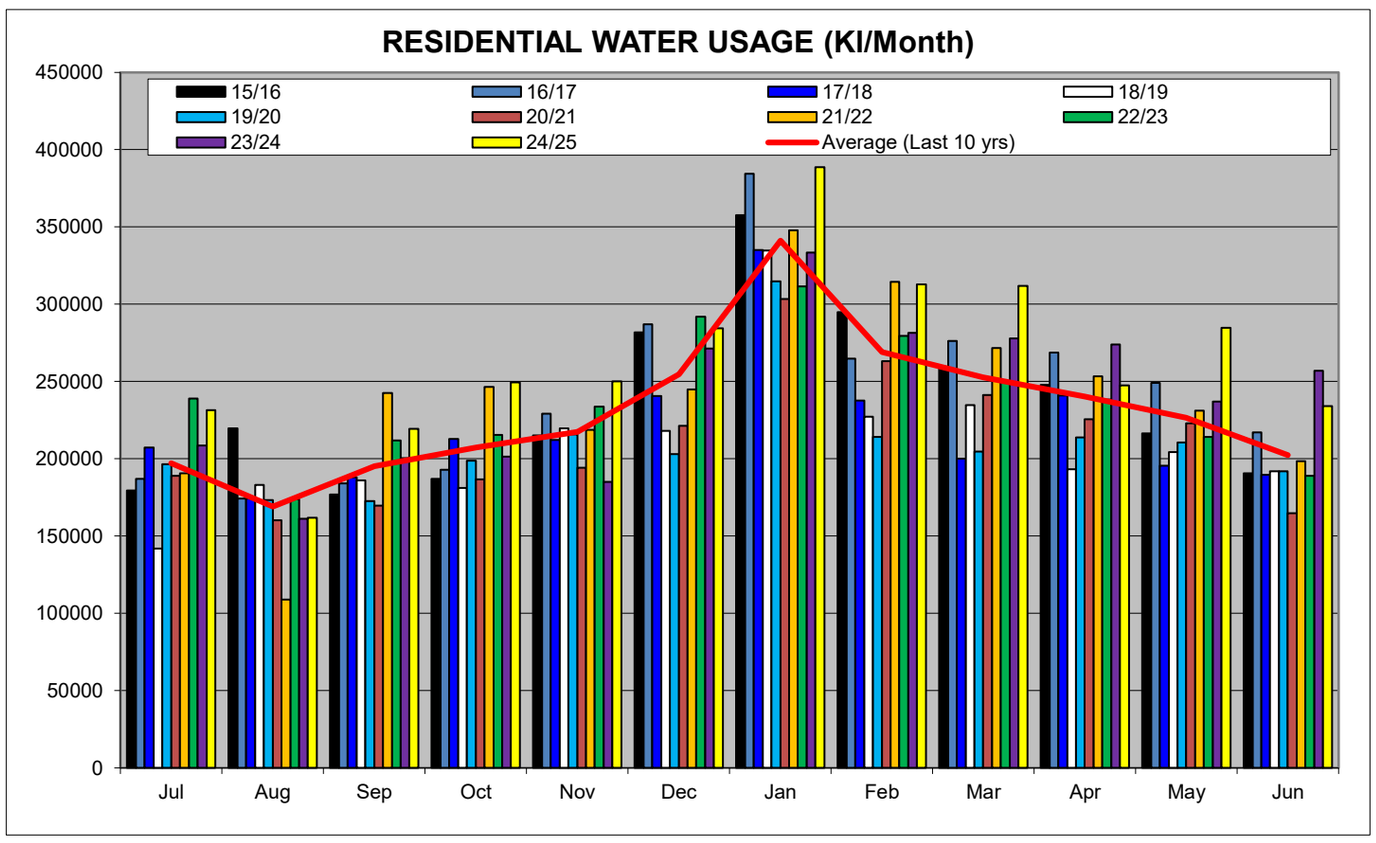




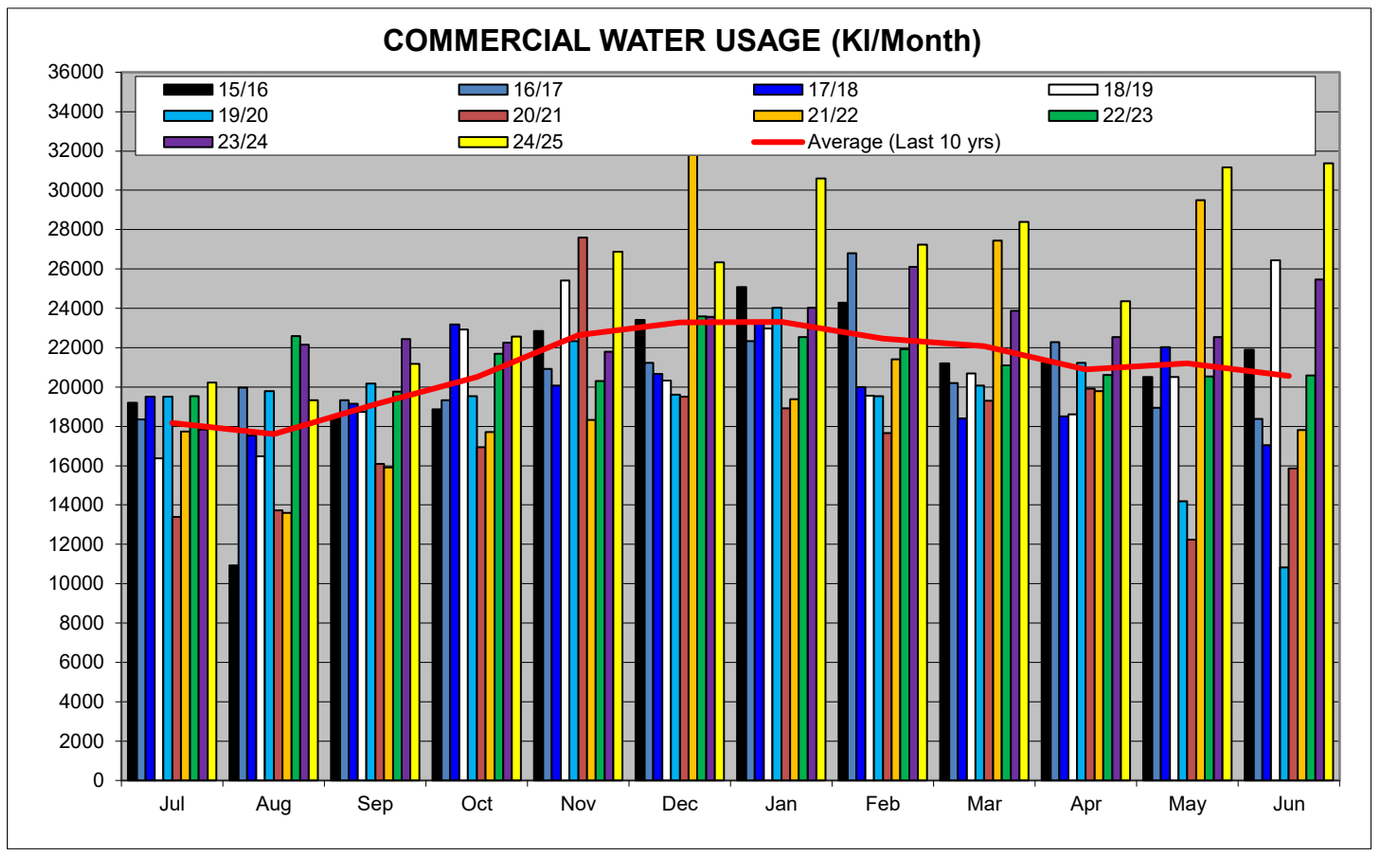
WATER BALANCE AND USAGE FOR THE HERMANUS DISTRIBUTION SYSTEM

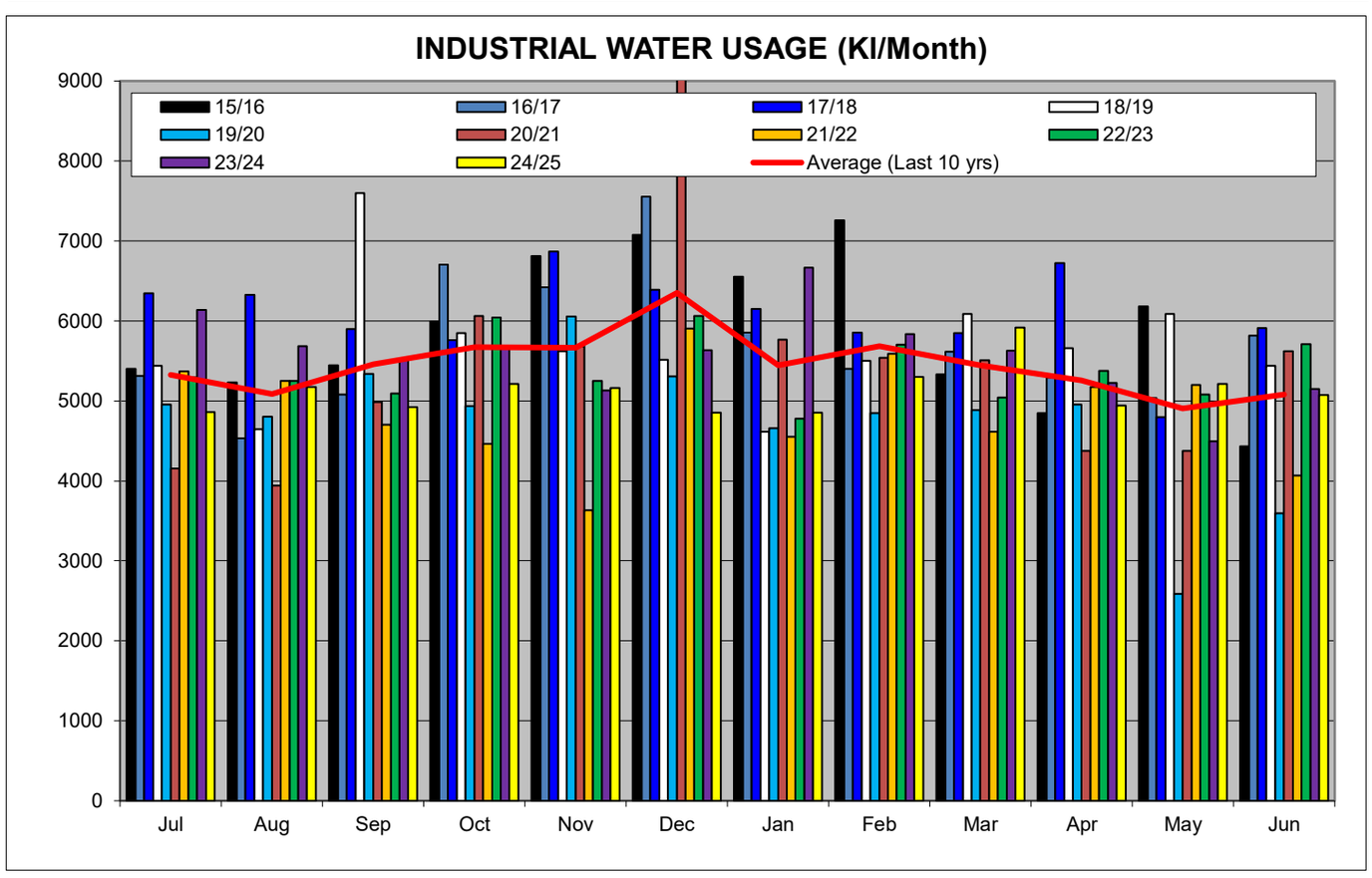


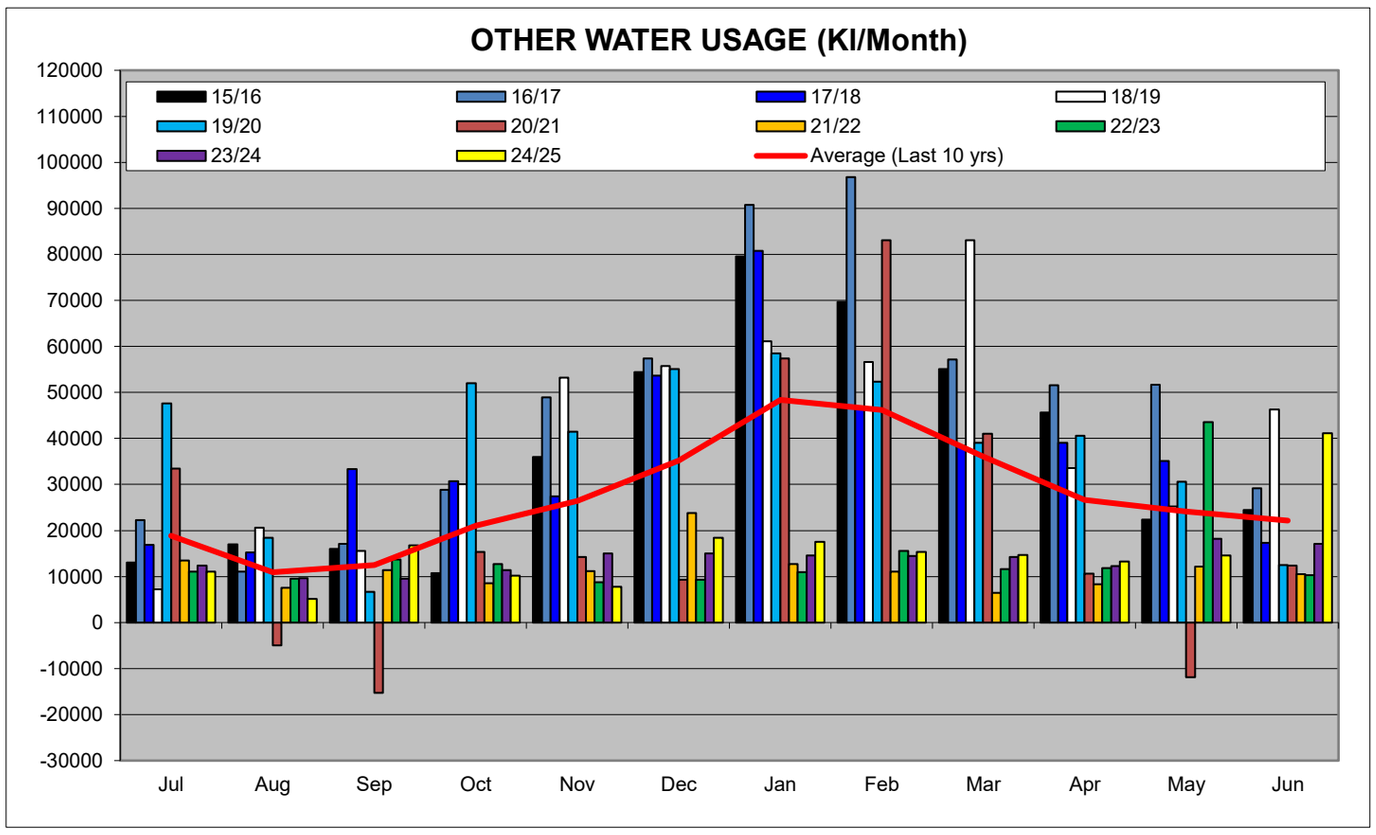




WATER BALANCE AND USAGE FOR THE HERMANUS DISTRIBUTION SYSTEM







OVERSTRAND MUNICIPALITY

Stanford

Month	Year	BULK WATER SUPPLY												TREATED WATER SUPPLY																	
		Raw Water Supply					System Input Volume			Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)													
																						Apparent Losses			Real Losses					
		Die Oog	Borehole KVE1	Borehole KVE2	Boreholes	Total	Die Kop	Reservoir	Total	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water from WTW	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
																							Estimated Percentages (Variables)							
																						2%	4%	1%	93%				
		[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
Jan'02	2001/2002													43010																
Feb'02														41790																
Mrt'02														27150																
Apr'02														36080																
May'02														26580																
Jun'02														28900																
Jul'02	2002/2003													28620																
Aug'02														25910																
Sep'02														29133																
Oct'02														52210																
Nov'02														34020																
Dec'02														34610																
Jan'03														53680																
Feb'03														49920																
Mrt'03														37610																
Apr'03														26860																
May'03														44980																
Jun'03														27010																
Jul'03	2003/2004													29930																
Aug'03														36230																
Sep'03														27650																
Oct'03														54520																
Nov'03														24480																
Dec'03														46710																
Jan'04														56160																
Feb'04														44520																
Mrt'04														35360																
Apr'04														38040																
May'04														28120																
Jun'04														31860																
Jul'04	2004/2005													25990	16687	0	9303	35.8%	200304	46.6%	0	52	185	370	93	8603	9251	35.6%	199443	46.4%
Aug'04														34900	18702	0	16198	46.4%			0	70	323	645	161	14999	16128	46.2%		
Sep'04														23460	13846	0	9614	41.0%			0	47	191	383	96	8897	9567	40.8%		
Oct'04														37160	19188	0	17972	48.4%			0	74	358	716	179	16645	17898	48.2%		
Nov'04														29690	16542	0	13148	44.3%			0	59	262	524	131	12172	13089	44.1%		
Dec'04														46920	22917	0	24003	51.2%			0	94	478	956	239	22236	23909	51.0%		
Jan'05														58930	30008	0	28922	49.1%			0	118	576	1152	288	26788	28804	48.9%		
Feb'05														58620	17059	0	41561	70.9%			0	117	829	1658	414	38543	41444	70.7%		
Mrt'05														30783	23572	0	7211	23.4%			0	62	143	286	71	6649	7149	23.2%		
Apr'05														28300	20133	0	8167	28.9%			0	57	162	324	81	7543	8110	28.7%		
May'05														23010	15977	0	7033	30.6%			0	46	140	279	70	6498	6987	30.4%		
Jun'05														32440	15268	0	17172	52.9%			0	65	342	684	171	15910	17107	52.7%		
Jul'05	2005/2006													18270	14907	0	3363	18.4%	100437	28.6%	0	37	67	133	33	3094	3326	18.2%	99736	28.4%
Aug'05														20740	13375	0	7365	35.5%			0	41	146	293	73	6811	7324	35.3%		
Sep'05														20420	15323	0	5097	25.0%			0	41	101	202	51	4702	5056	24.8%		
Oct'05														26780	19243	0	7537	28.1%			0	54	150	299	75	6960	7483	27.9%		
Nov'05														26070	18927	0	7143	27.4%			0	52	142	284	71	6594	7091	27.2%		
Dec'05														31870	24555	0	7315	23.0%			0	64	145	290	73	6744	7251	22.8%		
Jan'06														43270	28811	0	14459	33.4%			0	87	287	575	144	13366	14372	33.2%		
Feb'06														46280	28635	0	17645	38.1%			0	93	351	702	176	16324	17552	37.9%		
Mrt'06														29140	27050	0	2090	7.2%			0	58	41	81	20	1889	2032	7.0%		
Apr'06														36770	25199	0	11571	31.5%			0	74	230	460	115	10693	11497	31.3%		
May'06														23020	16822	0	6198	26.9%			0	46	123	246	62	5721	6152	26.7%		
Jun'06														28000	17346	0	10654	38.1%			0	56	212	424	106	9856	10598	37.9%		
Jul'06	2006/2007													21828	17166	0	4662	21.4%	140626	34.1%	0	44	92	185	46	4295	4618	21.2%	139801	33.9%
Aug'06														21828	15548	0	6280	28.8%			0	44	125	249	62	5800	6236	28.6%		
Sep'06														21828	15152	0	6676	30.6%			0	44	133	265	66	6168	6632	30.4%		
Oct'06														21828	18950	0	2878	13.2%			0	44	57	113	28	2636	2834	13.0%		
Nov'06														47790	21160	0	26630	55.7%			0	96	531	1061	265	24677	26534	55.5%		
Dec'06														39460	26364	0	13096	33.2%			0	79	260	521	130	12106	13017	33.0%		
Jan'07														44350	29443	0	14907	33.6%			0	89	296	593	148	13781	14818	33.4%		
Feb'07														48030	30636	0	17394	36.2%			0	96	346	692	173	16087	17298	36.0%		
Mrt'07														30410	25895	0	4515	14.8%			0	61	89	178	45	4142	4454	14.6%		
Apr'07														55600	29614	0	25986	46.7%			0	111	517	1035	259	24064	25875	46.5%		
May'07														26690	20388	0	6302	23.6%			0	53	125	250	62	5811	6249	23.4%		
Jun'07														32910	21610	0	11300	34.3%			0	66	225	449	112	10448	11234	34.1%		
Jul'07	2007/2008													30510	17967	0	12543	41.1%	123058	30.9%	0	61	250	499	125	11608	12482	40.9%	122260	30.7%
Aug'07														29170	17125	0	12045	41.3%			0	58	240	479	120	11148	11987	41.1%		
Sep'07														23690	16847	0	6843	28.9%			0	47	136	272	68	6320	6796	28.7%		
Oct'07														21390	17483	0	3907	18.3%			0	43	77	155	39	3594	3864	18.1%		
Nov'07														34490	21220	0	13270	38.5%			0	69	264	528	132	12277	13201	38.3%		
Dec'07														31170	23127	0	8043	25.8%			0	62	160	319	80	7422	7981	25.6%		
Jan'08														43130	32770	0	10360	24.0%			0	86	205	411	103	9555	10274	23.8%		
Feb'08														39530	25116	0	14414	36.5%			0	79	287	573	143	13331	14335	36.3%		
Mrt'08														48480	33630	0	14850	30.6%			0	97	295	590	148	13720	14753	30.4%		
Apr'08														35990	25151	0	10839	30.1%			0	72	215	431	108	10013	10767	29.9%		
May'08														40140	28231	0	11909	29.7%			0	80	237	473	118	11001	11829	29.5%		
Jun'08														21110	17075	0	4035	19.1%			0	42	80	160	40	3713	3993	18.9%		
Jul'08	2008/2009													23400	17559	0	5841	25.0%	163496	36.4%	0	47	116	232	58	5389	5794	24.8%	162598	36.2%
Aug'08														31600	19719	0	11881	37.6%			0	63	236	473	118	10991	11818	37.4%		
Sep'08														24370	16554	0	7816	32.1%			0	49	155	311	78	7224	7767	31.9%		
Oct'08														26600	17982	0	8618	32.4%			0	53	171	343	86	7965	8565	32.2%		
Nov'08														30050	20733	0	9317	31.0%			0	60	185	370	93	8609	9257	30.8%		
Dec'08														33820	22013	0	11807	34.9%			0	68	235	470	117	10918	11739	34.7%		
Jan'09														49070	35996	0	13074	26.6%			0	98	260	519	130	12068	12976	26.4%		
Feb'09														44610	29447	0	15163	34.0%			0	89	301	603	151	14019	15074	33.8%		
Mrt'09														47930	29222	0	18708	39.0%			0	96	372	744	186	17309	18612	38.8%		
Apr'09														44330	29735	0	14595	32.9%			0	89	290	580	145	13491	14506	32.7%		
May'09														52110	27307	0	24803	47.6%			0	104	494	988	247	22970	24699	47.4%		
Jun'09														40930	19057	0	21873	53.4%			0	82	436	872	218	20266	21791	53.2%		
Jul'09	2009/2010													39230	18871	0	20359	51.9%	194486	41.6%	0	78	406	811	203	18861	20281	51.7%	193550	41.4%
Aug'09														34200	17609	0	16391	47.9%			0	68	326	653	163	15180	16323	47.7%		
Sep'09														37790	17912	0	19878	52.6%			0	76	396	792	198	18416	19802	52.4%		
Oct'09														34510	18260	0	16250	47.1%			0	69	324	647	162	15048	16181	46.9%		
Nov'09														39930	20678	0	19252	48.2%			0	80	383	767	192	17830	19172	48.0%		
Dec'09														39010	24376	0	14634	37.5%			0	78	291	582	146	13537	14556	37.3%		
Jan'10														51260	34253	0	17007	33.2%			0	103	338	676	169	15721	16904	33.0%		
Feb'10														34950	28937	0	6013	17.2%			0	70	119	238	59	5527	5943	17.0%		
Mrt'10														34730	28701	0	6029	17.4%			0	69	119	238	60	5542	5960	17.2%		
Apr'10														45977	25729	0	20248	44.0%			0	92	403	806	202	18745	20156	43.8%		
May'10														30410	20625	0	9785	32.2%			0	61	194	389	97	9043	9724	32.0%		
Jun'10														45956	17316	0	28640	62.3%			0	92	571	1142	285	26550	28548	62.1%		
Jul'10	2010/2011													25320	16301	0	9019	35.6%	128297	35.5%	0	51	179	359	90	8341	8968	35.4%	127573	35.3%
Aug'10														27680	16446	0	11234	40.6%			0	55	224	447	112	10396	11179	40.4%		
Sep'10														23650	14377	0	9273	39.2%			0	47	185	369	92	8580	9226	39.0%		
Oct'10														26200	19215	0	6985	26.7%			0	52	139	277	69	6447	6933	26.5%		
Nov'10														30910	18647	0	12263	39.7%			0	62	244	488	122	11347	12201	39.5%		
Dec'10														34880	17839	0	17041	48.9%			0	70	339	679	170	15783	16971	48.7%		
Jan'11														34880	25471	0	9409	27.0%			0	70	187	374	93	8685	9339	26.8%		
Feb'11														36680	24354	0	12326	33.6%			0	73	245	490	123	11395	12253	33.4%		
Mrt'11														31030	22346	0	8684	28.0%			0	62	172	345	86	8018	8622	27.8%		
Apr'11														33760	24924	0	8836	26.2%			0	68	175	351	88	8155	8768	26.0%		
May'11														31440	19165	0	12275	39.0%			0	63	244	488	122	11357	12212	38.8%		
Jun'11														25380	14428	0	10952	43.2%			0	51	218	436	109	10138	10901	43.0%		
Jul'11	2011/2012													28130	15306	0	12824	45.6%	142029	37.5%	0	56	255	511	128	11874	12768	45.4%	141271	37.3%
Aug'11														26400	13495	0	12905	48.9%			0	53	257	514	129	11953	12852	48.7%		
Sep'11														25260	15916	0	9344	37.0%			0	51	186	372	93	8643	9293	36.8%		
Oct'11														23990	16747	0	7243	30.2%			0	48	144	288	72	6691	7195	30.0%		
Nov'11														27910	20329	0	7581	27.2%			0	56	151	301	75	6998	7525	27.0%		
Dec'11														34480	21287	0	13193	38.3%			0	69	262	525	131	12205	13124	38.1%		
Jan'12														37610	27309	0	10301	27.4%			0	75	205	409	102	9510	10226	27.2%		
Feb'12														36340	27452	0	8888	24.5%			0	73	176	353	88	8198	8815	24.3%		
Mrt'12														34350	23544	0	10806	31.5%			0	69	215	429	107	9986	10737	31.3%		
Apr'12														41170	22812	0	18358	44.6%			0	82	366	731	183	16996	18276	44.4%		
May'12														18440	17628	0	812	4.4%			0	37	16	31	8	721	775	4.2%		
Jun'12														45050	15276	0	29774	66.1%			0	90	594	1187	297	27606	29684	65.9%		
Jul'12	2012/2013													21640	14971	0	6669	30.8%	91388	30.8%	0	43	133	265	66	6162	6626	30.6%	90795	30.6%
Aug'12														16390	8704	0	7686	46.9%			0	33	153	306	77	7117	7653	46.7%		
Sep'12														17390	12347	0	5043	29.0%			0	35	100	200	50	4658	5008	28.8%		
Oct'12														23649	12813	0	10836	45.8%			0	47	216	432	108	10033	10789	45.6%		
Nov'12														26801	16766	0	10035	37.4%			0	54	200	399	100	9283	9981	37.2%		
Dec'12														33284	14131	0	19153	57.5%			0	67	382	763	191	17750	19086	57.3%		
Jan'13														29573	35599	0	-6026	-20.4%			0	59	-122	-243	-61	-5659	-6085	-20.6%		
Feb'13														29832	18502	0	11330	38.0%			0	60	225	451	113	10481	11270	37.8%		
Mrt'13														26493	19282	0	7211	27.2%			0	53	143	286	72	6657	7158	27.0%		
Apr'13														25299	22502	0	2797	11.1%			0	51	55	110	27	2554	2746	10.9%		
May'13														25330	13056	0	12274	48.5%			0	51	244	489	122	11368	12223	48.3%		
Jun'13														20711	16331	0	4380	21.1%			0	41	87	174	43	4035	4339	20.9%		
Jul'13	2013/2014													21103	14326	0	6777	32.1%	76516	25.9%	0	42	135	269	67	6263	6735	31.9%	75924	25.7%
Aug'13														21733	16016	0	5717	26.3%			0	43	113	227	57	5276	5674	26.1%		
Sep'13														22445	14592	0	7853	35.0%			0	45	156	312	78	7262	7808	34.8%		
Oct'13														25220	14519	0	10701	42.4%			0	50	213	426	107	9905	10651	42.2%		
Nov'13														23669	15690	0	7979	33.7%			0	47	159	317	79	7376	7932	33.5%		
Dec'13														39513	17839	0	21674	54.9%			0	79	432	864	216	20083	21595	54.7%		
Jan'14														28887	30693	0	-1806	-6.3%			0	58	-37	-75	-19	-1733	-1864	-6.5%		
Feb'14														26940	26636	0	304	1.1%			0	54	5	10	3	233	250	0.9%		
Mrt'14		23793			0	23793	2	23791	23793					23793	20635	0	3158	13.3%			0	48	62	124	31	2893	3110	13.1%		
Apr'14		26538			0	26538	0	26538	26538					26538	16168	0	10370	39.1%			0	53	206	413	103	9595	10317	38.9%		
May'14		64			18501	18565	234	18350	18584					18584	18770	0	-186	-1.0%			0	37	-4	-9	-2	-208	-223	-1.2%		
Jun'14		15			18128	18143	203	17190	17393					17393	13418	0	3975	22.9%			0	35	79	158	39	3664	3940	22.7%		
Jul'14	2014/2015	749			14109	14858	427	20090	20517	-5659	-38.09	12841	4.1%	20517	12794	0	7723	37.6%	80356	27.0%	0	41	154	307	77	7144	7682	37.4%	79760	26.8%
Aug'14		15458			4012	19470	488	19470	19958	-488	-2.51			19958	13304	0	6654	33.3%			0	40	132	265	66	6151	6614	33.1%		
Sep'14		14750			6079	20829	470	19270	19740	1089	5.23			19740	13999	0	5741	29.1%			0	39	114	228	57	5302	5702	28.9%		
Oct'14		16220			10548	26768	568	24900	25468	1300	4.86			25468	13570	0	11898	46.7%			0	51	237	474	118	11018	11847	46.5%		
Nov'14		13320			10694	24014	823	22050	22873	1141	4.75			22873	16877	0	5996	26.2%			0	46	119	238	60	5534	5950	26.0%		
Dec'14		23640			14261	37901	976	34440	35416	2485	6.56			35416	20889	0	14527	41.0%			0	71	289	578	145	13444	14456	40.8%		
Jan'15		16730			14249	30979	488	28710	29198	1781	5.75			29198	28049	0	1149	3.9%			0	58	22	44	11	1014	1091	3.7%		
Feb'15		15140			14173	29313	722	26750	27472	1841	6.28			27472	21654	0	5818	21.2%			0	55	115	231	58	5360	5763	21.0%		
Mrt'15		17340			14438	31778	482	29340	29822	1956	6.16			29822	20344	0	9478	31.8%			0	60	188	377	94	8759	9418	31.6%		
Apr'15		18130			13549	31679	338	28580	28918	2761	8.72			28918	21934	0	6984	24.2%			0	58	139	277	69	6441	6926	24.0%		
May'15		14010			8050	22060	255	19611	19866	2194	9.95			19866	20158	0	-292	-1.5%			0	40	-7	-13	-3	-309	-332	-1.7%		
Jun'15		13170			7968	21138	239	18459	18698	2440	13.22			18698	14018	0	4680	25.0%			0	37	93	186	46	4318	4643	24.8%		
Jul'15	2015/2016	13180	9166	6358	15524	28704	281	21540	21821	6883	24.0	85643	22.0%	21821	14047	0	7774	35.6%	73438	24.2%	0	44	155	309	77	7189	7730	35.4%	72831	24.0%
Aug'15		13810	13106	4177	17283	31093	250	19880	20130	10963	35.3			20130	17335	0	2795	13.9%			0	40	55	110	28	2562	2755	13.7%		
Sep'15		16150	9960	7736	17696	33846	272	21670	21942	11904	35.2			21942	16613	0	5329	24.3%			0	44	106	211	53	4915	5285	24.1%		
Oct'15		21460	10363	8570	18933	40393	927	24600	25527	14866	36.8			25527	18580	0	6947	27.2%			0	51	138	276	69	6413	6896	27.0%		
Nov'15		16386	23738	9	23747	40133	1154	-	25839	14294	35.6			25839	16242	0	9597	37.1%			0	52	191	382	95	8877	9545	36.9%		
Dec'15		28410	15751	6253	22004	50414	-	-	36640	13774	27.3			36640	25533	0	11107	30.3%			0	73	221	441	110	10261	11034	30.1%		
Jan'16		30690	3588	0	3588	34278	-	30310	30310	3968	11.6			30310	23475	0	6835	22.6%			0	61	135	271	68	6300	6774	22.4%		
Feb'16		32100	2078	1	2079	34179	1190	28740	29930	4249	12.4			29930	27758	0	2172	7.3%			0	60	42	84	21	1964	2112	7.1%		
Mrt'16		25450	3308	2	3310	28760	-	25480	25480	3280	11.4			25480	19445	0	6035	23.7%			0	51	120	239	60	5565	5984	23.5%		
Apr'16		2410	20671	73	20744	23154	417	23620	24037	-883	-3.8			24037	18346	0	5691	23.7%			0	48	113	226	56	5248	5643	23.5%		
May'16		7610	15228	6	15234	22844	368	21240	21608	1236	5.4			21608	17105	0	4503	20.8%			0	43	89	178	45	4148	4460	20.6%		
Jun'16		7450	13758	191	13949	21399	342	20080	20290	1109	5.5			20290	15637	0	4653	22.9%			0	41	92	184	46	4290	4612	22.7%		
Jul'16	2016/2017	17397	3689	225	3914	21311	307	19465	19772	1539	7.2	9125	2.9%	19772	15204	0	4568	23.1%	76937	25.3%	0	40	91	181	45	4211	4528	22.9%

OVERSTRAND MUNICIPALITY

Stanford

Month	Year	BULK WATER SUPPLY												TREATED WATER SUPPLY																	
		Raw Water Supply					System Input Volume			Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)													
																						Apparent Losses			Real Losses					
		Die Oog	Borehole KVE1	Borehole KVE2	Boreholes	Total	Die Kop	Reservoir	Total	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water from WTW	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
																							Estimated Percentages (Variables)							
																						2%	4%	1%	93%				
		[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
Jul'18	2018/2019	18444	6970	1275	8245	26689	633	23920	24553	2136	8.0	53133	14.2%	24553	15699	0	8854	36.1%	90868	28.2%	0	283	171	246	86	8068	8572	34.9%	87478	27.2%
Aug'18		12810	7568	4384	11952	24762	646	23849	24495	267	1.1			24495	16230	0	8265	33.7%			0	283	160	254	80	7489	7983	32.6%		
Sep'18		20755	7500	973	8473	29228	1126	23032	24158	5070	17.3			24158	16279	0	7879	32.6%			0	283	152	255	76	7114	7597	31.4%		
Oct'18		26282	3987	2658	6645	32927	1313	27945	29258	3669	11.1			29258	13540	0	15718	53.7%			0	283	309	212	154	14760	15436	52.8%		
Nov'18		20761	5968	2759	8727	29488	1217	24905	26122	3366	11.4			26122	26290	0	-168	-0.6%			0	283	-9	412	-5	-849	-451	-1.7%		
Dec'18		23443	6781	4519	11300	34743	1368	29361	30729	4014	11.6			30729	18518	0	12211	39.7%			0	283	239	290	119	11281	11929	38.8%		
Jan'19		22920	7152	4608	11760	34680	1506	30310	31816	2864	8.3			31816	27546	0	4270	13.4%			0	283	80	432	40	3436	3988	12.5%		
Feb'19		27430	2950	13752	16702	44132	1243	27682	28925	15207	34.5			28925	18243	0	10682	36.9%			0	283	208	286	104	9802	10400	36.0%		
Mrt'19		22733	7324	2708	10032	32765	1193	23181	24374	8391	25.6			24374	23119	0	1255	5.1%			0	283	19	362	10	581	973	4.0%		
Apr'19		14437	14280	1090	15370	29807	1120	22820	23940	5867	19.7			23940	17317	0	6623	27.7%			0	283	127	271	63	5879	6341	26.5%		
May'19		20059	7991	29	8020	28079	1215	26050	27265	814	2.9			27265	17998	0	9267	34.0%			0	283	180	282	90	8433	8985	33.0%		
Jun'19		15092	12404	14	12418	27510	1027	25015	26042	1468	5.9			26042	20030	0	6012	23.1%			0	283	115	314	57	5244	5730	22.0%		
Jul'19	2019/2020	14425	10819	535	11354	25779	1100	23940	25040	739	2.9	40381	11.0%	25040	17563	0	7477	29.9%	93141	28.7%	13	127	147	504	73	6613	7337	29.3%	91463	28.1%
Aug'19		14425	8542	8404	16946	31371	1185	26040	27225	4146	13.2			27225	14799	0	12426	45.6%			13	127	246	425	123	11493	12286	45.1%		
Sep'19		13858	16596	11136	27732	41590	1179	28430	29609	11981	28.8			29609	16944	0	12665	42.8%			13	127	251	486	125	11663	12525	42.3%		
Oct'19		16470	8060	3280	11340	27810	944	27429	28373	-563	-2.0			28373	17942	0	10431	36.8%			13	127	206	515	103	9467	10291	36.3%		
Nov'19		14600	7509	6646	14155	28755	919	24416	25335	3420	11.9			25335	19622	0	5713	22.5%			13	127	111	563	56	4843	5573	22.0%		
Dec'19		10790	11838	11690	23528	34318	1097	31420	32517	1801	5.2			32517	18869	0	13648	42.0%			13	127	270	542	135	12561	13508	41.5%		
Jan'20		20130	5934	5674	11608	31738	1165	23259	24424	7314	23.0			24424	27046	0	-2622	-10.7%			13	127	-55	776	-28	-3455	-2762	-11.3%		
Feb'20		6850	9628	13789	23417	30267	881	26720	27601	2666	8.8			27601	18068	0	9533	34.5%			13	127	188	519	94	8593	9393	34.0%		
Mrt'20		10050	8740	16436	25176	35226	1191	30260	31451	3775	10.7			31451	20167	0	11284	35.9%			13	127	223	579	111	10231	11144	35.4%		
Apr'20		15912	5100	4307	9407	25319	1162	23561	24723	596	2.4			24723	25792	0	-1069	-4.3%			13	127	-24	740	-12	-1913	-1209	-4.9%		
May'20		9671	12592	5945	18537	28208	1201	25559	26760	1448	5.1			26760	14015	0	12745	47.6%			13	127	252	402	126	11825	12605	47.1%		
Jun'20		17613	2773	4686	7459	25072	1137	20877	22014	3058	14.6			22014	21104	0	910	4.1%			13	127	15	606	8	141	770	3.5%		
Jul'20	2020/2021	14339	0	16158	16158	30497	1058	22046	23104	7393	24.2	143545	32.1%	23104	16766	0	6338	27.4%	79613	26.3%	21	110	124	101	62	5919	6207	26.9%	78036	25.8%
Aug'20		17897	1559	19923	21482	39379	1151	22797	23948	15431	39.2			23948	14881	0	9067	37.9%			21	110	179	90	89	8578	8936	37.3%		
Sep'20		20715	5507	10407	15914	36629	1096	24239	25335	11294	30.8			25335	17810	0	7525	29.7%			21	110	148	107	74	7064	7394	29.2%		
Oct'20		25152	11213	7395	18608	43760	635	28763	29398	14362	32.8			29398	18289	0	11109	37.8%			21	110	220	110	110	10538	10978	37.3%		
Nov'20		22023	9885	7605	17490	39513	1207	25195	26402	13111	33.2			26402	15142	0	11260	42.6%			21	110	223	91	111	10704	11129	42.2%		
Dec'20		21709	9891	9658	19549	41258	1258	26538	27796	13462	32.6			27796	18829	0	8967	32.3%			21	110	177	113	88	8457	8836	31.8%		
Jan'21		18628	17158	8164	25322	43950	1467	27240	28707	15243	34.7			28707	27892	0	815	2.8%			21	110	14	168	7	495	684	2.4%		
Feb'21		16487	9442	8416	17858	34345	1548	23962	25510	8835	25.7			25510	19925	0	5585	21.9%			21	110	109	120	55	5170	5454	21.4%		
Mrt'21		16514	9289	11148	20437	36951	1614	24321	25935	11016	29.8			25935	17937	0	7998	30.8%			21	110	157	108	79	7523	7867	30.3%		
Apr'21		11838	22236	5217	27453	39291	1763	26021	27784	11507	29.3			27784	21506	0	6278	22.6%			21	110	123	130	61	5833	6147	22.1%		
May'21		11634	15443	3524	18967	30601	1744	18094	19838	10763	35.2			19838	18773	0	1065	5.4%			21	110	19	113	9	792	934	4.7%		
Jun'21		12518	16336	1484	17820	30338	1661	17549	19210	11128	63.4			19210	15604	0	3606	18.8%			21	110	69	94	35	3276	3475	18.1%		
Jul'21	2021/2022	10533	17049	3512	20561	31094	1642	18419	20061	11033	35.5	197305	42.1%	20061	13694	0	6367	31.7%	17035	6.3%	37	236	122	82	61	5829	6094	30.4%	13758	5.1%
Aug'21			20265	7	20272	20272	2360	18643	21003	-731	-3.6			21003	33406	0	-12403	-59.1%			37	236	-254	201	-127	-12497	-12676	-60.4%		
Sep'21		20353	19907	0	19907	40260	1688	18407	20095	20165	50.1			20095	18071	0	2024	10.1%			37	236	35	109	18	1590	1751	8.7%		
Oct'21		18964	16011	1427	17438	36402	1700	20463	22163	14239	39.1			22163	15146	0	7017	31.7%			37	236	135	91	67	6450	6744	30.4%		
Nov'21		21395	5206	8085	13291	34686	1506	17173	18679	16007	46.1			18679	17050	0	1629	8.7%			37	236	27	103	14	1213	1356	7.3%		
Dec'21		23013	2219	11172	13391	36404	1557	19845	21402	15002	41.2			21402	19624	0	1778	8.3%			37	236	30	118	15	1342	1505	7.0%		
Jan'22		29427	8143	11559	19702	49129	1967	25790	27757	21372	43.5			27757	20620	0	7137	25.7%			37	236	137	124	69	6534	6864	24.7%		
Feb'22		25803	4685	13359	18044	43847	1909	23880	25789	18058	41.2			25789	29186	0	-3397	-13.2%			37	236	-73	176	-37	-3736	-3670	-14.2%		
Mrt'22		28746	17482	11781	29263	58009	2247	23490	25737	32272	55.6			25737	24294	0	1443	5.6%			37	236	23	146	12	988	1170	4.5%		
Apr'22		24751	12615	5657	18272	43023	1600	21076	22676	20347	47.3			22676	22826	0	-150	-0.7%			37	236	-8	138	-4	-548	-423	-1.9%		
May'22		15932	15491	8263	23754	39686	1810	23832	25642	14044	35.4			25642	21994	0	3648	14.2%			37	236	67	133	34	3141	3375	13.2%		
Jun'22		21003	11640	3448	15088	36091	1143	19451	20594	15497	79.7			20594	18652	0	1942	9.4%			37	236	33	112	17	1506	1669	8.1%		
Jul'22	2022/2023	22704	8357	3544	11901	34605	1883	22704	24587	10018	28.9	235534	47.3%	24587	19658	0	4929	20.0%	13485	5.1%	11	123	96	118	48	4533	4796	19.5%	11884	4.5%
Aug'22		18882	9588	5235	14823	33705	1147	18882	20029	13676	40.6			20029	14201	0	5828	29.1%			11	123	114	86	57	5438	5695	28.4%		
Sep'22		18603	12302	7697	19999	38602	1362	17218	18580	20022	51.9			18580	18483	0	97	0.5%			11	123	-1	111	0	-147	-36	-0.2%		
Oct'22		22182	18273	10337	28610	50792	1625	16888	18513	32279	63.6			18513	17418	0	1095	5.9%			11	123	19	105	10	828	962	5.2%		
Nov'22		20981	4222	18937	23159	44140	1377	20130	21507	22633	51.3			21507	23021	0	-1514	-7.0%			11	123	-33	139	-16	-1737	-1647	-7.7%		
Dec'22		21891	3417	18792	22209	44100	1405	20610	22015	22085	50.1			22015	22484	0	-469	-2.1%			11	123	-12	135	-6	-720	-602	-2.7%		
Jan'23		24304	9443	14830	24273	48577	1719	25364	27083	21494	44.2			27083	26810	0	273	1.0%			11	123	3	162	1	-26	140	0.5%		
Feb'23		24813	6523	11163	17686	42499	1258	20714	21972	20527	48.3			21972	24062	0	-2090	-9.5%			11	123	-44	145	-22	-2302	-2223	-10.1%		
Mrt'23		30035	7070.28	11535.72	18606	48641	1321	26088	27409	21232	43.7			27409	23946	0	3463	12.6%			11	123	67	144	33	3085	3330	12.1%		
Apr'23		23893	6058.34	9884.66	15943	39836	1222	19886	21108	18728	47.0			21108	22625	0	-1517	-7.2%			11	123	-33	136	-17	-1737	-1650	-7.8%		
May'23		20918	9049.5	9049.5	18099	39017	1499	18984	20483	18534	47.5			20483	18954	0	1529	7.5%			11	123	28	114	14	1240	1396	6.8%		
Jun'23		15572	9127.5	9127.5	18255	33827	1180	18341	19521	14306	78.0			19521	17660	0	1861	9.5%			11	123	35	106	17	1569	1728	8.8%		
Jul'23	2023/2024	14365	10424	10424	20848	35213	1227	18987	20214	14999	42.6	134894	24.6%	20214	17427	0	2787	13.8%	129046	31.2%	14	203	51	105	26	2388	2571	12.7%	126448	30.6%
Aug'23		15437	10032	10032	20064	35501	1543	22443	23986	11515	32.4			23986	15455	0	8531	35.6%			14	203	166	93	83	7972	8315	34.7%		
Sep'23		15146	11183	11183	22366	37512	1435	22927	24362	13150	35.1			24362	16910	0	7452	30.6%			14	203	145	102	72	6917	7236	29.7%		
Oct'23		17871	15223	15223	30446	48317	1820	31946	33766	14551	30.1			33766	20847	0	12919	38.3%			14	203	254	126	127	12196	12703	37.6%		
Nov'23		17073	9982	22439	32421	49494	1540	37399	38939	10555	21.3			38939	20216	0	18723	48.1%			14	203	370	122	185	17830	18507	47.5%		
Dec'23		34130	4111	23633	27744	61874	1923	43493	45416	16458	26.6			45416	28323	0	17093	37.6%			14	203	338	171	169	16200	16877	37.2%		
Jan'24		32744	0	19409	19409	52153	1890	40915	42805	9348	17.9			42805	26141	0	16664	38.9%			14	203	329	157	164	15797	16448	38.4%		
Feb'24		22015	56	26676	26732	48747	1598	33308	34906	13841	28.4			34906	34658	0	248	0.7%			14	203	1	209	0	-178	32	0.1%		
Mrt'24		22872	22	19018	19040	41912	1465	35190	36655	5257	12.5			36655	26677	0	9978	27.2%			14	203	195	161	98	9308	9762	26.6%		
Apr'24		24549	1701	15577	17278	41827	1599	36053	37652	4175	10.0			37652	26707	0	10945	29.1%			14	203	215	161	107	10246	10729	28.5%		
May'24		23836	1	20866	20867	44703	1812	35636	37448	7255	16.2			37448	24247	0	13201	35.3%			14	203	260	146	130	12449	12985	34.7%		
Jun'24		24622	4328	22392	26720	51342	1476	36076	37552	13790	38.2			37552	27047	0	10505	28.0%			14	203	206	163	103	9817	10289	27.4%		
Jul'24	2024/2025	19887	3615	14939	18554	38441	1529	31500	33029	5412	14.1	115904	18.4%	33029	25346	0	7683	23.3%	210916	40.9%	22	193	149	153	75	7091	7467	22.6%	208328	40.4%
Aug'24		24231	8491	10064	18555	42786	1486	30630	32116	10670	24.9			32116	20532	0	11584	36.1%			22	193	227	124	114	10904	11368	35.4%		
Sep'24		29411	161	22733	22894	52305	1409	34906	36315	15990	30.6			36315	24233	0	12082	33.3%			22	193	237	146	119	11364	11866	32.7%		
Oct'24		26051	6838	11837	18675	44726	1539	33484	35023	9703	21.7			35023	18949	0	16074	45.9%			22	193	317	114	159	15268	15858	45.3%		
Nov'24		30383	8436	10887	19323	49706	1595	39650	41245	8461	17.0			41245	22287	0	18958	46.0%			22	193	375	134	187	18046	18742	45.4%		
Dec'24		34243	15161	12899	28060	62303	1784	50728	52512	9791	15.7			52512	20796	0	31716	60.4%			22	193	630	125	315	30430	31500	60.0%		
Jan'25		34386	18070	16405	34475	68861	1873	56298	58171	10690	15.5			58171	33422	0	24749	42.5%			22	193	491	201	245	23596	24533	42.2%		
Feb'25		29271	15314	14411	29725	58996	1556	47157	48713	10283	17.4			48713	33726	0	14987	30.8%			22	193	295	203	148	14125	14771	30.3%		
Mrt'25		30299	16809	10456	27265	57564	1605	47450	49055	8509	14.8			49055	29391	0	19664	40.1%			22	193	389	177	194	18688	19448	39.6%		
Apr'25		29997	10268	10858	21126	51123	1659	40972	42631	8492	16.6			42631	20990	0	21641	50.8%			22	193	429	126	214	20656	21425	50.3%		
May'25		29237	11122	11661	22783	52020	1398	41939	43337	8683	16.7			43337	28920	0	14417	33.3%			22	193	284	174	142	13601	14201	32.8%		
Jun'25		30264	9151	12920	22071	52335	1393	41722	43115	9220	22.1			43115	25754	0	17361	40.3%			22	193	343	155	171	16476	17145	39.8%		

ANNUAL TOTALS

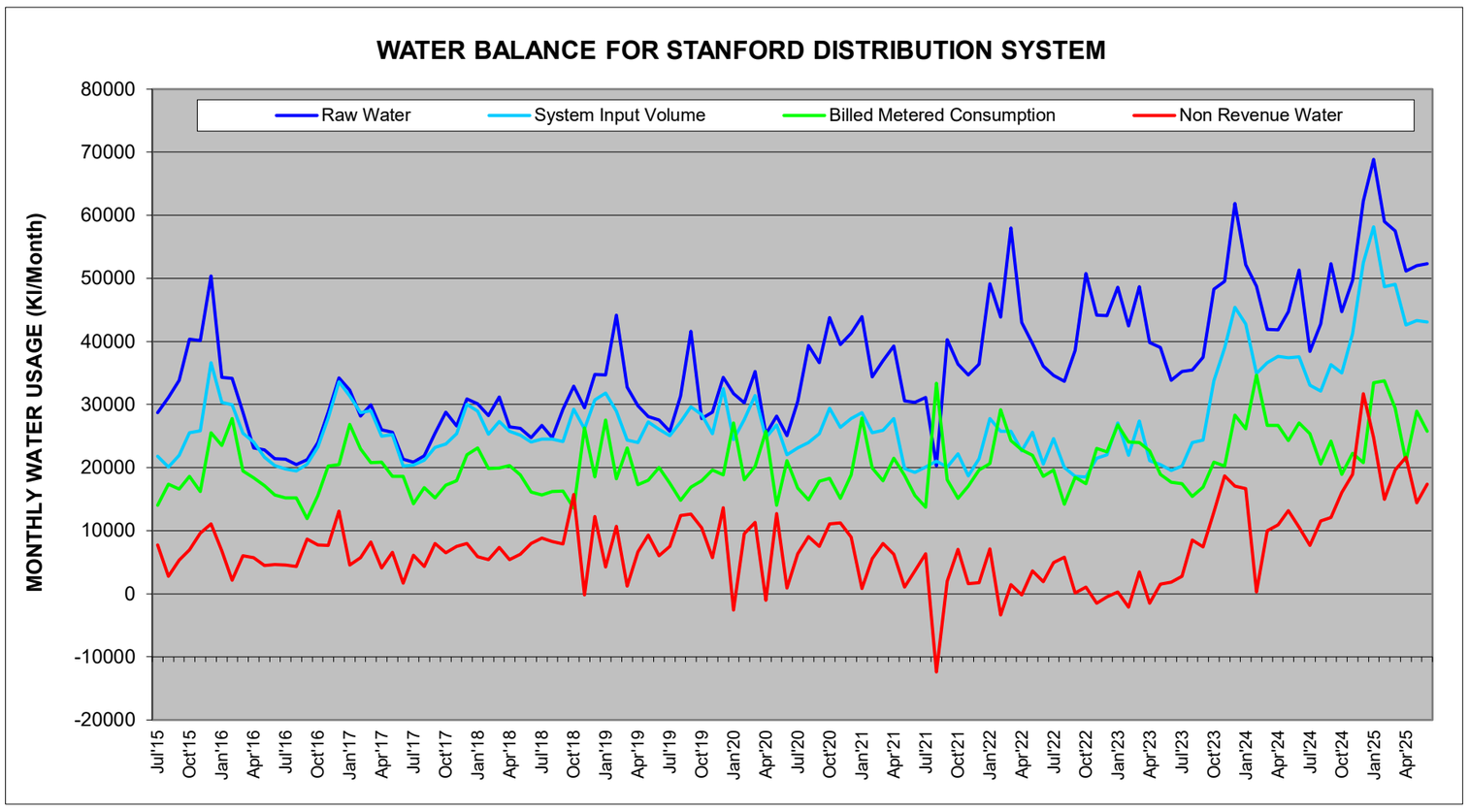
Year	Raw Water Supply					System Input Volume			Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)													
																						Apparent Losses			Real Losses					
	Die Oog	Borehole KVE1	Borehole KVE2	Boreholes	Total	Die Kop	Reservoir	Total	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water from WTW	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
2004/2005													430203	229899	0			200304	46.6%	0	860	3989	7978	1994	185482			199443	46.4%
2005/2006													350630	250193	0			100437	28.6%	0	701	1995	3989	997	92754			99736	28.4%
2006/2007													412552	271926	0			140626	34.1%	0	825	2796	5592	1398	130015			139801	33.9%
2007/2008													398800	275742	0			123058	30.9%	0	798	2445	4890	1223	113702			122260	30.7%
2008/2009													448820	285324	0			163496	36.4%	0	898	3252	6504	1626	151216			162598	36.2%
2009/2010													467953	273467	0			194486	41.6%	0	936	3871	7742	1936	180002			193550	41.4%
2010/2011													361810	233513	0			128297	35.5%	0	724	2551	5103	1276	118643			127573	35.3%
2011/2012													379130	237101	0			142029	37.5%	0	758	2825	5651	1413	131382			141271	37.3%
2012/2013													296392	205004	0			91388	30.8%	0	593	1816	3632	908	84440			90795	30.6%
2013/2014													295818	219302	0			76516	25.9%	0	592	1518	3037	759	70610			75924	25.7%
2014/2015	178657			132130	310787	6276	291670	297946			12841	4.1%	297946	217590	0			80356	27.0%	0	596	1595	3190	798	74177			79760	26.8%
2015/2016	215106	140715	33376	174091	389197	5201	237160	303554			85643	22.0%	303554	230116	0			73438	24.2%	0	607	1457	2913	728	67733			72831	24.0%
2016/2017	163932	64099	85271	149370	313302	12291	291886	304177			9125	2.9%	304177	227240	0			76937	25.3%	0	608	1527	3053	763	70986			76329	25.1%
2017/2018	169667	92122	59690	151812	321479	7980	292506	300486			20993	6.5%	300486	221763	0			78723	26.2%	0	601	1562	3125	781	72653			78122	26.0%
2018/2019	245166	90875	38769	129644	374810	13607	308070	321677			53133	14.2%	321677	230809	0			90868	28.2%	0	3390	1750	3616	875	81237			87478	27.2%
2019/2020	164794	108131	92528	200659	365453	13161	311911	325072			40381	11.0%	325072	231931	0			93141	28.7%	152	1525	1829	6657	915	82062			91463	28.1%
2020/2021	209454	127959	109099	237058	446512	16202	286765	302967			143545	32.1%	302967	223354	0			79613	26.3%	252	1325	1561	1346	780	74350			78036	25.8%
2021/2022	239920	150713	78270	228983	468903	21129	250469	271598			197305	42.1%	271598	254563	0			17035	6.3%	446	2831	275	1534	138	11811			13758	5.1%
2022/2023	264778	103431	130132	233563	498341	16998	245809	262807			235534	47.3%	262807	249322	0			13485	5.1%	128	1472	238	1502	119	10026			11884	4.5%
2023/2024	264660	67063	216872	283935	548595	19328	394373	413701			134894	24.6%	413701	284655	0			129046	31.2%	164	2434	2529	1715	1264	120940			126448	30.6%
2024/2025	347660	123436	160070	283506	631166	18826	496436	515262			115904	18.4%	515262	304346	0			210916	40.9%	270	2318	4167	1834	2083	200245			208328	40.4%

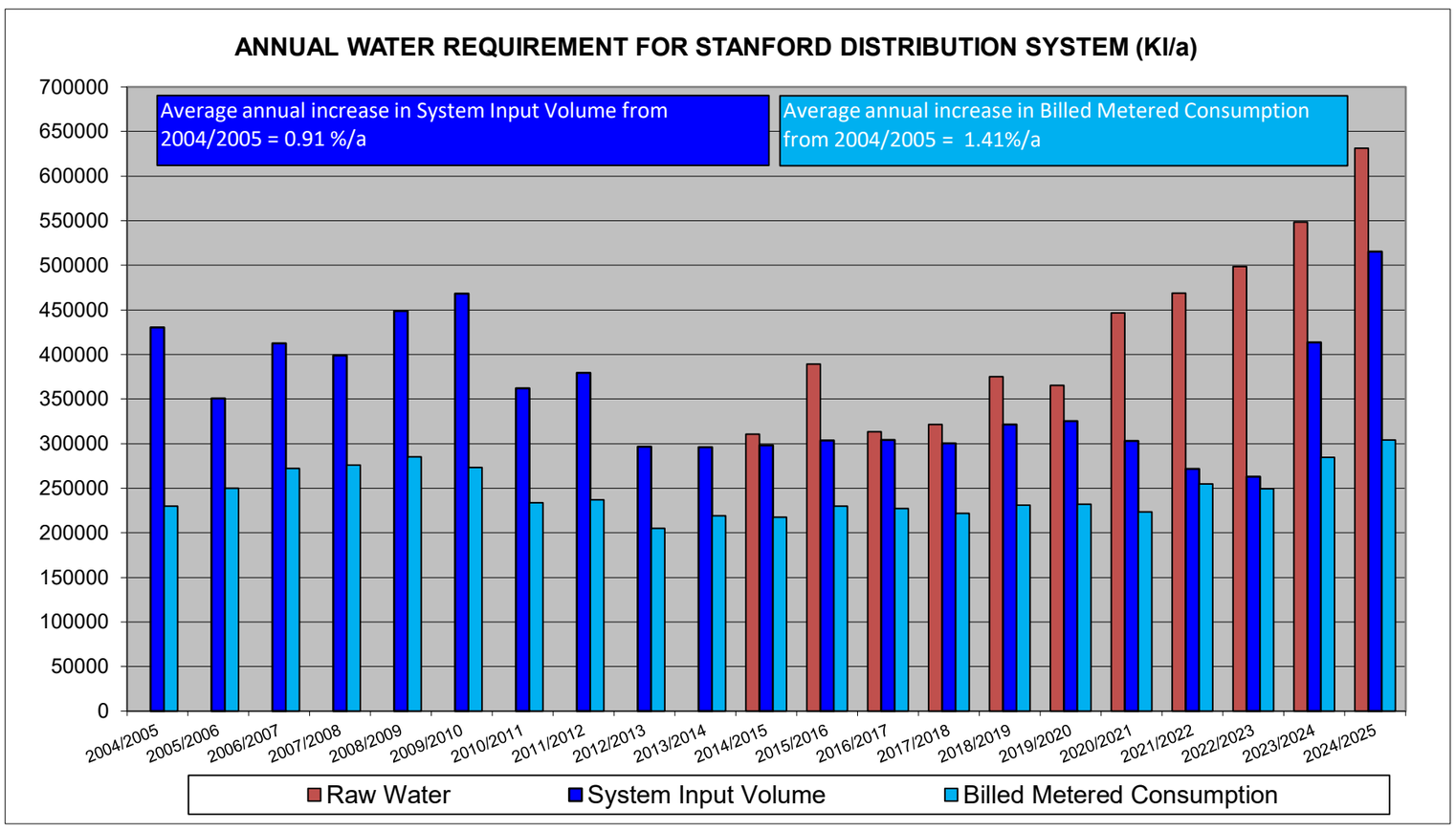
Water Balance Components		Water Balance Volumes											
Component	Units	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
Consumer Units	Number of connections	1202	1216	1229	1261	1304	1348	1366	1418	1471	1524	1577	2051
System Input Volume	l/connection/day	674	672	677	661	631	654	652	585	506	472	719	688
Average Billed Metered Cons.	l/connection/day	500	490	513	494	466	469	465	432	474	448	495	407
Non-Revenue Water	l/connection/day	174	181	164	167	165	185	187	154	32	24	224	282

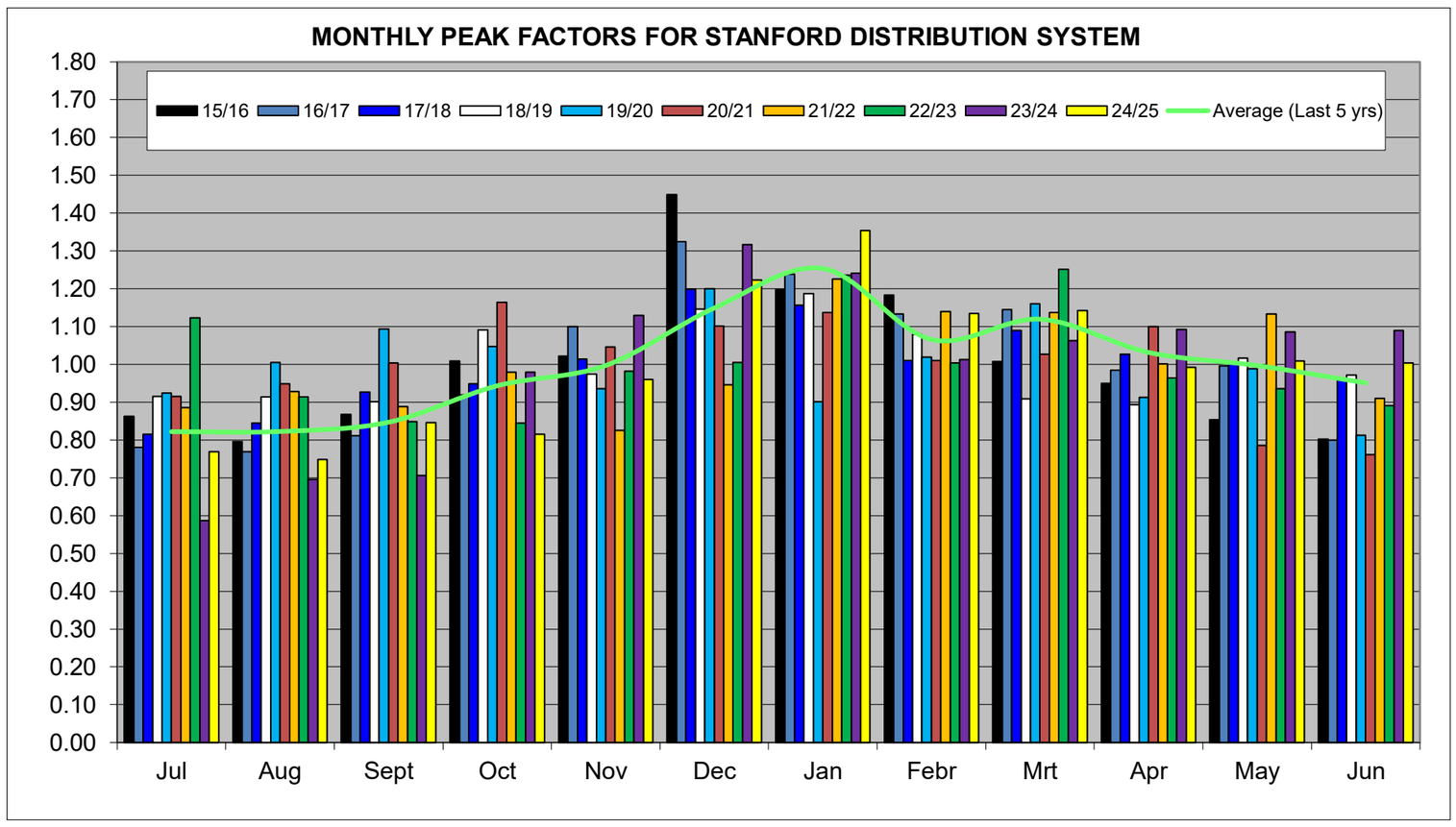
Water Balance Components		Percentage Change in Volumes in l/connection/day, year on year											
Component	Units	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
System Input Volume	% Change in Volume	-	-0.43%	0.79%	-2.36%	-4.47%	3.56%	-0.28%	-10.22%	-13.58%	-6.60%	52.13%	-4.23%
Average Billed Metered Cons.	% Change in Volume	-	-1.91%	4.62%	-3.78%	-5.63%	0.68%	-0.84%	-7.23%	9.87%	-5.46%	10.33%	-17.79%
Non-Revenue Water	% Change in Volume	-	3.82%	-9.59%	2.09%	-1.05%	11.66%	1.15%	-17.66%	-79.37%	-23.59%	824.80%	25.67%

Water Balance Components		Did volume in l/connection/day Rise or Fall, year on year?											
Component	Units	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
System Input Volume	Rise or Fall	-	Fall	Rise	Rise	Fall	Rise	Fall	Fall	Fall	Fall	Rise	Fall
Average Billed Metered Cons.	Rise or Fall	-	Fall	Rise	Fall	Fall	Rise	Fall	Fall	Rise	Fall	Rise	Fall
Non-Revenue Water	Rise or Fall	-	Rise	Fall	Rise	Fall	Rise	Rise	Fall	Fall	Fall	Rise	Rise

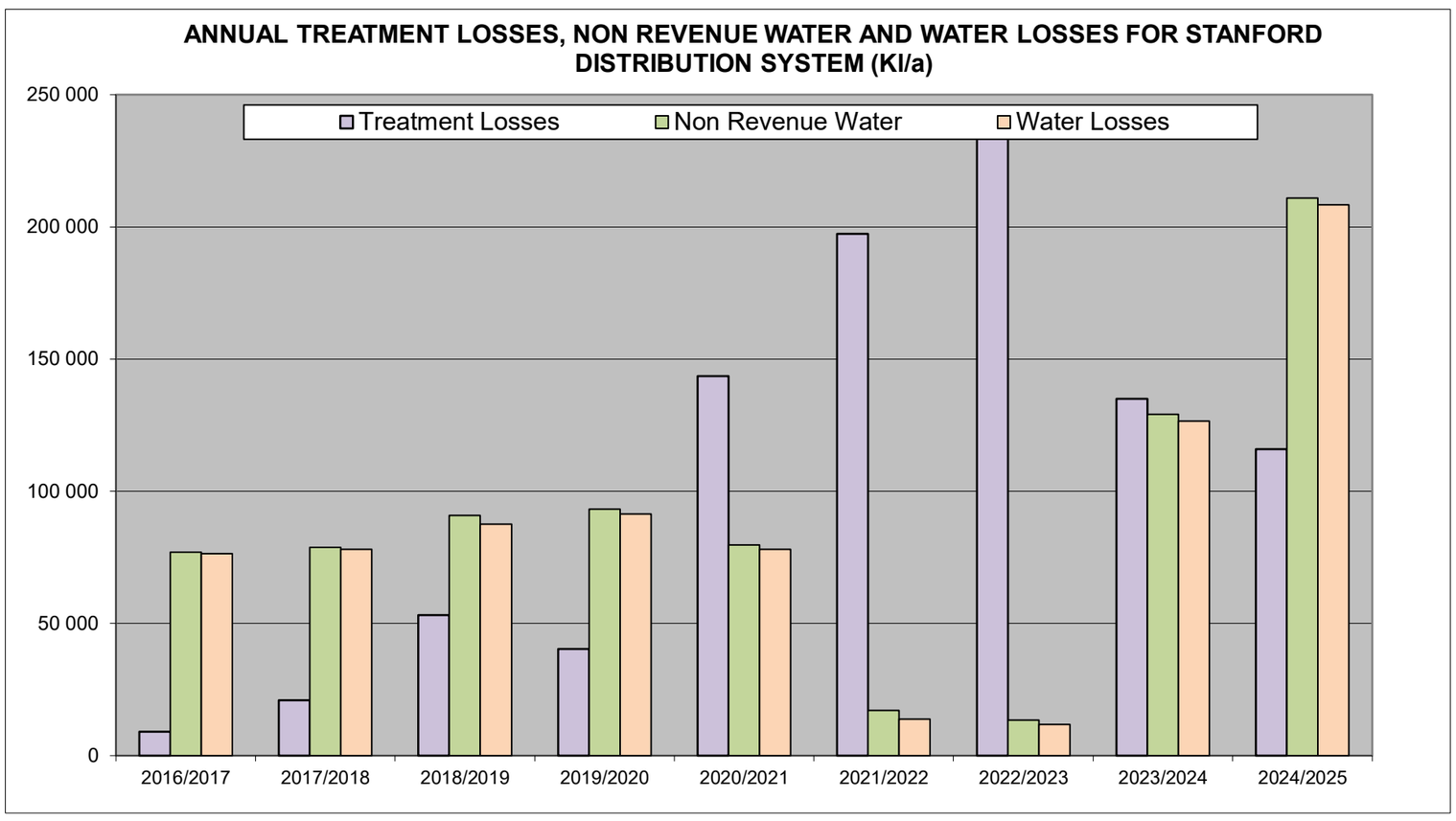
WATER BALANCE AND USAGE FOR STANDFORD DISTRIBUTION SYSTEM

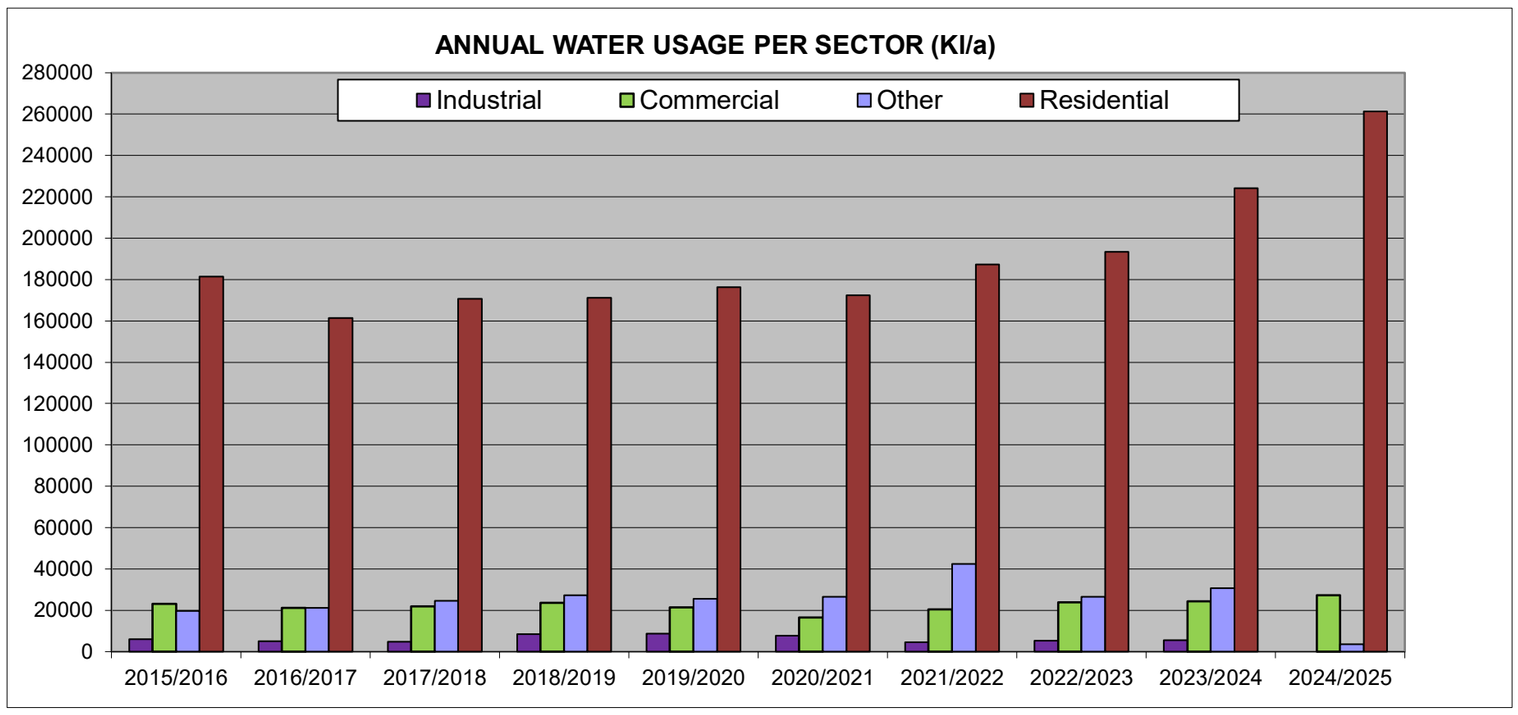


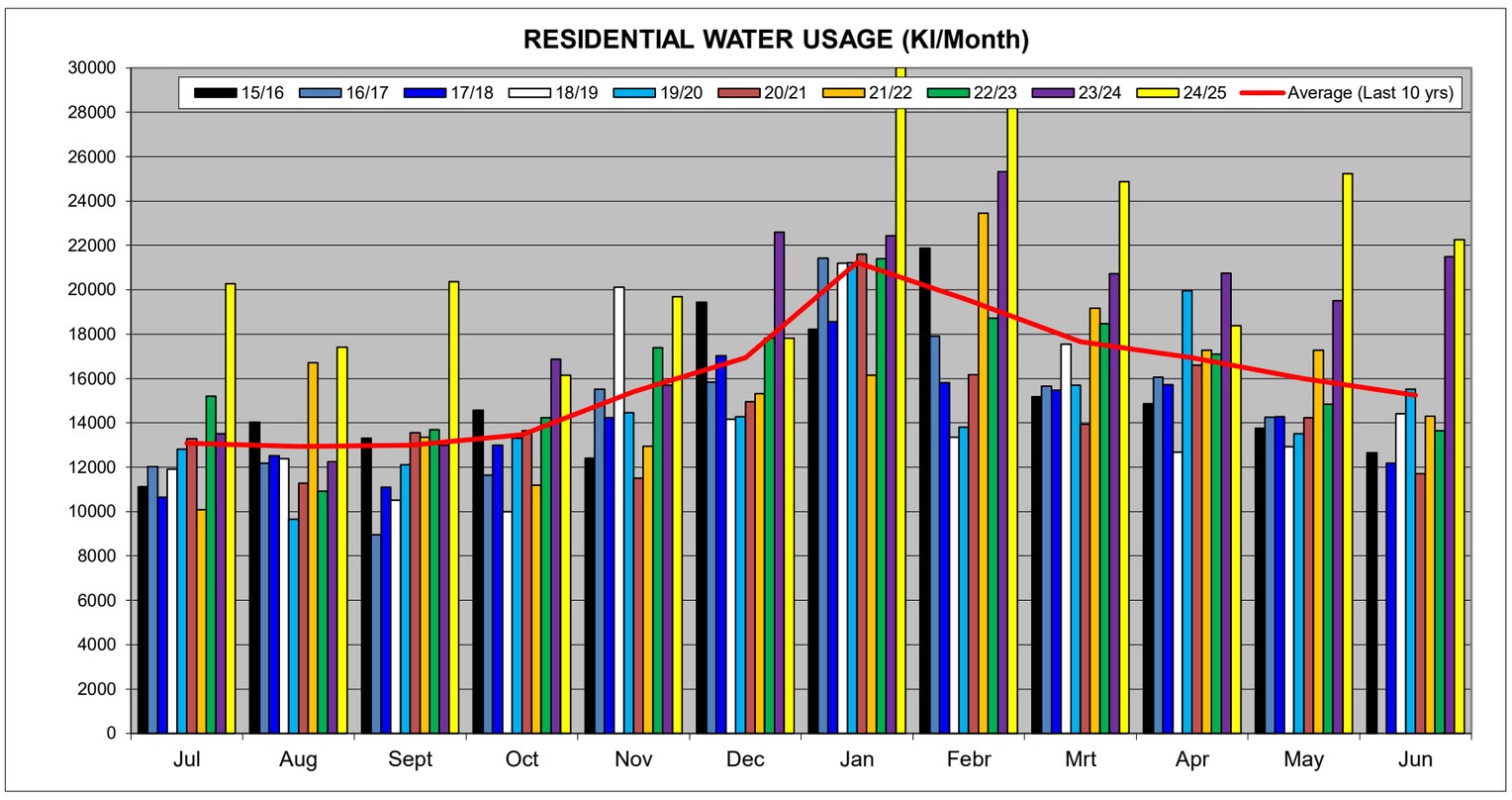




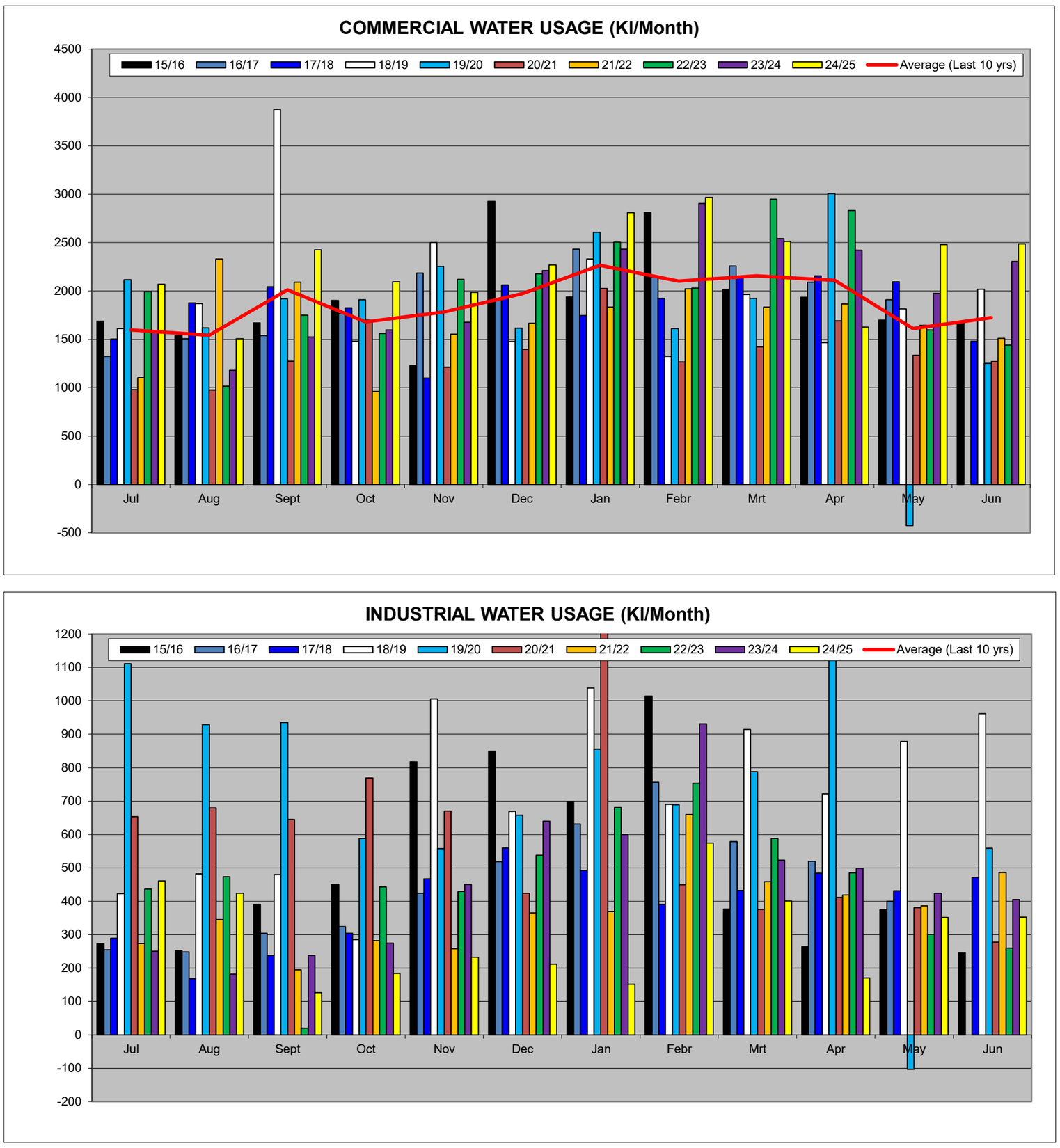
WATER BALANCE AND USAGE FOR STANDFORD DISTRIBUTION SYSTEM

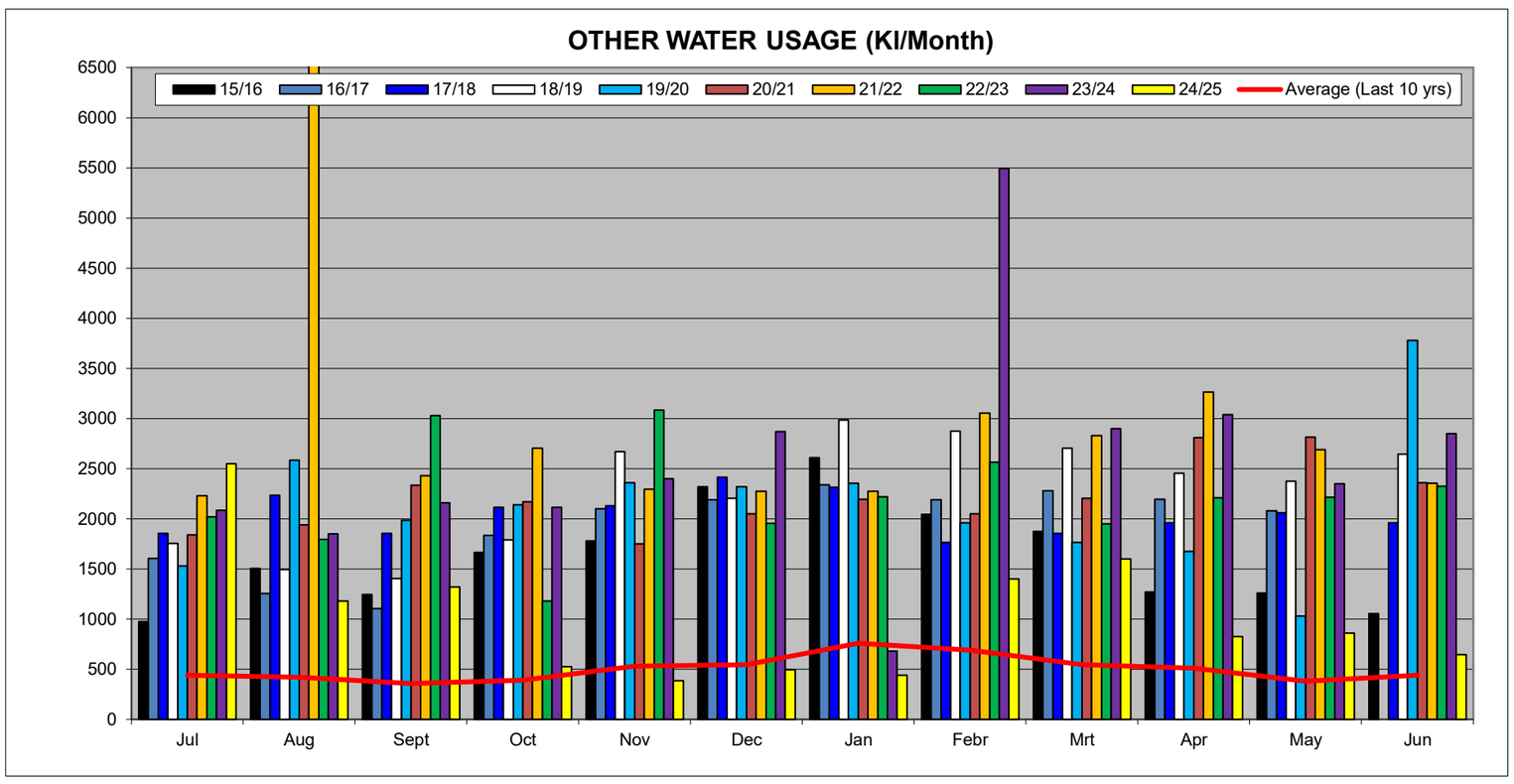






WATER BALANCE AND USAGE FOR STANDFORD DISTRIBUTION SYSTEM





OVERSTRAND MUNICIPALITY

Gansbaai

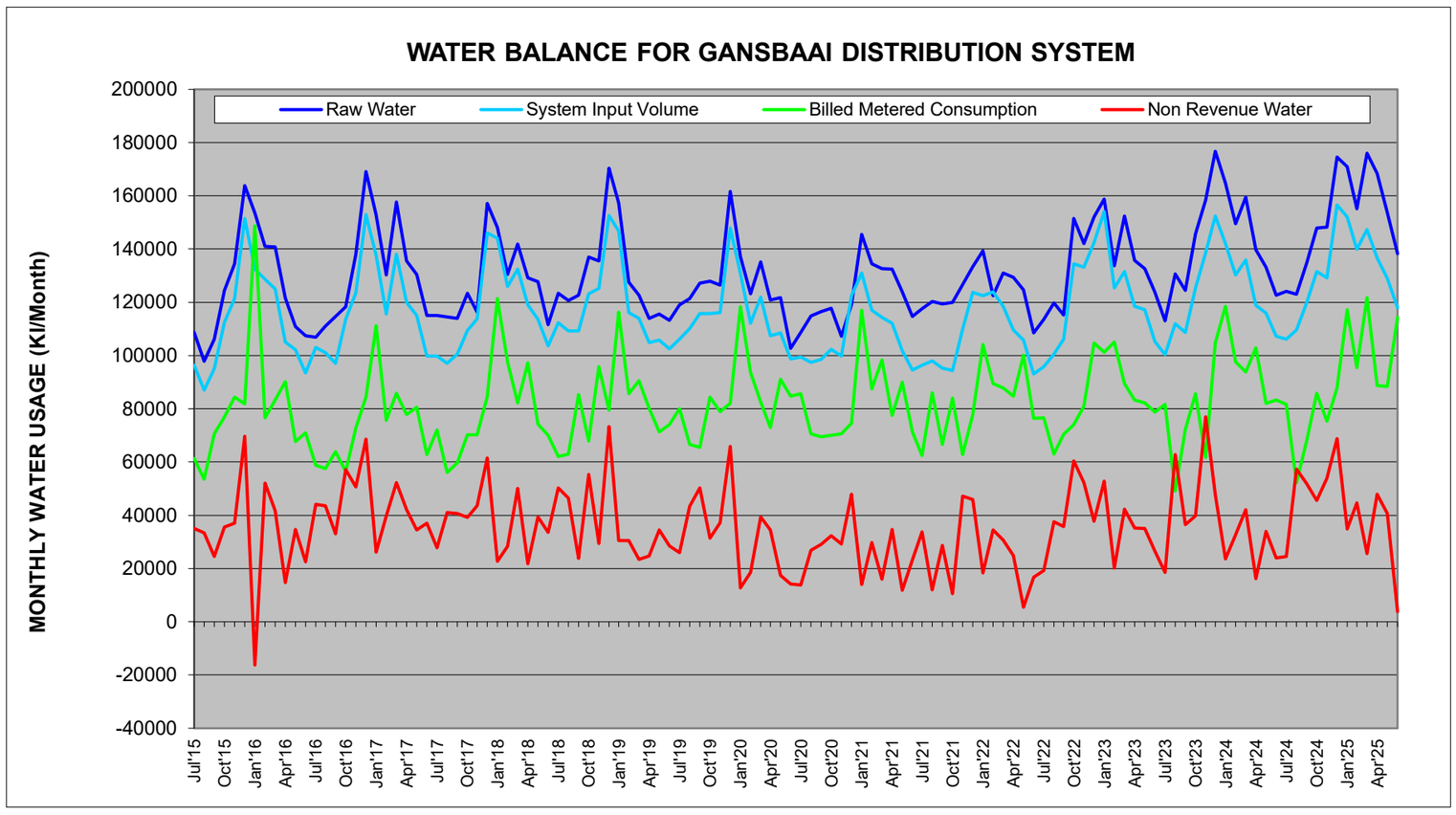
| Month | Year | FRANSKRAAL WTW BULK WATER SUPPLY | | | | | | | | | | | | | | | | | | | | | DE KELDERS WTW BULK WATER SUPPLY | | | | | | | | | | | | | Bulk Water Supply | | TREATED WATER SUPPLY | | | | | | | | | | | | | | | | | | |

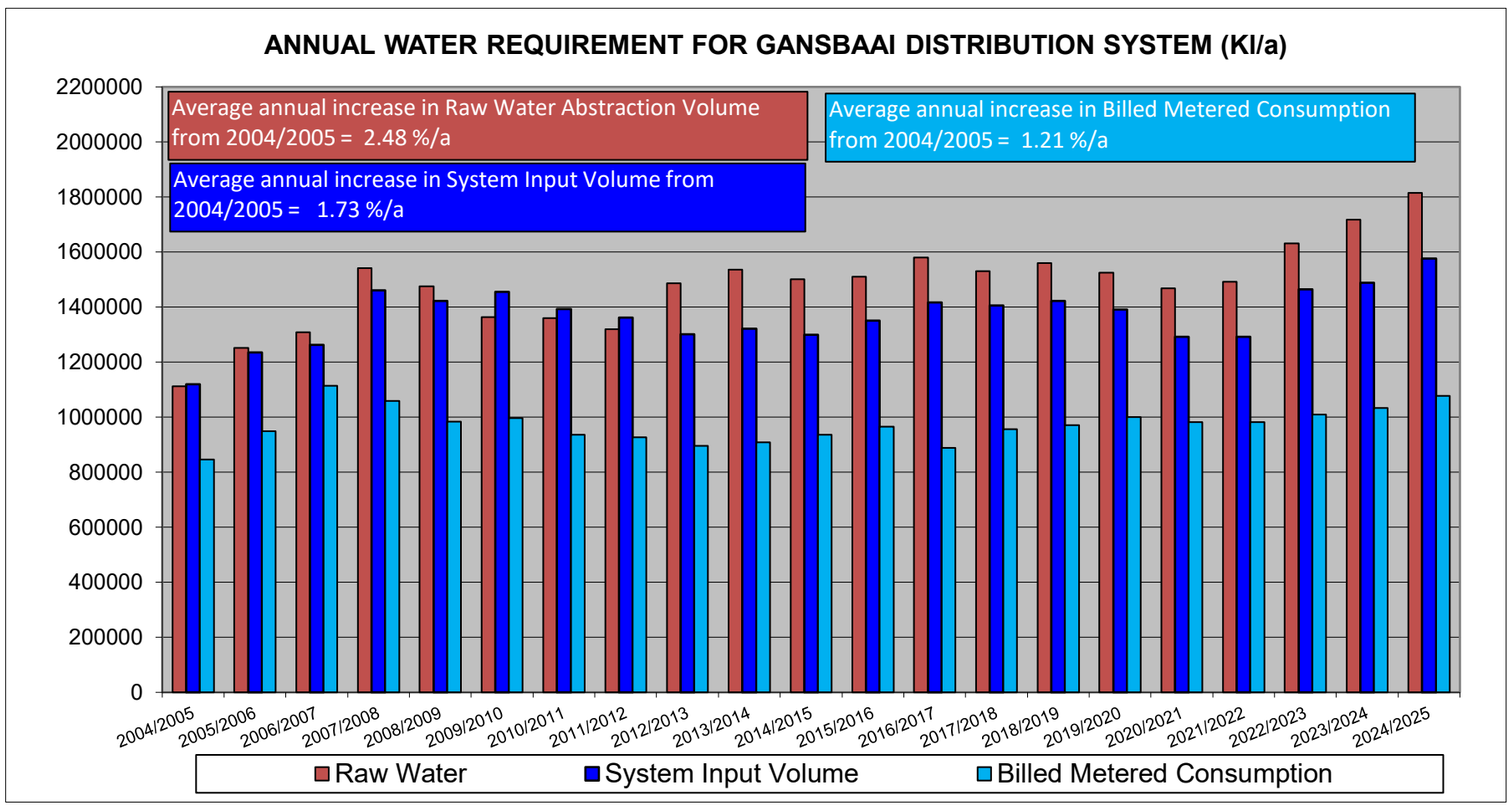
OVERSTRAND MUNICIPALITY

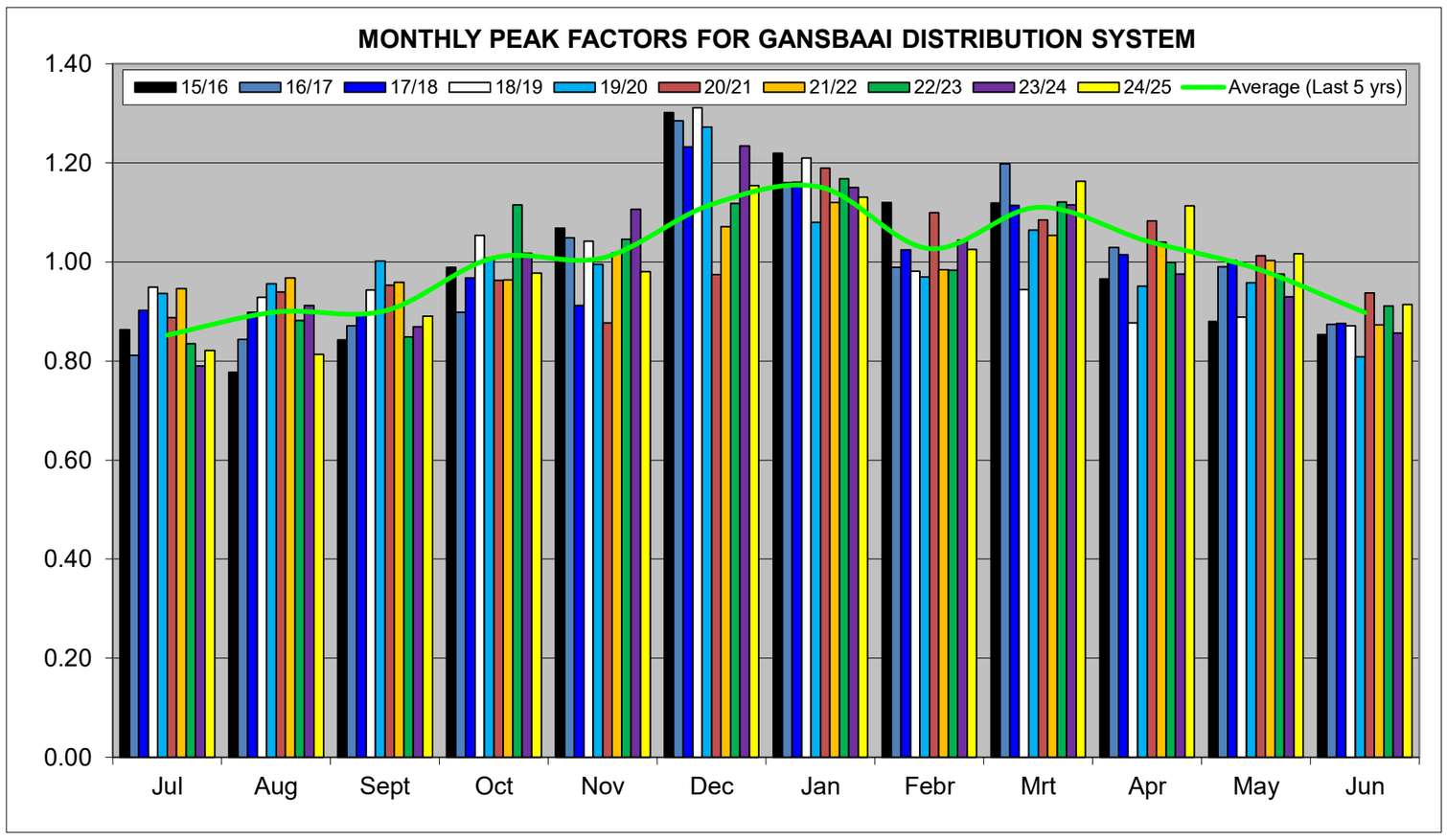
Gansbaai

Month	Year	FRANSKRAAL WTW BULK WATER SUPPLY																				DE KELDERS WTW BULK WATER SUPPLY														Bulk Water Supply		TREATED WATER SUPPLY																	
		Raw Water Supply								System Input Volume				Treatment Losses				Raw Water Supply						Treatment Losses				System Input Volume		Raw Water Supply		Revenue Water		Non Revenue Water (NRW)																	
		Intakeitech	Old Bulk	Witaka	New Bulk	Klipgat to Franskraal	Kraalbosch to Franskraal	New Bulk Raw Meter	New Site Water	Raw Water at Franskraal WTW	Franskraal Combo	Uilkraal	Franskraal Return Booster	New WTWs Drinkwater	Sludge Water Estimated	System Input Volume Franskraal	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	De Kelders Grotto Fountain	Stanfords Bay Fountain	Klipgat Fountain	Raw Water at De Kelders WTW	Perlemoenbaai Fountain	Klipfontein Borehole	De Kelders WTW	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Franskraal Raw Water Supply	Total	Treated Water Supply from Franskraal and De Kelders	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Apparent Losses			Real Losses			Annual Water Losses	Annual Water Losses
																																									Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses		
																																								7%	4%	1%	93%				
		[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[m³]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[m³]	[%]	[m³]	[%]
Jul'15		0	0	0	0	0	57456	67838		67838	62810					62810	5028	0.0			2268	0	36917	40879	0	0	33621	7258	17.75										96431	61305	0	35126	36.4%																	
Aug'15		0	0	0	0	0	48384	55439		55439		52038				52038	3401	0.0					4969	0	35486	42414	0	0	34963	7451	17.57										87001	53525	0	33476	38.5%																	
Sep'15		0	0	0	0	0	0	63619		63619		59767				59767	3852	0.0					5849	0	34585	40484	0	0	32434	7240	17.04										95351	70555	0	24856	25.7%																	
Oct'15		0	0	0	37422	84031		84031		79008						79008	5023	0.0					1577	0	38948	40625	0	0	33525	7000	17.27										112533	76993	0	35540	31.6%																	
Nov'15		0	0	0	87696	93459		93459		86590						86590	6869	0.0					3555	0	36881	41007	0	0	34752	6255	15.25										121342	84384	0	36958	30.5%																	
Dec'15	2015/2016	0	0	0	123448	122564		122564		116538						116538	6026	0.0	74357	7.4%				41321	0	0	35018	6303	15.3	85837	16.9%										151556	81783	0	69773	46.0%	384841	28.5%	0	303	1389	2779	695	64607	69470	45.8%	382139	28.3%
Jan'16		0	0	0	119228	113301		113301		103466						103466	6835	0.0					0	0	0	43267	0	0	29064	14203	32.8										132530	148759	0	-16229	-12.2%			0	265	-330	-660	-165	-15339	-16494	-12.4%		
Feb'16		0	0	0	120399	103826		103826		91550						91550	12276	0.0			30564	0	30737	31459	0	0	27032	6255	15.25										128587	76504	0	52083	40.5%			0	257	1037	2073	518	48198	51826	40.3%		
Mar'16		0	0	0	120399	97523		97523		89070						89070	8453	0.0			7227	0	34576	43368	0	0	36039	7329	16.9										125109	83320	0	41789	33.4%			0	250	831	1662	415	38631	41539	33.2%		
Apr'16		0	0	0	120399	77546		77546		71488						71488	6058	0.0			2232	0	30955	44078	0	0	33026	10552	23.9										105516	90283	0	15233	14.0%			0	210	290	581	145	13505	14521	13.8%		
May'16		0	0	0	120399	64493		60044		60044						60044	4449	0.0			5683	0	43526	46350	0	0	42215	4135	8.9										102259	67627	0	34632	33.9%			0	205	689	1377	344	32018	34427	33.7%		
Jun'16		0	0	0	120399	62832		62832		56345						56345	6287	0.0			2905	0	41932	44837	0	0	37148	7689	17.1										93483	70987	0	22536	24.1%			0	187	447	894	223	20773	22339	23.9%		
Jul'16		0	0	0	38556	60967		60967		58735						58735	2232	0.0					3454	0	42454	45908	0	0	44320	1588	3.46										103055	56894	0	44161	42.9%			0	206	879	1758	440	40878	43965	42.7%		
Aug'16		0	0	0	0	62167		62167		58788						58788	3379	0.0					3923	0	43619	46918	0	0	42356	6562	13.41										101144	57628	0	43516	43.0%			0	202	666	1733	433	40282	43314	42.8%		
Sep'16		0	0	0	0	67130		67130		57830						57830	9300	0.0					3669	0	43776	47332	0	0	39188	8344	17.55										97518	63977	0	33541	34.1%			0	194	557	1314	329	30548	32847	33.9%		
Oct'16		0	0	0	127008	82623		82623		84285						84285	-1662	0.0					2904	0	33461	35668	0	0	29380	6288	17.63										113665	56509	0	57156	50.3%			0	227	1139	2277	569	52944	56929	50.1%		
Nov'16		0	0	0	54432	92569		92569		87210						87210	5359	0.0					3509	0	43514	45519	0	0	36311	9208	20.23										123521	72933	0	50588	41.0%			0	247	1009	2018	504	46910	50441	40.8%		
Dec'16	2016/2017	0	0	0	17010	123513		123513		117145						117145	6368	0.0	67191	6.4%			2890	0	42730	45655	0	0	35865	9790	21.4	95258	17.9%										153010	84329	0	68681	44.9%	529125	37.3%	0	306	1367	2735	684	63589	68375	44.7%	526290	37.1%
Jan'17		0	0	0	0	109520		109520		93752						93752	15768	0.0					2267	0	43747	45934	0	0	36082	9852	22.3										137482	111294	0	26188	19.0%			0	275	518	1036	259	24081	25893	18.8%		
Feb'17		0	0	0	108864	91985		91985		85770						85770	6215	0.0					1813	0	38247	38230	0	0	29757	8473	22.2										115527	75739	0	39788	34.4%			0	231	791	1582	396	36788	39557	34.2%		
Mar'17		0	0	0	121058	110715		110715		102160						102160	8555	0.0					2103	0	44928	46985	0	0	39939	11056	23.5										138120	85838	0	52281	37.9%			0	276	1040	2081	520	48374	52015	37.7%		
Apr'17		0	0	0	81648	88385		88385		81320						81320	7065	0.0					1787	0	47635	47086	0	0	38550	8536	18.1										119870	77793	0	42077	35.1%			0	240	837	1673	418	38909	41837	34.9%		
May'17		0	0	0	63504	83420		83420		75565						75565	7855	0.0					0	0	49631	46965	0	0	39573	7392	15.7										115138	80617	0	34521	30.0%			0	207	736	1472	368	34249	36857	29.8%		
Jun'17		0	0	0	72576	78335		78335		70805						70805	7530	0.0					-97	0	38188	38768	0	0	29009	7759	21.1										99814	62777	0	37037	37.1%			0	200	737	1473	368	34237	36837	36.9%		
Jul'17		0	0	0	0	72130		65900		65900						65900	6230	0.0					-52	0	45460	42882	0	0	33947	8935	20.84										99847	72087	0	27760	27.8%			0	200	551	1102	276	25631	27560	27.6%		
Aug'17		0	0	0	167	70355		70355		61785						61785	8570	0.0					0	0	46712	44102	0	0	33305	8807	20.11										97090	56099	0	41000	42.2%			0	194	816	1632	408	37941	40797	42.0%		
Sep'17		0	0	0	55566	72945		72945		67620						67620	5325	0.0					0	0	43617	41071	0	0	32879	8192	19.95										100499	59806	0	40693	40.5%			0	203	780	1560	390	36264	38993	35.6%		
Oct'17		0	0	0	72198	85895		85895		80070						80070	5825	0.0					0	0	41848	39475	0	0	29329	10146	25.73										109395	73153	0	36242	33.1%			0	219	783	1566	392	36024	39133	35.8%		
Nov'17		0	0	0	72198	91715		91715		86915						86915	4800	0.0					0	0	33594	24567	0	0	26913	2346	-9.55										113828	70201	0	43627	38.3%			0	228	868	1736	434	40361	43399	38.1%		
Dec'17		0	0	0	130152	124065		124065		116760						116760	7305	0.0					0	0	38207	35057	0	0	27184	17.5	7650										146351	84515	0	61836	42.3%			0	292	1225	2450	612	56957	61244	41.9%		
Jan'18		0	0	0	136080	115500		115500		112535						112535	3015	0.0			-146	0	1905	32484	0	0	31578	906	2.8	68287	16.3%										144113	121370	0	22743	15.8%	449960	32.0%	0	288	449	898	225	20883	22455	15.6%	447089	31.8%
Feb'18		0	0	0	84672	102095		102095		96285						96285	3810	0.0			-45	0	40721	28427	0	0	26130	797	2.8										129915	97646	0	26269	22.5%			0	262	560	1121	280	26056	28017	22.3%		
Mar'18		0	0	0	148680	107440		107440		103560						103560	3880	0.0			-106	0	82255	34525	0	0	28880	5638	16.3										132447	82297	0	50150	37.9%			0	265	968	1935	499	46393	49865	37.7%		
Apr'18		0	0	0	90360	94075		94075		91755						91755	2320	0.0			-30	0	121858	35211	0	0	27343	7868	22.3										119098	97214	0	21884	18.4%			0	238	433	866	216	20131	21640	18.2%		
May'18		0	0	0	82000	91485		88370		88370						88370	3125	0.0			-181	0	37419	36270	0	0	29227	11043	34.7%										115397	74200	0	39397	34.7%			0	227	783	1567	392	34428	39170	34.5%		
Jun'18		0	0	0	110160	82800		82800		79255						79255	3545	0.0			-502	0	34658	28803	0	0	24372	4431	15.4										103627	69989	0	33638	32.5%			0	207	669	1337	334	31091	33431	32.3%		
Jul'18		0	0	0	100080	85250		81405		80902						80902	503	0.0			-11	0	41817	36002	0	0	30811	5191	14.86										112276	63029	0	50247	44.8%			0	376	997	858	499	47571	49871	44.4%		
Aug'18		0	0	0	94000	84840		84840		81720						81720	3120	0.0			-10	0	37700	35873	0	0	27616	8257	23.02										109336	62949	0	46387	42.4%			0	376	970	870	460	43760	46011	42.1%		
Sep'18		0	0	0	40000	87980		87980		83005						83005	4975	0.0			-18	0	37177	34633	0	0	26189	8444	24.38										109194	85341	0	23853	21.8%			0	376	470	1180	295	21593	23477	21.5%		
Oct'18		0	0	0	72000	102615		96400		96400						96400	6215	0.0			-31	0	36887	34343	0	0	26182	8161	23.77										123181	67866	0	55315	44.9%			0	376	1099	938	549	52353	54939	44.6%		
Nov'18		0	0	0	143000	104045		104045		96200						96200	7845	0.0			8623	0	30825	31433	0	0	29102	2331	7.42										125302	95876	0	29426	23.5%			0	376	581	1326	291	26853	29050	23.2%		
Dec'18	2018/2019	0	0	0	112000	129725		120375		103375						103375	17000	0.0	66610	5.6%			18555	30064	40689	0	0	31311	8372	22.6	71221	19.7%										153292	78410	0	74882	48.9%	450328	31.7%	0	376	1408	1098	729	69021	72906	47.7%	445817	31.4%
Jan'19		0	0	0	112000	122875		122875		115110						115110	7765	0.0			12159	0	24638	34382	0	0	31653	2729	7.9										146763	116335	0	30428	20.7%			0	376	601	1609	301	27542	30052	20.5%		
Feb'19		0	0	0	136000	102460		96835		92625						92625	4210	0.0					25086	30384	0	0	29313	1071	3.53										116055	85596	0	30459	26.2%			0	376	602	1184	301	27397	30083	25.9%		
Mar'19		0	0	0	65000	101265		101265		97300						97300	3965	0.0			1678	0	24862	21447	0	0	16617	4830	22.5										113917	90572	0	23345	20.5%			0	376	459	1252	230	21028	22969	20.2%		
Apr'19		0	0	0	116000	93300		93300		89000						89000	4300	0.0			-168	0	23745	20709	0	0	15821	4888	23.6										104921	80206	0	24615	23.5%			0	376	485	1109	242	22403	24239	23.1%		
May'19		0	0	0	104000	93485		93485		88625						88625	4860	0.0			516	0	26381	22028	0	0	16867	5161	23.44										116852	71404	0	44448	32.5%			0	376	681	997	341	30360	34272	32.2%		
Jun'19		0	0	0	58000	90525		90525		85580						85580	4945	0.0					0	22647	0	0	16927	5720	25.3										102507	73994	0	28523	27.8%			0	376	563	1023	281	26280	28147	27.5%		
Jul'19		0	0	0	94000	95700		84415		80315						80315	4100	0.0			-53	0	46889	23293	0	0	18419	4874	24.03										128111	80993	0	47118	36.8%			0	376	511	2280	255	24797	25537	24.1%		
Aug'19		0	0	0	89000	95160		95160		90365						90365	4795	0.0			-25	0	29632	26300	0	0	19749	6551	24.91										110114	66672	0	43442	39.5%			0	376	859	1898	430	39772	42969	39.0%		
Sep'19		0	0	0	118000	100500		100500		95710						95710	4790	0.0			-63	0	30740	28759	0	0	19060	9700	25.30										115700	65463	0	50237	43.4%			0	376	995	1864	498	46397	49754	43.0%		
Oct'19		0	0	0	56000	102245		102245		96145						96145	6100	0.0			-7	0	28459	25774	0	0	19616	6158	23.89										115761	84427	0	31334	27.1%			0	376	563	2404	309	27522	30851	26.7%		
Nov'19		0	0	0	105000	92435		87920		87920						87920	4615	0.0			12337	0	24861	33969	0	0	28330	5639	16.60										116150	78965	0	37185	32.0%			0	376	470	2256	282	31353	34702	31.6%		
Dec'19	2019/2020	0	0	0	118000	127720		127720		119480						119480	8240	0.0	64025	5.5%			14048	19231	33073	0	0	26998	6075	18.37	69012	19.7%										147940	82513	0	65427	44.2%	390657	28.1%	0	376	1309	2335	654	61145	65444	44.2%	384859	27.7%
Jan'20		0	0	0	79000	105340		105340		100790						100790	4550	0.0			14904	0	11305	31835	0	0	30126	1709	5.4										130916	118268	0	12648	9.7%			0	376	455	2429	243	8433	12165	9.3%		
Feb'20		0	0	0	100000	90035		87040		87040						87040	2995	0.0			12364	0	19407	33135	0	0	31715	1420	4.28										112215	93069	0	19146	17.1%			0	376	455	2667	180	14834	18043	16.1%		
Mar'20		0	0	0	99000	100070		90535		90535						90535	4535	0.0			11409	0	11426	35117	0	0	26419	8698	24.8										119493	82561	0	36933	32.3%			0	376	455	2258	226	33852	36962	31.6%		
Apr'20		0	0	0	82000	87335		82095		82095						82095	5270	0.0			12367	0	16723	33525	0	0	25355	8170	24.4										107420	72975	0	34445	32.1%			0	376	679	2078	340	30883	33962	31.6%		
May'20		0	0	0	101000	91640		91640		86635						86635	5005	0.0			13341	0	5878	30047	0	0	21838	8209	27.3										104873	91082	0	17391	16.0%			0	376	455	2593	169	13807	16908	15.6%		
Jun'20		0	0	0	85695	85695		79850		79850						79850	5845	0.0			12568	0	0	17070	0	0	18963	-1893	-11.1										98813	84704	0	14109	14.3%			0	376	455	2412	156	10055	13626	13.8%		
Jul'20		0	0	0	84695	84695		84695		78715						78715	5980	0.0			14715	0	14630	23924	0	0	20586	3338	13.93										99405	85821	0	13584	13.7%			0	376	267	332	134	12928	13360	13.4%		
Aug'20		0	0	0	87495	87495		87495		78535						78535	8960	0.0			15085	0	16164	27352	0	0	18871	8481	31.01										97406	70515	0	26891	27.6%			0	376	353	2709	177	16492	19377	27.2%		
Sep'20		0	0	0	82815	82815		76540		76540						76540	6275	0.0			15895	0	19384	33700	0	0	21900	11791	34.99										98549	69560	0	28989	29.4%			0	376	393	2742	196	26569	29882	29.0%		
Oct'20		0	0	0	88975	88975		88975		83165						83165	5810	0.0			11304	0	20223	28749	0	0	19117	9632	33.50										102282	69980	0	32302	31.6%			0	376	393	638	271	319	30654	31882	31.2%		
Nov'20	2020/2021	0	0	0	86110	86110		76560		76560						76560	9550	0.0	97490	8.7%			11282	0	20096	31983	0	0	24837	-12854	-107.3	79262	22.9%										99418	70962	0	28457	28.6%	308492	23.9%	0	376	393	549	289	474	45737	47449	38.7%	303451	23.5%
Dec'20		0	0	0	107185	107185		107185		97630						97630	9555	0.0			11282	0	20096	11983	0	0	24837	-12854	-107.3										122467	74598	0	47869	39.1%			0	376	393	549	289	474	45737	47449	38.7%		
Jan'21		0	0	0	112620	112620		103195		94825						94825	8370	0.0			12054	0	27815	32899	0	0	27832	5067	15.4										131027	111074	0	19953	15.2%			0	376	393	453	135	12674	13533	10.3%		
Feb'21		0	0	0	102455	102455		93495		86960						86960	6535	0.0			8077	0	26655	32076	0	0	26153	6443	20.3										117128	87344	0	29784	25.4%			0	376	586	338	293	26696	29314	25.0%		
Mar'21		0	0	0	101430	101430		91320		91320						91320	10110	0.0			7910	0	26465	31309	0	0	23053	8256	26.4										114373	98332	0	16041	14.0%			0	376	393	381	156	14272	15821	13.7%		
Apr'21		0	0	0	100780	100780		90290		90290						90290	10490	0.0			5940	0	28008	31644	0	0	21886	9758	30.8										112178	71460	0	40718	36.3%			0	376	393	300	343	27492	29705	26.5%		
May'21		0	0	0	87090	87090		78885		78885						78885	8205	0.0			9359	0	29770	36804	0	0	22920	13884	37.7										101805	90049	0	11756	11.5%			0	376	340	749	113	11336	11.1%			
Jun'21		0	0	0	78925	78925		71370		71370						71370	7555	0.0			12394	0	24156	34682	0	0	21976	12706	36.6										94601	71327	0	23274	24.6%			0	376	453	1129	151	10982	12564	17.6%		
Jul'21		0	0	0	79975	79975		72075		72075						72075	7900	0.0			12326	0	24105	13428	0	0	24253	13428	35.64										96328	62480	0	33848	35.1%			58	1122	653	242	327	31447	32069	33.9%		
Aug'21		0	0	0	78120	78120		68705		68705						68705	9415	0.0			14415	0	28137	42241	0	0	29304	12937	30.63										98009	85968	0	12041	12.3%			58	1122	217	333	109	10203	10862	11.1%		
Sep'21		0	0	0	86680	86680		75225		75225						75225	11455	0.0			14455	0	19455	33701	0	0	27836	5865	17.4										96328	63962	0	32366	33.6%			58	1122	551	258	275	25447	27531	28.6%		
Oct'21		0	0	0	93460	93460		75503		75503						75503	17957	0.0			14415	0	28137	42241	0	0	29304	12937	30.63										99009	85968	0	13041	13.2%			58	1122	217	333	109	10203	10862	11.1%		
Nov'21		0	0	0	96480	96480		86880		86880						86880	9600	0.0			14415	0	28137	42241	0	0	29304	12937	30.63										99009	85968	0	13041	13.2%			58	1122	217	333	109	10203	10862	11.1%		
Dec'21	2021/2022	0	0	0	93460	93460		75503		75503						75503	17957	0.0	120239	10.6%			14415	0	28137	42241	0	0	29304	12937	30.63	81195	22.4%										99009	85968	0	13041	13.2%	308847	23.9%	58	1122	217	333	109	10203	10862	11.1%	294894	22.8%
Jan'22		0	0	0	107160	107160		96480		96480						96480	9600	0.0			14415	0	28137	42241	0	0	29304	12937	30.63										99009

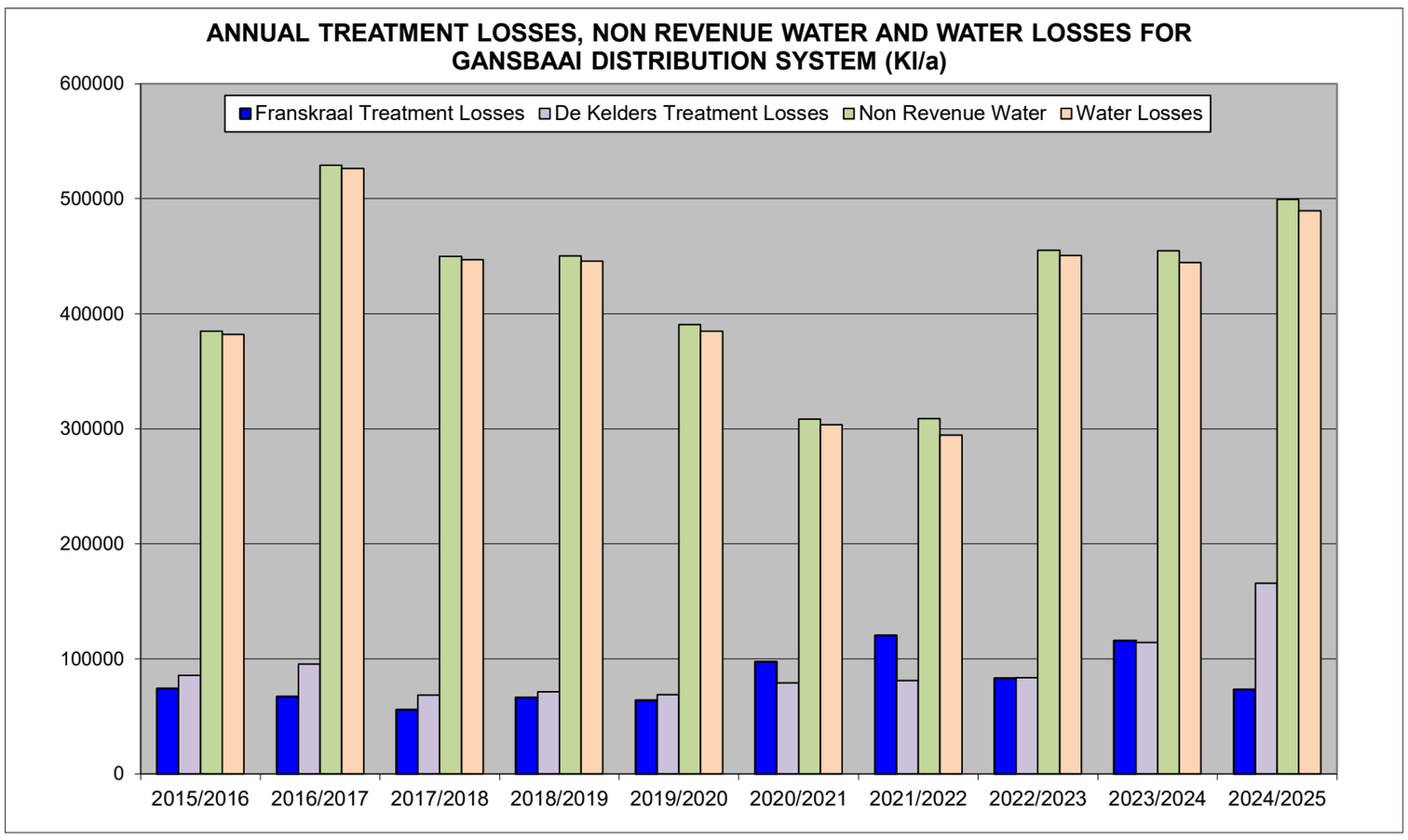
WATER BALANCE AND USAGE FOR GANSBAAI DISTRIBUTION SYSTEM

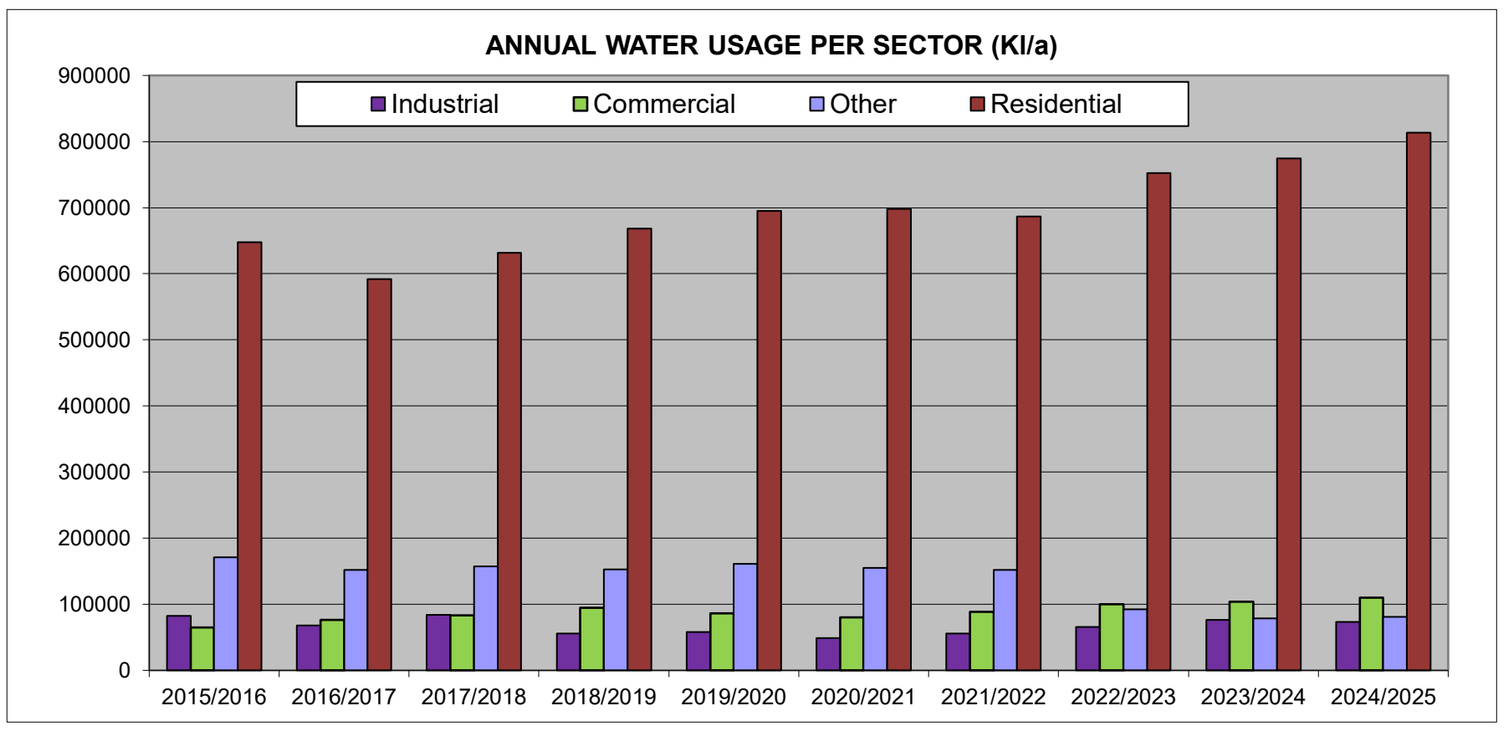


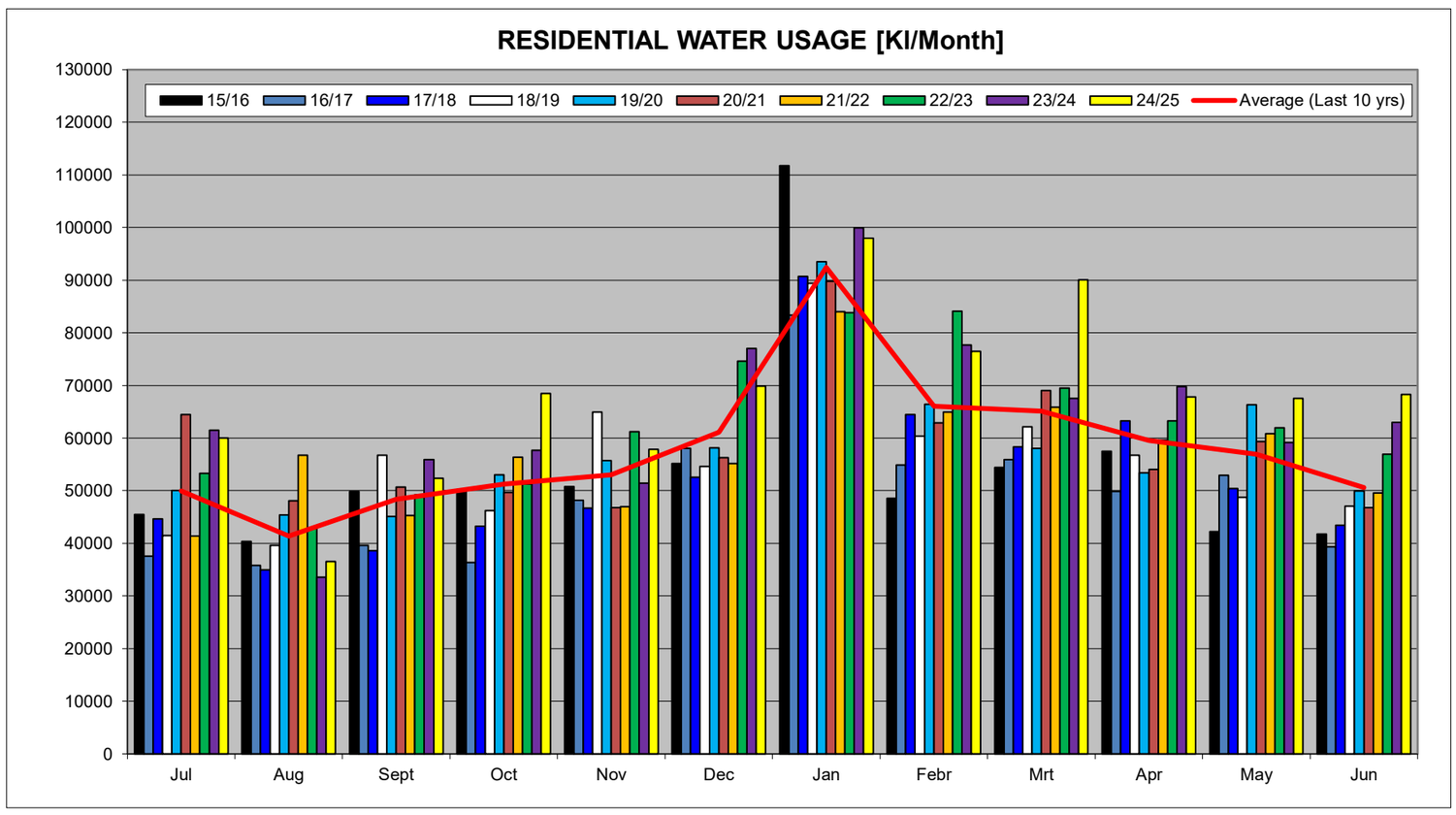




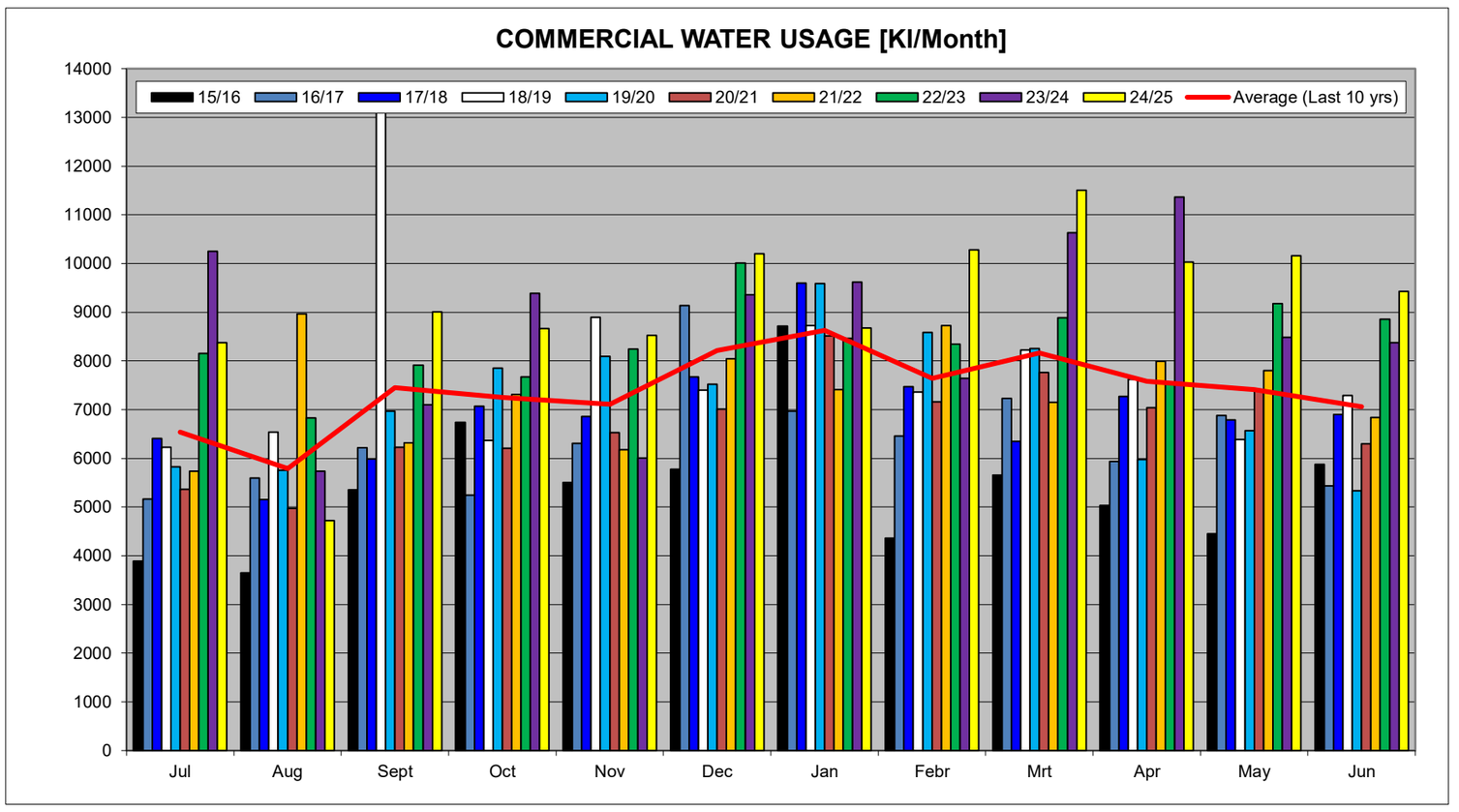
WATER BALANCE AND USAGE FOR GANSBAAI DISTRIBUTION SYSTEM

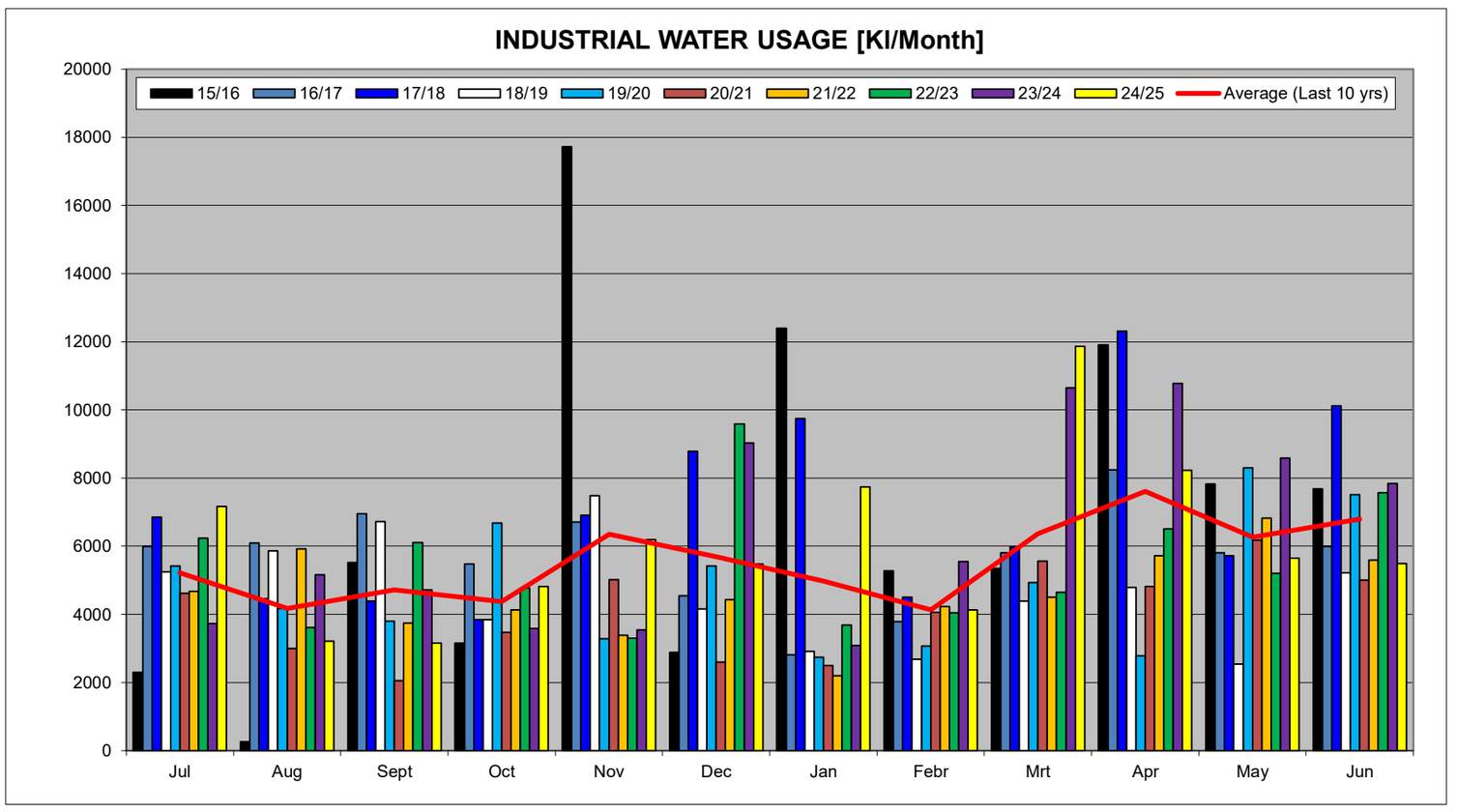


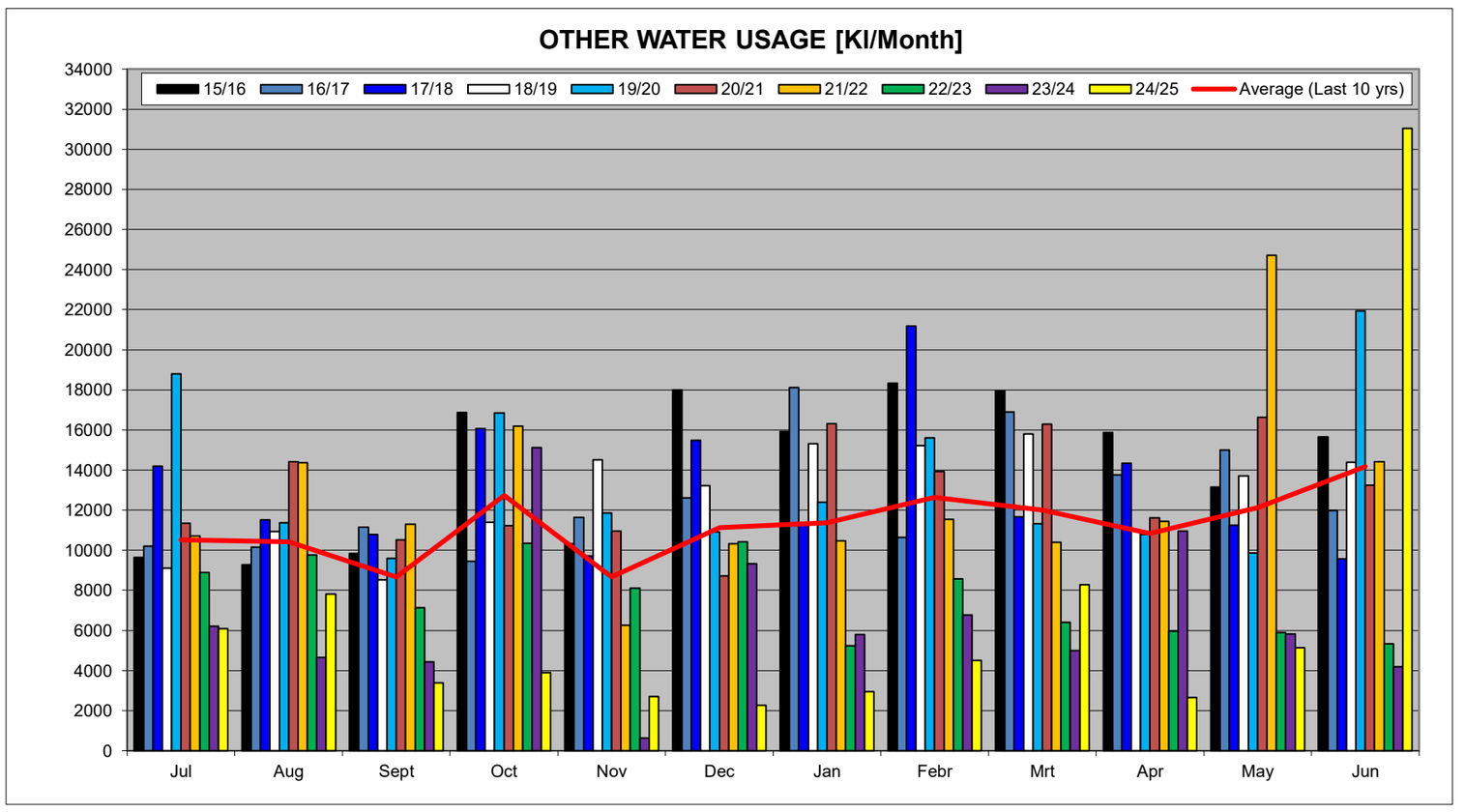




WATER BALANCE AND USAGE FOR GANSBAAI DISTRIBUTION SYSTEM







OVERSTRAND MUNICIPALITY

Baardskeerdersbos

Month	Year	BULK WATER SUPPLY								TREATED WATER SUPPLY																	
		Raw Water Supply			System Input Volume	Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)													
																			Apparent Losses			Real Losses				
		Borehole	Stream	Total Raw Water at WTW	Treated Water from WTW	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water from WTW	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
																			Estimated Percentages (Variables)							
																			2%	4%	1%	93%				
		[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
Jan'02																											
Feb'02																											
Mrt'02	2001/2002																										
Apr'02																											
May'02																											
Jun'02																											
Jul'02																											
Aug'02																											
Sep'02																											
Oct'02																											
Nov'02																											
Dec'02	2002/2003																										
Jan'03																											
Feb'03																											
Mrt'03																											
Apr'03																											
May'03																											
Jun'03																											
Jul'03																											
Aug'03																											
Sep'03																											
Oct'03																											
Nov'03																											
Dec'03	2003/2004																										
Jan'04																											
Feb'04																											
Mrt'04																											
Apr'04																											
May'04																											
Jun'04																											
Jul'04																											
Aug'04																											
Sep'04																											
Oct'04																											
Nov'04																											
Dec'04	2004/2005																										
Jan'05																											
Feb'05																											
Mrt'05																											
Apr'05																											
May'05					246					246																	
Jun'05					438					438																	
Jul'05					248					248																	
Aug'05					102					102																	
Sep'05					215					215	138	0	77	35.8%			0	0	2	3	1	71	77	35.6%		
Oct'05					232					232	139	0	93	40.1%			0	0	2	4	1	86	93	39.9%		
Nov'05					304					304	161	0	143	47.0%			0	1	3	6	1	132	142	46.8%		
Dec'05	2005/2006				508					508	273	0	235	46.3%	768	17.9%	0	1	5	9	2	218	234	46.1%	759	17.7%
Jan'06					762					762	455	0	307	40.3%			0	2	6	12	3	284	305	40.1%		
Feb'06					642					642	824	0	-182	-28.3%			0	1	-4	-7	-2	-170	-183	-28.5%		
Mrt'06					567					567	457	0	110	19.4%			0	1	2	4	1	101	109	19.2%		
Apr'06					413					413	403	0	10	2.4%			0	1	0	0	0	9	9	2.2%		
May'06					304					304	395	0	-91	-29.9%			0	1	-2	-4	-1	-85	-92	-30.1%		
Jun'06					345					345	279	0	66	19.1%			0	1	1	3	1	61	65	18.9%		
Jul'06					388					388	321	0	67	17.3%			0	1	1	3	1	62	66	17.1%		
Aug'06					669					669	217	0	452	67.6%			0	1	9	18	5	419	451	67.4%		
Sep'06					639					639																	
Oct'06					779					779																	
Nov'06					1318					1318																	
Dec'06	2006/2007				1334					1334					4563	52.3%									4546	52.1%
Jan'07					1159					1159	857	0	302	26.1%			0	2	6	12	3	279	300	25.9%		
Feb'07					959					959	809	0	150	15.6%			0	2	3	6	1	138	148	15.4%		
Mrt'07					1796					1796	577	0	1219	67.9%			0	4	24	49	12	1130	1215	67.7%		
Apr'07					995					995	604	0	391	39.3%			0	2	8	16	4	362	389	39.1%		
May'07					1445					1445	479	0	966	66.9%			0	3	19	39	10	896	963	66.7%		
Jun'07					1314					1314	298	0	1016	77.3%			0	3	20	41	10	942	1013	77.1%		
Jul'07					504					504	329	0	175	34.7%			0	1	3	7	2	162	174	34.5%		
Aug'07					601					601	270	0	331	55.1%			0	1	7	13	3	307	330	54.9%		
Sep'07					537					537	340	0	197	36.7%			0	1	4	8	2	182	196	36.5%		
Oct'07					789					789	369	0	420	53.2%			0	2	8	17	4	389	418	53.0%		
Nov'07					620					620	446	0	174	28.1%			0	1	3	7	2	161	173	27.9%		
Dec'07	2007/2008				1364					1364	417	0	947	69.4%	2869	31.3%	0	3	19	38	9	878	944	69.2%	2851	31.1%
Jan'08					1339					1339	725	0	614	45.9%			0	3	12	24	6	569	611	45.7%		
Feb'08					812					812	1117	0	-305	-37.6%			0	2	-6	-12	-3	-285	-307	-37.8%		
Mrt'08					909					909	667	0	242	26.6%			0	2	5	10	2	223	240	26.4%		
Apr'08					642					642	418	0	224	34.9%			0	1	4	9	2	207	223	34.7%		
May'08					527					527	630	0	-103	-19.5%			0	1	-2	-4	-1	-97	-104	-19.7%		
Jun'08					529					529	576	0	-47	-8.9%			0	1	-1	-2	0	-45	-48	-9.1%		
Jul'08					478					478	351	0	127	26.6%			0	1	3	5	1	117	126	26.4%		
Aug'08					223					223	430	0	-207	-92.8%			0	0	-4	-8	-2	-193	-207	-93.0%		
Sep'08					1751					1751	370	0	1381	78.9%			0	4	28	55	14	1281	1377	78.7%		
Oct'08					1963					1963	558	0	1405	71.6%			0	4	28	56	14	1303	1401	71.4%		
Nov'08					1331					1331	408	0	923	69.3%			0	3	18	37	9	856	920	69.1%		
Dec'08	2008/2009				1172					1172	425	0	747	63.7%	4915	39.4%	0	2	15	30	7	693	745	63.5%	4890	39.2%
Jan'09					1051					1051	991	0	60	5.7%			0	2	1	2	1	54	58	5.5%		
Feb'09					752					752	847	0	-95	-12.6%			0	2	-2	-4	-1	-90	-97	-12.8%		
Mrt'09					1130					1130	710	0	420	37.2%			0	2	8	17	4	388	418	37.0%		
Apr'09					1016					1016	882	0	134	13.2%			0	2	3	5	1	123	132	13.0%		
May'09					911					911	779	0	132	14.5%			0	2	3	5	1	121	130	14.3%		
Jun'09					711					711	823	0	-112	-15.8%			0	1	-2	-5	-1	-105	-113	-16.0%		
Jul'09					483					483	674	0	-191	-39.5%			0	1	-4	-8	-2	-179	-192	-39.7%		
Aug'09					427					427	447	0	-20	-4.7%			0	1	0	-1	0	-19	-21	-4.9%		
Sep'09					563					563	429	0	134	23.8%			0	1	3	5	1	124	133	23.6%		
Oct'09					463					463	216	0	247	53.3%			0	1	5	10	2	229	246	53.1%		
Nov'09					653					653	467	0	186	28.5%			0	1	4	7	2	172	185	28.3%		
Dec'09	2009/2010				1349					1349	558	0	791	58.6%	2722	25.8%	0	3	16	32	8	733	788	58.4%	2701	25.6%
Jan'10					2202					2202	915	0	1287	58.4%			0	4	26	51	13	1193	1283	58.2%		
Feb'10					991					991	1264	0	-273	-27.5%			0	2	-5	-11	-3	-256	-275	-27.7%		
Mrt'10					913					913	806	0	107	11.7%			0	2	2	4	1	98	105	11.5%		
Apr'10					1324					1324	685	0	639	48.3%			0	3	13	25	6	592	636	48.1%		
May'10					628					628	782	0	-154	-24.5%			0	1	-3	-6	-2	-144	-155	-24.7%		
Jun'10					535					535	566	0	-31	-5.8%			0	1	-1	-1	0	-30	-32	-6.0%		
Jul'10					705					705	321	0	384	54.5%			0	1	8	15	4	356	383	54.3%		
Aug'10					640					640	435	0	205	32.0%			0	1	4	8	2	189	204	31.8%		
Sep'10					635					635	398	0	237	37.3%			0	1	5	9	2	219	236	37.1%		
Oct'10					758					758	521	0	237	31.3%			0	2	5	9	2	219	235	31.1%		
Nov'10					900					900	359	0	541	60.1%			0	2	11	22	5	501	539	59.9%		
Dec'10	2010/2011				1071					1071	513	0	558	52.1%	4085	37.3%	0	2	11	22	6	517	556	51.9%	4063	37.1%
Jan'11					976					976	716	0	260	26.6%			0	2	5	10	3	240	258	26.4%		
Feb'11					1401					1401	678	0	723	51.6%			0	3	14	29	7	670	720	51.4%		
Mrt'11					1550					1550	805	0	745	48.1%			0	3	15	30	7	690	742	47.9%		
Apr'11					839					839	910	0	-71	-8.5%			0	2	-1	-3	-1	-68	-73	-8.7%		
May'11					825					825	644	0	181	21.9%			0	2	4	7	2	167	179	21.7%		
Jun'11					654					654	569	0	85	13.0%			0	1	2	3	1	78	84	12.8%		
Jul'11					605					605	293	0	312	51.6%			0	1	6	12	3	289	311	51.4%		
Aug'11					621					621	427	0	194	31.2%			0	1	4	8	2	179	193	31.0%		
Sep'11					608					608	304	0	304	50.0%			0	1	6	12	3	282	303	49.8%		
Oct'11					871					871	472	0	399	45.8%			0	2	8	16	4	369	397	45.6%		
Nov'11					610					610	466	0	144	23.6%			0	1	3	6	1	133	143	23.4%		
Dec'11	2011/2012				1014					1014	468	0	546	53.8%	2778	29.3%	0	2	11	22	5	506	544	53.6%	2759	29.1%
Jan'12					1194					1194	935	0	259	21.7%			0	2	5	10	3	239	257	21.5%		
Feb'12					1034					1034	767	0	267	25.8%			0	2	5	11	3	246	265	25.6%		
Mrt'12					1141					1141	962	0	179	15.7%			0	2	4	7	2	164	177	15.5%		
Apr'12					710					710	706	0	4	0.6%			0	1	0	0	0	2	3	0.4%		
May'12					568					568	522	0	46	8.1%			0	1	1	2	0	42	45	7.9%		
Jun'12					519					519	395	0	124	23.9%			0	1	2	5	1	114	123	23.7%		
Jul'12					487					487	384	0	103	21.1%			0	1	2	4	1	95	102	20.9%		
Aug'12					570					570	383	0	187	32.8%			0	1	4	7	2	173	186	32.6%		
Sep'12					710					710	336	0	374	52.7%			0	1	7	15	4	346	373	52.5%		
Oct'12					1065					1065	709	0	356	33.4%			0	2	7	14	4	329	354	33.2%		
Nov'12					1470					1470	301	0	1169	79.5%			0	3	23	47	12	1084	1166	79.3%		
Dec'12	2012/2013				1597					1597	594	0	1003	62.8%	4000	36.3%	0	3	20	40	10	930	1000	62.6%	3978	36.1%
Jan'13					1134					1134	1170	0	-36	-3.2%			0	2	-1	-2	0	-36	-38	-3.4%		
Feb'13					1041					1041	708	0	333	32.0%			0	2	7	13	3	308	331	31.8%		
Mrt'13					1053					1053	709	0	344	32.7%			0	2	7	14	3	318	342	32.5%		
Apr'13					777					777	761	0	16	2.1%			0	2	0	1	0	13	14	1.9%		
May'13					709					709	459	0	250	35.3%			0	1	5	10	2	231	249	35.1%		
Jun'13					406					406	505	0	-99	-24.4%			0	1	-2	-4	-1	-93	-100	-24.6%		
Jul'13					457					457	355	0	102	22.3%			0	1	2	4	1	94	101	22.1%		
Aug'13					512					512	339	0	173	33.8%			0	1	3	7	2	160	172	33.6%		
Sep'13					1107					1107	343	0	764	69.0%			0	2	15	30	8	708	762	68.8%		
Oct'13					1630					1630	378	0	1252	76.8%			0	3	25	50	12	1161	1249	76.6%		
Nov'13					1131					1131	463	0	668	59.1%			0	2	13	27	7	619	666	58.9%		
Dec'13	2013/2014				1216					1216	446	0	770	63.3%	5665	48.6%	0	2	15	31	8	714	768	63.1%	5642	48.4%
Jan'14					1022					1022	906	0	116	11.4%			0	2	2	5	1	106	114	11.2%		
Feb'14					1017					1017	423	0	594	58.4%			0	2	12	24	6	551	592	58.2%		
Mrt'14					844					844	850	0	-6	-0.7%			0	2	0	0	0	-7	-8	-0.9%		
Apr'14					302					302	523	0	-221	-73.2%			0	1	-4	-9	-2	-206	-222	-73.4%		
May'14		2514	0	2514	1391					1391	565	0	826	59.4%			0	3	16	33	8	766	823	59.2%		
Jun'14		1254	0	1254	1023					1023	396	0	627	61.3%			0	2	12	25	6	581	625	61.1%		
Jul'14		1321	0	1321	988	333	25.2			988	361	0	627	63.5%			0	2	13	25	6	581	625	63.3%		
Aug'14		983	0	983	697	286	29.1			697	306	0	391	56.1%			0	1	8	16	4	362	390	55.9%		
Sep'14		1232	0	1232	882	350	28.4			882	349	0	533	60.4%			0	2	11	21	5	494	531	60.2%		
Oct'14		1595	0	1595	1120	475	29.8			1120	368	0	752	67.1%			0	2	15	30	7	697	750	66.9%		
Nov'14		1646	0	1646	1268	378	23.0			1268	442	0	826	65.1%			0	3	16	33	8	766	823	64.9%		
Dec'14	2014/2015	1838	0	1838	1498	340	18.5	3953	22.6%	1498	838	0	660	44.1%	6251	46.3%	0	3	13	26	7	611	657	43.9%	6224	46.1%
Jan'15		1865	0	1865	1519	346	18.6			1519	1000	0	519	34.2%			0	3	10	21	5	480	516	34.0%		
Feb'15		1419	0	1419	1179	240	16.9			1179	759	0	420	35.6%			0	2	8	17	4	388	418	35.4%		
Mrt'15		1622	0	1622	1340	282	17.4			1340	753	0	587	43.8%			0	3	12	23	6	543	584	43.6%		
Apr'15		1496	0	1496	1138	358	23.9			1138	956	0	182	16.0%			0	2	4	7	2	167	180	15.8%		
May'15		1481	0	1481	1109	372	25.1			1109	606	0	503	45.4%			0	2	10	20	5	466	501	45.2%		
Jun'15		968	0	968	775	193	19.9			775	524	0	251	32.4%			0	2	5	10	2	232	249	32.2%		
Jul'15		817	0	817	680	137	16.8			680	607	0	73	10.7%			0	1	1	3	1	67	72	10.5%		
Aug'15		857	0	857	705	152	17.7			705	529	0	176	25.0%			0	1	3	7	2	162	175	24.8%		
Sep'15		963	0	963	847	116	12.0			847	263	0	584	68.9%			0	2	12	23	6	542	582	68.7%		
Oct'15		1157	0	1157	923	234	20.2			923	540	0	383	41.5%			0	2	8	15	4	354	381	41.3%		
Nov'15		1122	0	1122	933	189	16.8			933	596	0	337	36.1%			0	2	7	13	3	312	335	35.9%		
Dec'15	2015/2016	1610	0	1610	1241	369	22.9	3736	20.3%	1241	556	0	685	55.2%	6654	45.4%	0	2	14	27	7	635	683	55.0%	6625	45.2%
Jan'16		3686	0	3686	2802	884	24.0			2802	1260	0	1542	55.0%			0	6	31	61	15	1429	1536	54.8%		
Feb'16		2076	0	2076	1552	524	25.2			1552	816	0	736	47.4%			0	3	15	29	7	682	733	47.2%		
Mrt'16		2188	0	2188	1760	428	19.6			1760	955	0	805	45.7%			0	4	16	32	8	745	801	45.5%		
Apr'16		1484	0	1484	1213	271	18.3			1213	810	0	403	33.2%			0	2	8	16	4	373	401	33.0%		
May'16		1120	0	1120	907	213	19.0			907	640	0	267	29.4%			0	2	5	11	3	247	265	29.2%		
Jun'16		1300	0	1300	1081	219	16.8			1081	418	0	663	61.3%			0	2	13	26	7	615	661	61.1%		

OVERSTRAND MUNICIPALITY

Baardskeerdersbos

Month	Year	BULK WATER SUPPLY								TREATED WATER SUPPLY																	
		Raw Water Supply			System Input Volume	Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)													
																			Apparent Losses			Real Losses				
		Borehole	Stream	Total Raw Water at WTW	Treated Water from WTW	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water from WTW	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
																			Estimated Percentages (Variables)							
																			2%	4%	1%	93%				
		[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
Jul'16	2016/2017	1162	0	1162	963	199	17.1	2967	18.5%	963	514	0	449	46.6%	5047	38.7%	0	2	9	18	4	416	447	46.4%	5021	38.5%
Aug'16		1211	0	1211	949	262	21.6			949	335	0	614	64.7%			0	2	12	24	6	569	612	64.5%		
Sep'16		1239	0	1239	1027	212	17.1			1027	627	0	400	38.9%			0	2	8	16	4	370	398	38.7%		
Oct'16		1347	0	1347	1103	244	18.1			1103	480	0	623	56.5%			0	2	12	25	6	577	621	56.3%		
Nov'16		1277	0	1277	1074	203	15.9			1074	627	0	447	41.6%			0	2	9	18	4	414	445	41.4%		
Dec'16		1996	0	1996	1646	350	17.5			1646	586	0	1060	64.4%			0	3	21	42	11	983	1057	64.2%		
Jan'17		1687	0	1687	1424	263	15.6			1424	1241	0	183	12.9%			0	3	4	7	2	168	180	12.7%		
Feb'17		1327	0	1327	1104	223	16.8			1104	835	0	269	24.4%			0	2	5	11	3	248	267	24.2%		
Mrt'17		1516	0	1516	1211	305	20.1			1211	690	0	521	43.0%			0	2	10	21	5	482	519	42.8%		
Apr'17		1092	0	1092	880	212	19.4			880	798	0	82	9.3%			0	2	2	3	1	75	80	9.1%		
May'17		1097	0	1097	864	233	21.2			864	748	0	116	13.4%			0	2	2	5	1	106	114	13.2%		
Jun'17		1068	0	1068	807	261	24.4			807	524	0	283	35.1%			0	2	6	11	3	262	281	34.9%		
Jul'17	2017/2018	1018	0	1018	843	175	17.2	2446	14.3%	843	573	0	270	32.0%	6752	45.9%	0	2	5	11	3	250	268	31.8%	6723	45.7%
Aug'17		1117	0	1117	935	182	16.3			935	548	0	387	41.4%			0	2	8	15	4	358	385	41.2%		
Sep'17		1136	0	1136	982	154	13.6			982	404	0	578	58.9%			0	2	12	23	6	536	576	58.7%		
Oct'17		1636	0	1636	1422	214	13.1			1422	607	0	815	57.3%			0	3	16	32	8	755	812	57.1%		
Nov'17		1651	0	1651	1345	306	18.5			1345	777	0	568	42.2%			0	3	11	23	6	526	565	42.0%		
Dec'17		2193	0	2193	1799	394	18.0			1799	627	0	1172	65.1%			0	4	23	47	12	1087	1168	64.9%		
Jan'18		1847	0	1847	1621	226	12.2			1621	1255	0	366	22.6%			0	3	7	15	4	337	363	22.4%		
Feb'18		1806	0	1806	1614	192	10.6			1614	674	0	940	58.2%			0	3	19	37	9	871	937	58.0%		
Mrt'18		1426	0	1426	1240	186	13.0			1240	650	0	590	47.6%			0	2	12	24	6	546	588	47.4%		
Apr'18		1323	0	1323	1136	187	14.1			1136	891	0	245	21.6%			0	2	5	10	2	226	243	21.4%		
May'18		1048	0	1048	923	125	11.9			923	491	0	432	46.8%			0	2	9	17	4	400	430	46.6%		
Jun'18		953	0	953	848	105	11.0			848	459	0	389	45.9%			0	2	8	15	4	360	387	45.7%		
Jul'18	2018/2019	1005	0	1005	876	129	12.8	3101	17.2%	876	463	0	413	47.1%	7509	50.1%	0	16	8	21	4	364	397	45.3%	7313	48.8%
Aug'18		1275	0	1275	1060	215	16.9			1060	464	0	596	56.2%			0	16	12	21	6	542	580	54.7%		
Sep'18		1087	0	1087	828	259	23.8			828	550	0	278	33.6%			0	16	5	25	3	229	262	31.6%		
Oct'18		1297	0	1297	1104	193	14.9			1104	516	0	588	53.3%			0	16	11	23	6	531	572	51.8%		
Nov'18		1416	0	1416	1189	227	16.0			1189	448	0	741	62.3%			0	16	14	20	7	683	725	61.0%		
Dec'18		1912	0	1912	1568	344	18.0			1568	756	0	812	51.8%			0	16	16	34	8	738	796	50.7%		
Jan'19		1924	0	1924	1588	336	17.5			1588	1044	0	544	34.3%			0	16	11	47	5	465	528	33.2%		
Feb'19		1817	0	1817	1510	307	16.9			1510	522	0	988	65.4%			0	16	19	23	10	919	972	64.4%		
Mrt'19		1763	0	1763	1484	279	15.8			1484	703	0	781	52.6%			0	16	15	31	8	710	765	51.5%		
Apr'19		1546	0	1546	1357	189	12.2			1357	901	0	456	33.6%			0	16	9	40	4	386	440	32.4%		
May'19		1598	0	1598	1306	292	18.3			1306	492	0	814	62.3%			0	16	16	22	8	752	798	61.1%		
Jun'19		1437	0	1437	1106	331	23.0			1106	608	0	498	45.0%			0	16	10	27	5	440	482	43.6%		
Jul'19	2019/2020	1477	0	1477	1248	229	15.5	2637	14.4%	1248	661	0	587	47.0%	6941	44.3%	1	8	12	24	6	536	578	46.3%	6834	43.6%
Aug'19		1317	0	1317	1101	216	16.4			1101	539	0	562	51.0%			1	8	11	20	6	517	553	50.2%		
Sep'19		1340	0	1340	1123	217	16.2			1123	672	0	451	40.2%			1	8	9	25	4	404	442	39.4%		
Oct'19		1556	0	1556	1285	271	17.4			1285	642	0	643	50.0%			1	8	13	24	6	591	634	49.3%		
Nov'19		1470	0	1470	1249	221	15.0			1249	677	0	572	45.8%			1	8	11	25	6	521	563	45.1%		
Dec'19		2042	0	2042	1830	212	10.4			1830	804	0	1026	56.1%			1	8	20	30	10	957	1017	55.6%		
Jan'20		1829	0	1829	1609	220	12.0			1609	1227	0	382	23.7%			1	8	7	45	4	317	373	23.2%		
Feb'20		1353	0	1353	1186	167	12.3			1186	848	0	338	28.5%			1	8	7	31	3	288	329	27.7%		
Mrt'20		1762	0	1762	1509	253	14.4			1509	763	0	746	49.4%			1	8	15	28	7	687	737	48.8%		
Apr'20		1568	0	1568	1319	249	15.9			1319	669	0	650	49.3%			1	8	13	25	6	597	641	48.6%		
May'20		1453	0	1453	1211	242	16.7			1211	652	0	559	46.2%			1	8	11	24	6	510	550	45.4%		
Jun'20		1144	0	1144	1004	140	12.2			1004	579	0	425	42.3%			1	8	8	21	4	382	416	41.4%		
Jul'20	2020/2021	1240	0	1240	1060	180	14.5	2603	14.7%	1060	421	0	639	60.3%	7918	52.3%	0	4	13	28	6	588	635	59.9%	7871	52.0%
Aug'20		1343	0	1343	1140	203	15.1			1140	457	0	683	59.9%			0	4	14	31	7	628	679	59.6%		
Sep'20		1282	0	1282	1056	226	17.6			1056	537	0	519	49.1%			0	4	10	36	5	463	515	48.8%		
Oct'20		1600	0	1600	1370	230	14.4			1370	422	0	948	69.2%			0	4	19	28	9	887	944	68.9%		
Nov'20		1526	0	1526	1310	216	14.2			1310	461	0	849	64.8%			0	4	17	31	8	789	845	64.5%		
Dec'20		1519	0	1519	1288	231	15.2			1288	689	0	599	46.5%			0	4	12	46	6	531	595	46.2%		
Jan'21		2169	0	2169	1940	229	10.6			1940	951	0	989	51.0%			0	4	20	64	10	891	985	50.8%		
Feb'21		2118	0	2118	1857	261	12.3			1857	589	0	1268	68.3%			0	4	25	40	13	1186	1264	68.1%		
Mrt'21		1310	0	1310	1158	152	11.6			1158	789	0	369	31.9%			0	4	7	53	4	301	365	31.5%		
Apr'21		1432	0	1432	1178	254	17.7			1178	611	0	567	48.1%			0	4	11	41	6	505	563	47.8%		
May'21		1230	0	1230	977	253	20.6			977	723	0	254	26.0%			0	4	5	49	3	194	250	25.6%		
Jun'21		972	0	972	804	168	17.3			804	570	0	234	29.1%			0	4	5	38	2	185	230	28.6%		
Jul'21	2021/2022	1126	0	1126	922	204	18.1	3202	19.0%	922	466	0	456	49.5%	5883	43.1%	0	12	9	31	4	399	444	48.2%	5738	42.1%
Aug'21		920	0	920	749	171	18.6			749	487	0	262	35.0%			0	12	5	33	2	210	250	33.4%		
Sep'21		902	0	1066	902	164	15.4			902	519	0	383	42.5%			0	12	7	35	4	325	371	41.1%		
Oct'21		1196	0	1196	1015	181	15.1			1015	775	0	240	23.6%			0	12	5	52	2	169	228	22.5%		
Nov'21		1356	0	1356	1078	278	20.5			1078	573	0	505	46.8%			0	12	10	39	5	439	493	45.7%		
Dec'21		1552	0	1552	1194	358	23.1			1194	505	0	689	57.7%			0	12	14	34	7	623	677	56.7%		
Jan'22		1992	0	1992	1627	365	18.3			1627	835	0	792	48.7%			0	12	16	56	8	700	780	47.9%		
Feb'22		1863	0	1863	1458	405	21.7			1458	770	0	688	47.2%			0	12	14	52	7	604	676	46.4%		
Mrt'22		1624	0	1624	1360	264	16.3			1360	873	0	487	35.8%			0	12	9	59	5	402	475	34.9%		
Apr'22		1580	0	1580	1272	308	19.5			1272	856	0	416	32.7%			0	12	8	58	4	334	404	31.8%		
May'22		1430	0	1430	1152	278	19.4			1152	538	0	614	53.3%			0	12	12	36	6	548	602	52.3%		
Jun'22		1133	0	1133	907	226	19.9			907	556	0	351	38.7%			0	12	7	38	3	291	339	37.4%		
Jul'22	2022/2023	1261	0	1261	1002	259	20.5	2229	11.6%	1002	545	0	457	45.6%	8125	47.7%	4	36	8	37	4	367	417	41.6%	7640	44.8%
Aug'22		1027	0	1027	853	174	16.9			853	468	0	385	45.1%			4	36	7	32	3	303	345	40.4%		
Sep'22		1237	0	1237	1157	80	6.5			1157	602	0	555	48.0%			4	36	10	41	5	459	515	44.5%		
Oct'22		1976	0	1976	1660	316	16.0			1660	538	0	1122	67.6%			4	36	22	36	11	1013	1082	65.2%		
Nov'22		2097	0	2097	1788	309	14.7			1788	825	0	963	53.9%			4	36	18	56	9	839	923	51.6%		
Dec'22		2135	0	2135	1900	235	11.0			1900	1034	0	866	45.6%			4	36	17	70	8	731	826	43.5%		
Jan'23		2150	0	2150	1985	165	7.7			1985	1032	0	953	48.0%			4	36	18	70	9	816	913	46.0%		
Feb'23		1658	0	1658	1489	169	10.2			1489	864	0	625	42.0%			4	36	12	58	6	509	585	39.3%		
Mrt'23		1580	0	1580	1323	257	16.3			1323	818	0	505	38.2%			4	36	9	55	5	395	465	35.1%		
Apr'23		1599	0	1599	1492	107	6.7			1492	745	0	747	50.1%			4	36	14	50	7	635	707	47.4%		
May'23		1416	0	1416	1316	100	7.1			1316	713	0	603	45.8%			4	36	11	48	6	498	563	42.8%		
Jun'23		1138	0	1138	1080	58	5.1			1080	736	0	344	31.9%			4	36	6	50	3	245	304	28.1%		
Jul'23	2023/2024	1275	0	1275	1108	167	13.1	3078	13.4%	1108	739	0	369	33.3%	8546	43.1%	1	25	7	50	3	284	344	31.0%	8243	41.6%
Aug'23		1578	0	1578	1347	231	14.6			1347	540	0	807	59.9%			1	25	16	36	8	722	782	58.0%		
Sep'23		1521	0	1521	1336	185	12.2			1336	755	0	581	43.5%			1	25	11	51	6	488	556	41.6%		
Oct'23		1678	0	1678	1399	279	16.6			1399	799	0	600	42.9%			1	25	11	54	6	504	575	41.1%		
Nov'23		1927	0	1927	1720	207	10.7			1720	854	0	866	50.3%			1	25	17	58	8	758	841	48.9%		
Dec'23		2657	0	2657	2311	346	13.0			2311	1162	0	1149	49.7%			1	25	22	78	11	1012	1124	48.6%		
Jan'24		2801	0	2801	2197	604	21.6			2197	1315	0	882	40.1%			1	25	17	89	9	742	857	39.0%		
Feb'24		1854	0	1854	1755	99	5.3			1755	1237	0	518	29.5%			1	25	10	83	5	394	493	28.1%		
Mrt'24		2422	0	2422	2118	304	12.6			2118	1211	0	907	42.8%			1	25	18	82	9	774	882	41.6%		
Apr'24		1664	0	1664	1385	279	16.8			1385	890	0	495	35.7%			1	25	9	60	5	396	470	33.9%		
May'24		1938	0	1938	1734	204	10.5			1734	921	0	813	46.9%			1	25	16	62	8	702	788	45.4%		
Jun'24		1573	0	1573	1400	173	11.0			1400	841	0	559	39.9%			1	25	11	57	5	461	534	38.1%		
Jul'24	2024/2025	1403	0	1403	1269	134	9.6	2188	10.1%	1269	868	0	401	31.6%	6771	34.7%	2	16	8	59	4	314	384	30.2%	6565	33.7%
Aug'24		1476	0	1476	1379	97	6.6			1379	522	0	857	62.1%			2	16	17	35	8	779	840	60.9%		
Sep'24		1318	0	1318	1189	129	9.8			1189	813	0	376	31.6%			2	16	7	55	4	293	359	30.2%		
Oct'24		1923	0	1923	1707	216	11.2			1707	928	0	779	45.6%			2	16	15	63	8	676	762	44.6%		
Nov'24		1839	0	1839	1711	128	7.0			1711	1044	0	667	39.0%			2	16	13	70	6	560	650	38.0%		
Dec'24		2337	0	2337	2189	148	6.3			2189	1012	0	1177	53.8%			2	16	23	68	12	1057	1160	53.0%		
Jan'25		2332	0	2332	2107	225	9.6			2107	1945	0	162	7.7%			2	16	3	131	1	9	145	6.9%		
Feb'25		2240	0	2240	2071	169	7.5			2071	1317	0	754	36.4%			2	16	15	89	7	626	737	35.6%		
Mrt'25		2002	0	2002	1757	245	12.2			1757	1247	0	510	29.0%			2	16	10	84	5	394	493	28.0%		
Apr'25		1720	0	1720	1544	176	10.2			1544	1155	0	389	25.2%			2	16	7	78	4	283	372	24.1%		
May'25		1587	0	1587	1376	211	13.3			1376	1036	0	340	24.7%			2	16	6	70	3	243	323	23.5%		
Jun'25		1518	0	1518	1208	310	20.4			1208	849	0	359	29.7%			2	16	7	57	3	274	342	28.3%		

ANNUAL TOTALS

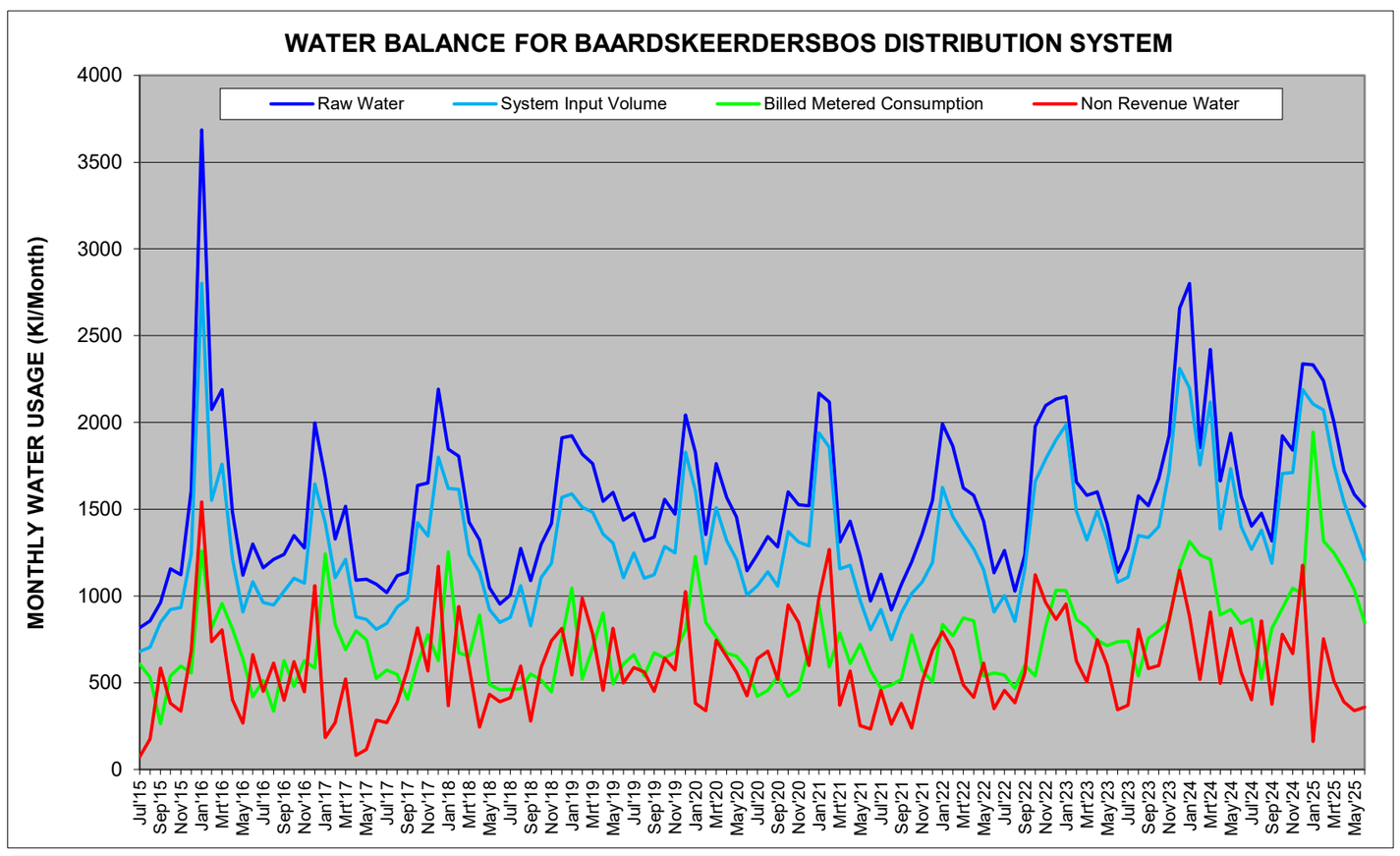
Year	Raw Water Supply			System Input Volume	Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)													
																		Apparent Losses			Real Losses				
	Borehole	Stream	Total Raw Water at WTW	Treated Water from WTW	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water from WTW	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
2005/2006				4642					4642	3524	0			768	17.9%	0	9	15	30	8	706			759	17.7%
2006/2007				12795					12795	4162	0			4563	52.3%	0	17	91	182	45	4227			4546	52.1%
2007/2008				9173					9173	6304	0			2869	31.3%	0	18	57	114	29	2651			2851	31.1%
2008/2009				12489					12489	7574	0			4915	39.4%	0	25	98	196	49	4548			4890	39.2%
2009/2010				10531					10531	7809	0			2722	25.8%	0	21	54	108	27	2512			2701	25.6%
2010/2011				10954					10954	6869	0			4085	37.3%	0	22	81	163	41	3779			4063	37.1%
2011/2012				9495					9495	6717	0			2778	29.3%	0	19	55	110	28	2566			2759	29.1%
2012/2013				11019					11019	7019	0			4000	36.3%	0	22	80	159	40	3700			3978	36.1%
2013/2014				11652					11652	5987	0			5665	48.6%	0	23	113	226	56	5247			5642	48.4%
2014/2015	17466	0	17466	13513			3953	22.6%	13513	7262	0			6251	46.3%	0	27	124	249	62	5788			6224	46.1%
2015/2016	18380	0	18380	14644			3736	20.3%	14644	7990	0			6654	45.4%	0	29	132	265	66	6161			6625	45.2%
2016/2017	16019	0	16019	13052			2967	18.5%	13052	8005	0			5047	38.7%	0	26	100	201	50	4669			5021	38.5%
2017/2018	17154	0	17154	14708			2446	14.3%	14708	7956	0			6752	45.9%	0	29	134	269	67	6252			6723	45.7%
2018/2019	18077	0	18077	14976			3101	17.2%	14976	7467	0			7509	50.1%	0	196	146	334	73	6760			7313	48.8%
2019/2020	18311	0	18311	15674			2637	14.4%	15674	8733	0			6941	44.3%	12	95	137	321	68	6308			6834	43.6%
2020/2021	17741	0	17741	15138			2603	14.7%	15138	7220	0			7918	52.3%	1	46	157	487	79	7148			7871	52.0%
2021/2022	16674	0	16838	13636			3202	19.0%	13636	7753	0			5883	43.1%	3	142	115	523	57	5043			5738	42.1%
2022/2023	19274	0	19274	17045			2229	11.6%	17045	8920	0			8125	47.7%	50	434	153	602	76	6809			7640	44.8%
2023/2024	22888	0	22888	19810			3078	13.4%	19810	11264	0			8546	43.1%	8	295	165	760	82	7235			8243	41.6%
2024/2025	21695	0	21695	19507			2188	10.1%	19507	12736	0			6771	34.7%	20	187	131	859	66	5509			6565	33.7%

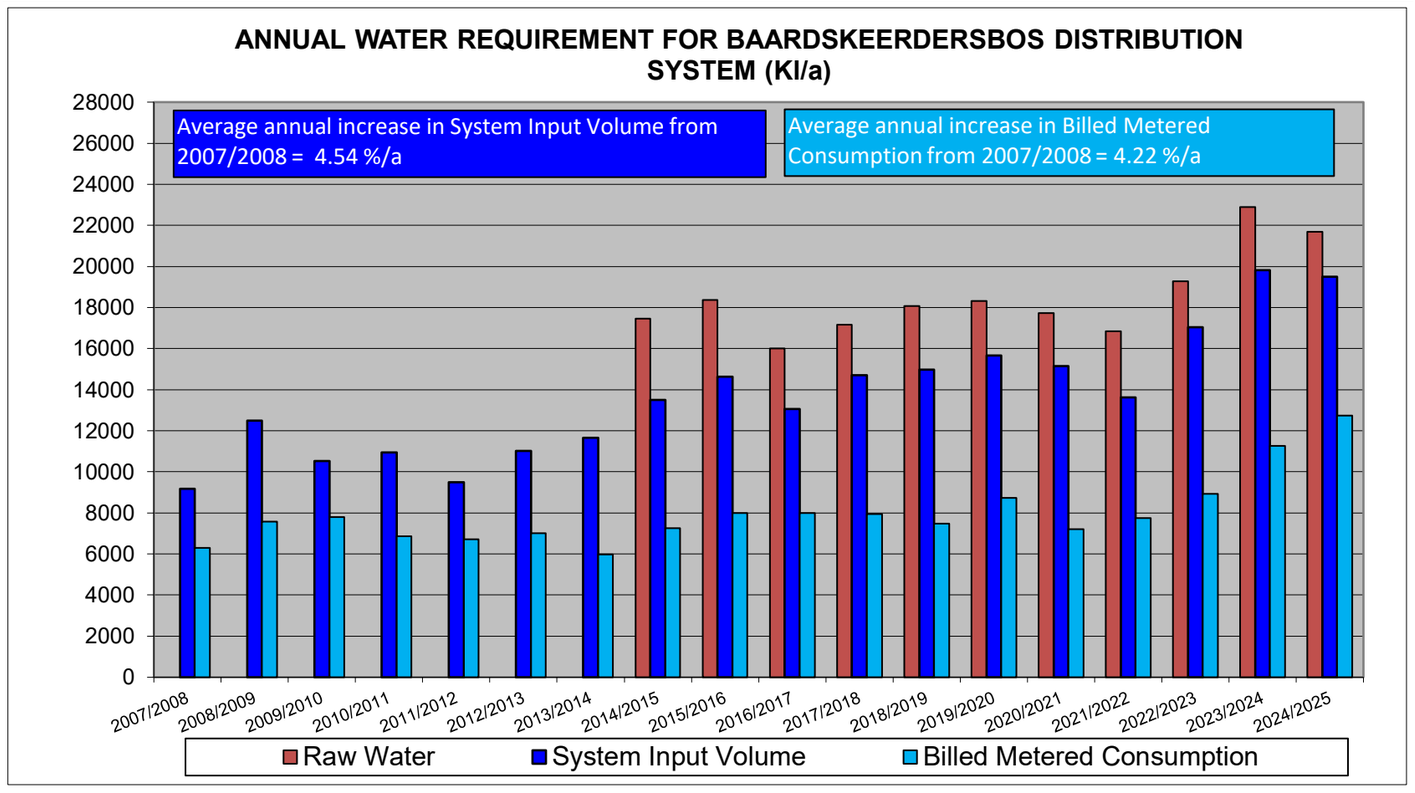
Water Balance Components		Water Balance Volumes											
Component	Units	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
Consumer Units	Number of connections	66	66	67	67	67	68	70	77	84	91	98	100
System Input Volume	l/connection/day	484	560	599	534	601	603	613	539	445	513	554	534
Average Billed Metered Cons.	l/connection/day	249	301	327	327	325	301	342	257	253	269	315	349
Non-Revenue Water	l/connection/day	235	259	272	206	276	303	272	282	192	245	239	186

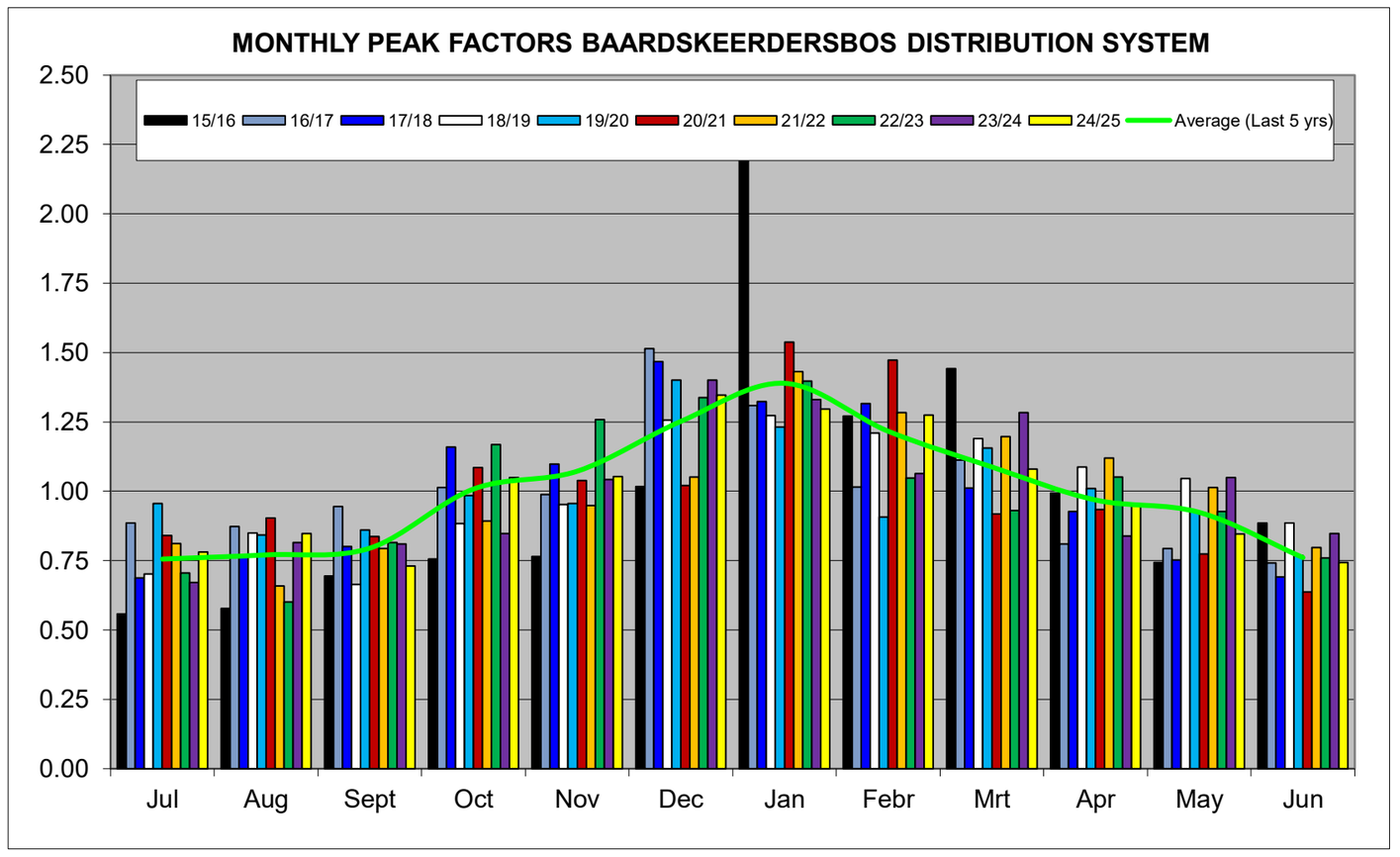
Water Balance Components		Percentage Change in Volumes in l/connection/day, year on year											
Component	Units	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
System Input Volume	% Change in Volume	-	15.68%	7.02%	-10.87%	12.69%	0.32%	1.67%	-12.20%	-17.43%	15.38%	7.92%	-3.50%
Average Billed Metered Cons.	% Change in Volume	-	20.99%	8.66%	0.19%	-0.61%	-7.53%	13.61%	-24.84%	-1.57%	6.20%	17.26%	10.81%
Non-Revenue Water	% Change in Volume	-	10.07%	5.12%	-24.15%	33.78%	9.58%	-10.21%	3.71%	-31.89%	27.49%	-2.33%	-22.35%

Water Balance Components		Did volume in l/connection/day Rise or Fall, year on year?											
Component	Units	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
System Input Volume	Rise or Fall	-	Rise	Rise	Fall	Rise	Rise	Rise	Fall	Fall	Rise	Rise	Fall
Average Billed Metered Cons.	Rise or Fall	-	Rise	Rise	Rise	Fall	Fall	Rise	Fall	Fall	Rise	Rise	Rise
Non-Revenue Water	Rise or Fall	-	Rise	Rise	Fall	Rise	Rise	Fall	Rise	Fall	Rise	Fall	Fall

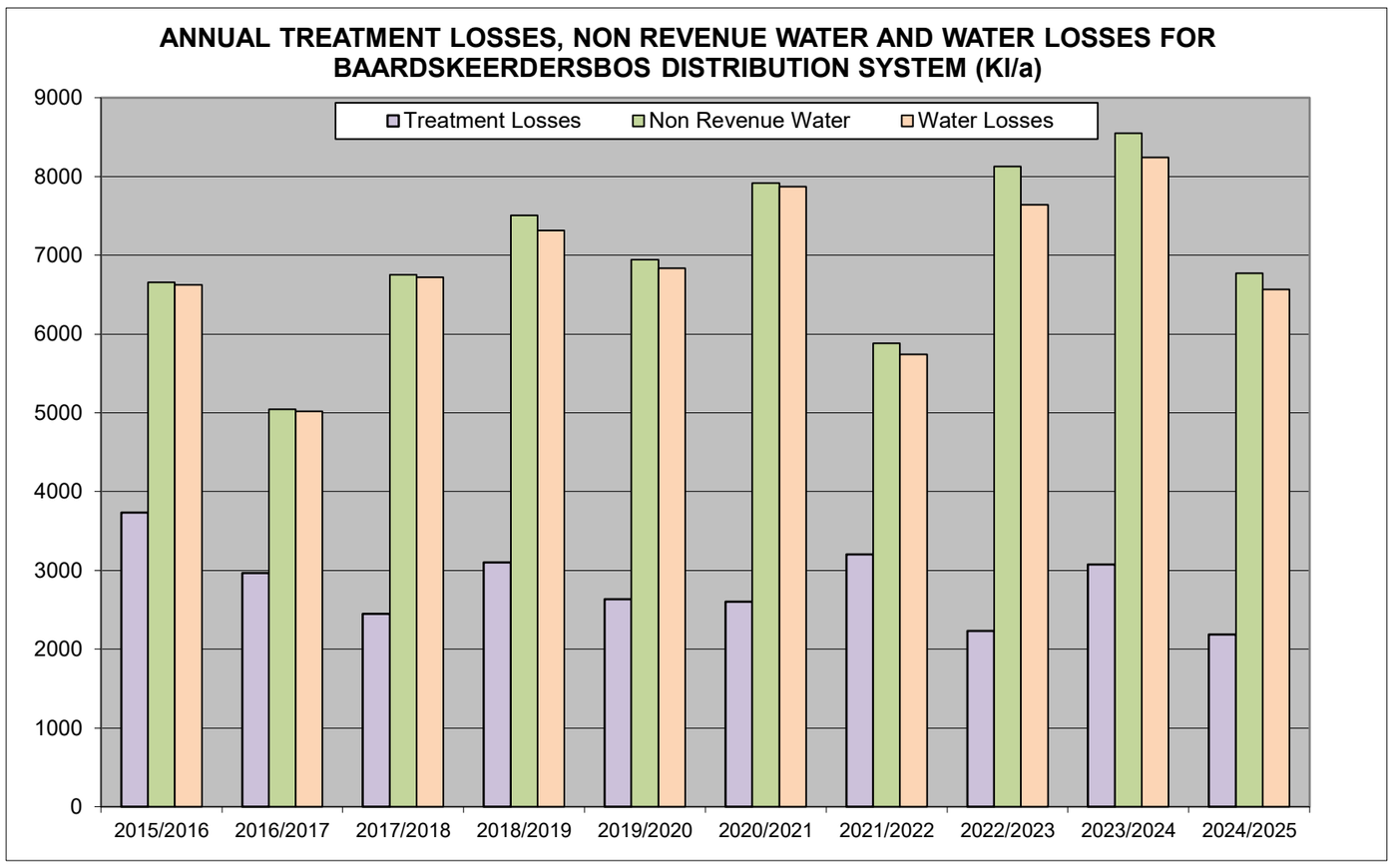
WATER BALANCE AND USAGE FOR THE BAARDSKEERDERSBOS DISTRIBUTION SYSTEM

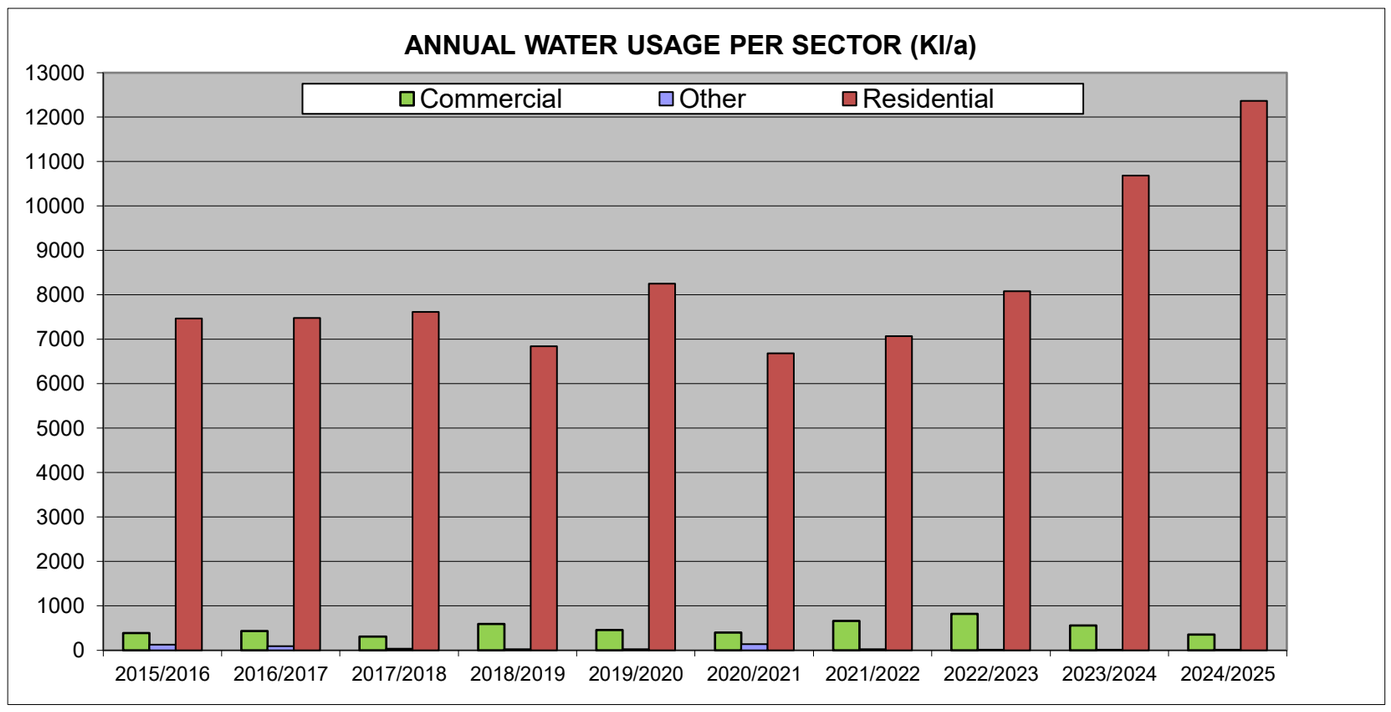


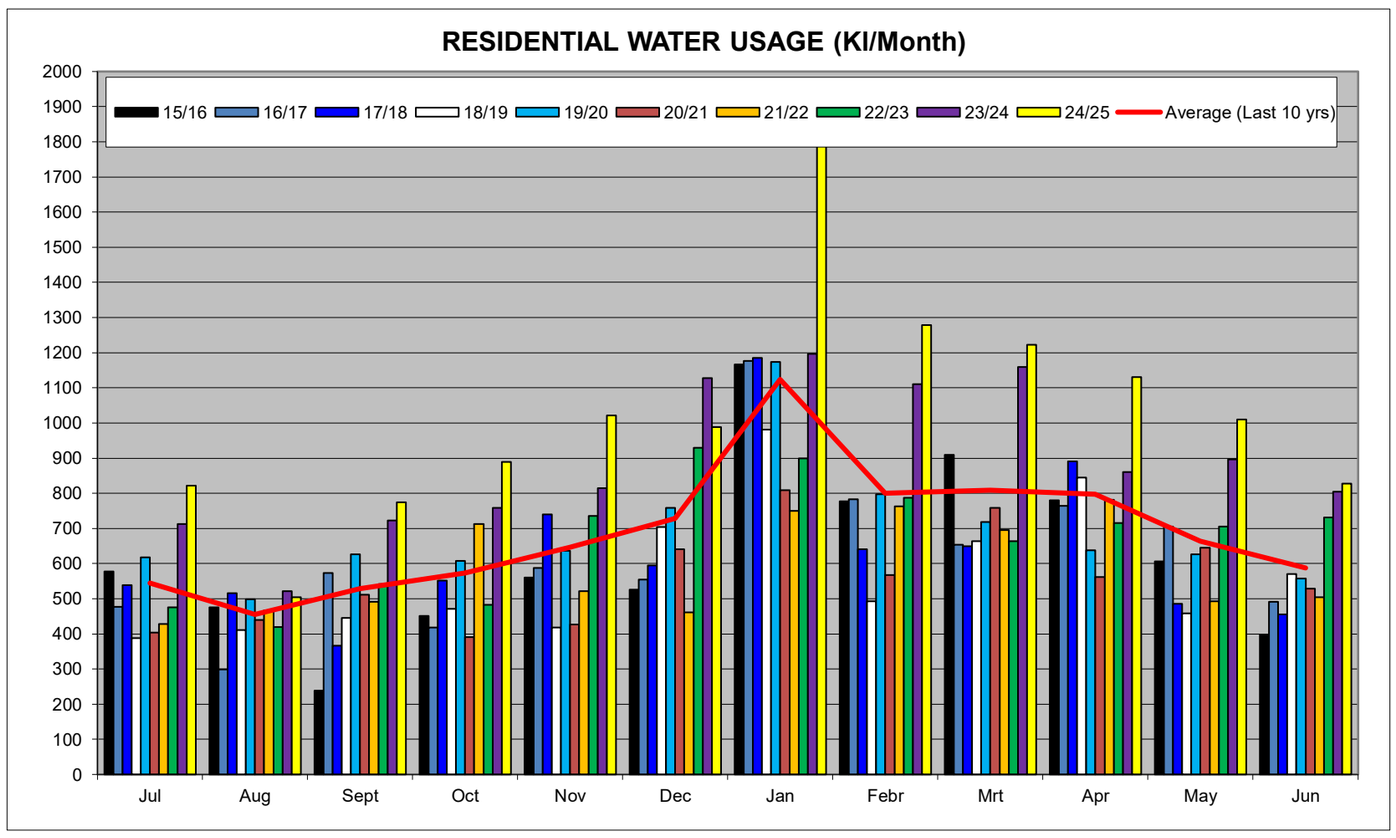




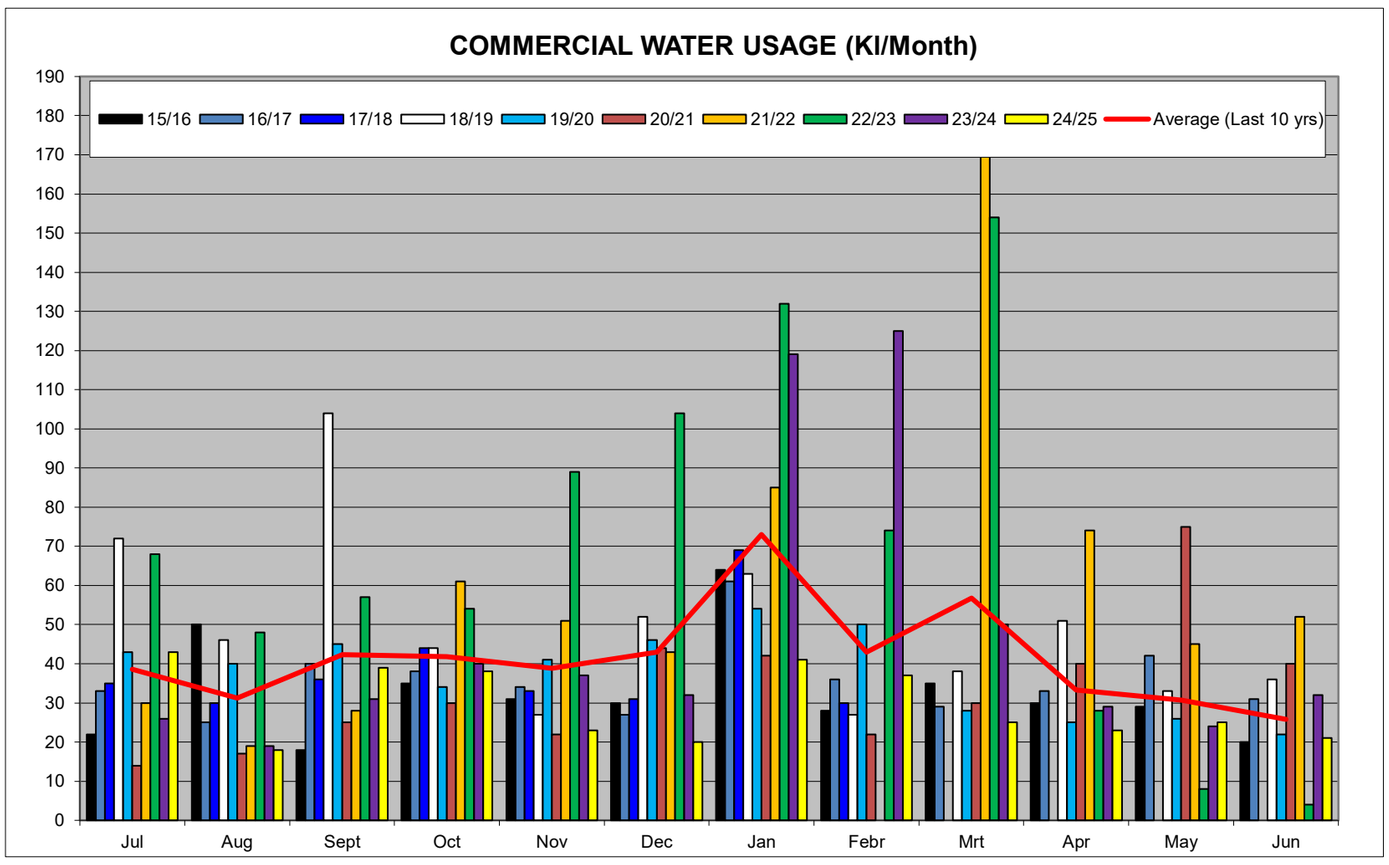
WATER BALANCE AND USAGE FOR THE BAARDSKEERDERSBOS DISTRIBUTION SYSTEM

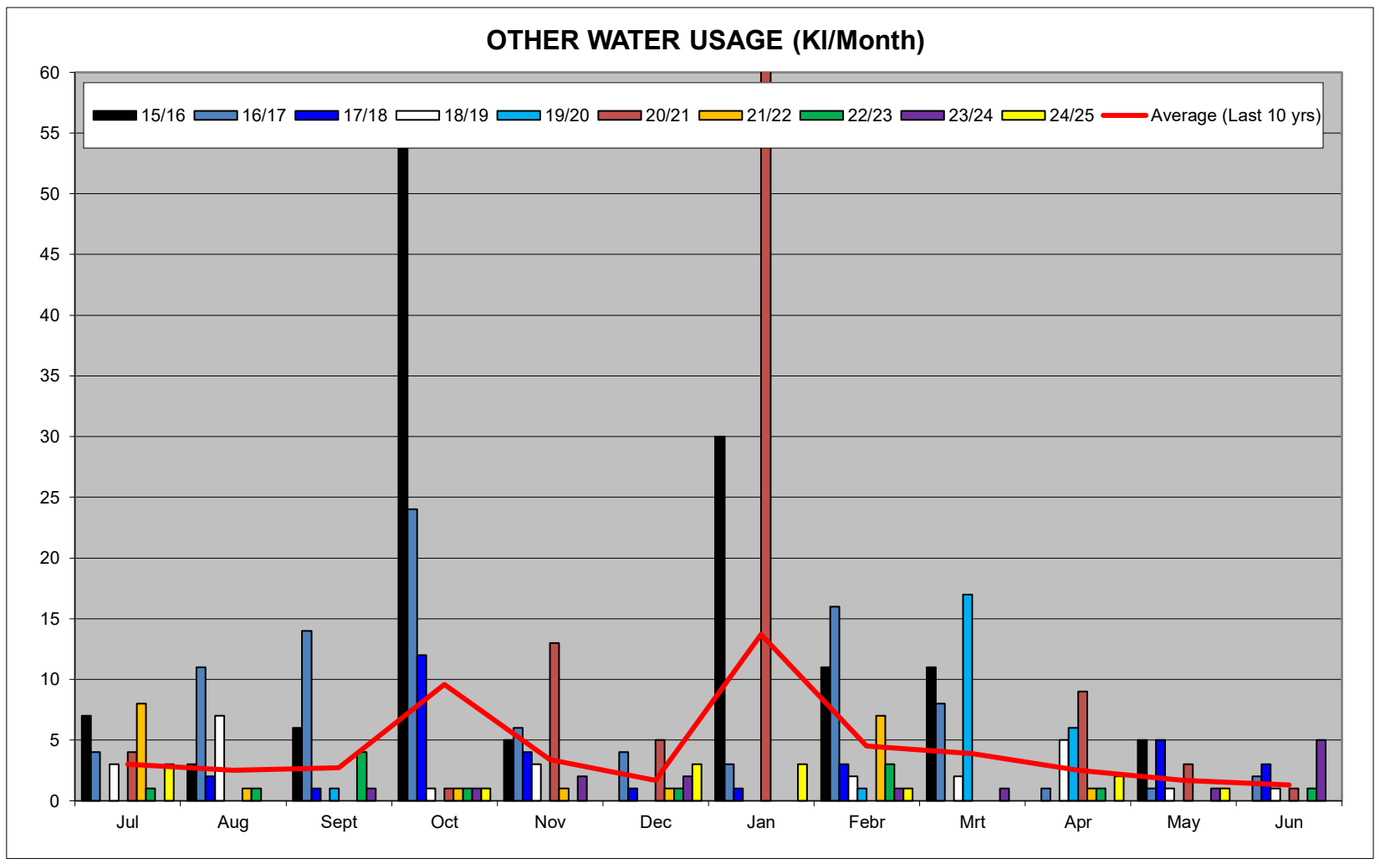






WATER BALANCE AND USAGE FOR THE BAARDSKEERDERSBOS DISTRIBUTION SYSTEM





OVERSTRAND MUNICIPALITY

Pearly Beach

Month	Year	RAW WATER ABSTRACTED			BULK WATER SUPPLY								TREATED WATER SUPPLY																			
					Raw Water Supply			System Input Volume	Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)																	
																					Apparent Losses			Real Losses							
																					Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.							
																					Estimated Percentages (Variables)										
																					2%	4%	1%	93%							
		Pearly Beach Raw Water Out	Koekemoer Raw Water Dam Out	Total Raw Water Abstracted	Inflow Koekemoer	Inflow Pearly Beach	Raw Water Inlet at WTW	Treated Water from WTW	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water from WTW	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption					Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses			
		[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]		
Jan'02	2001/2002						10269																									
Feb'02							8443																									
Mrt'02							10082																									
Apr'02							5979																									
May'02							4842																									
Jun'02							5726																									
Jul'02	2002/2003						4444																									
Aug'02							5392																									
Sep'02							6064																									
Oct'02							10008																									
Nov'02							10848																									
Dec'02							17464																									
Jan'03							13856																									
Feb'03							9883																									
Mrt'03							10040																									
Apr'03							7323																									
May'03							5096																									
Jun'03							5265																									
Jul'03	2003/2004						5890																									
Aug'03							4831																									
Sep'03							7134																									
Oct'03							7287																									
Nov'03							10296																									
Dec'03							16276																									
Jan'04							10348																									
Feb'04							8071																									
Mrt'04							8948																									
Apr'04							7526																									
May'04							6829																									
Jun'04							5765																									
Jul'04	2004/2005						7047							4514																		
Aug'04							5806							4978																		
Sep'04							11231							3936																		
Oct'04							12326							5285																		
Nov'04							10070							6550																		
Dec'04							15008							6476																		
Jan'05							9719							13116																		
Feb'05							8825							7757																		
Mrt'05							10096							8305																		
Apr'05							6261							9799																		
May'05							5172							6499																		
Jun'05							4890							4284																		
Jul'05	2005/2006						5726							4140																		
Aug'05							5790							4020																		
Sep'05							7790							4806																		
Oct'05							8985							5997																		
Nov'05							9108							6781																		
Dec'05							19995							7648																		
Jan'06							14994							19597																		
Feb'06							11018							15165																		
Mrt'06							12210							9593																		
Apr'06							9149							10265																		
May'06							6133							9453																		
Jun'06							6755							4652																		
Jul'06	2006/2007						5806							5354																		
Aug'06							4931							4329																		
Sep'06							7721							3862																		
Oct'06							8725							6204																		
Nov'06							9194							6961																		
Dec'06							19897							7872																		
Jan'07							16506							17338																		
Feb'07							11951							12796																		
Mrt'07							11796							10293																		
Apr'07							10447							10445																		
May'07							8079							7422																		
Jun'07							7928							5824																		
Jul'07	2007/2008						8134							4909																		
Aug'07							8631							4472																		
Sep'07							8788							5407																		
Oct'07							8680							9770																		
Nov'07							11683							2132																		
Dec'07							18428							9220																		
Jan'08							17315							17185																		
Feb'08							12961							10594																		
Mrt'08							13866							13571																		
Apr'08							9086							6962																		
May'08							8647							8479																		
Jun'08							6840							6195																		
Jul'08	2008/2009						6969							4747																		
Aug'08							6076							5506																		
Sep'08							6398							4600																		
Oct'08							9449							5268																		
Nov'08							9302							7498																		
Dec'08							19170							5818																		
Jan'09							13491							20304																		
Feb'09							13036							9962																		
Mrt'09							13645							9112																		
Apr'09							12804							9448																		
May'09							8413							10707																		
Jun'09							8007							6464																		
Jul'09	2009/2010						8078							4116																		
Aug'09							8693							5685																		
Sep'09							8284							7374																		
Oct'09							7054							2922																		
Nov'09							8101							4785																		
Dec'09							8101							7293																		
Jan'10							14174							15998																		
Feb'10							11000							9295																		
Mrt'10							10860							10942																		
Apr'10							10558							8052																		
May'10							7852							7761																		
Jun'10							7444							4292																		
Jul'10	2010/2011						7995							7558																		
Aug'10							8575							4373																		
Sep'10							10341							6174																		
Oct'10							9475							7492																		
Nov'10							10052							5842																		
Dec'10							23520							7523																		
Jan'11							16269							16505																		
Feb'11							11135							15303																		
Mrt'11							13062							8245																		
Apr'11							15291							10454																		
May'11							7343							8540																		
Jun'11							5911							4449																		
Jul'11	2011/2012						7521							4828																		
Aug'11							7060							5214																		
Sep'11							10295							4505																		
Oct'11							10655							6729																		
Nov'11							10199							6623																		
Dec'11							21203							7797																		
Jan'12							17483							16854																		
Feb'12							15572							12484																		
Mrt'12							14174							9902																		
Apr'12							14006							8758																		
May'12							6518							7575																		
Jun'12							6856							4584																		
Jul'12	2012/2013						6392							4389																		
Aug'12							7301							4832																		
Sep'12							8813							3849																		
Oct'12							7752							5217																		
Nov'12							12975							6534																		
Dec'12							24436							7538																		
Jan'13							18826	18278	548	2.9	2963	3.2%	18278	19039	0	-761	-4.2%	29162	32.3%	0	37	-16	-32	-8	-742	-798	-4.4%	28982	32.1%		
Feb'13							18979	18141	838	4.4			18141	11431	0	6710	37.0%			0	36	133	267	67	6207	6674	36.8%				
Mrt'13							19261	18701	560	2.9			18701	9043	0	9658	51.6%			0	37	192	385	96	8947	9621	51.4%				
Apr'13							15156	14784	372	2.5			14784	10393	0	4391	29.7%			0	30	87	174	44	4056	4361	29.5%				
May'13							10798	10721	77	0.7			10721	5929	0	4792	44.7%			0	21	95	191	48	4437	4771	44.5%				
Jun'13							10142	9574	568	5.6			9574	5202	0	4372	45.7%			0	19	87	174	44	4048	4353	45.5%				
Jul'13	2013/2014						12599	12268	331	2.6	9175	4.8%	12268	5490	0	6778	55.2%	87708	48.4%	0	25	135	270	68	6281	6753	55.0%	87346	48.2%		
Aug'13							12202	11554	648	5.3			11554	4801	0	6753	58.4%			0	23	135	269	67	6259	6730	58.2%				
Sep'13							13482	13120	362	2.7			13120	4846	0	8274	63.1%			0	26	165	330	82	7670	8248	62.9%				
Oct'13							15952	15009	943	5.9			15009	4959	0	10050	67.0%			0	30	200	401	100	9319	10020	66.8%				
Nov'13							17278	15746	1532	8.9			15746	5799	0	9947	63.2%			0	31	198	397	99	9221	9916	63.0%				
Dec'13							32625	31045	1580	4.8			31045	6693	0	24352	78.4%			0	62	486	972	243	22590	24290	78.2%				
Jan'14							17102	16980	122	0.7			16980	20196	0	-3216	-18.9%			0	34	-65	-130	-32	-3022	-3250	-19.1%				
Feb'14							20074	18101	1973	9.8			18101	9631	0	8470	46.8%			0	36	169	337	84	7843	8434	46.6%				
Mrt'14							15097	13780	1317	8.7			13780	9280	0	4500	32.7%			0	28	89	179	45	4159	4472	32.5%				
Apr'14							16434	16093	341	2.1			16093	7626	0	8467	52.6%			0	32	169	337	84	7844	8435	52.4%				
May'14							9464	9295	169	1.8			9295	10014	0	-719	-7.7%			0	19	-15	-30	-7	-686	-738	-7.9%				
Jun'14							7995	8138	-143	-1.8			8138	4086	0	4052	49.8%			0	16	81	161	40	3753	4036	49.6%				
Jul'14	2014/2015						8991	8898	93	1.0	6461	4.0%	8898	4046	0	4852	54.5%	52640	33.7%	0	18	97	193	48	4496	4834	54.3%	52327	33.5%		
Aug'14							8075	8148	-73	-0.9			8148	5518	0	2630	32.3%			0	16	52	105	26	2431	2614	32.1%				
Sep'14							8261	8000	261	3.2			8000	6274	0	1726	21.6%			0	16	34	68	17	1590	1710	21.4%				
Oct'14							12325	10954	1371	11.1			10954	4968	0	5986	54.6%			0	22	119	239	60	5547	5964	54.4%				
Nov'14							12356	11594	762	6.2			11594	8142	0	3452	29.8%			0	23	69	137	34	3189	3429	29.6%				
Dec'14							27023	25862	1161	4.3			25862	8716	0	17146	66.3%			0	52	342	684	171	15898	17094	66.1%				
Jan'15		8741	8171	16912			15943	15490	453	2.8			15490	19775	0	-4285	-27.7%			0	31	-86	-173	-43	-4014	-4316	-27.9%				
Feb'15		8812	7898	16710			16710	14904	1806	10.8			14904	12226	0	2678	18.0%			0	30	53	106	26	2463	2648	17.8%				
Mrt'15		7895	5626	13521			13521	15264	-1743	-12.9			15264	8713	0	6551	42.9%			0	31	130	261	65	6064	6520	42.7%				
Apr'15		13923	5551	19474			18424	18097	327	1.8			18097	8389	0	9708	53.6%			0	36	193	387	97	8995	9672	53.4%				
May'15		10684	0	10684			10199	8983	1216	11.9			8983	10779	0	-1796	-20.0%			0	18	-36	-73	-18	-1687	-1814	-20.2%				
Jun'15		10918	0	10918			10918	10091	827	7.6			10091	6099	0	3992	39.6%			0	20	79	159	40	3694	3972	39.4%				
Jul'15	2015/2016	8257	1856	10113			10113	9752	361	3.6	5489	3.6%	9752	7243	0	2509	25.7%	36951	25.4%	0	20	50	100	25	2315	2489	25.5%	36660	25.2%		
Aug'15		5520	2837	8357			8357	8439	-82	-1.0			8439	7443	0	996	11.8%			0	17	20	39	10	911	979	11.6%				
Sep'15		5965	2990	8955			8955	8861	94	1.0			8861	5585	0	3276	37.0%			0	18	65	130	33	3030	3258	36.8%				
Oct'15		8457	4242	12699			12280	12163	117	1.0			12163	8066	0	4097	33.7%			0	24	81	163	41	3788	4073	33.5%				
Nov'15				0			12687	12199	488	3.8			12199	4991	0	7208	59.1%			0	24	144	287	72	6681	7184	58.9%				
Dec'15		13766	6871	20637			20637	19812	825	4.0			19812	10606	0	9206	46.5%			0	40	183	367	92	8525	9166	46.3%				
Jan'16		9456	5180	14636			14636	14741	-105	-0.7			14741	19906	0	-5165	-35.0%			0	29	-104	-208	-52	-4831	-5194	-35.2%				
Feb'16		9241	5007	14248			14248	13594	654	4.6			13594	10444	0	3150	23.2%			0	27	62	125	31	2904	3123	23.0%				
Mrt'16		9560	5351	14911			14911	14272	639	4.3			14272	9952	0	4320	30.3%			0	29	86	172	43	3991	4291	30.1%				
Apr'16		8520	4972	13492			13492	12462	1030	7.6			12462	9747	0	2715	21.8%			0	25	54	108	27	2502	2690	21.6%				
May'16		6008	3423	9431			9431	8761	670	7.1			8761	7604	0	1157	13.2%			0	18	23	46	11	1060	1139	13.0%				
Jun'16		8047	2031	10078			11172	10374	798	7.1			10374	6892	0	3482	33.6%			0	21	69	138	35	3219	3461	33.4%				
Jul'16	2016/2017	6888	3500	10388			9695	8801	894	9.2	10044	7.0%	8801	6517	0	2284	26.0%	21928	16.5%	0	18	45	91	23	2108	2266	25.8%	21663	16.3%		
Aug'16		8629	4500	13129			12282	11437	845	6.9			11437	6472	0	4965	43.4%			0	23	99	198	49	4596	4942	43.2%				
Sep'16		6984	3500	10484			9509	8946	563	5.9			8946	6065	0	2881	32.2%			0	18	57	115	29	2663	2863	32.0%				
Oct'16		7420	4500	11920			10029	9747	282	2.8			9747	7126	0	2621	26.9%			0	19	52	104	26	2419	2602	26.7%				
Nov'16		8539	4395	12934			12056	10801	1255	10.4			10801	8729	0	2072	19.2%			0	22	41	82	21	1907	2050	19.0%				
Dec'16		14561	7203	21764			20028	18946	1082	5.4			18946	9072	0	9874	52.1%			0	38	197	393	98	9148	9836	51.9%				
Jan'17		17129	6138	23267			17810	14446	3364	18.9			14446	18190	0	-3744	-25.9%			0	29	-75	-151	-38	-3509	-3773	-26.1%				
Feb'17		4874	4642	9516			10877	9801	1076	9.9			9801	9511	0	290	3.0%			0	20	5	11	3	251	270	2.8%				
Mrt'17		7963	5856	13819			12055	10966	1089	9.0			10966	8370	0	2596	23.7%			0	22	51	103	26	2394	2574	23.5%				
Apr'17		9565	5512	15077			11517	10894	623	5.4			10894	7218	0	3676	33.7%			0	22	73	146	37	3398	3654	33.5%				
May'17		7938	3725	11663			9893	10533	-640	-6.5			10533	16623	0	-6090	-57.8%			0	21	-122	-244	-61	-5683	-6111	-58.0%				
Jun'17		4696	5713	10409			6830	7219	-389	-5.7			7219	6716	0	503	7.0%			0	14	10	20	5	454	489	6.8%				

OVERSTRAND MUNICIPALITY

Pearly Beach

Month	Year	RAW WATER ABSTRACTED			BULK WATER SUPPLY								TREATED WATER SUPPLY																	
					Raw Water Supply			System Input Volume	Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)															
																					Apparent Losses			Real Losses					
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																					Estimated Percentages (Variables)								
																					2%	4%	1%	93%					
		Pearly Beach Raw Water Out	Koekemoer Raw Water Dam Out	Total Raw Water Abstracted	Inflow Koekemoer	Inflow Pearly Beach	Raw Water Inlet at WTW	Treated Water from WTW	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water from WTW	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption					Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
		[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
Jul'17	2017/2018	4602	4309	8911			8300	8397	-97	-1.2	5860	4.6%	8397	6760	0	1637	19.5%	23495	19.5%	0	17	32	65	16	1507	1620	19.3%	23254	19.3%
Aug'17		5164	4792	9956			10681	8299	2382	22.3			8299	5298	0	3001	36.2%			0	17	60	119	30	2775	2984	36.0%		
Sep'17		4492	5829	10321			7983	8058	-75	-0.9			8058	5673	0	2385	29.6%			0	16	47	95	24	2203	2369	29.4%		
Oct'17		5793	4939	10732			9710	9028	682	7.0			9028	7994	0	1034	11.5%			0	18	20	41	10	945	1016	11.3%		
Nov'17		5510	4812	10322			9967	9358	609	6.1			9358	7839	0	1519	16.2%			0	19	30	60	15	1395	1500	16.0%		
Dec'17		5419	8857	14276			17110	15479	1631	9.5			15479	7528	0	7951	51.4%			0	31	158	317	79	7366	7920	51.2%		
Jan'18		7564	7748	15312			14538	12705	1833	12.6			12705	16031	0	-3326	-26.2%			0	25	-67	-134	-34	-3117	-3351	-26.4%		
Feb'18		12689	5518	18207			10850	10391	459	4.2			10391	8640	0	1751	16.9%			0	21	35	69	17	1609	1730	16.7%		
Mrt'18		5260	6164	11424			11316	11389	-73	-0.6			11389	7072	0	4317	37.9%			0	23	86	172	43	3994	4294	37.7%		
Apr'18		3531	7337	10868			9671	10227	-556	-5.7			10227	9988	0	239	2.3%			0	20	4	9	2	203	219	2.1%		
May'18		2583	5936	8519	5739	2646	8385	8966	-581	-6.9			8966	7018	0	1948	21.7%			0	18	39	77	19	1795	1930	21.5%		
Jun'18		4020	4340	8360	4340	3382	7722	8076	-354	-4.6			8076	7037	0	1039	12.9%			0	16	20	41	10	951	1023	12.7%		
Jul'18	2018/2019	6857	9874	16731	9874	6381	16255	9755	6500	40.0	29603	17.0%	9755	7275	0	2480	25.4%	38499	26.6%	0	62	48	70	24	2276	2418	24.8%	37760	26.1%
Aug'18		4689	3949	8638	3949	1999	5948	6350	-402	-6.8			6350	6510	0	-160	-2.5%			0	62	-4	63	-2	-278	-222	-3.5%		
Sep'18		3799	7010	10809	6419	3436	9855	10428	-573	-5.8			10428	6826	0	3602	34.5%			0	62	71	66	35	3369	3540	34.0%		
Oct'18		10655	2990	13645	1431	9595	11026	10892	134	1.2			10892	7809	0	3083	28.3%			0	62	60	75	30	2856	3021	27.7%		
Nov'18		8983	4572	13555	4572	8244	12816	13309	-493	-3.8			13309	9233	0	4076	30.6%			0	62	80	89	40	3805	4014	30.2%		
Dec'18		12706	5455	18161	5455	12552	18007	16911	1096	6.1			16911	8501	0	8410	49.7%			0	62	167	82	83	8016	8348	49.4%		
Jan'19		10670	4594	15264	4602	10691	15293	15218	75	0.5			15218	16286	0	-1068	-7.0%			0	62	-23	157	-11	-1252	-1130	-7.4%		
Feb'19		11306	4699	16005	11244	15913	27157	15343	11814	43.5			15343	8889	0	6454	42.1%			0	62	128	86	64	6115	6392	41.7%		
Mrt'19		6854	5545	12399	6964	12537	19501	12325	7176	36.8			12325	9949	0	2376	19.3%			0	62	46	96	23	2149	2314	18.8%		
Apr'19		4531	7656	12187	4522	12088	16610	12294	4316	26.0			12294	9482	0	2812	22.9%			0	62	55	91	28	2577	2750	22.4%		
May'19		6804	4663	11467	4767	6844	11611	11816	-205	-1.8			11816	8455	0	3361	28.4%			0	62	66	81	33	3119	3299	27.9%		
Jun'19		4209	6066	10275	4209	6066	10275	10110	165	1.6			10110	7037	0	3073	30.4%			0	62	60	68	30	2853	3011	29.8%		
Jul'19	2019/2020	7812	4039	11851	4026	7850	11876	9734	2142	18.0	4891	3.1%	9734	7640	0	2094	21.5%	46005	30.6%	4	66	40	225	20	1738	2024	20.8%	45166	30.0%
Aug'19		6079	4284	10363	4162	5906	10068	10194	-126	-1.3			10194	6075	0	4119	40.4%			4	66	81	179	40	3748	4049	39.7%		
Sep'19		6824	4782	11606	4781	6852	11633	11538	95	0.8			11538	6780	0	4758	41.2%			4	66	94	200	47	4347	4688	40.6%		
Oct'19		7368	5560	12928	5465	7217	12682	12601	81	0.6			12601	7726	0	4875	38.7%			4	66	96	228	48	4433	4805	38.1%		
Nov'19		6912	5826	12738	5737	6872	12609	12740	-131	-1.0			12740	8864	0	3876	30.4%			4	66	76	261	38	3430	3806	29.9%		
Dec'19		10982	10314	21296	9845	10793	20638	19456	1182	5.7			19456	8282	0	11174	57.4%			4	66	222	244	111	10527	11104	57.1%		
Jan'20		9686	6167	15853	5960	9686	15646	16171	-525	-3.4			16171	16298	0	-127	-0.8%			4	66	-4	481	-2	-672	-197	-1.2%		
Feb'20		7426	5897	13323	5506	7150	12656	11799	857	6.8			11799	9970	0	1829	15.5%			4	66	35	294	18	1412	1759	14.9%		
Mrt'20		7462	7775	15237	7581	7259	14840	13847	993	6.7			13847	7724	0	6123	44.2%			4	66	121	228	61	5644	6053	43.7%		
Apr'20		14600	5711	20311	5638	7223	12861	12117	744	5.8			12117	7896	0	4221	34.8%			4	66	83	233	42	3794	4151	34.3%		
May'20		15293	2624	17917	2570	7893	10463	10590	-127	-1.2			10590	10284	0	306	2.9%			4	66	5	303	2	-74	236	2.2%		
Jun'20		8441	981	9422	964	8432	9396	9690	-294	-3.1			9690	6933	0	2757	28.5%			4	66	54	205	27	2402	2687	27.7%		
Jul'20	2020/2021	6778	3704	10482	3497	6154	10330	10010	320	3.1	4756	3.1%	10010	6531	0	3479	34.8%	44318	29.8%	1	62	68	31	34	3283	3417	34.1%	43574	29.3%
Aug'20		7219	2536	9755	2625	6704	10239	9922	317	3.1			9922	6715	0	3207	32.3%			1	62	63	32	31	3019	3145	31.7%		
Sep'20		10436	231	10667	173	9715	10601	10272	329	3.1			10272	6937	0	3335	32.5%			1	62	65	33	33	3142	3273	31.9%		
Oct'20		10256	5	10261	0	10256	10767	10433	334	3.1			10433	8287	0	2146	20.6%			1	62	42	40	21	1982	2084	20.0%		
Nov'20		10222	0	10222	0	10222	10143	9829	314	3.1			9829	7278	0	2551	26.0%			1	62	50	35	25	2380	2489	25.3%		
Dec'20		25786	2204	27990	0	18230	18090	17529	561	3.1			17529	9536	0	7993	45.6%			1	62	159	46	79	7647	7931	45.2%		
Jan'21		18566	7650	26216	7745	9788	20868	20221	647	3.1			20221	16528	0	3693	18.3%			1	62	73	79	36	3443	3631	18.0%		
Feb'21		7193	8351	15544	8146	6232	15982	15487	495	3.1			15487	10064	0	5423	35.0%			1	62	107	48	54	5152	5361	34.6%		
Mrt'21		7700	3306	11006	3585	7700	12336	11954	382	3.1			11954	9679	0	2275	19.0%			1	62	44	46	22	2100	2213	18.5%		
Apr'21		6866	5268	12134	5268	6866	13225	12815	410	3.1			12815	8632	0	4183	32.6%			1	62	82	41	41	3956	4121	32.2%		
May'21		7912	2532	10444	2532	7912	11041	10699	342	3.1			10699	8371	0	2328	21.8%			1	62	45	40	23	2158	2266	21.2%		
Jun'21		5747	11286	17033	3442	5747	9782	9479	303	3.1			9479	5774	0	3705	39.1%			1	62	73	28	36	3506	3643	38.4%		
Jul'21	2021/2022	6390	4325	10715	4325	6390	10715	10767	-52	-0.5	-6419	-4.3%	10767	6239	0	4528	42.1%	41065	26.7%	4	134	88	30	44	4229	4391	40.8%	39415	25.6%
Aug'21		6034	4430	10464	4430	6034	10464	10815	-351	-3.4			10815	8488	0	2327	21.5%			4	134	44	41	22	2083	2190	20.2%		
Sep'21		11035	937	11972	937	11035	11972	11911	61	0.5			11911	6455	0	5456	45.8%			4	134	106	31	53	5128	5319	44.7%		
Oct'21		9820	332	10152	332	9820	10152	10579	-427	-4.2			10579	9994	0	585	5.5%			4	134	9	48	4	386	448	4.2%		
Nov'21		8450	2652	11102	2652	8450	11102	11327	-225	-2.0			11327	7322	0	4005	35.4%			4	134	77	35	39	3716	3868	34.1%		
Dec'21		9987	6424	16411	6424	9987	16411	16927	-516	-3.1			16927	7901	0	9026	53.3%			4	134	178	38	89	8584	8889	52.5%		
Jan'22		8686	8684	17370	8684	8686	17370	17900	-530	-3.1			17900	15758	0	2142	12.0%			4	134	40	75	20	1869	2005	11.2%		
Feb'22		6998	5863	12861	5863	6998	12861	13815	-954	-7.4			13815	13170	0	645	4.7%			4	134	10	63	5	429	508	3.7%		
Mrt'22		6975	4395	11370	4395	6975	11370	12683	-1313	-11.5			12683	10438	0	2245	17.7%			4	134	42	50	21	1994	2108	16.6%		
Apr'22		11139	3720	14859	3720	11139	14859	15271	-412	-2.8			15271	9776	0	5495	36.0%			4	134	107	47	54	5150	5358	35.1%		
May'22		8418	3771	12189	3771	8418	12189	12764	-575	-4.7			12764	10810	0	1954	15.3%			4	134	36	52	18	1710	1817	14.2%		
Jun'22		5146	3042	8188	3042	5146	8188	9313	-1125	-13.7			9313	6656	0	2657	28.5%			4	134	50	32	25	2412	2520	27.1%		
Jul'22	2022/2023	9356	2217	11573	2217	9356	11573	10770	803	6.9	7263	4.9%	10770	8895	0	1875	17.4%	25787	18.2%	2	40	37	43	18	1736	1833	17.0%	25284	17.9%
Aug'22		2442	4314	6756	4314	2442	6756	9180	-2424	-35.9			9180	7142	0	2038	22.2%			2	40	40	34	20	1902	1996	21.7%		
Sep'22		7120	4657	11777	4657	7120	11777	10665	1112	9.4			10665	7555	0	3110	29.2%			2	40	61	36	31	2940	3068	28.8%		
Oct'22		10824	2873	13697	2873	10824	13697	12735	962	7.0			12735	7954	0	4781	37.5%			2	40	95	38	47	4559	4739	37.2%		
Nov'22		9697	3723	13420	3723	9697	13420	12462	958	7.1			12462	8063	0	4399	35.3%			2	40	87	39	44	4188	4357	35.0%		
Dec'22		8385	7844	16229	7844	8385	16229	17254	-1025	-6.3			17254	9154	0	8100	46.9%			2	40	161	44	81	7773	8058	46.7%		
Jan'23		5760	10868	16628	10868	5760	16628	16012	616	3.7			16012	14278	0	1734	10.8%			2	40	34	68	17	1573	1692	10.6%		
Feb'23		3167	6589	9756	6589	3167	9756	9404	352	3.6			9404	17182	0	-7778	-82.7%			2	40	-156	82	-78	-7667	-7820	-83.2%		
Mrt'23		3184	10064	13248	10064	3184	13248	11831	1417	10.7			11831	9209	0	2622	22.2%			2	40	52	44	26	2459	2580	21.8%		
Apr'23		3444	10458	13902	10458	3444	13902	12187	1715	12.3			12187	9747	0	2440	20.0%			2	40	48	47	24	2280	2398	19.7%		
May'23		9238	2138	11376	2138	9238	11376	9827	1549	13.6			9827	9098	0	729	7.4%			2	40	14	43	7	623	687	7.0%		
Jun'23		7987	2237	10224	2237	7987	10224	8996	1228	12.0			8996	7259	0	1737	19.3%			2	40	34	35	17	1610	1695	18.8%		
Jul'23	2023/2024	10809	600	11409	600	10809	11409	10298	1111	9.7	18823	10.9%	10298	8628	0	1670	16.2%	43359	28.3%	5	70	32	41	16	1506	1595	15.5%	42463	27.7%
Aug'23		8256	2609	10865	2609	8256	10865	10316	549	5.1			10316	5457	0	4859	47.1%			5	70	96	26	48	4615	4784	46.4%		
Sep'23		8105	2707	10812	2707	8105	10812	9835	977	9.0			9835	7868	0	1967	20.0%			5	70	38	38	19	1798	1892	19.2%		
Oct'23		11217	1513	12730	1513	11217	12730	11633	1097	8.6			11633	8015	0	3618	31.1%			5	70	71	38	35	3399	3543	30.5%		
Nov'23		10645	3078	13723	3078	10645	13723	12469	1254	9.1			12469	8289	0	4180	33.5%			5	70	82	40	41	3943	4105	32.9%		
Dec'23		17212	5987	23199	5987	17212	23199	19794	3405	14.7			19794	9946	0	9848	49.8%			5	70	195	48	98	9433	9773	49.4%		
Jan'24		14948	8400	23348	8400	14948	23348	19432	3916	16.8			19432	18322	0	1110	5.7%			5	70	21	88	10	917	1035	5.3%		
Feb'24		8231	8599	16830	8599	8231	16830	14478	2352	14.0			14478	12001	0	2477	17.1%			5	70	48	57	24	2273	2402	16.6%		
Mrt'24		7468	7229	14697	7229	7468	14697	12769	1928	13.1			12769	8931	0	3838	30.1%			5	70	75	43	38	3608	3763	29.5%		
Apr'24		6215	7073	13288	7073	6215	13288	12064	1224	9.2			12064	9897	0	2167	18.0%			5	70	42	47	21	1982	2092	17.3%		
May'24		4059	6998	11057	6998	4059	11057	10492	565	5.1			10492	6816	0	3676	35.0%			5	70	72	33	36	3461	3601	34.3%		
Jun'24		5758	4434	10192	4434	5758	10192	9747	445	4.4			9747	5798	0	3949	40.5%			5	70	77	28	39	3730	3874	39.7%		
Jul'24	2024/2025	5725	3699	9424	3699	5725	9424	8661	763	8.1	26221	13.9%	8661	8118	0	543	6.3%	41758	25.8%	7	68	9	39	5	416	468	5.4%	40864	25.2%
Aug'24		5436	4566	10002	4566	5436	10002	9410	592	5.9			9410	5206	0	4204	44.7%			7	68	83	25	41	3981	4129	43.9%		
Sep'24		5077	6791	11868	6791	5077	11868	11601	267	2.2			11601	7438	0	4163	35.9%			7	68	82	36	41	3930	4088	35.2%		
Oct'24		3973	10068	14041	10068	3973	14041	11918	2123	15.1			11918	9134	0	2784	23.4%			7	68	54	44	27	2585	2709	22.7%		
Nov'24		4096	11711	15807	11711	4096	15807	13142	2665	16.9			13142	8984	0	4158	31.6%			7	68	82	43	41	3918	4083	31.1%		
Dec'24		8344	15952	24296	15952	8344	24296	20206	4090	16.8			20206	9552	0	10654	52.7%			7	68	212	46	106	10216	10579	52.4%		
Jan'25		7145	14724	21869	14724	7145	21869	18174	3695	16.9			18174	19715	0	-1541	-8.5%			7	68	-32	94	-16	-1661	-1616	-8.9%		
Feb'25		4043	12946	16989	12946	4043	16989	14081	2908	17.1			14081	11264	0	2817	20.0%			7	68	55	54	27	2606	2742	19.5%		
Mrt'25		4249	14374	18623	14374	4249	18623	15518	3105	16.7			15518	10859	0	4659	30.0%			7	68	92	52	46	4395	4584	29.5%		
Apr'25		6306	11395	17701	11395	6306	17701	15396	2305	13.0			15396	11920	0	3476	22.6%			7	68	68	57	34	3242	3401	22.1%		
May'25		11133	3815	14948	3815	11133	14948	12874	2074	13.9			12874	10544	0	2330	18.1%			7	68	45	50	23	2137	2255	17.5%		
Jun'25		5079	7419	12498	7419	5079	12498	10864	1634	13.1			10864	7353	0	3511	32.3%			7	68	69	35	34	3298	3436	31.6%		

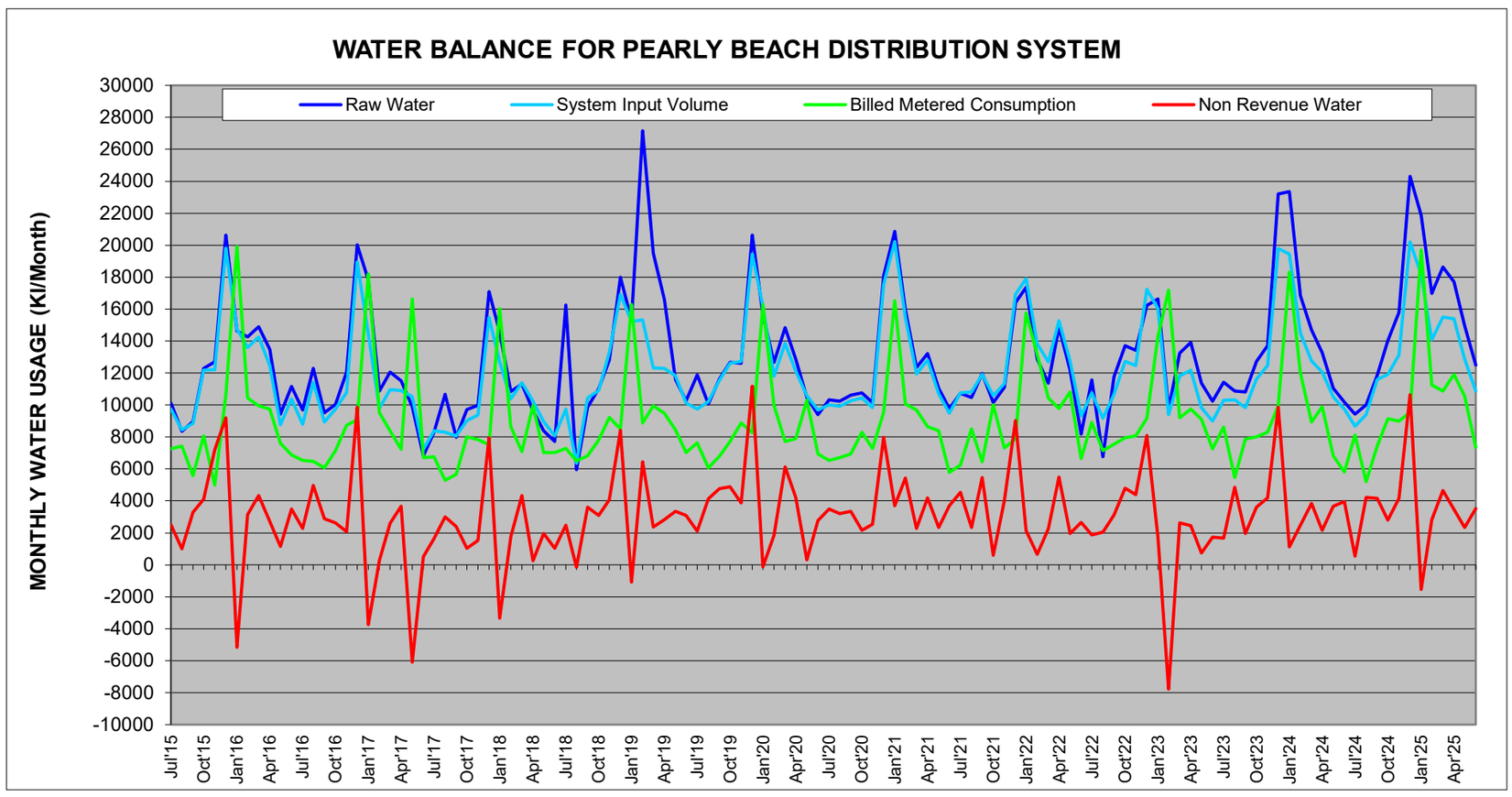
ANNUAL TOTALS

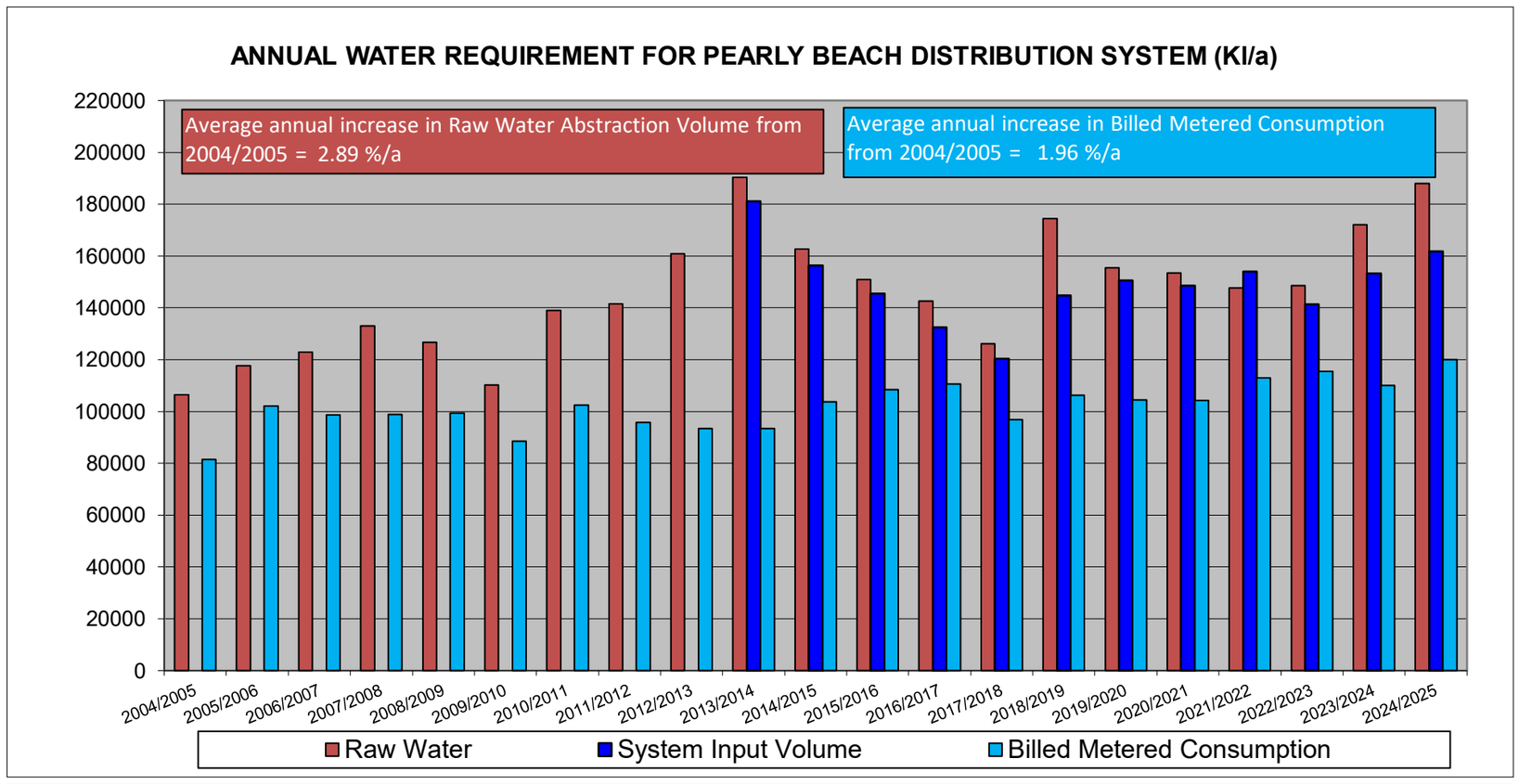
Year	RAW WATER ABSTRACTED			BULK WATER SUPPLY								TREATED WATER SUPPLY																	
				Raw Water Supply			System Input Volume	Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)															
																					Apparent Losses			Real Losses					
	Pearly Beach Raw Water Out	Koekemoer Raw Water Dam Out	Total Raw Water Abstracted	Inflow Koekemoer	Inflow Pearly Beach	Raw Water Inlet at WTW	Treated Water from WTW	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water from WTW	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
2004/2005						106451							81499															
2005/2006						117653							102117															
2006/2007						122981							98700															
2007/2008						133059							98896															
2008/2009						126760							99434															
2009/2010						110198							88515															
2010/2011						138969							102458															
2011/2012						141542							95853															
2012/2013						160831							93396															
2013/2014						190304	181129			9175	4.8%	181129	93421	0			87708	48.4%	0	362	1747	3494	873	81232			87346	48.2%
2014/2015						162746	156285			6461	4.0%	156285	103645	0			52640	33.7%	0	313	1047	2093	523	48665			52327	33.5%
2015/2016	92797	44760	137557			150919	145430			5489	3.6%	145430	108479	0			36951	25.4%	0	291	733	1466	367	34094			36660	25.2%
2016/2017	105186	59184	164370			142581	132537			10044	7.0%	132537	110609	0			21928	16.5%	0	265	433	867	217	20147			21663	16.3%
2017/2018	66627	70581	137208	10079	6028	126233	120373			5860	4.6%	120373	96878	0			23495	19.5%	0	241	465	930	233	21626			23254	19.3%
2018/2019	92063	67073	159136	68008	106346	174354	144751			29603	17.0%	144751	106252	0			38499	26.6%	0	739	755	1022	378	35605			37760	26.1%
2019/2020	108885	63960	172845	62235	93133	155368	150477			4891	3.1%	150477	104472	0			46005	30.6%	49	790	903	3082	452	40729			45166	30.0%
2020/2021	124681	47073	171754	37013	105526	153406	148650			4756	3.1%	148650	104332	0			44318	29.8%	6	738	871	499	436	41768			43574	29.3%
2021/2022	99078	48575	147653	48575	99078	147653	154072			-6419	-4.3%	154072	113007	0			41065	26.7%	44	1606	788	540	394	37692			39415	25.6%
2022/2023	80604	67982	148586	67982	80604	148586	141323			7263	4.9%	141323	115536	0			25787	18.2%	20	482	506	552	253	23973			25284	17.9%
2023/2024	112923	59227	172150	59227	112923	172150	153327			18823	10.9%	153327	109968	0			43359	28.3%	61	835	849	526	425	40663			42463	27.7%
2024/2025	70606	117460	188066	117460	70606	188066	161845			26221	13.9%	161845	120087	0			41758	25.8%	79	816	817	574	409	39063			40864	25.2%

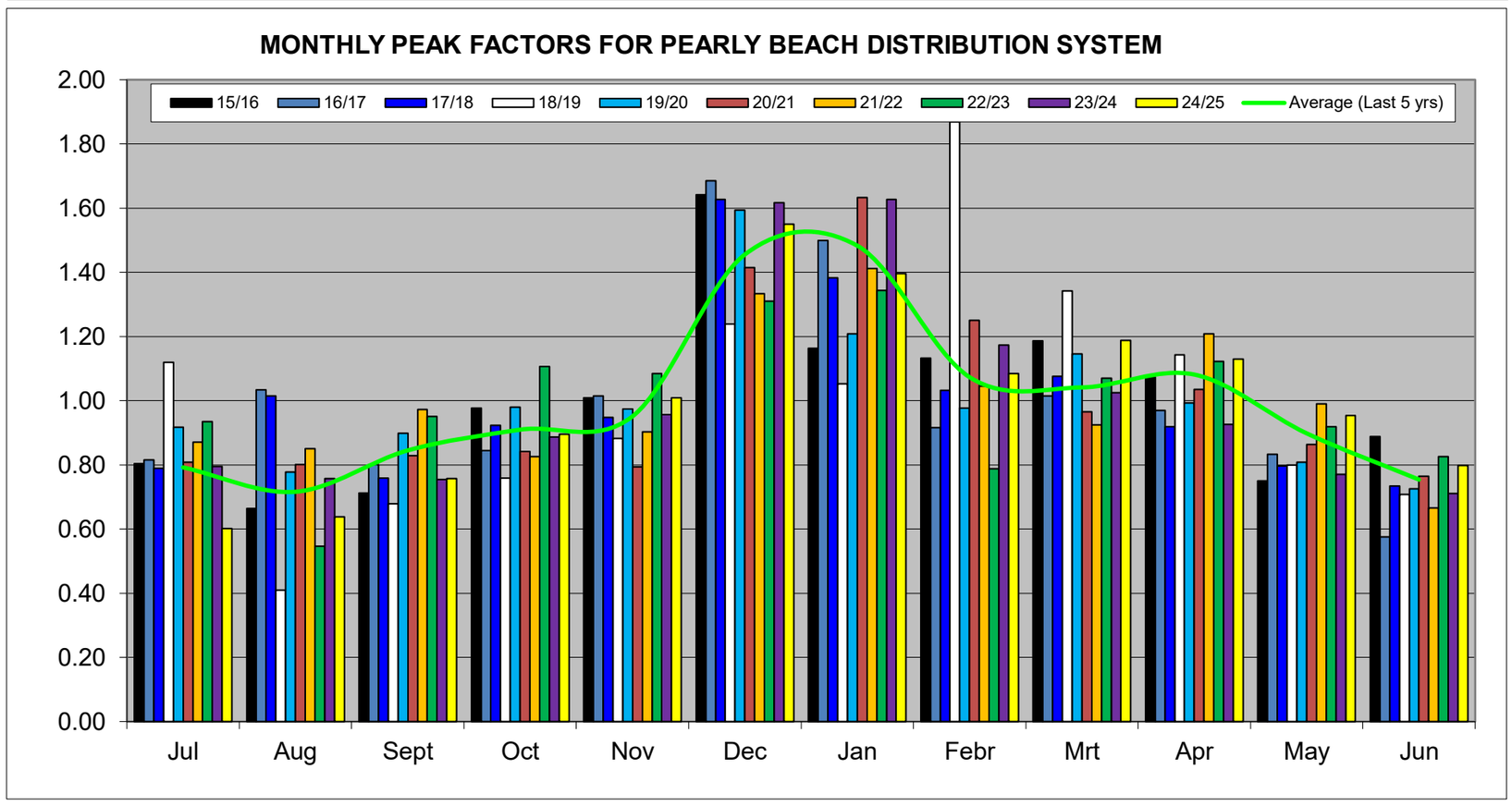
Water Balance Components		Water Balance Volumes											
Component	Units	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
Consumer Units	Number of connections	1092	1234	1264	1510	1704	1664	1674	1715	1756	1797	1838	1842
System Input Volume	l/connection/day	455	347	315	240	194	238	246	237	240	215	229	241
Average Billed Metered Cons.	l/connection/day	234	230	235	201	156	175	171	167	176	176	164	179
Non-Revenue Water	l/connection/day	220	117	80	40	38	63	75	71	64	39	65	62

Water Balance Components		Percentage Change in Volumes in l/connection/day, year on year											
Component	Units	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
System Input Volume	% Change in Volume	-	-23.63%	-9.18%	-23.72%	-19.52%	23.14%	3.33%

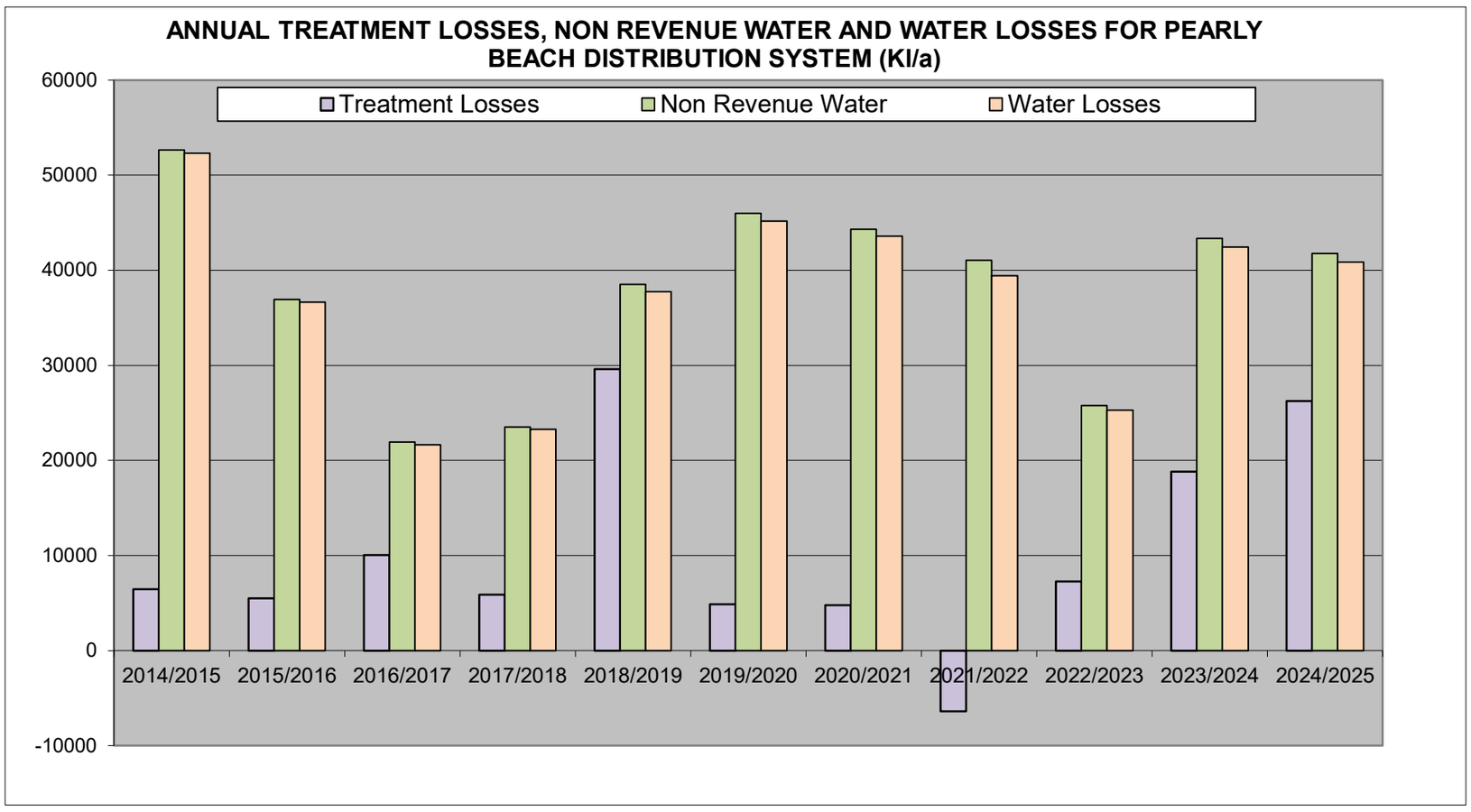
WATER BALANCE AND USAGE FOR PEARLY BEACH DISTRIBUTION SYSTEM

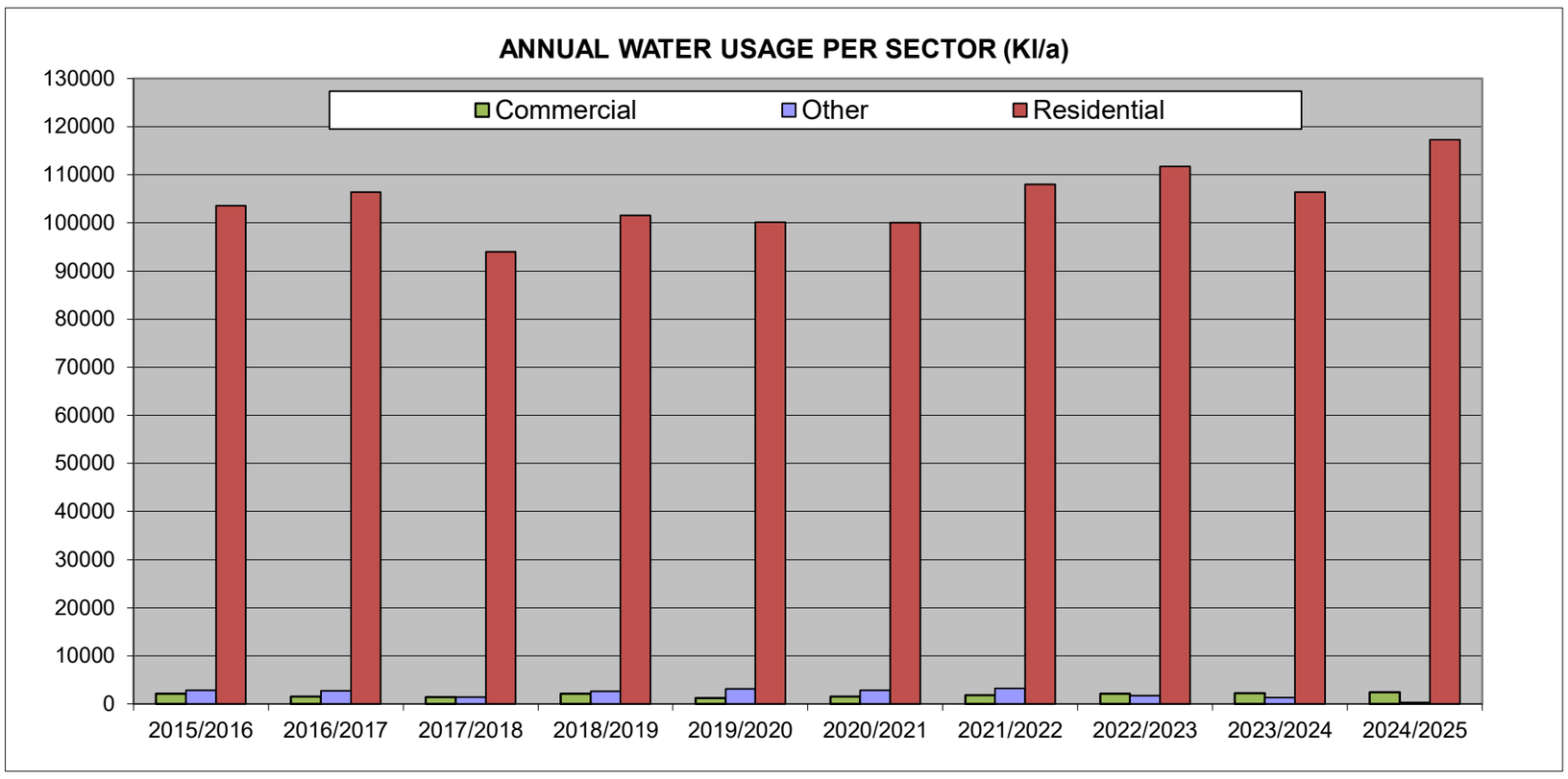


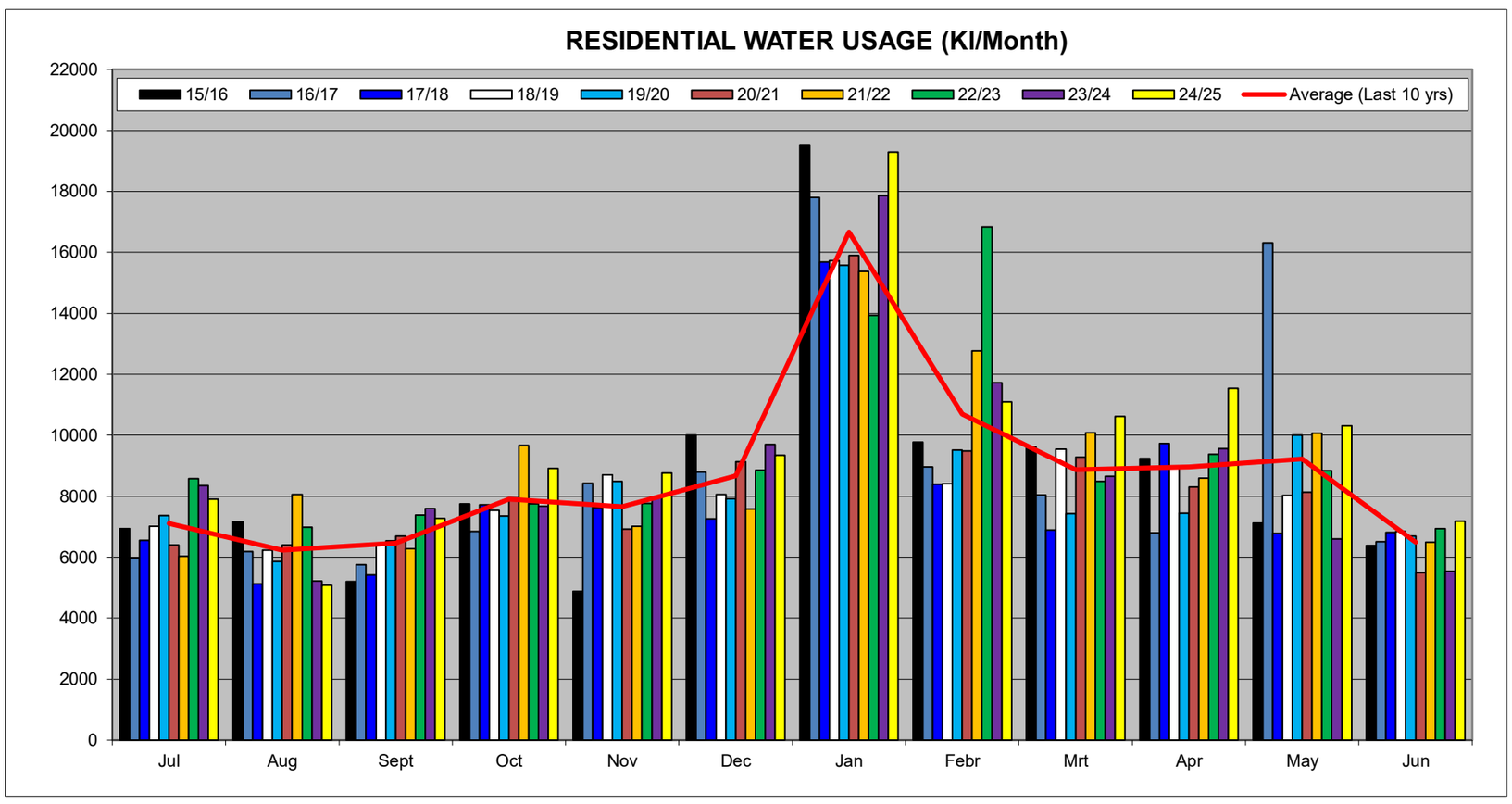




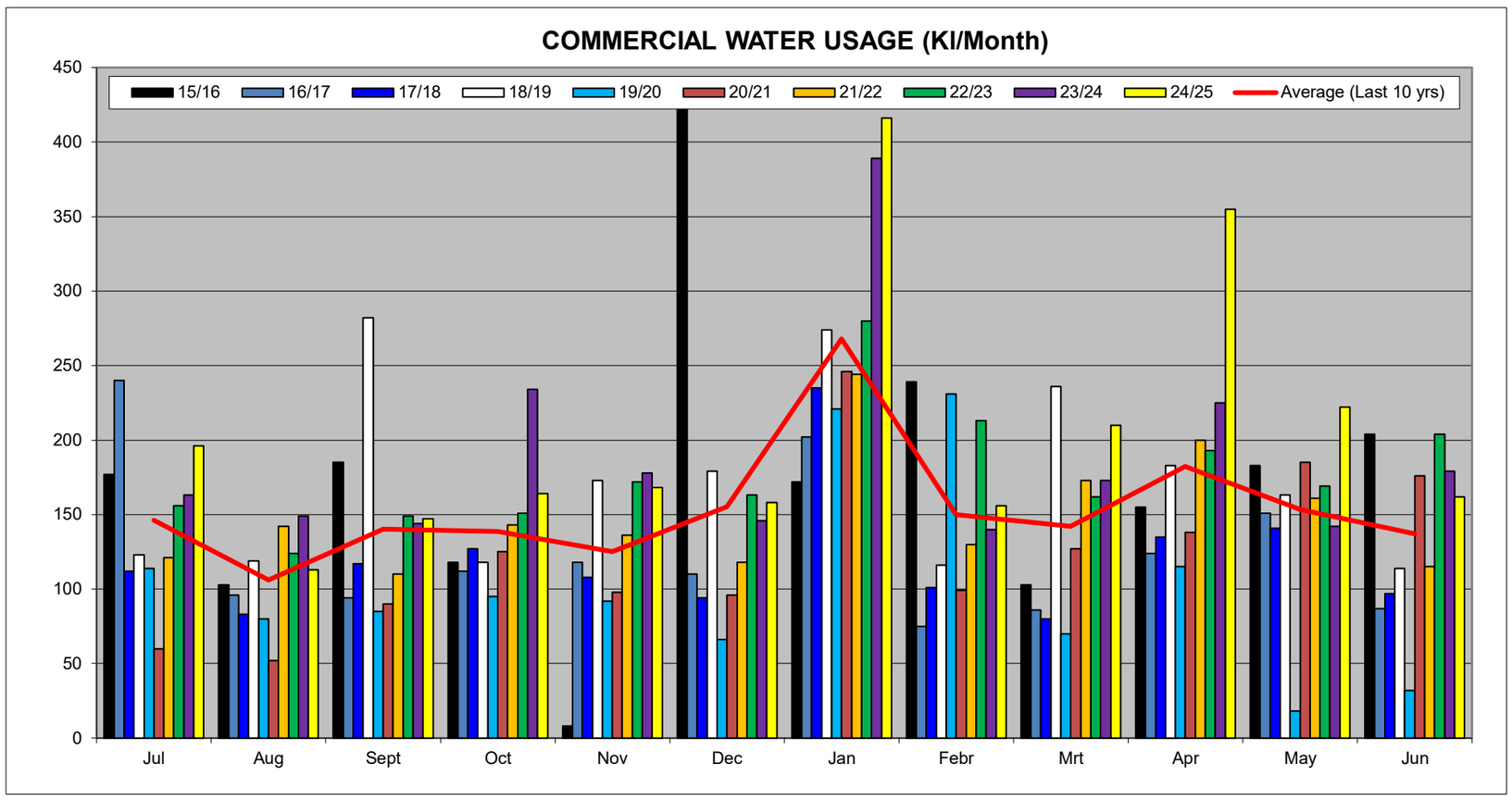
WATER BALANCE AND USAGE FOR PEARLY BEACH DISTRIBUTION SYSTEM

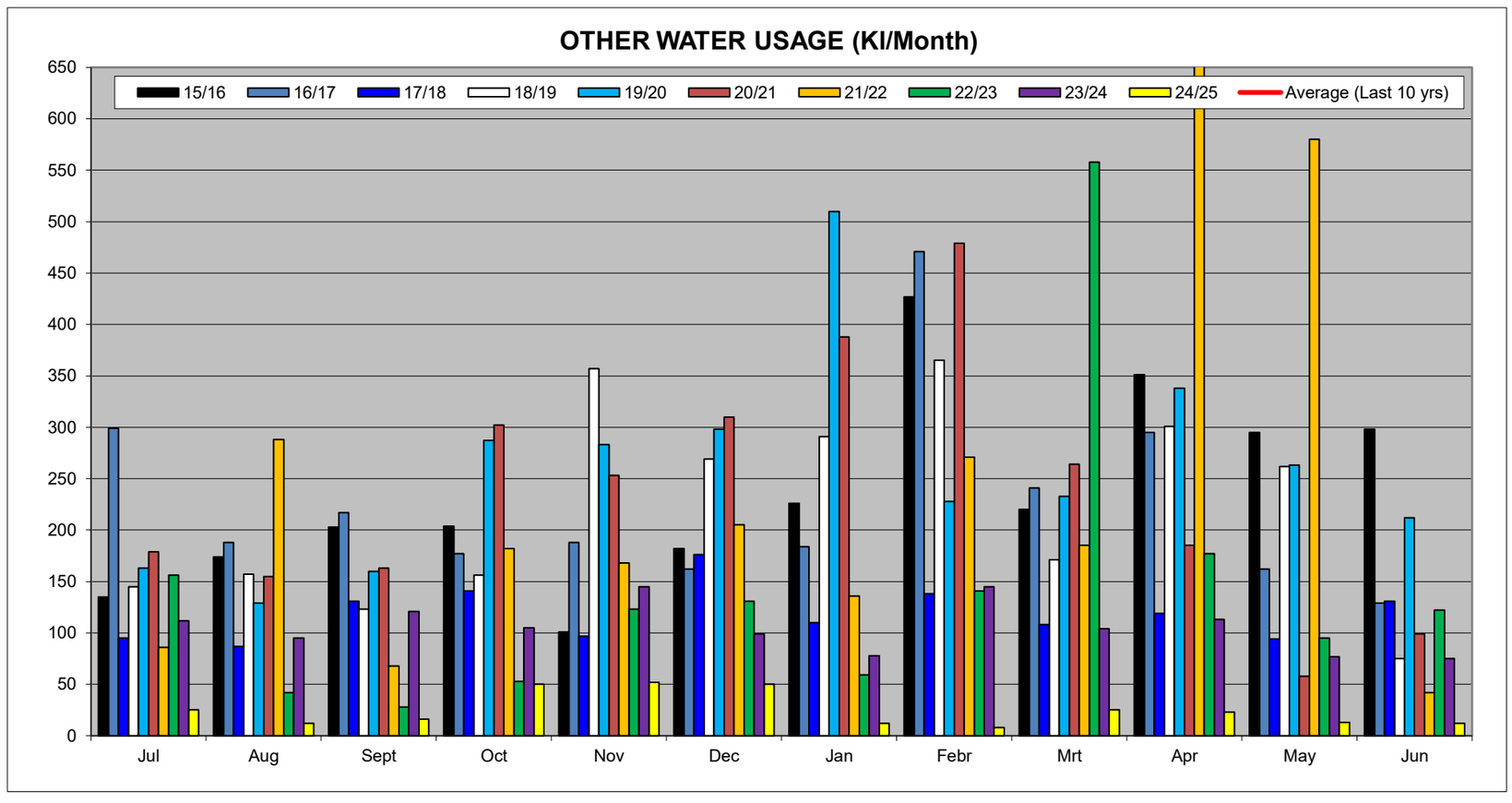






WATER BALANCE AND USAGE FOR PEARLY BEACH DISTRIBUTION SYSTEM





OVERSTRAND MUNICIPALITY

Buffeljags Bay

Month	Year	BULK WATER SUPPLY						TREATED WATER SUPPLY																	
		Raw Water Supply	System Input Volume	Bulk Distribution Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)													
																		Apparent Losses			Real Losses				
		Raw Water Supply from Borehole	Treated Water Reservoir	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water at Reservoir	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
																	Estimated Percentages (Variables)							
																	2%	4%	1%	93%				
		[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
Jan'02	2001/2002																								
Feb'02																									
Mrt'02																									
Apr'02																									
May'02																									
Jun'02																									
Jul'02	2002/2003																								
Aug'02																									
Sep'02																									
Oct'02																									
Nov'02																									
Dec'02																									
Jan'03																									
Feb'03																									
Mrt'03																									
Apr'03																									
May'03																									
Jun'03																									
Jul'03	2003/2004																								
Aug'03																									
Sep'03																									
Oct'03																									
Nov'03																									
Dec'03																									
Jan'04																									
Feb'04																									
Mrt'04																									
Apr'04																									
May'04																									
Jun'04																									
Jul'04	2004/2005																								
Aug'04																									
Sep'04																									
Oct'04																									
Nov'04																									
Dec'04																									
Jan'05																									
Feb'05																									
Mrt'05																									
Apr'05																									
May'05		244	244					244																	
Jun'05		281	281					281																	
Jul'05	2005/2006	256	256					256																	
Aug'05		169	169					169	61		108	63.9													
Sep'05		153	153					153	1		152	99.3													
Oct'05		165	165					165	0		165	100.0													
Nov'05		163	163					163	55		108	66.3													
Dec'05		217	217					217	2		215	99.1													
Jan'06		152	152					152	3		149	98.0													
Feb'06		160	160					160	0		160	100.0													
Mrt'06		183	183					183	116		67	36.6													
Apr'06		178	178					178	5		173	97.2													
May'06		208	208					208	1		207	99.5													
Jun'06		138	138					138	2		136	98.6													
Jul'06	2006/2007	390	390					390	1																
Aug'06		314	314					314																	
Sep'06		288	288					288																	
Oct'06		273	273					273																	
Nov'06		324	324					324																	
Dec'06		390	390					390																	
Jan'07		343	343					343	266	0	77	22.4%	220	11.8%	0	1	2	3	1	71	76	22.2%	216	11.6%
Feb'07		322	322					322	222	0	100	31.1%			0	1	2	4	1	92	99	30.9%		
Mrt'07		345	345					345	111	0	234	67.8%			0	1	5	9	2	217	233	67.6%		
Apr'07		299	299					299	449	0	-150	-50.2%			0	1	-3	-6	-2	-140	-151	-50.4%		
May'07		256	256					256	379	0	-123	-48.0%			0	1	-2	-5	-1	-115	-124	-48.2%		
Jun'07		297	297					297	215	0	82	27.6%			0	1	2	3	1	76	81	27.4%		
Jul'07	2007/2008	300	300					300	221	0	79	26.3%	360	12.3%	0	1	2	3	1	73	78	26.1%	354	12.1%
Aug'07		201	201					201	234	0	-33	-16.4%			0	0	-1	-1	0	-31	-33	-16.6%		
Sep'07		231	231					231	119	0	112	48.5%			0	0	2	4	1	104	112	48.3%		
Oct'07		269	269					269	211	0	58	21.6%			0	1	1	2	1	53	57	21.4%		
Nov'07		293	293					293	131	0	162	55.3%			0	1	3	6	2	150	161	55.1%		
Dec'07		301	301					301	291	0	10	3.3%			0	1	0	0	0	9	9	3.1%		
Jan'08		281	281					281	317	0	-36	-12.8%			0	1	-1	-1	0	-34	-37	-13.0%		
Feb'08		244	244					244	272	0	-28	-11.5%			0	0	-1	-1	0	-26	-28	-11.7%		
Mrt'08		244	244					244	193	0	51	20.9%			0	0	1	2	1	47	51	20.7%		
Apr'08		219	219					219	241	0	-22	-10.0%			0	0	0	-1	0	-21	-22	-10.2%		
May'08		243	243					243	202	0	41	16.9%			0	0	1	2	0	38	41	16.7%		
Jun'08		107	107					107	141	0	-34	-31.8%			0	0	-1	-1	0	-32	-34	-32.0%		
Jul'08	2008/2009	123	123					123	231	0	-108	-87.8%	112	4.4%	0	0	-2	-4	-1	-101	-108	-88.0%	107	4.2%
Aug'08		129	129					129	183	0	-54	-41.9%			0	0	-1	-2	-1	-50	-54	-42.1%		
Sep'08		174	174					174	205	0	-31	-17.8%			0	0	-1	-1	0	-29	-31	-18.0%		
Oct'08		43	43					43	160	0	-117	-272.1%			0	0	-2	-5	-1	-109	-117	-272.3%		
Nov'08		241	241					241	255	0	-14	-5.8%			0	0	0	-1	0	-13	-14	-6.0%		
Dec'08		300	300					300	211	0	89	29.7%			0	1	2	4	1	82	88	29.5%		
Jan'09		337	337					337	324	0	13	3.9%			0	1	0	0	0	11	12	3.7%		
Feb'09		248	248					248	187	0	61	24.6%			0	0	1	2	1	56	61	24.4%		
Mrt'09		252	252					252	240	0	12	4.8%			0	1	0	0	0	11	11	4.6%		
Apr'09		399	399					399	178	0	221	55.4%			0	1	4	9	2	205	220	55.2%		
May'09		159	159					159	157	0	2	1.3%			0	0	0	0	0	2	2	1.1%		
Jun'09		167	167					167	129	0	38	22.8%			0	0	1	2	0	35	38	22.6%		
Jul'09	2009/2010	196	196					196	192	0	4	2.0%	-309	-12.0%	0	0	0	0	0	3	4	1.8%	-314	-12.2%
Aug'09		131	131					131	125	0	6	4.6%			0	0	0	0	0	5	6	4.4%		
Sep'09		168	168					168	204	0	-36	-21.4%			0	0	-1	-1	0	-34	-36	-21.6%		
Oct'09		215	215					215	143	0	72	33.5%			0	0	1	3	1	67	72	33.3%		
Nov'09		168	168					168	197	0	-30	-17.6%			0	0	-1	-1	0	-28	-30	-17.8%		
Dec'09		228	228					228	190	0	38	16.5%			0	0	1	1	0	34	37	16.3%		
Jan'10		207	207					207	329	0	-123	-59.3%			0	0	-2	-5	-1	-114	-123	-59.5%		
Feb'10		178	178					178	256	0	-78	-43.8%			0	0	-2	-3	-1	-73	-78	-44.0%		
Mrt'10		202	202					202	228	0	-26	-12.9%			0	0	-1	-1	0	-25	-26	-13.1%		
Apr'10		417	417					417	419	0	-2	-0.5%			0	1	0	0	0	-3	-3	-0.7%		
May'10		292	292					292	333	0	-41	-14.0%			0	1	-1	-2	0	-39	-42	-14.2%		
Jun'10		182	182					182	275	0	-94	-51.5%			0	0	-2	-4	-1	-87	-94	-51.7%		
Jul'10	2010/2011	96	96					96	275	0	-179	-186.5%	-182	-5.1%	0	0	-4	-7	-2	-167	-179	-186.7%	-189	-5.3%
Aug'10		275	275					275	273	0	2	0.7%			0	1	0	0	0	1	1	0.5%		
Sep'10		258	258					258	345	0	-87	-33.7%			0	1	-2	-4	-1	-81	-88	-33.9%		
Oct'10		358	358					358	305	0	53	14.8%			0	1	1	2	1	49	52	14.6%		
Nov'10		287	287					287	294	0	-7	-2.4%			0	1	0	0	0	-7	-8	-2.6%		
Dec'10		367	367					367	307	0	60	16.3%			0	1	1	2	1	55	59	16.1%		
Jan'11		334	334					334	445	0	-111	-33.2%			0	1	-2	-4	-1	-104	-112	-33.4%		
Feb'11		321	321					321	364	0	-43	-13.4%			0	1	-1	-2	0	-41	-44	-13.6%		
Mrt'11		400	400					400	269	0	131	32.8%			0	1	3	5	1	121	130	32.6%		
Apr'11		162	162					162	233	0	-71	-43.8%			0	0	-1	-3	-1	-66	-71	-44.0%		
May'11		390	390					390	326	0	64	16.4%			0	1	1	3	1	59	63	16.2%		
Jun'11		312	312					312	306	0	6	1.9%			0	1	0	0	0	5	5	1.7%		
Jul'11	2011/2012	348	348					348	234	0	114	32.8%	19	0.5%	0	1	2	5	1	105	113	32.6%	11	0.3%
Aug'11		352	352					352	387	0	-35	-9.9%			0	1	-1	-1	0	-33	-36	-10.1%		
Sep'11		253	253					253	277	0	-24	-9.5%			0	1	0	-1	0	-23	-25	-9.7%		
Oct'11		295	295					295	331	0	-36	-12.2%			0	1	-1	-1	0	-34	-37	-12.4%		
Nov'11		341	341					341	261	0	80	23.5%			0	1	2	3	1	74	79	23.3%		
Dec'11		344	344					344	320	0	24	7.0%			0	1	0	1	0	22	23	6.8%		
Jan'12		308	308					308	489	0	-181	-58.8%			0	1	-4	-7	-2	-169	-182	-59.0%		
Feb'12		337	337					337	302	0	35	10.4%			0	1	1	1	0	32	34	10.2%		
Mrt'12		416	416					416	309	0	107	25.7%			0	1	2	4	1	99	106	25.5%		
Apr'12		312	312					312	259	0	53	17.0%			0	1	1	2	1	49	52	16.8%		
May'12		351	351					351	347	0	4	1.1%			0	1	0	0	0	3	3	0.9%		
Jun'12		238	238					238	360	0	-122	-51.3%			0	0	-2	-5	-1	-114	-122	-51.5%		
Jul'12	12/13	199	199					199	270	0	-71	-35.7%	90	2.6%	0	0	-1	-3	-1	-66	-71	-35.9%	83	2.4%
Aug'12		258	258					258	208	0	50	19.4%			0	1	1	2	0	46	49	19.2%		
Sep'12		243	243					243	201	0	42	17.3%			0	0	1	2	0	39	42	17.1%		
Oct'12		330	330					330	207	0	123	37.3%			0	1	2	5	1	114	122	37.1%		
Nov'12		330	330					330	549	0	-219	-66.4%			0	1	-4	-9	-2	-204	-220	-66.6%		
Dec'12		294	294					294	179	0	115	39.1%			0	1	2	5	1	106	114	38.9%		
Jan'13		402	402					402	361	0	41	10.2%			0	1	1	2	0	37	40	10.0%		
Feb'13		312	312					312	229	0	83	26.6%			0	1	2	3	1	77	82	26.4%		
Mrt'13		210	210					210	265	0	-55	-26.2%			0	0	-1	-2	-1	-52	-55	-26.4%		
Apr'13		324	324					324	336	0	-12	-3.7%			0	1	0	-1	0	-12	-13	-3.9%		
May'13		252	252					252	266	0	-14	-5.6%			0	1	0	-1	0	-13	-15	-5.8%		
Jun'13		264	264					264	257	0	7	2.7%			0	1	0	0	0	6	6	2.5%		
Jul'13	13/14	276	276					276	280	0	-4	-1.4%	4	0.1%	0	1	0	0	0	-4	-5	-1.6%	-3	-0.1%
Aug'13		240	240					240	218	0	22	9.2%			0	0	0	1	0	20	22	9.0%		
Sep'13		318	318					318	237	0	81	25.5%			0	1	2	3	1	75	80	25.3%		
Oct'13		252	252					252	221	0	31	12.3%			0	1	1	1	0	28	30	12.1%		
Nov'13		174	174					174	236	0	-62	-35.6%			0	0	-1	-2	-1	-58	-62	-35.8%		
Dec'13		228	228					228	250	0	-22	-9.6%			0	0	0	-1	0	-21	-22	-9.8%		
Jan'14		264	264					264	447	0	-183	-69.3%			0	1	-4	-7	-2	-171	-184	-69.5%		
Feb'14		408	408					408	240	0	168	41.2%			0	1	3	7	2	155	167	41.0%		
Mrt'14		270	270					270	336	0	-66	-24.4%			0	1	-1	-3	-1	-62	-67	-24.6%		
Apr'14		252	252					252	250	0	2	0.8%			0	1	0	0	0	1	1	0.6%		
May'14		276	276					276	288	0	-12	-4.3%			0	1	0	-1	0	-12	-13	-4.5%		
Jun'14		300	300					300	251	0	49	16.3%			0	1	1	2	0	45	48	16.1%		
Jul'14	14/15	282	282					282	271	0	11	3.9%	612	15.4%	0	1	0	0	0	10	10	3.7%	604	15.2%
Aug'14		282	282					282	212	0	70	24.8%			0	1	1	3	1	65	69	24.6%		
Sep'14		301	301					301	266	0	35	11.6%			0	1	1	1	0	32	34	11.4%		
Oct'14		257	257					257	234	0	23	8.9%			0	1	0	1	0	21	22	8.7%		
Nov'14		324	324					324	240	0	84	25.9%			0	1	2	3	1	78	83	25.7%		
Dec'14		386	386					386	285	0	101	26.2%			0	1	2	4	1	93	100	26.0%		
Jan'15		372	372					372	375	0	-3	-0.8%			0	1	0	0	0	-3	-4	-1.0%		
Feb'15		131	131					131	258	0	-127	-96.9%			0	0	-3	-5	-1	-118	-127	-97.1%		
Mrt'15		363	363					363	294	0	69	19.0%			0	1	1	3	1	63	68	18.8%		
Apr'15		334	334					334	284	0	50	15.0%			0	1	1	2	0	46	49	14.8%		
May'15		638	638					638	353	0	285	44.7%			0	1	6	11	3	264	284	44.5%		
Jun'15		292	292					292	278	0	14	4.8%			0	1	0	1	0	12	13	4.6%		
Jul'15	15/16	338	338	0	0.0	979	18.0%	338	274	0	64	18.9%	705	15.8%	0	1	1	3	1	59	63	18.7%	696	15.6%
Aug'15		329	329	0	0.0			329	278	0	51	15.5%			0	1	1	2	1	47	50	15.3%		
Sep'15		664	664	0	0.0			664	278	0	386	58.1%			0	1	8	15	4	358	385	57.9%		
Oct'15		400	400	0	0.0			400	359	0	41	10.3%			0	1	1	2	0	37	40	10.1%		
Nov'15		363	363	0	0.0			363	261	0	102	28.1%			0	1	2	4	1	94	101	27.9%		
Dec'15		413	413	0	0.0			413	330	0	83	20.1%			0	1	2	3	1	76	82	19.9%		
Jan'16		518	356	162	31.3			356	418	0	-62	-17.4%			0	1	-1	-3	-1	-58	-63	-17.6%		
Feb'16		740	332	408	55.1			332	398	0	-66	-19.9%			0	1	-1	-3	-1	-62	-67	-20.1%		
Mrt'16		561	340	221	39.4			340	252	0	88	25.9%			0	1	2	3	1	81	87	25.7%		
Apr'16		399	341	58	14.5			341	372	0	-31	-9.1%			0	1	-1	-1	0	-29	-32	-9.3%		
May'16		399	313	86	21.6			313	300	0	13	4.2%			0	1	0	0	0	12	12	4.0%		
Jun'16		303	259	44	14.5			259	223	0	36	13.9%			0	1	1	1	0	33	35	13.7%		
Jul'16	16/17	343	316	27	7.9	606	13.4%	316	245	0	71	22.5%	200	5.1%	0	1	1	3	1	65	70	22.3%	192	4.9%
Aug'16		497	311	186	37.4			311	280	0	31	10.0%			0	1	1	1	0	28	30	9.8%		
Sep'16		331	296	35	10.6			296	361	0	-65	-22.0%			0	1	-1	-3	-1	-61	-66	-22.2%		
Oct'16		374	345	29	7.8			345	287	0	58	16.8%			0	1	1	2	1	53	57	16.6%		
Nov'16		359	341	18	5.0			341	347	0	-6	-1.8%			0	1	0	0	0	-6	-7	-2.0%		
Dec'16		399	395	4	1.0			395	297	0	98	24.8%			0	1	2	4	1	90	97	24.6%		
Jan'17		380	363	17	4.5			363	448	0	-85	-23.4%			0	1	-2	-3	-1	-80	-86	-23.6%		
Feb'17		324	328	-4	-1.2			328	297	0	31	9.5%			0	1	1	1	0	28	30	9.3%		
Mrt'17		402	334	68	16.9			334	300	0	34	10.2%			0	1	1	1	0	31	33	10.0%		
Apr'17		422	320	102	24.2			320	291	0	29	9.1%			0	1	1	1	0	26	28	8.9%		
May'17		386	294	92	23.8			294	337	0	-43	-14.6%			0	1	-1	-2	0	-41	-44	-14.8%		
Jun'17		316	284	32	10.1			284	237	0	47	16.5%			0	1	1	2	0	43	46	16.3%		
Jul'17	17/18	336	314	22	6.5	523	10.5%	314	320	0	-6	-1.9%	373	8.4%	0	1	0	0	0	-6	-7	-2.1%	364	8.2%
Aug'17		339	312	27	8.0			312	271	0	41	13.1%			0	1	1	2	0	38	40	12.9%		
Sep'17		386	349	37	9.6			349	239	0	110	31.5%			0	1	2	4	1	102	109	31.3%		
Oct'17		449	441	8	1.8			441	374	0	67	15.2%			0	1	1	3	1	61	66	15.0%		
Nov'17		706	341	365	51.7			341	408	0	-67	-19.6%			0	1	-1	-3	-1	-63	-68	-19.8%		
Dec'17		422	432	-10	-2.4			432	279	0	153	35.4%			0	1	3	6	2	141	152	35.2%		
Jan'18		494	455	39	7.9			455	444	0	11	2.4%			0	1	0	0	0	9	10	2.2%		
Feb'18		404	395	9	2.2			395	400	0	-5	-1.3%			0	1	0	0	0	-5	-6	-1.5%		
Mrt'18		341	344	-3	-0.9			344	376	0	-32	-9.3%			0	1	-1	-1	0	-30	-33	-9.5%		
Apr'18		335	327	8	2.4			327	339	0	-12	-3.7%			0	1	0	-1	0	-12	-13	-3.9%		
May'18		370	364	6	1.6			364	331	0	33	9.1%			0	1	1	1	0	30	32	8.9%		
Jun'18		384	369	15	3.9			369	289	0	80	21.7%			0	1	2	3	1	74	79	21.5%		
Jul'18	18/19	563	563	0	0.0	48	1.0%	563	409	0	154	27.4%	770	15.8%	0	2	3	3	2	144	152	26.9%	741	15.2%
Aug'18		413	414	-1	-0.2			414	482	0	-68	-16.4%			0	2	-1	3	-1	-72	-70	-17.0%		
Sep'18		370	365	5	1.4			365	358	0	7	1.9%			0	2	0	2	0	2	5	1.3%		
Oct'18		278	377	-99	-35.6			377	301	0	76	20.2%			0	2	1	2	1	69	74	19.5%		
Nov'18		325	339	-14	-4.3			339	213	0	126	37.2%			0	2	2	1	1	118	124	36.5%		
Dec'18		508	422	86	16.9			422	298	0	124	29.4%			0	2	2	2	1	116	122	28.8%		
Jan'19		427	389	38	8.9			389	422	0	-33	-8.5%			0	2	-1	3	0	-37	-35	-9.1%		
Feb'19		426	365	61	14.3			365	235	0	130	35.6%			0	2	3	2	1	122	128	35.0%		
Mrt'19		380	395	-15	-3.9			395	311	0	84	21.3%			0	2	2	2	1	77	82	20.7%		
Apr'19		362	379	-17	-4.7			379	443	0	-64	-16.9%			0	2	-1	3	-1	-67	-66	-17.5%		
May'19		403	399	4	1.0			399	251	0	148	37.1%			0	2	3	2	1	140	146	36.5%		
Jun'19		457	457	0	0.0

OVERSTRAND MUNICIPALITY

Buffeljags Bay

Month	Year	BULK WATER SUPPLY						TREATED WATER SUPPLY																	
		Raw Water Supply	System Input Volume	Bulk Distribution Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)													
																		Apparent Losses			Real Losses				
		Raw Water Supply from Borehole	Treated Water Reservoir	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water at Reservoir	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
																	Estimated Percentages (Variables)							
																	2%	4%	1%	93%				
		[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
Jul'20	20/21	445	427	18	4.0	-220	-3.9%	427	171	0	256	60.0%	3156	53.7%	0	2	5	1	3	245	254	59.4%	3127	53.2%
Aug'20		431	421	10	2.3			421	226	0	195	46.3%			0	2	4	2	2	185	193	45.7%		
Sep'20		468	472	-4	-0.9			472	258	0	214	45.3%			0	2	4	2	2	203	212	44.8%		
Oct'20		515	494	21	4.1			494	230	0	264	53.4%			0	2	5	2	3	252	262	53.0%		
Nov'20		454	493	-39	-8.6			493	225	0	268	54.4%			0	2	5	2	3	256	266	53.9%		
Dec'20		537	603	-66	-12.3			603	269	0	334	55.4%			0	2	7	2	3	319	332	55.0%		
Jan'21		601	691	-90	-15.0			691	302	0	389	56.3%			0	2	8	3	4	372	387	55.9%		
Feb'21		500	542	-42	-8.4			542	197	0	345	63.7%			0	2	7	2	3	331	343	63.2%		
Mrt'21		487	476	11	2.3			476	240	0	236	49.6%			0	2	5	2	2	225	234	49.1%		
Apr'21		452	423	29	6.4			423	201	0	222	52.5%			0	2	4	2	2	211	220	51.9%		
May'21		364	377	-13	-3.6			377	219	0	158	41.9%			0	2	3	2	2	149	156	41.3%		
Jun'21		405	460	-55	-13.6			460	185	0	275	59.8%			0	2	5	2	3	263	273	59.3%		
Jul'21	21/22	443	367	76	17.2	247	4.5%	367	196	0	171	46.6%	2299	43.7%	0	5	3	2	2	160	166	45.3%	2243	42.7%
Aug'21		395	410	-15	-3.8			410	156	0	254	62.0%			0	5	5	1	2	241	249	60.8%		
Sep'21		451	479	-28	-6.2			479	234	0	245	51.1%			0	5	5	2	2	231	240	50.2%		
Oct'21		607	541	66	10.9			541	273	0	268	49.5%			0	5	5	2	3	253	263	48.7%		
Nov'21		502	502	0	0.0			502	269	0	233	46.4%			0	5	5	2	2	219	228	45.5%		
Dec'21		426	426	0	0.0			426	244	0	182	42.7%			0	5	4	2	2	170	177	41.6%		
Jan'22		403	401	2	0.5			401	330	0	71	17.7%			0	5	1	3	1	62	66	16.5%		
Feb'22		406	351	55	13.5			351	203	0	148	42.2%			0	5	3	2	1	137	143	40.8%		
Mrt'22		448	400	48	10.7			400	205	0	195	48.8%			0	5	4	2	2	183	190	47.6%		
Apr'22		394	497	-103	-26.1			497	225	0	272	54.7%			0	5	5	2	3	257	267	53.8%		
May'22		563	498	65	11.5			498	367	0	131	26.3%			0	5	3	3	1	119	126	25.4%		
Jun'22		466	385	81	17.4			385	256	0	129	33.5%			0	5	2	2	1	118	124	32.3%		
Jul'22	22/23	460	410	50	10.9	182	3.1%	410	259	0	151	36.8%	1998	35.1%	1	0	3	2	2	143	150	36.6%	1986	34.9%
Aug'22		377	361	16	4.2			361	192	0	169	46.8%			1	0	3	2	2	161	168	46.5%		
Sep'22		448	444	4	0.9			444	261	0	183	41.2%			1	0	4	2	2	174	182	41.0%		
Oct'22		489	464	5	1.1			464	335	0	129	27.8%			1	0	3	3	1	121	128	27.6%		
Nov'22		480	409	71	14.8			409	278	0	131	32.0%			1	0	3	2	1	124	130	31.8%		
Dec'22		451	447	4	0.9			447	258	0	189	42.3%			1	0	4	2	2	180	188	42.1%		
Jan'23		606	600	6	1.0			600	341	0	259	43.2%			1	0	5	3	3	247	258	43.0%		
Feb'23		495	490	5	1.0			490	431	0	59	12.0%			1	0	1	4	1	53	58	11.8%		
Mrt'23		573	568	5	0.9			568	429	0	139	24.5%			1	0	3	4	1	130	138	24.3%		
Apr'23		456	451	5	1.1			451	404	0	47	10.4%			1	0	1	3	0	41	46	10.2%		
May'23		473	468	5	1.1			468	301	0	167	35.7%			1	0	3	3	2	158	166	35.5%		
Jun'23		584	578	6	1.0			578	203	0	375	64.9%			1	0	7	2	4	361	374	64.7%		
Jul'23	23/24	610	604	6	1.0	63	0.9%	604	336	0	268	44.4%	3417	48.6%	0	3	5	3	3	254	265	43.9%	3381	48.1%
Aug'23		634	628	6	0.9			628	237	0	391	62.3%			0	3	8	2	4	374	388	61.8%		
Sep'23		565	559	6	1.1			559	326	0	233	41.7%			0	3	5	3	2	220	230	41.2%		
Oct'23		477	472	5	1.0			472	211	0	261	55.3%			0	3	5	2	3	248	258	54.7%		
Nov'23		618	613	5	0.8			613	213	0	400	65.3%			0	3	8	2	4	383	397	64.8%		
Dec'23		671	666	5	0.7			666	246	0	420	63.1%			0	3	8	2	4	402	417	62.6%		
Jan'24		686	681	5	0.7			681	570	0	111	16.3%			0	3	2	5	1	100	108	15.9%		
Feb'24		507	502	5	1.0			502	341	0	161	32.1%			0	3	3	3	2	150	158	31.5%		
Mrt'24		505	500	5	1.0			500	289	0	211	42.2%			0	3	4	2	2	199	208	41.6%		
Apr'24		505	500	5	1.0			500	293	0	207	41.4%			0	3	4	2	2	195	204	40.8%		
May'24		655	650	5	0.8			650	285	0	365	56.2%			0	3	7	2	4	349	362	55.7%		
Jun'24		667	662	5	0.7			662	273	0	389	58.8%			0	3	8	2	4	372	386	58.3%		
Jul'24	24/25	659	654	5	0.8	60	0.7%	654	192	0	462	70.6%	5467	68.2%	0	1	9	2	5	445	461	70.4%	5449	67.9%
Aug'24		588	583	5	0.9			583	128	0	455	78.0%			0	1	9	1	5	439	454	77.8%		
Sep'24		654	649	5	0.8			649	170	0	479	73.8%			0	1	10	1	5	462	478	73.6%		
Oct'24		582	577	5	0.9			577	294	0	283	49.0%			0	1	6	3	3	271	282	48.8%		
Nov'24		596	591	5	0.8			591	211	0	380	64.3%			0	1	8	2	4	365	379	64.0%		
Dec'24		788	783	5	0.6			783	204	0	579	73.9%			0	1	12	2	6	558	578	73.8%		
Jan'25		737	732	5	0.7			732	292	0	440	60.1%			0	1	9	2	4	423	439	59.9%		
Feb'25		759	754	5	0.7			754	213	0	541	71.8%			0	1	11	2	5	522	540	71.6%		
Mrt'25		668	663	5	0.7			663	163	0	500	75.4%			0	1	10	1	5	482	499	75.2%		
Apr'25		777	772	5	0.6			772	260	0	512	66.3%			0	1	10	2	5	493	511	66.1%		
May'25		662	657	5	0.8			657	203	0	454	69.1%			0	1	9	2	5	437	453	68.9%		
Jun'25		610	605	5	0.8			605	223	0	382	63.1%			0	1	8	2	4	367	381	62.9%		

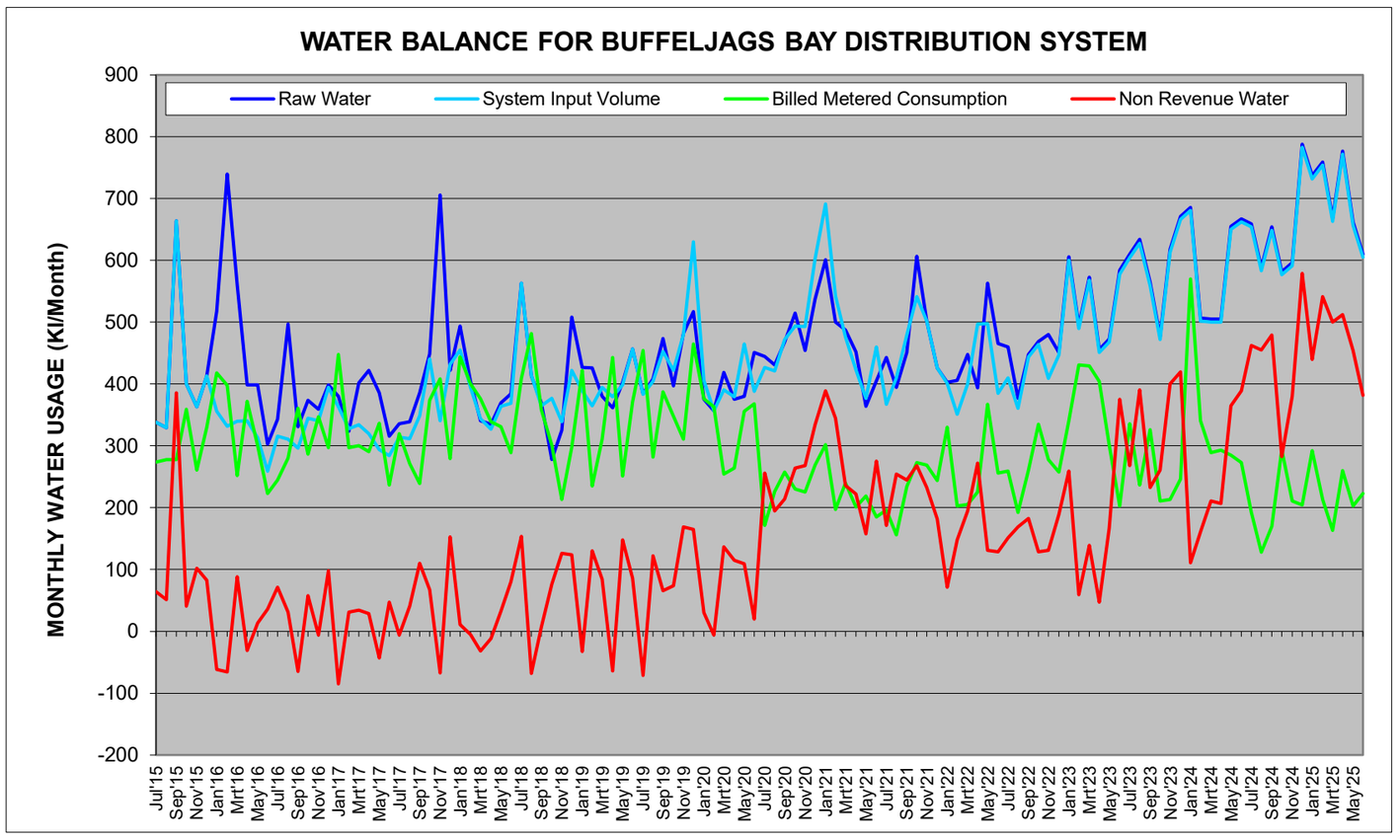
Year	ANNUAL TOTALS																							
	Raw Water Supply	System Input Volume	Bulk Distribution Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)														
																	Apparent Losses			Real Losses				
	Raw Water Supply from Borehole	Treated Water Reservoir	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water at Reservoir	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
2005/2006	2142	2142					2142	246	0													0	0.0%
2006/2007	3841	3841					3841	1643	0			220	11.8%	0	4	4	9	2	201			216	11.6%
2007/2008	2933	2933					2933	2573	0			360	12.3%	0	6	7	14	4	329			354	12.1%
2008/2009	2572	2572					2572	2460	0			112	4.4%	0	5	2	4	1	99			107	4.2%
2009/2010	2582	2582					2582	2891	0			-309	-12.0%	0	5	-6	-13	-3	-292			-314	-12.2%
2010/2011	3560	3560					3560	3742	0			-182	-5.1%	0	7	-4	-8	-2	-176			-189	-5.3%
2011/2012	3895	3895					3895	3876	0			19	0.5%	0	8	0	0	0	10			11	0.3%
2012/2013	3418	3418					3418	3328	0			90	2.6%	0	7	2	3	1	77			83	2.4%
2013/2014	3258	3258					3258	3254	0			4	0.1%	0	7	0	0	0	-2			-3	-0.1%
2014/2015	3962	3962					3962	3350	0			612	15.4%	0	8	12	24	6	562			604	15.2%
2015/2016	5427	4448			979	18.0%	4448	3743	0			705	15.8%	0	9	14	28	7	647			696	15.6%
2016/2017	4533	3927			606	13.4%	3927	3727	0			200	5.1%	0	8	4	8	2	179			192	4.9%
2017/2018	4966	4443			523	10.5%	4443	4070	0			373	8.4%	0	9	7	15	4	339			364	8.2%
2018/2019	4912	4864			48	1.0%	4864	4094	0			770	15.8%	0	29	15	27	7	692			741	15.2%
2019/2020	5019	5158			-139	-2.8%	5158	4228	0			930	18.0%	0.6	29	18	106	9	768			901	17.5%
2020/2021	5659	5879			-220	-3.9%	5879	2723	0			3156	53.7%	0.12	29	63	23	31	3010			3127	53.2%
2021/2022	5504	5257			247	4.5%	5257	2958	0			2299	43.7%	0.96	55	45	25	22	2150			2243	42.7%
2022/2023	5872	5690			182	3.1%	5690	3692	0			1998	35.1%	12	0	40	31	20	1895			1986	34.9%
2023/2024	7100	7037			63	0.9%	7037	3620	0			3417	48.6%	2.04	34	68	31	34	3249			3381	48.1%
2024/2025	8080	8020			60	0.7%	8020	2553	0			5467	68.2%	0	17	109	22	54	5264			5449	67.9%

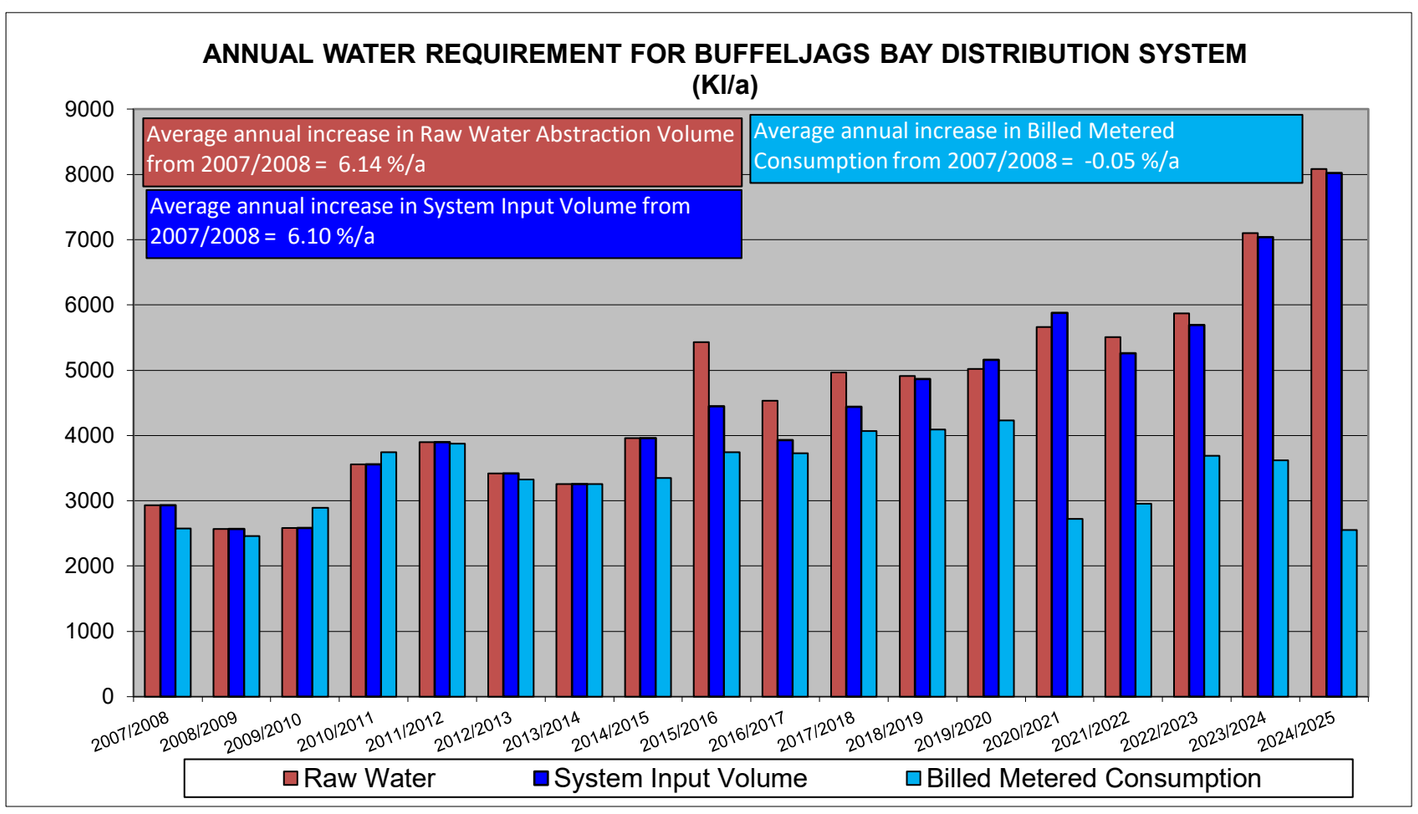
Water Balance Components		Water Balance Volumes											
Component	Units	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
Consumer Units	Number of connections	32	34	36	36	36	36	36	35	33	32	30	30
System Input Volume	l/connection/day	279	318	339	299	338	370	393	460	436	487	643	732
Average Billed Metered Cons.	l/connection/day	279	269	285	284	310	312	322	213	246	316	331	233
Non-Revenue Water	l/connection/day	0	49	54	15	28	59	71	247	191	171	312	499

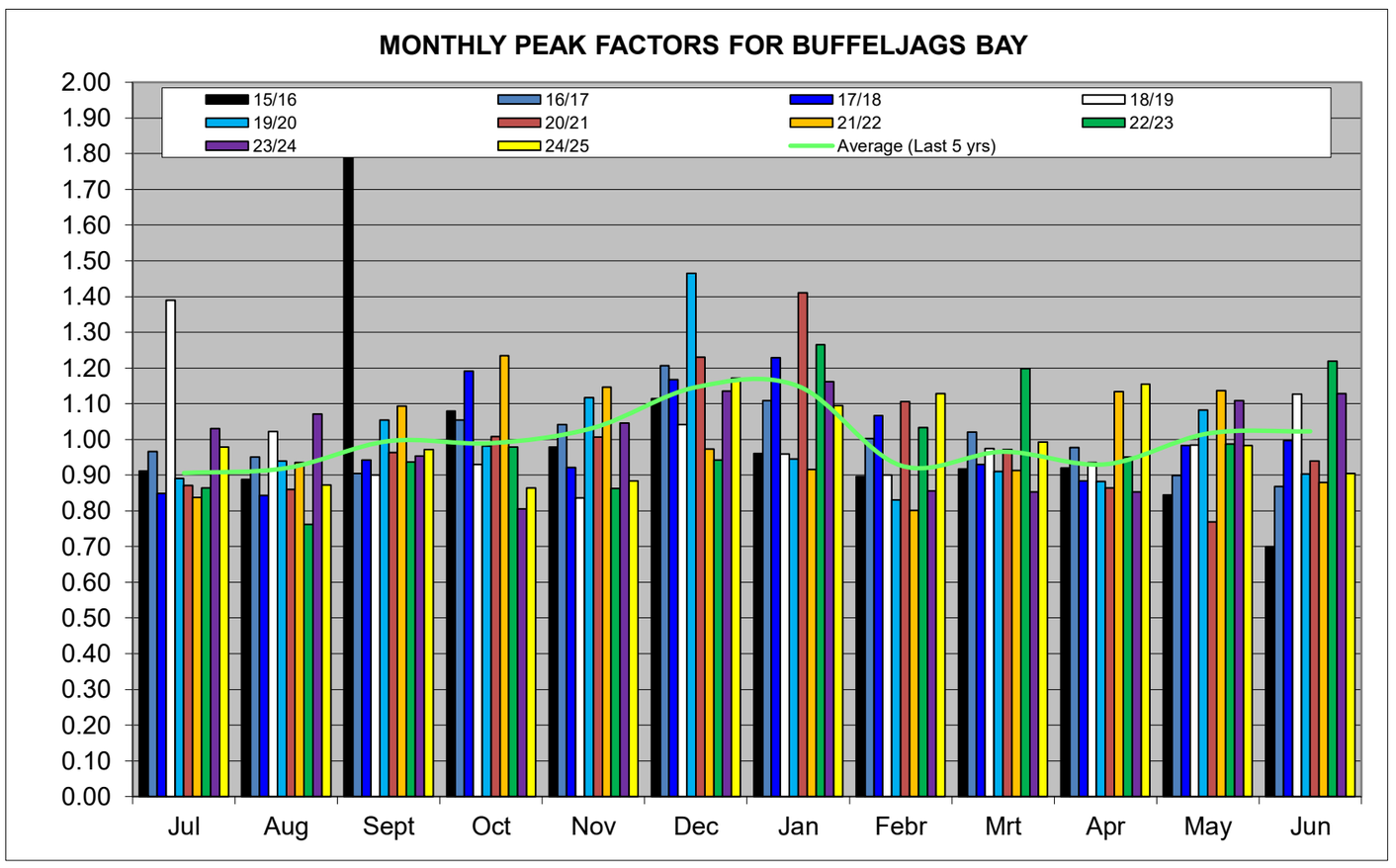
Water Balance Components		Percentage Change in Volumes in l/connection/day, year on year											
Component	Units	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
System Input Volume	% Change in Volume	-	13.90%	6.55%	-11.71%	13.14%	9.48%	6.04%	17.23%	-5.16%	11.62%	31.92%	13.97%
Average Billed Metered Cons.	% Change in Volume	-	-3.58%	6.04%	-0.43%	9.20%	0.59%	3.27%	-33.76%	15.21%	28.71%	4.59%	-29.48%
Non-Revenue Water	% Change in Volume	-	14229.76%	9.33%	-71.63%	86.50%	106.43%	20.78%	249.05%	-22.74%	-10.38%	82.42%	59.99%

Water Balance Components		Did volume in l/connection/day Rise or Fall, year on year?											
Component	Units	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
System Input Volume	Rise or Fall	-	Rise	Rise	Fall	Rise	Rise	Rise	Rise	Fall	Rise	Rise	Rise
Average Billed Metered Cons.	Rise or Fall	-	Fall	Rise	Fall	Rise	Rise	Rise	Fall	Rise	Rise	Rise	Fall
Non-Revenue Water	Rise or Fall	-	Rise	Rise	Fall	Rise	Rise	Rise	Rise	Fall	Fall	Rise	Rise

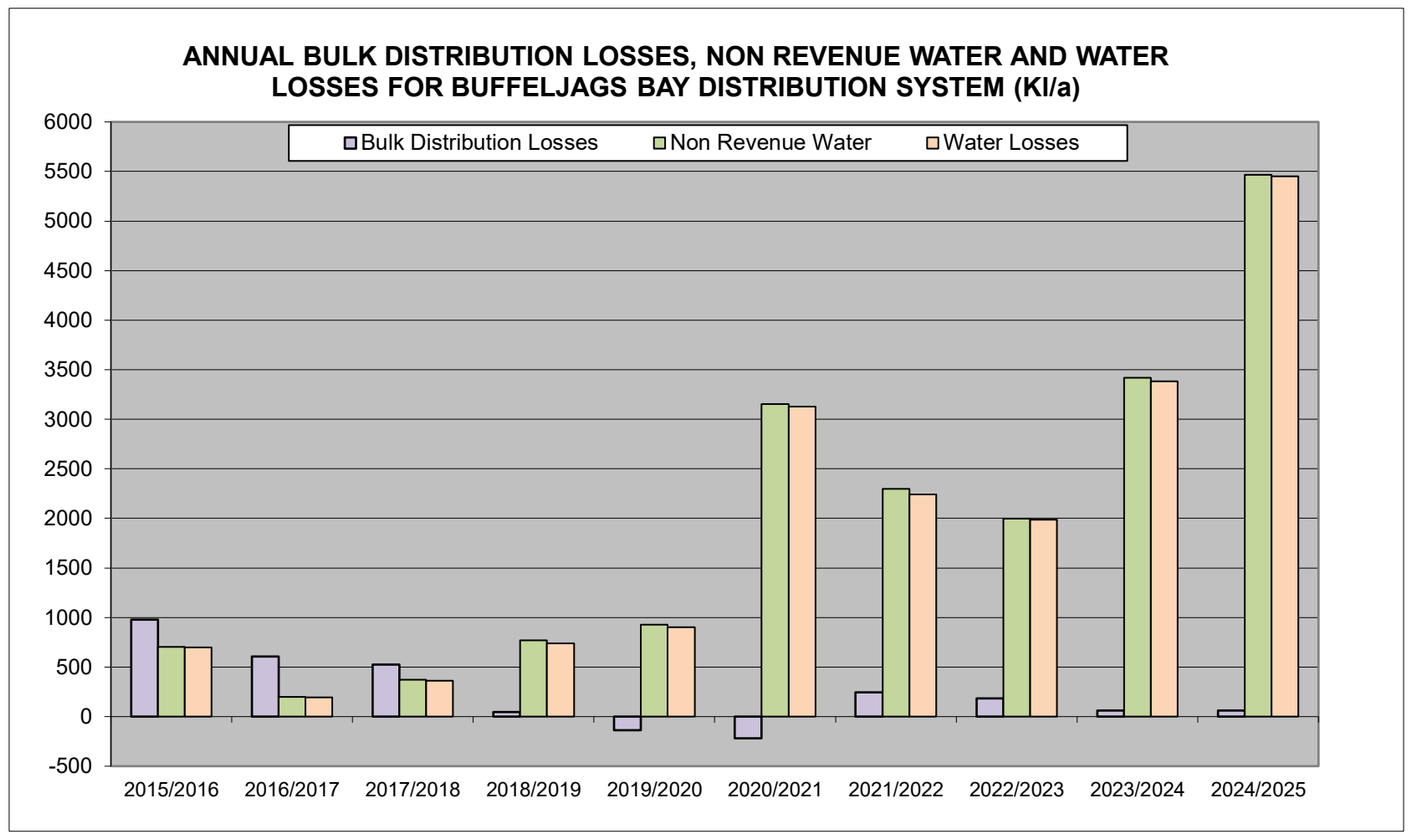
WATER BALANCE AND USAGE FOR BUFFELJAGSBAAI DISTRIBUTION SYSTEM

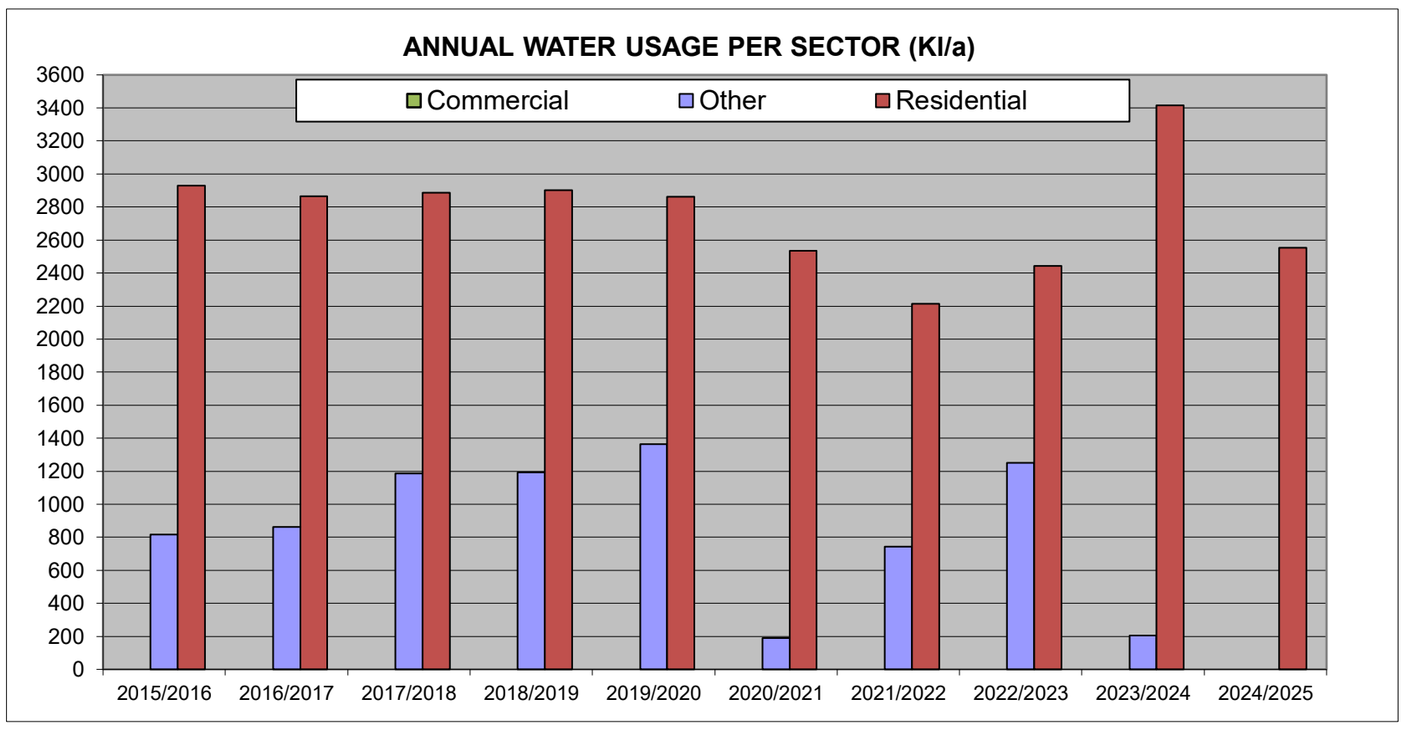


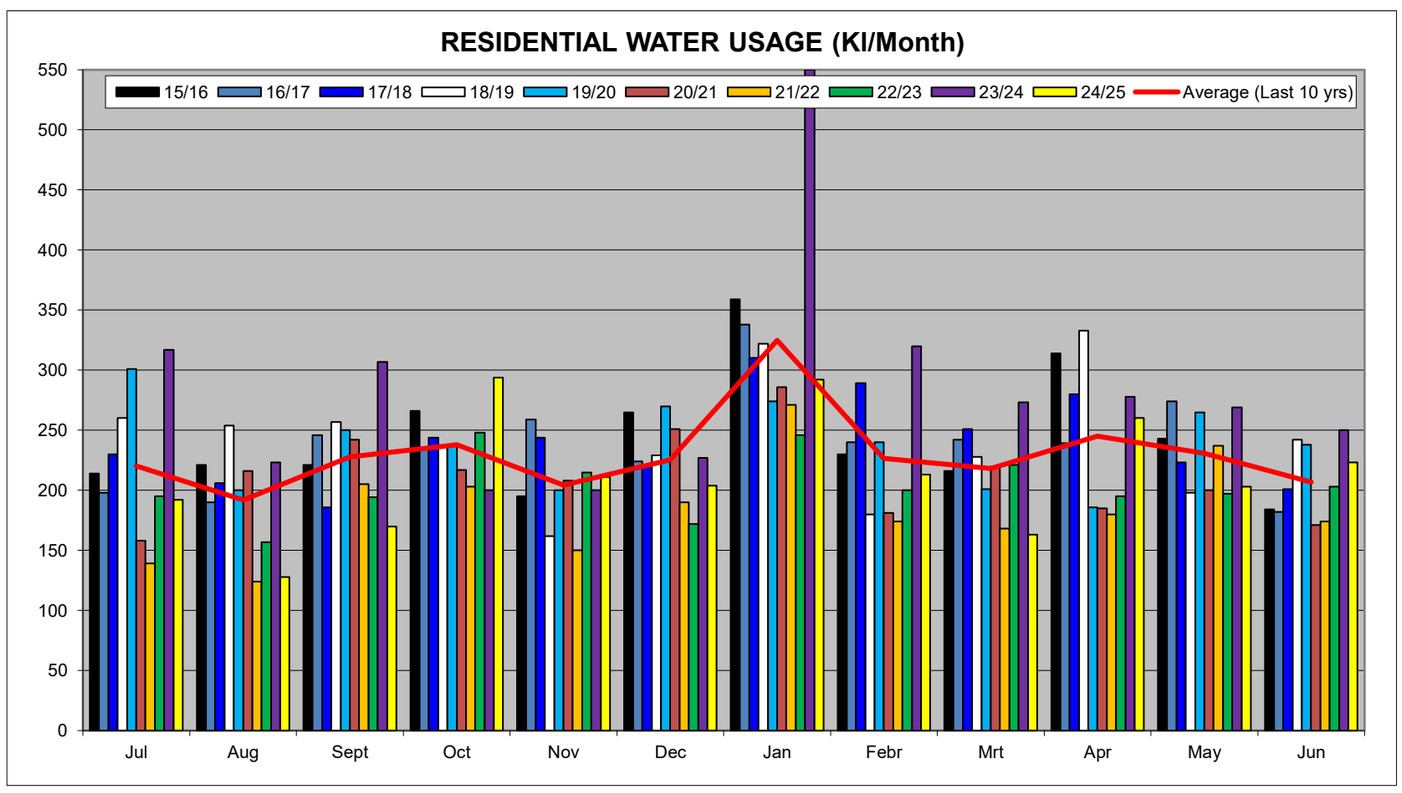




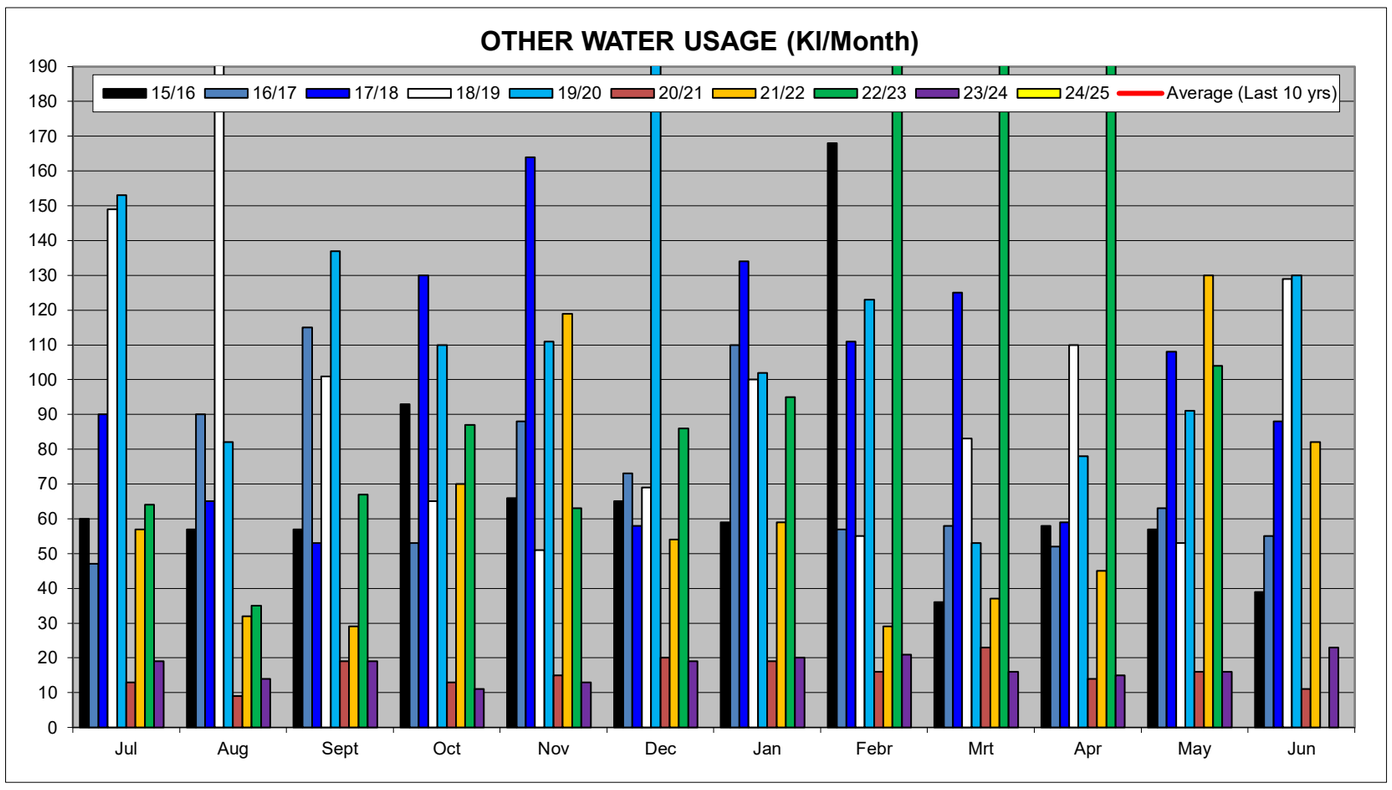
WATER BALANCE AND USAGE FOR BUFFELJAGSBAAI DISTRIBUTION SYSTEM







WATER BALANCE AND USAGE FOR BUFFELJAGSBAAI DISTRIBUTION SYSTEM



OVERSTRAND MUNICIPALITY

Month	Year	TREATED WATER SUPPLY																							
				Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)														
																	Apparent Losses			Real Losses					
		Raw Water Supply	System Input Volume	Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water from WTW	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
																	Estimated Percentages (Variables)								
																	2%	4%	1%	93%				
		[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
Jul'18	2018/2019	579489	492664	86825	15.0	838029	10.7%	492664	311693	0	180971	36.7	1511124	21.5%	0	7678	3466	8156	1733	159938	173293	35.2%	1418984	20.2%
Aug'18		571269	490364	80905	14.2			490364	367265	0	123099	25.1			0	7678	2308	9611	1154	102347	115421	23.5%		
Sep'18		565910	493332	72578	12.8			493332	395201	0	98131	19.9			0	7678	1809	10342	905	77398	90453	18.3%		
Oct'18		669982	599457	70525	10.5			599457	391342	0	208115	34.7			0	7678	4009	10241	2004	184183	200437	33.4%		
Nov'18		660369	593983	66386	10.1			593983	508517	0	85466	14.4			0	7678	1556	13307	778	62147	77788	13.1%		
Dec'18		802690	733094	69596	8.7			733094	474590	0	258504	35.3			0	7678	5017	12419	2508	230882	250826	34.2%		
Jan'19		800231	740603	59628	7.5			740603	709080	0	31523	4.3			0	7678	477	18555	238	4574	23845	3.2%		
Feb'19		724591	639612	84979	11.7			639612	509504	0	130108	20.3			0	7678	2449	13333	1224	105424	122430	19.1%		
Mrt'19		681775	601533	80242	11.8			601533	553078	0	48455	8.1			0	7678	816	14473	408	25080	40777	6.8%		
Apr'19		613639	549824	63815	10.4			549824	427108	0	122716	22.3			0	7678	2301	11177	1150	100410	115038	20.9%		
May'19		621568	566436	55132	8.9			566436	423061	0	143375	25.3			0	7678	2714	11071	1357	120555	135697	24.0%		
Jun'19		581607	514189	47418	8.4			514189	433528	0	80661	15.7			0	7678	1460	11345	730	59449	72983	14.2%		
Jul'19	2019/2020	586586	521501	68085	11.5	779588	9.9%	521501	440212	0	81289	15.6	1580399	22.3%	170	4708	1528	6032	764	68086	76411	14.7%	1521865	21.5%
Aug'19		619184	544032	75152	12.1			544032	360603	0	183429	33.7			170	4708	3571	4942	1786	168253	178551	32.8%		
Sep'19		632549	570858	61691	9.8			570858	355397	0	215461	37.7			170	4708	4212	4870	2106	199395	210583	36.9%		
Oct'19		647329	593302	54027	8.3			593302	457003	0	136299	23.0			170	4708	2628	6263	1314	121216	131421	22.2%		
Nov'19		656923	597881	59042	9.0			597881	467156	0	130725	21.9			170	4708	2517	6402	1258	115670	125847	21.0%		
Dec'19		814801	737356	77445	9.5			737356	460431	0	276925	37.6			170	4708	5441	6310	2720	257576	272047	36.9%		
Jan'20		745233	672158	73075	9.8			672158	704479	0	-32321	-4.8			170	4708	-744	9654	-372	-45737	-37199	-5.5%		
Feb'20		642349	578757	63592	9.9			578757	497804	0	80953	14.0			170	4708	1522	6822	761	66971	76075	13.1%		
Mrt'20		710994	634160	76834	10.8			634160	456484	0	177676	28.0			170	4708	3456	6255	1728	161359	172798	27.2%		
Apr'20		608858	551892	56966	9.4			551892	461254	0	90638	16.4			170	4708	1715	6321	858	76867	85760	15.5%		
May'20		623261	562651	60610	9.7			562651	449018	0	113633	20.2			170	4708	2175	6153	1088	99339	108755	19.3%		
Jun'20		572875	519806	53069	9.3			519806	394114	0	125692	24.2			170	4708	2416	5401	1208	111789	120814	23.2%		
Jul'20	2020/2021	579955	537873	42082	7.3	635571	8.0%	537873	394484	0	143389	26.7	2077312	28.3%	103	6581	2734	2933	1367	129671	136705	25.4%	1997106	27.2%
Aug'20		610403	535747	74656	12.2			535747	342636	0	193111	36.0			103	6581	3729	2547	1864	178287	186427	34.8%		
Sep'20		610601	538658	71943	11.8			538658	350121	0	188537	35.0			103	6581	3637	2603	1819	173795	181853	33.8%		
Oct'20		664675	607389	57286	8.6			607389	391553	0	215836	35.5			103	6581	4183	2911	2092	199967	209152	34.4%		
Nov'20		659786	597566	62220	9.4			597566	401295	0	196271	32.8			103	6581	3792	2984	1896	180916	189587	31.7%		
Dec'20		777486	737454	40032	5.1			737454	434753	0	302701	41.0			103	6581	5920	3232	2960	283904	296017	40.1%		
Jan'21		837157	765988	71169	8.5			765988	654480	0	111508	14.6			103	6581	2096	4866	1048	96814	104824	13.7%		
Feb'21		696593	651400	45193	6.5			651400	534175	0	117225	18.0			103	6581	2211	3971	1105	103254	110541	17.0%		
Mrt'21		721040	646231	74809	10.4			646231	496446	0	149785	23.2			103	6581	2862	3691	1431	135117	143101	22.1%		
Apr'21		623608	633824	-10016	-1.6			633824	466344	0	167480	26.4			103	6581	3216	3467	1608	152505	160796	25.4%		
May'21		616541	559604	56937	9.2			559604	455890	0	103714	18.5			103	6581	1941	3389	970	90730	97030	17.3%		
Jun'21		588427	539169	49258	8.4			539169	351414	0	187755	34.8			103	6581	3621	2613	1811	173026	181071	33.6%		
Jul'21	2021/2022	604086	543150	60936	10.1	702661	8.7%	543150	367430	0	175720	32.4	1768177	24.0%	299	11765	3273	2732	1637	156015	163656	30.1%	1623412	22.1%
Aug'21		594820	556052	38768	6.5			556052	304502	0	251550	45.2			299	11765	4790	2264	2395	230038	239486	43.1%		
Sep'21		631537	552412	79125	12.5			552412	429463	0	122949	22.3			299	11765	2218	3193	1109	104366	110885	20.1%		
Out'21		665581	593308	72273	10.9			593308	477932	0	115376	19.4			299	11765	2066	3553	1033	96660	103312	17.4%		
Nov'21		641198	582173	59025	9.2			582173	402784	0	179389	30.8			299	11765	3347	2995	1673	159311	167325	28.7%		
Dec'21		752472	712848	39624	5.3			712848	480730	0	232118	32.6			299	11765	4401	3574	2201	209878	220054	30.9%		
Jan'22		808132	753701	54431	6.7			753701	633820	0	119881	15.9			299	11765	2156	4712	1078	99870	107817	14.3%		
Feb'22		707629	672317	35312	5.0			672317	588944	0	83373	12.4			299	11765	1426	4379	713	64791	71309	10.6%		
Mrt'22		762999	683935	79064	10.4			683935	523159	0	160776	23.5			299	11765	2974	3890	1487	140361	148712	21.7%		
Apr'22		672012	606068	65944	9.8			606068	491620	0	114448	18.9			299	11765	2048	3655	1024	95658	102384	16.9%		
May'22		641828	578431	63397	9.9			578431	491311	0	87120	15.1			299	11765	1501	3653	751	69152	75056	13.0%		
Jun'22		574964	520202	54762	9.5			520202	394725	0	125477	24.1			299	11765	2268	2935	1134	107076	113413	21.8%		
Jul'22	2022/2023	599620	553525	46095	7.7	638642	7.8%	553525	448953	0	104572	18.9	1840979	24.5%	169	8815	1912	3338	956	89382	95588	17.3%	1733169	23.0%
Aug'22		599817	549554	50263	8.4			549554	359310	0	190244	34.6			169	8815	3625	2671	1813	173151	181260	33.0%		
Sep'22		597077	546497	50580	8.5			546497	409503	0	136994	25.1			169	8815	2560	3045	1280	121125	128010	23.4%		
Oct'22		712630	640718	71912	10.1			640718	437045	0	203673	31.8			169	8815	3894	3249	1947	185599	194689	30.4%		
Nov'22		741592	688434	53158	7.2			688434	465605	0	222829	32.4			169	8815	4277	3462	2138	203968	213845	31.1%		
Dec'22		801841	752998	48843	6.1			752998	559814	0	193184	25.7			169	8815	3684	4162	1842	174512	184200	24.5%		
Jan'23		817020	775817	41203	5.0			775817	614989	0	160828	20.7			169	8815	3037	4572	1518	142716	151844	19.6%		
Feb'23		680944	635668	45276	6.6			635668	587575	0	68093	10.7			169	8815	1182	4220	591	53116	59109	9.3%		
Mrt'23		724507	652254	72253	10.0			652254	488986	0	163268	25.0			169	8815	3086	3635	1543	146020	154284	23.7%		
Apr'23		649972	604859	45113	6.9			604859	461978	0	142881	23.6			169	8815	2678	3435	1339	126445	133897	22.1%		
May'23		646176	585907	60269	9.3			585907	476293	0	109614	18.7			169	8815	2013	3541	1006	94070	100630	17.2%		
Jun'23		589205	535528	53677	9.1			535528	390729	0	144799	27.0			169	8815	2716	2905	1358	128835	135815	25.4%		
Jul'23	2023/2024	610764	569068	41676	6.8	659338	7.3%	569068	422842	0	146246	25.7	2563057	30.6%	278	8953	2740	3144	1370	129761	137016	24.1%	2452293	29.3%
Aug'23		645917	597446	48471	7.5			597446	323303	0	274143	45.9			278	8953	5298	2404	2649	254562	264913	44.3%		
Sep'23		570054	524865	45189	7.9			524865	402663	0	122202	23.3			278	8953	2259	2994	1130	106589	112972	21.5%		
Oct'23		708085	652997	55088	7.8			652997	421365	0	231632	35.5			278	8953	4448	3133	2224	212597	222402	34.1%		
Nov'23		755602	701977	53625	7.1			701977	366853	0	315124	44.9			278	8953	6118	2876	3059	293841	305894	43.6%		
Dec'23		939467	867955	71512	7.6			867955	543660	0	324295	37.4			278	8953	6301	4042	3151	301571	315065	36.3%		
Jan'24		886194	834061	52133	5.9			834061	675235	0	158826	19.0			278	8953	2992	5020	1496	140088	149596	17.9%		
Feb'24		811721	760198	51523	6.3			760198	569881	0	190317	25.0			278	8953	3622	4237	1811	171417	181087	23.8%		
Mrt'24		843547	785949	57598	6.8			785949	547546	0	238403	30.3			278	8953	4583	4071	2292	218227	229173	29.2%		
Apr'24		769665	705251	64414	8.4			705251	557655	0	147596	20.9			278	8953	2767	4146	1384	130069	138366	19.6%		
May'24		791840	731084	60756	7.7			731084	471265	0	259819	35.5			278	8953	5012	3504	2506	239567	250589	34.3%		
Jun'24		705873	648720	57153	8.1			648720	494266	0	154454	23.8			278	8953	2904	3675	1452	137192	145224	22.4%		
Jul'24	2024/2025	719981	664455	55526	7.7	703975	7.1%	664455	519809	0	144646	21.8	2863886	31.2%	234	7887	2731	3865	1365	128565	136525	20.5%	2766435	30.1%
Aug'24		701338	652977	48361	6.9			652977	327391	0	325586	49.9			234	7887	6349	2434	3175	305507	317465	48.6%		
Sep'24		748669	685888	62781	8.4			685888	412113	0	273775	39.9			234	7887	5313	3064	2657	254620	265654	38.7%		
Oct'24		807725	748288	59437	7.4			748288	472876	0	275412	36.8			234	7887	5346	3516	2673	255757	267291	35.7%		
Nov'24		832470	775091	57379	6.9			775091	477544	0	297547	38.4			234	7887	5789	3550	2894	277193	289426	37.3%		
Dec'24		990415	942843	47572	4.8			942843	538977	0	403866	42.8			234	7887	7915	4007	3957	379866	395745	42.0%		
Jan'25		990047	930059	59988	6.1			930059	740706	0	189353	20.4			234	7887	3625	5507	1812	170288	181232	19.5%		
Feb'25		856820	810468	46352	5.4			810468	601258	0	209210	25.8			234	7887	4022	4470	2011	190586	201089	24.8%		
Mrt'25		912700	843418	69282	7.6			843418	643135	0	200283	23.7			234	7887	3843	4782	1922	181616	192162	22.8%		
Apr'25		840104	765322	74782	8.9			765322	495999	0	269323	35.2			234	7887	5224	3688	2612	249678	261202	34.1%		
May'25		773707	705407	68300	8.8			705407	547422	0	157985	22.4			234	7887	2997	4070	1499	141298	149864	21.2%		
Jun'25		705753	651538	54215	7.7			651538	534638	0	116900	17.9			234	7887	2176	3975	1088	101541	108779	16.7%		

ANNUAL TOTALS

Year	Raw Water Supply	System Input Volume	Treatment Losses				System Input Volume	Revenue Water		Non Revenue Water (NRW)														
																	Apparent Losses			Real Losses				
			Monthly Treatment Losses	Monthly Treatment Losses	Annual Treatment Losses	Annual Treatment Losses	Treated Water from WTW	Billed Metered Consumption	Billed Un-metered Consumption	Monthly NRW	Monthly NRW	Annual NRW	Annual NRW	Unbilled Metered Consumption	Unbilled Un-metered Consumption	Illegal Connections	Inaccurate Meters	Administrative Errors	Leaks, Reservoirs overflow, etc.	Monthly Water Losses	Monthly Water Losses	Annual Water Losses	Annual Water Losses
	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[m³]	[%]	[m³]	[%]
2018/2019	7853120	7015091			838029	10.67%	7015091	5503967	0			1511124	21.54%	0	92140	28380	144028	14190	1232387			1418984	20.23%
2019/2020	7863942	7084354			779588	9.91%	7084354	5503955	0			1580399	22.31%	2037	56497	30437	75424	15219	1400785			1521865	21.48%
2020/2021	7986474	7350903			635571	7.96%	7350903	5273591	0			2077312	28.26%	1234	78972	39942	39208	19971	1897985			1997106	27.17%
2021/2022	8057258	7354597			702661	8.72%	7354597	5586420	0			1768177	24.04%	3591	141174	32468	41534	16234	1533176			1623412	22.07%
2022/2023	8160401	7521759			638642	7.83%	7521759	5680780	0			1840979	24.48%	2029	105781	34663	42235	17332	1638938			1733169	23.04%
2023/2024	9038929	8379591			659338	7.29%	8379591	5816534	0			2563057	30.59%	3334	107430	49046	43244	24523	2335480			2452293	29.27%
2024/2025	9879729	9175754			703975	7.13%	9175754	6311868	0			2863886	31.21%	2813	94639	55329	46927	27664	2636515			2766435	30.15%

Water Balance Components

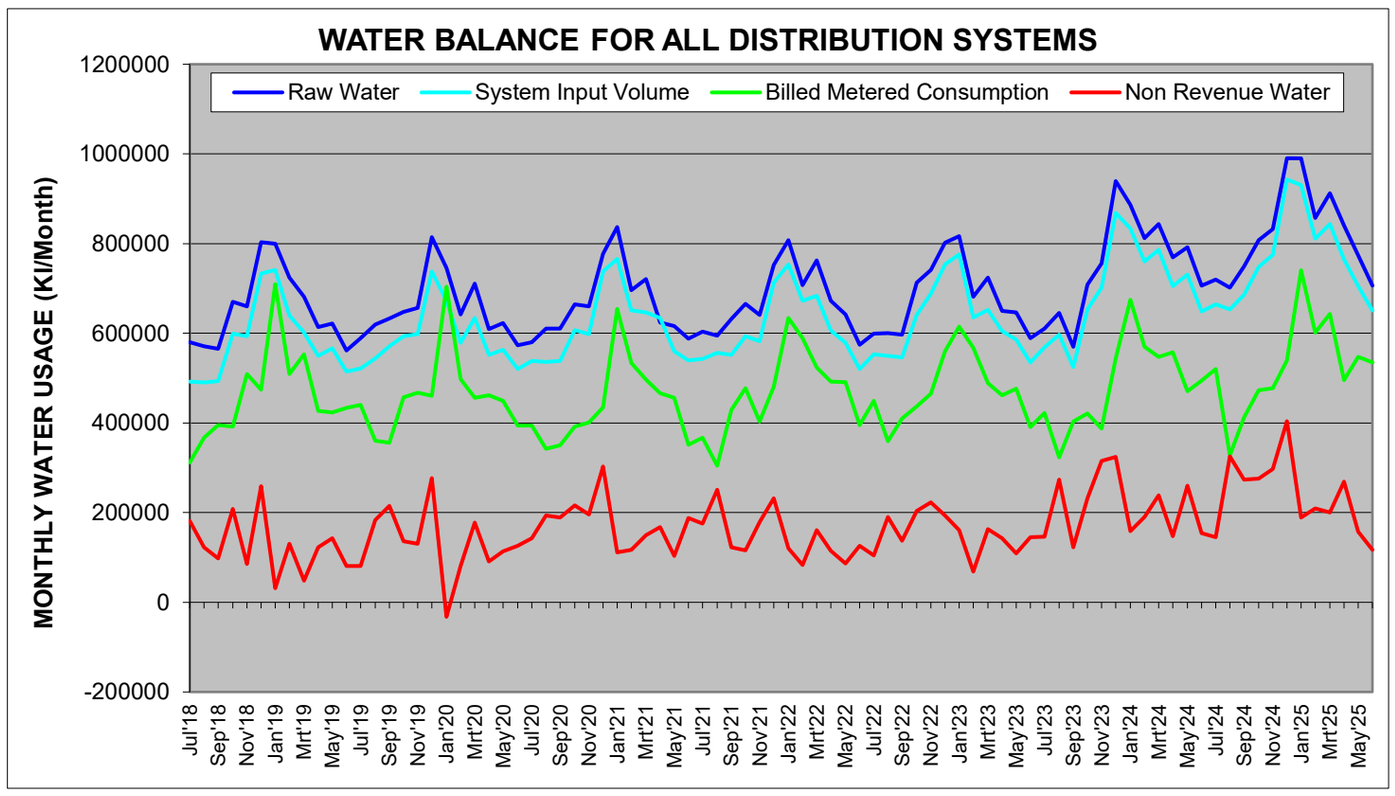
Component	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
Consumer Units	38621	39251	40060	40869	41680	42489	43322
System Input Volume	498	494	503	493	494	540	580
Average Billed Metered Cons.	390	384	361	374	373	375	399
Non-Revenue Water	107	110	142	119	121	165	181

Water Balance Components

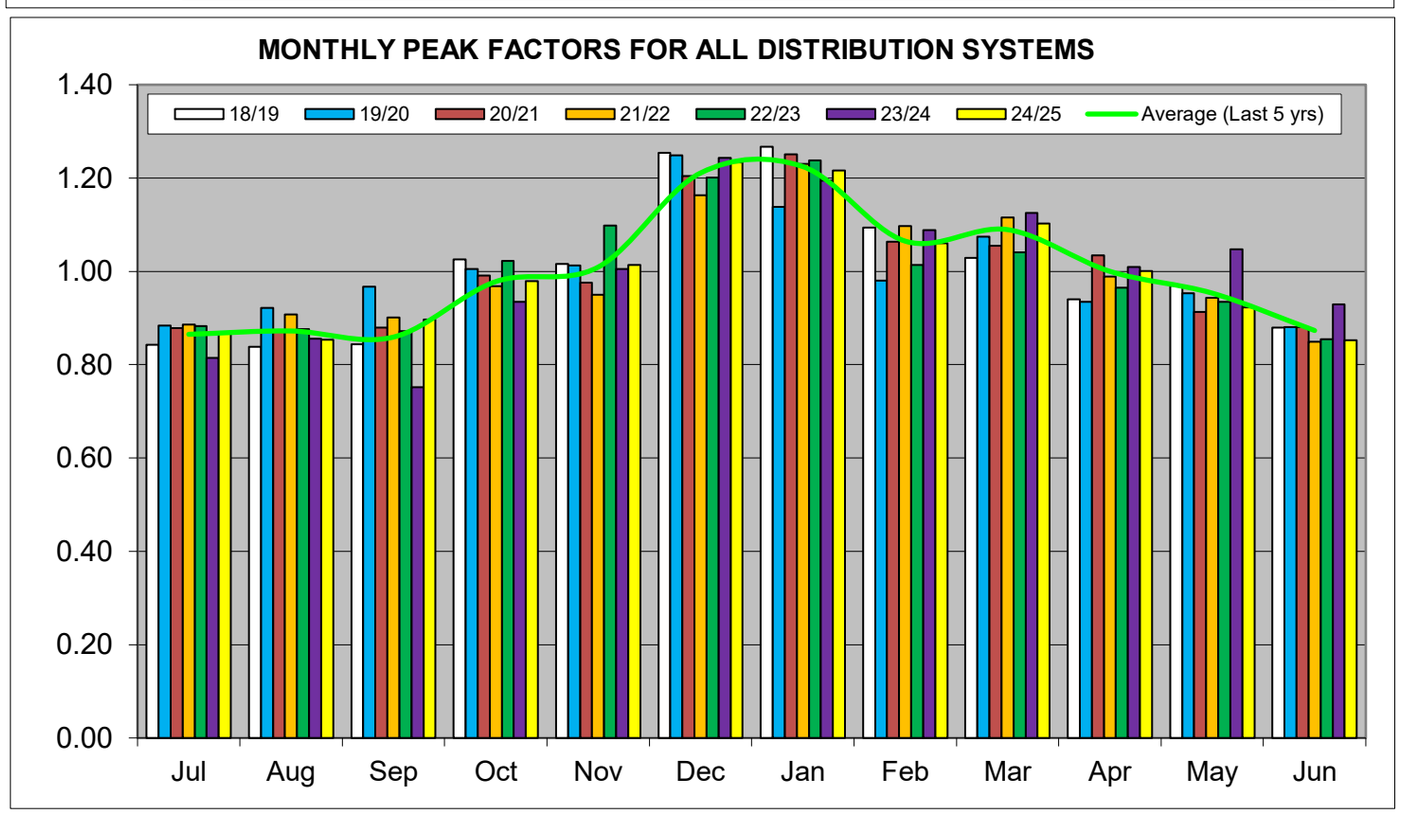
Component	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
System Input Volume		-0.63%	1.67%	-1.93%	0.28%	9.28%	7.40%
Average Billed Metered Cons.		-1.61%	-6.12%	3.84%	-0.29%	0.44%	6.43%
Non-Revenue Water		2.91%	28.79%	-16.57%	2.09%	36.57%	9.59%

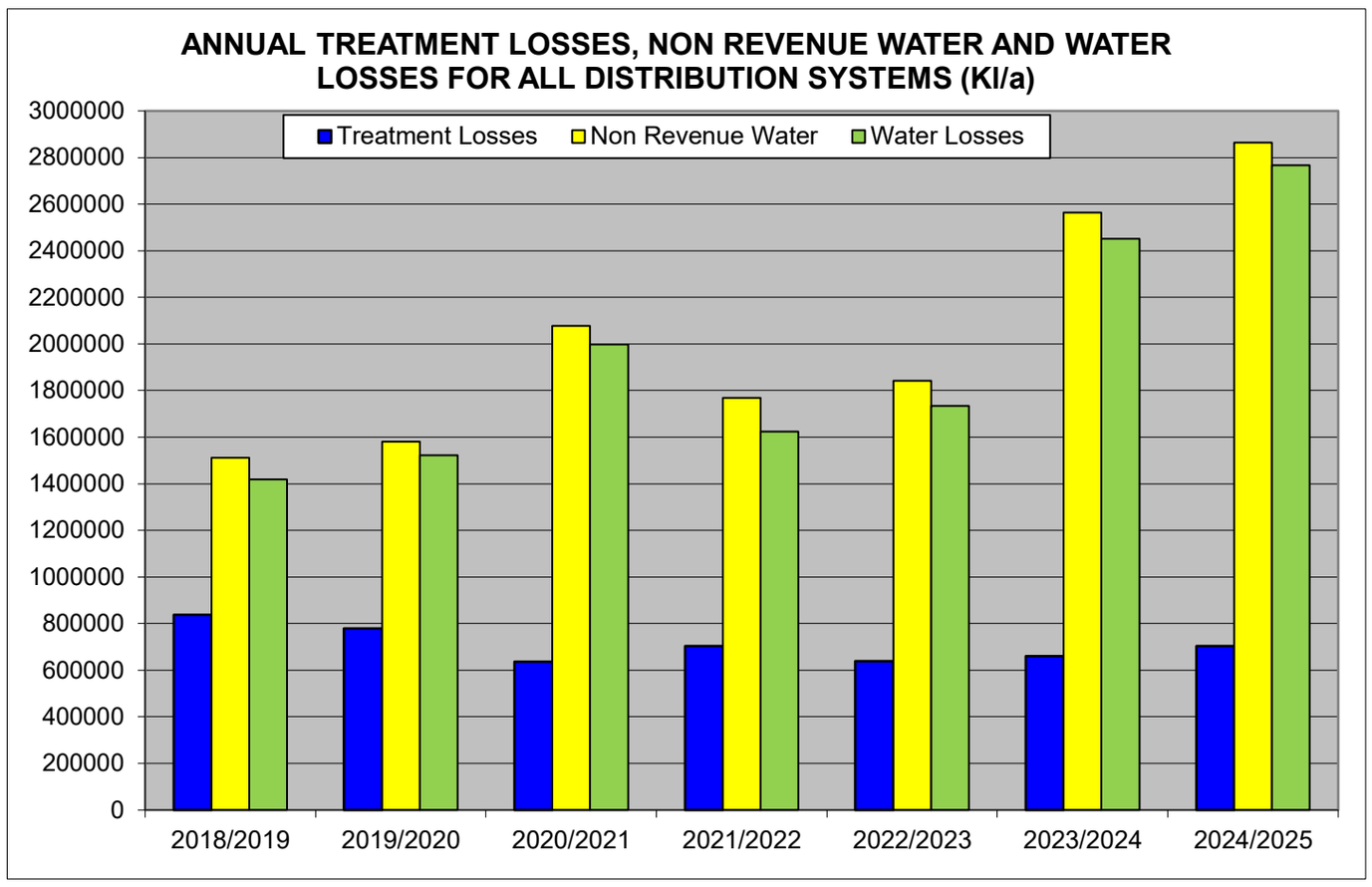
Water Balance Components

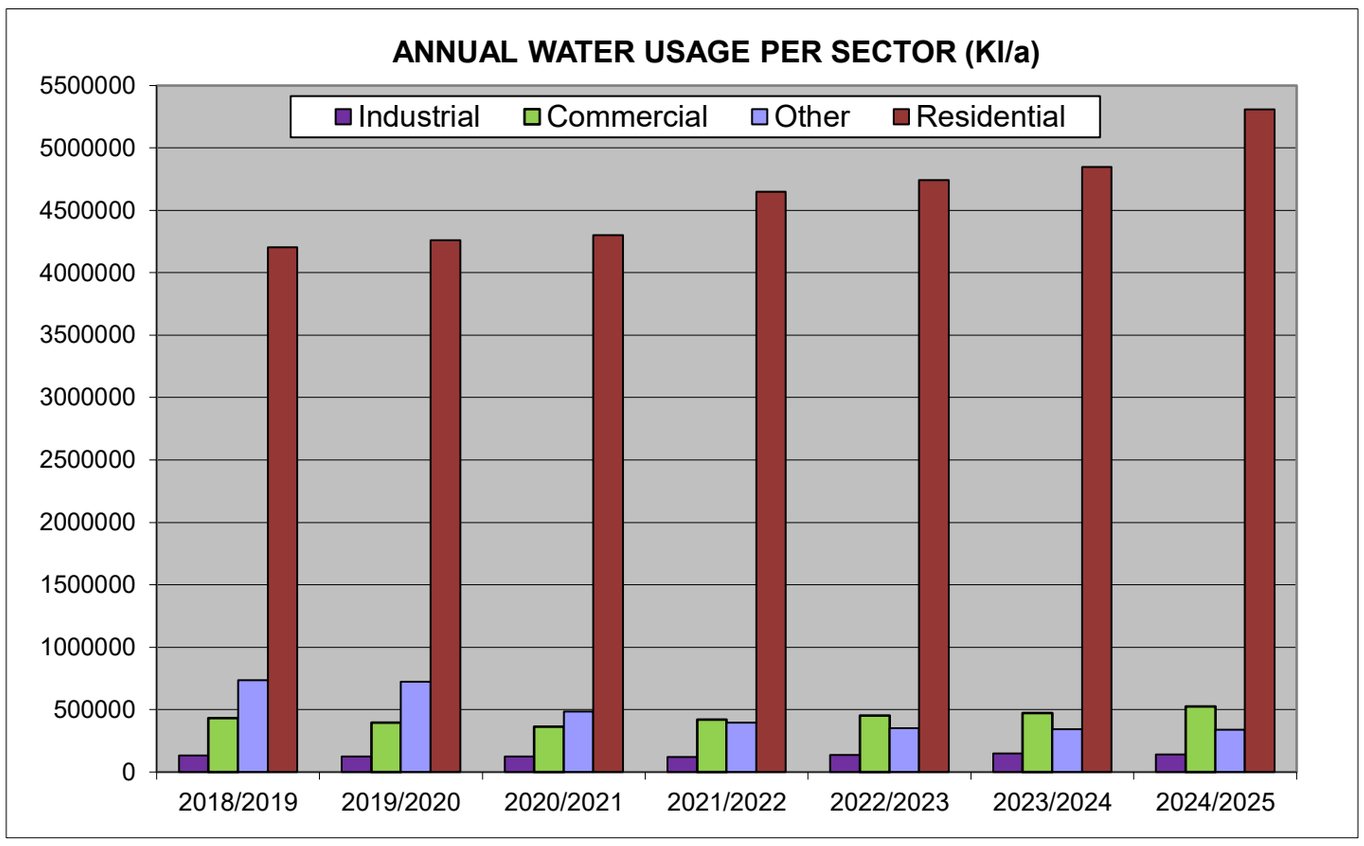
Component	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
System Input Volume		Fall	Rise	Fall	Rise	Rise	Rise
Average Billed Metered Cons.		Fall	Fall	Rise	Fall	Rise	Rise
Non-Revenue Water		Rise	Rise	Fall	Rise	Rise	Rise

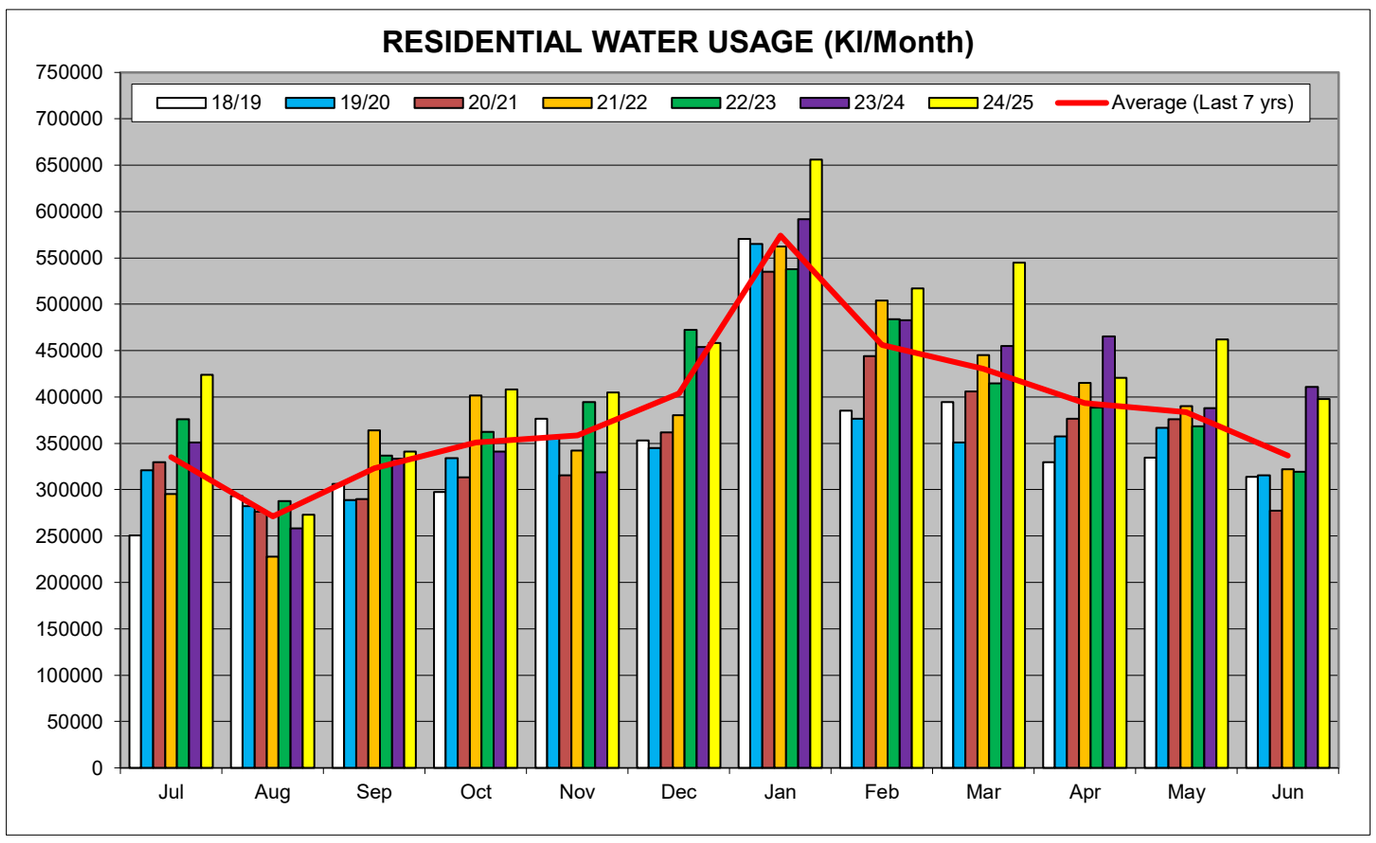

WATER BALANCE FOR ALL DISTRIBUTION SYSTEMS
MONTHLY WATER USAGE (Kl/Month)
Raw Water
System Input Volume
Billed Metered Consumption
Non Revenue Water
1200000
1000000
800000
600000
400000
200000
0
-200000
Jul'18
Sep'18
Nov'18
Jan'19
Mrt'19
May'19
Jul'19
Sep'19
Nov'19
Jan'20
Mrt'20
May'20
Jul'20
Sep'20
Nov'20
Jan'21
Mrt'21
May'21
Jul'21
Sep'21
Nov'21
Jan'22
Mrt'22
May'22
Jul'22
Sep'22
Nov'22
Jan'23
Mrt'23
May'23
Jul'23
Sep'23
Nov'23
Jan'24
Mrt'24
May'24
Jul'24
Sep'24
Nov'24
Jan'25
Mrt'25
May'25

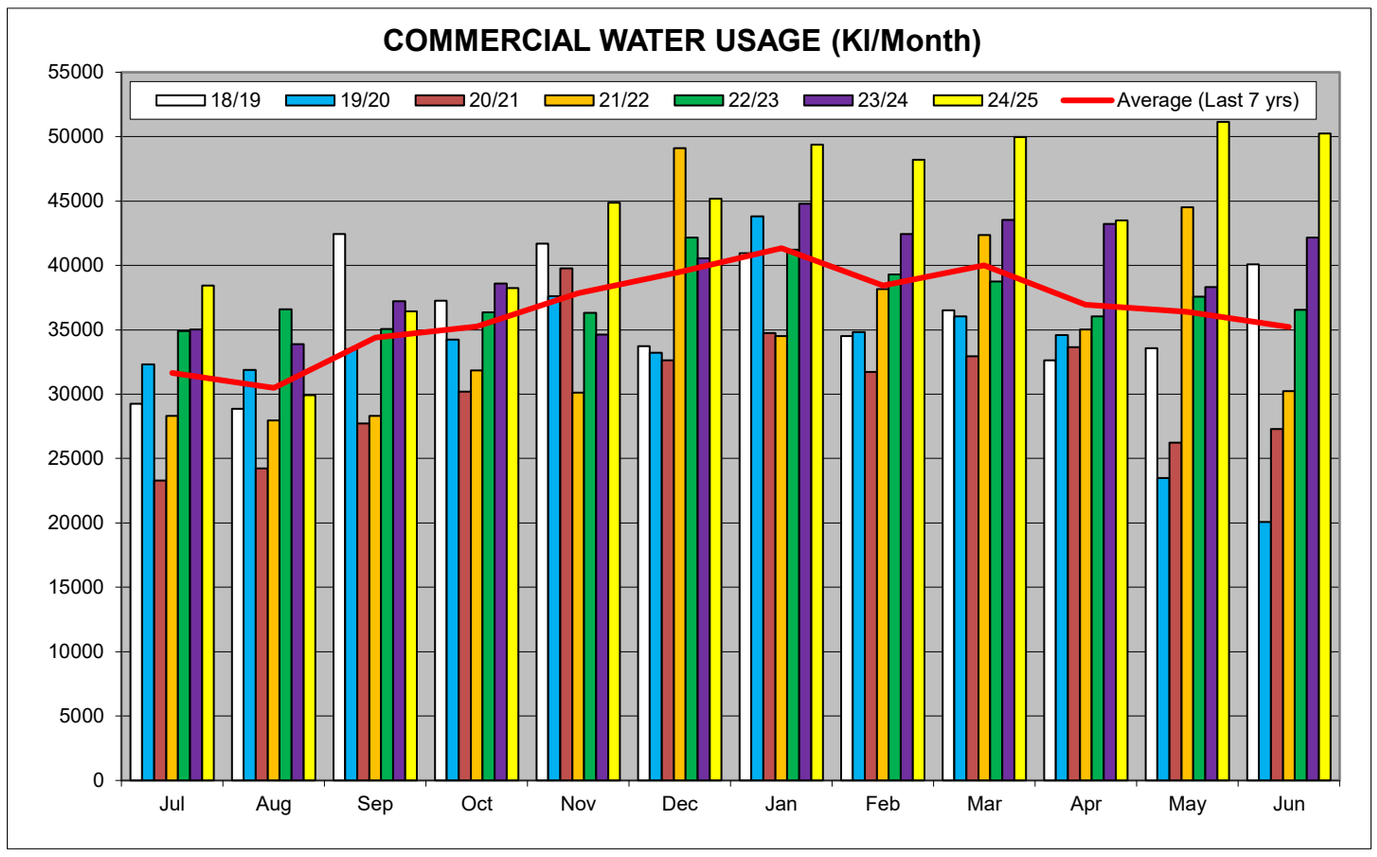
ANNUAL WATER REQUIREMENT FOR ALL DISTRIBUTION SYSTEMS (Kl/a)
Average annual increase in Raw Water Abstraction Volume from 2018/2019 = 3.90 %/a
Average annual increase in Billed Metered Consumption from 2018/2019 = 2.31 %/a
Average annual increase in System Input Volume from 2018/2019 = 4.58 %/a
12000000
11000000
10000000
9000000
8000000
7000000
6000000
5000000
4000000
3000000
2000000
1000000
0
2018/2019
2019/2020
2020/2021
2021/2022
2022/2023
2023/2024
2024/2025
Raw Water
System Input Volume
Billed Metered Consumption

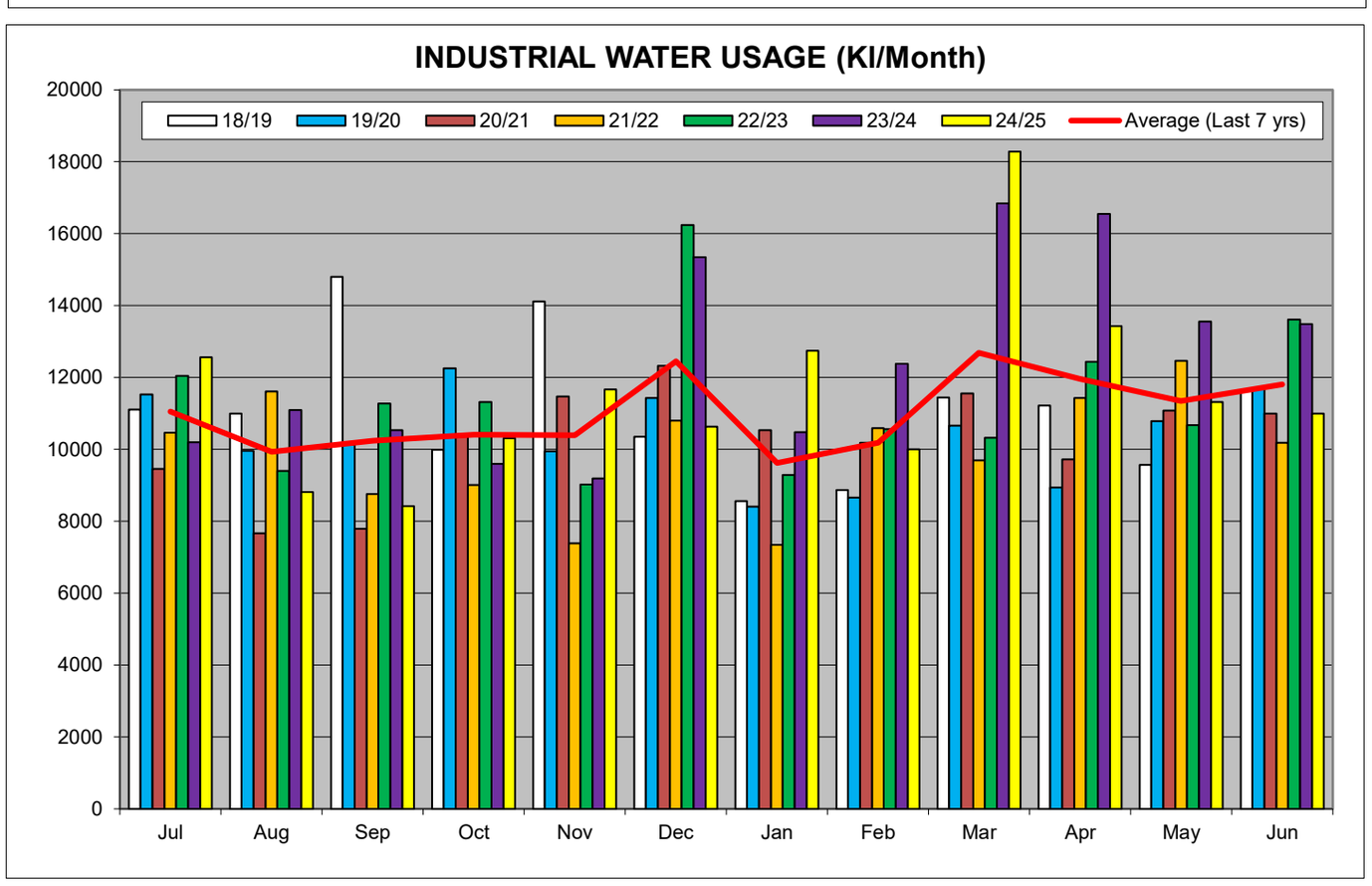

MONTHLY PEAK FACTORS FOR ALL DISTRIBUTION SYSTEMS
18/19
19/20
20/21
21/22
22/23
23/24
24/25
Average (Last 5 yrs)
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun

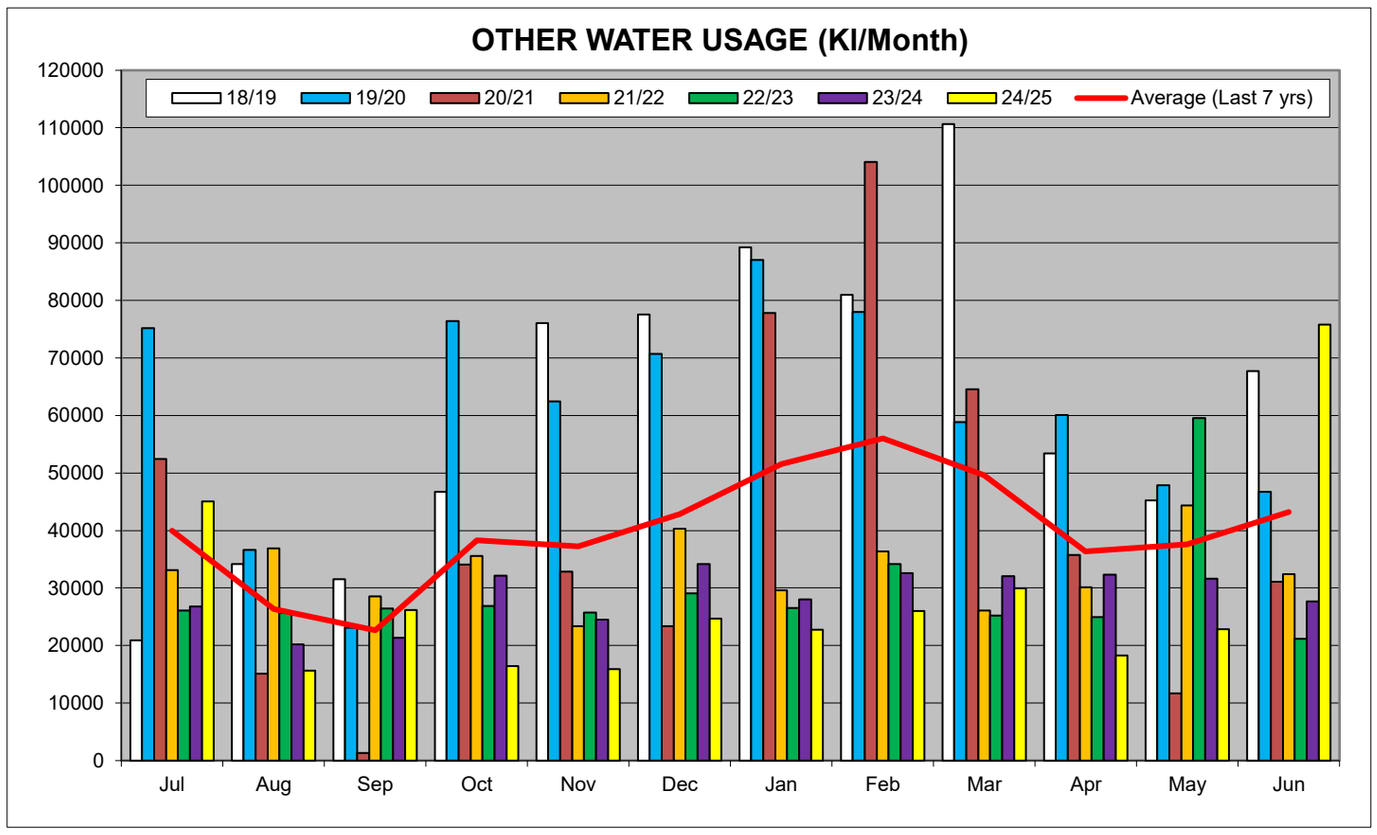

ANNUAL TREATMENT LOSSES, NON REVENUE WATER AND WATER LOSSES FOR ALL DISTRIBUTION SYSTEMS (Kl/a)
Treatment Losses
Non Revenue Water
Water Losses
3000000
2800000
2600000
2400000
2200000
2000000
1800000
1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
2018/2019
2019/2020
2020/2021
2021/2022
2022/2023
2023/2024
2024/2025


ANNUAL WATER USAGE PER SECTOR (Kl/a)
Industrial
Commercial
Other
Residential
5500000
5000000
4500000
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
2018/2019
2019/2020
2020/2021
2021/2022
2022/2023
2023/2024
2024/2025


RESIDENTIAL WATER USAGE (Kl/Month)
18/19
19/20
20/21
21/22
22/23
23/24
24/25
Average (Last 7 yrs)
750000
700000
650000
600000
550000
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun


COMMERCIAL WATER USAGE (Kl/Month)
55000
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
18/19
19/20
20/21
21/22
22/23
23/24
24/25
Average (Last 7 yrs)
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun


INDUSTRIAL WATER USAGE (Kl/Month)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
18/19
19/20
20/21
21/22
22/23
23/24
24/25
Average (Last 7 yrs)
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun


OTHER WATER USAGE (Kl/Month)
120000
110000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
18/19
19/20
20/21
21/22
22/23
23/24
24/25
Average (Last 7 yrs)
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun

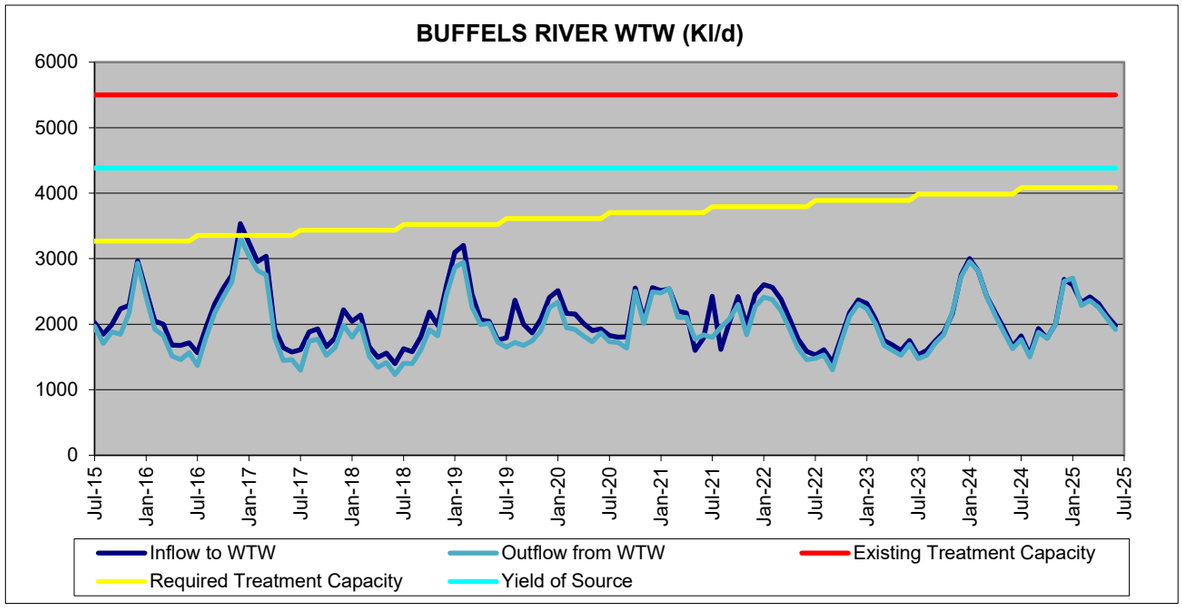
Capacity of WTWs in Overstrand Municipality's Management Area

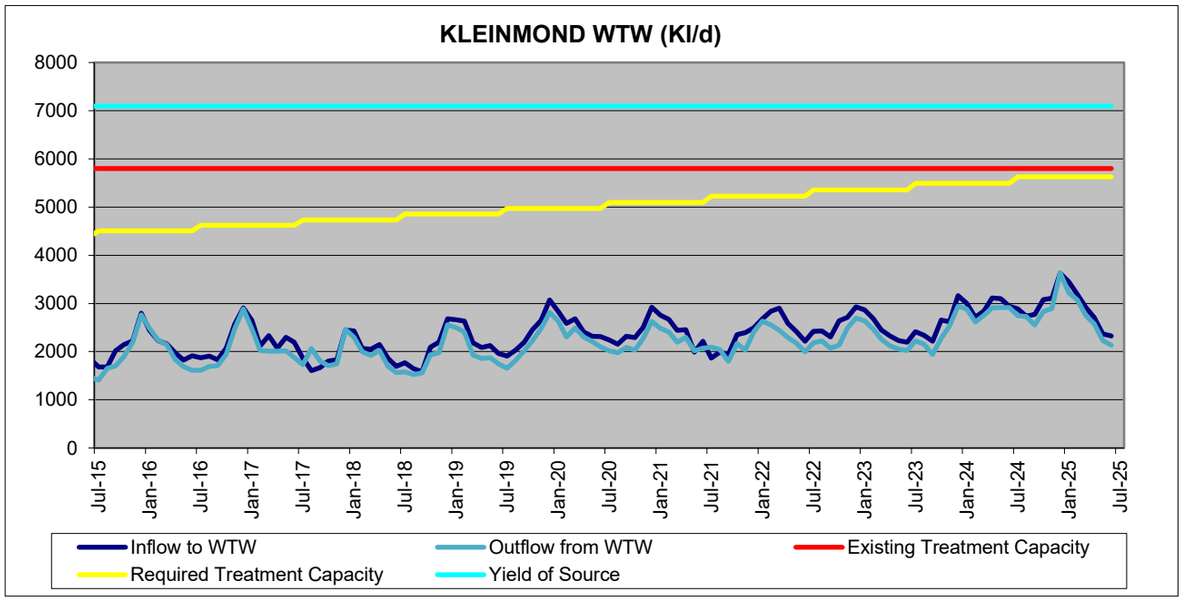
Date	Buffels River WTWs							Kleinmond WTWs							Preekstoel WTWs							Stanford WTWs							Franskraal							De Kelders							Pearly Beach							Baardskeerdersbos							Total WTWs							
	Buffels River Yield	Inflow		Outflow		Existing Capacity	Required Capacity (1.5x AADD $_{18}$). Used 2.5% growth on 2024/2025 demand	Palmiet River, Onrusrivier and Borchelie Yield	Inflow		Outflow		Existing Capacity	Required Capacity (1.5x AADD $_{18}$). Used 2.5% growth on 2024/2025 demand	De Bos Dam, Gateway and Hermet & Aarde Boschrivier Yield	Inflow		Outflow		Existing Capacity	Required Capacity (1.5x AADD $_{18}$). Used 3% growth on 2024/2025 demand	Boreholes and Die Oog Yield	Inflow		Outflow		Existing Capacity	Required Capacity (1.5x AADD $_{18}$). Used 3% growth on 2024/2025 demand	Franskraal and Klaasboschs Dams Yield	Inflow		Outflow		Existing Capacity	Required Capacity (1.5x AADD $_{18}$). Used 3% growth on 2024/2025 demand	Klipgat and De Kelders Yield	Inflow		Outflow		Existing Capacity	Required Capacity, kept the same as design capacity	Kwikkemoer Dam and Seven Springs Yield	Inflow		Outflow		Existing Capacity	Required Capacity (1.5x AADD $_{18}$). Used 2.5% growth on 2024/2025 demand	Boreholes Yield	Inflow		Outflow		Existing Capacity	Required Capacity (1.5x AADD $_{18}$). Used 2.5% growth on 2024/2025 demand	Yield	Inflow		Outflow		Capacity	Required Capacity (1.5x AADD $_{18}$)
		Total flow	Flow	Total flow	Flow				Total flow	Flow	Total flow	Flow				Total flow	Flow	Total flow	Flow				Total flow	Flow	Total flow	Flow				Total flow	Flow	Total flow	Flow				Total flow	Flow	Total flow	Flow				Total flow	Flow	Total flow	Flow				Total flow	Flow	Total flow	Flow		
	kl/d	Ml	kl/d	Ml	kl/d	kl/d	kl/d	Ml	kl/d	Ml	kl/d	Ml	kl/d	kl/d	Ml	kl/d	Ml	kl/d	Ml	kl/d	kl/d	Ml	kl/d	Ml	kl/d	Ml	kl/d	kl/d	kl/d	Ml	kl/d	Ml	kl/d	kl/d	kl/d	Ml	kl/d	Ml	kl/d	kl/d	kl/d	Ml	kl/d	Ml	kl/d	kl/d	kl/d	Ml	kl/d	Ml	kl/d	kl/d	kl/d	Ml	kl/d	Ml	kl/d	kl/d
Jan-01	4384	72370	2335	62490	2016	3000		7094	129358	4173	117213	3781	5800																																																					
Jan-02	4384	60266	2157	52950	1891	3000		7094	81781	2921	55992	2000	5800																																															
Mar-01	4384	80800	2606	68970	2225	3000		7094	98540	3179	89403	2884	5800																																														
Apr-01	4384	55970	1866	53365	1779	3000		7094	60750	2025	63079	2103	5800																																														
May-01	4384	45600	1471	43680	1409	3000		7094	62916	2030	63086	2045	5800																																														
Jun-01	4384	40930	1364	32770	1092	3000		7094	48364	1612	47697	1590	5800																																														
Jul-01	4384	55400	1786	46360	1496	3000	3658	7094	50797	1639	43555	1405	5800	3734																																												
Aug-01	4384	48940	1579	39800	1284	3000	3658	7094	50463	1918	52373	1689	5800	3734																																											
Sep-01	4384	47440	1581	36770	1226	3000	3658	7094	58446	1948	53503	1783	5800	3734																																											
Oct-01	4384	58350	1882	49540	1598	3000	3658	7094	62752	2024	58948	1902	5800	3734																																											
Nov-01	4384	65230	2174	53680	1789	3000	3658	7094	78639	2535	71149	2373	5800	3734																																											
Dec-01	4384	85550	2760	69940	2256	3000	3658	7094	114020	3678	108858	3512	5800	3734																																											
Jan-02	4384	67850	2189	56260	1813	3000	3658	7094	82913	2675	80767	2605	5800	3734																																											
Feb-02	4384	59910	2125	51120	1826	3000	3658	7094	71269	2545	71524	2554	5800	3734																																											
Mar-02	4384	78120	2520	63830	2060	3000	3658	7094	82727	2669	78681	2538	5800	3734																																											
Apr-02	4384	60730	2024	53920	1797	3000	3658	7094	53968	1799	56022	1884	5800	3734																																											
May-02	4384	45600	1471	38760	1186	3000	3658	7094	41764	1347	41816	1349	5800	3734																																											
Jun-02	4384	41410	1380	43620	1454	3000	3658	7094	42117	1404	41471	1382	5800	3734																																											
Jul-02	4384	63560	2050	44460	1434	3000	3941	7094	41511	1339	39868	1286	5800	3844																																											
Aug-02	4384	54180	1748	53060	1713	3000	3941	7094	38529	1243	41294	1332	5800	3844																																											
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Jan-03	4384	87560	2825	66650	2150	3000	3941	7094	99434	3208	89038	2872	5800	3844																																											
Feb-03	4384	73250	2616	60270	2153	3000	3941	7094	85257	3351	76350	2841	5800	3844																																											
Mar-03	4384	75610	2439	62830	2027	3000	3941	7094	78730	2540	72744	2347	5800	3844																																											
Apr-03	4384	68160	2272	55770	1859	3000	3941	7094	59079	1969	56243	1875	5800	3844																																											
May-03	4384	58220	1878	49930	1611	3000	3941	7094	46429	1498	42394	1368	5800	3844																																											
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Nov-05	4384	85120	2838	78000	2600	3000	3134	7094	78238	2608	78005	2600	5800	3145																																											
Dec-05	4384	104940	3385	96540	3114	3000	3134	7094	115000	3710	118082	3809	5800	3145																																											
Jan-06	4384	110370	3560	101600	3277	3000	3134	7094	107499	3468	111522	3466	5800	3145																																											
Feb-06	4384	90670	3238	83680	2989	3000	3134	7094	86998	3095	92297	3296	5800	3145																																											
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Jan-07	4384	117450	3789	105510	3404	3000	3628	7094	118310	3816	116768	3767	5800	3358	19000	504221	16265	489094	15777	24000																																						
Feb-07	4384	98630	3523	88070	3145	3000	3628	7094	90818	3243	85942	3069	5800	3358	19000	407784	14564	356560	14127	24000																																						
Mar-07	4384	112420	3626	89550	2889	3000	3628	7094	88678	2861	83615	2697	5800	3358	19000	425504	13726	412739	13314	24000																																						
Apr-07	4384	79750	2658	76080	2536	3000	3628	7094	73158	2439	72931	2431	5800	3358	19000	365862	12195	364886	11930	24000																																						
May-07	4384	77030	2485	71770	2315	3000	3628	7094	62231	2007	63772	2057	5800	3358	19000	310163	10005	300858	9705	24000																																						
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Jul-07	4384	78850	2544	75060	2421	3000	3628	7094	48052	1550	55417	1788	5800	3358	19000	251690	8119	244139	7875	24000	17189																																						
Aug-07	4384	77800	2510	79960	2579	3000	3628	7094	59478	1928	59435	1788	5800	3358	19000	240511	7756	233266	7525	24000	17189																																						
Sep-07	4384	89170	2972	81240	2708	3000	3628	7094	55030	1834	53218	1774	5800	3358	19000	277735	9258	269403	8980	24000	17189																																						
Oct-07	4384	90980	2931	81140	2617	3000	3628	7094	70710	2281	72081	2325	5800	3358	19000	330926	10675	321002	10355	24000	17189																																						
Nov-07	4384	84900	2830	76410	2547	3000	3628	7094	68310	2277	69463	2315	5800	3358	19000	357063	11902	346351	11545	24000	17189																																						
Dec-07	4384	113300	3655	101970	3289	3000	3628	7094	96026	3098	97909	3158	5800	3358	19000	465153	15005	451198	14555	24000	17189																																						
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Feb-08	4384	110060	3795	105672	3644	5500	3216	7094	92510	3190	87924	3032	5800	3258	19000	396958	13757	386989	13344	24000	17189																																						
Mar-08	4384	104560	3377	99370	3208	5500	3216	7094	84910	2739	81406	2627	5800	3258	19000	429992	13870	414056	13357	24000	17189																																						
Apr-08	4384	110010	3667	92250	3075	5500	3216	7094	77292	2576	72071	2402	5800	3258	19000	261136	8705	253302	8443	24000	17189																																						
May-08	4384	104320	3365	94410	3045	5500	3216	7094	84631	2730	80772	2573	5800	3258	19000	330033	10646	320132	10327	24000	17189																																						
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Jul-08	4384	82562	2664	75764	2444	5500	3216	7094	50947	1643	53407	1723	5800	3258	19000	193747	6250	187930	6062	24000	17189																																						
Aug-08	4384	80040	2582	73431	2369	5500	3292	7094	56540	1827	57738	1863	5800	3200	19000	299496	9339	280811	9058	24000	17020																																						
Sep-08	4384	74020	2467	68120	2271	5500	3292	7094	60058	2319	59836	1861	5800	3200	19000	257270	8576	249552	8318	24000	17020																																						
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Jan-09	4384	132289	4267	117618	3794	5500	3292	7094	105207	3394	101446	3272	5800	3200	19000	575011	18549	557761	17992	24000	17020																																						
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Dec-09	4384	126260	4073	105131	3391	5500	3156	7094	111504	3597	112251	3621	5800	3692	19000	548772	17702	532369	17171	24000	16967																																						
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Feb-10	4384	97700	3486	76479	2731	5500	3156	7094	77404	2764	78605	2807	5800	3692	19000	430364	15370	417453	14909	24000	16967																																						
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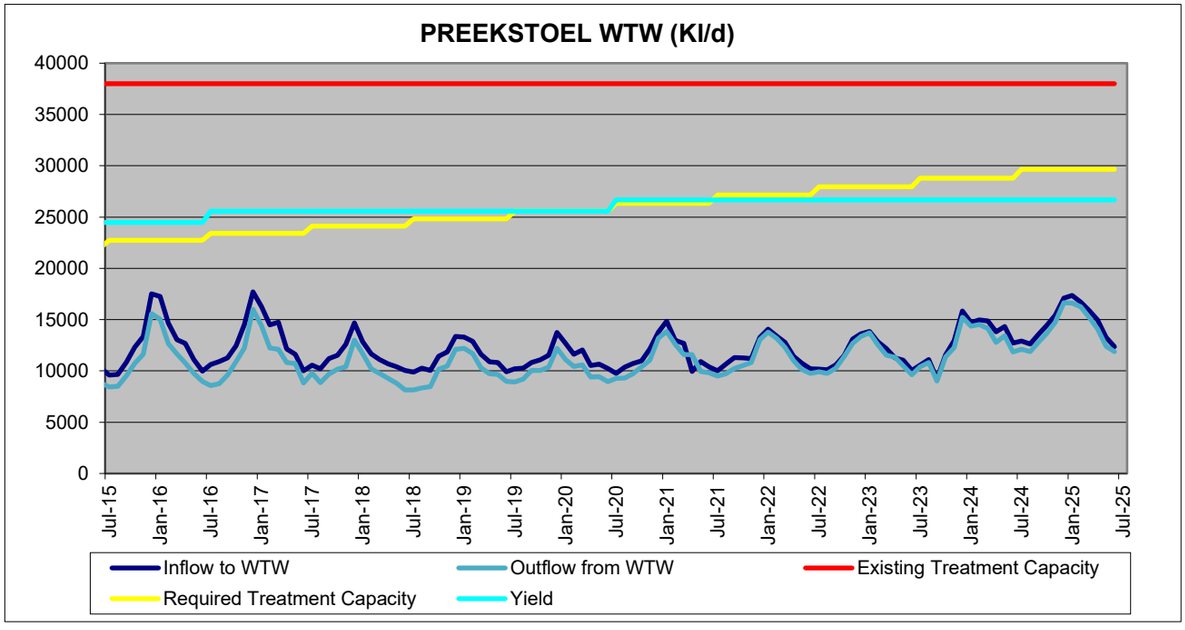
Capacity of WTWs in Overstrand Municipality's Management Area

| Date | Buffels River WTWs | | | | | | | Kleinmond WTWs | | | | | | | Preekstoel WTWs | | | | | | | Stanford WTWs | | | | | | | Franskraal | | | | | | | De Kelders | | | | | | | Pearly Beach | | | | | | | Baardskeerdersbos | | | | | | | Total WTWs | | | | | | |
|---|---|---

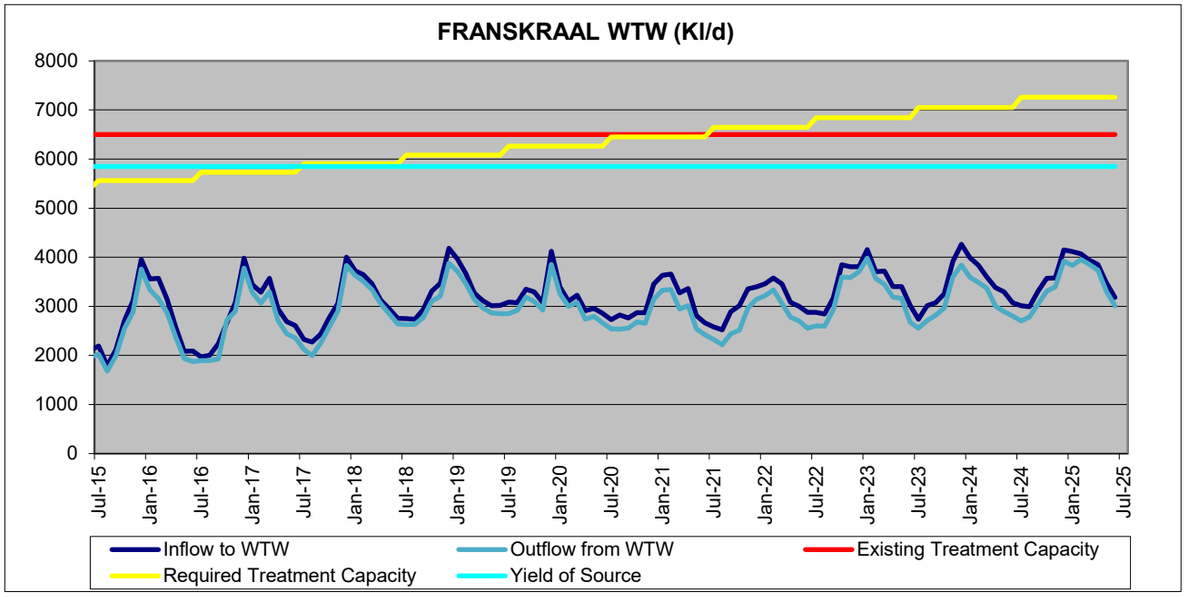
WTWs CAPACITIES

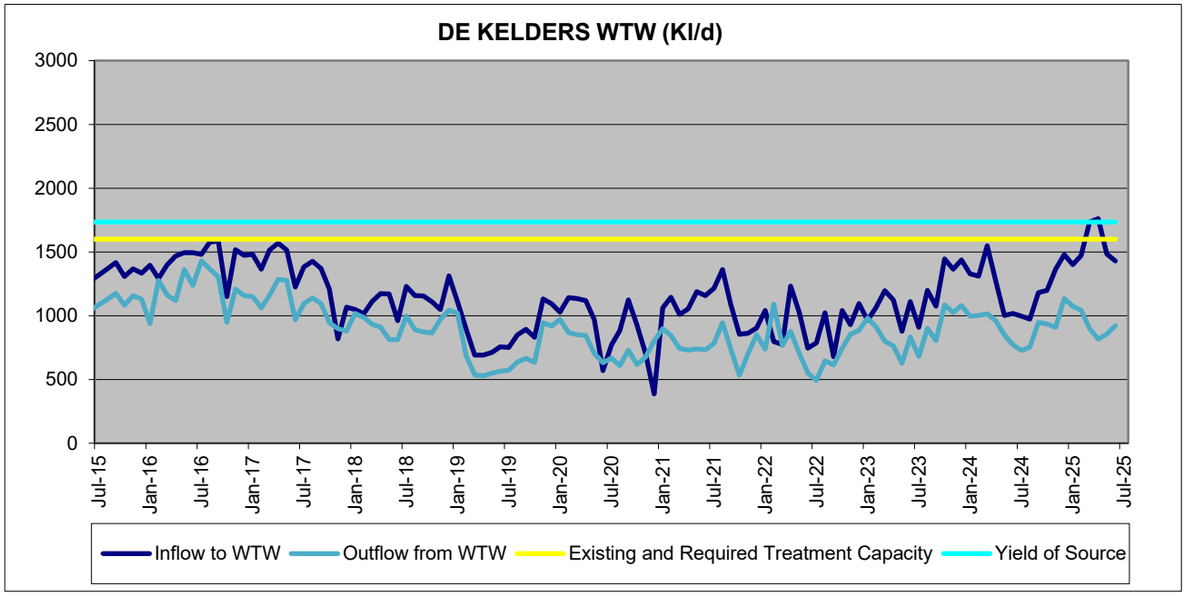


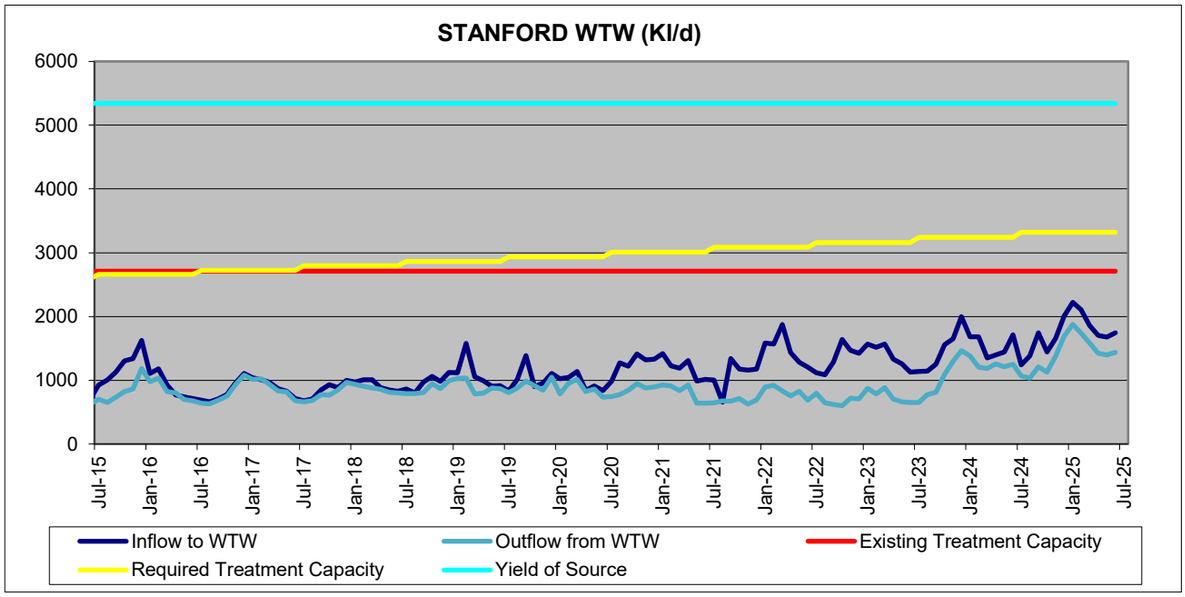




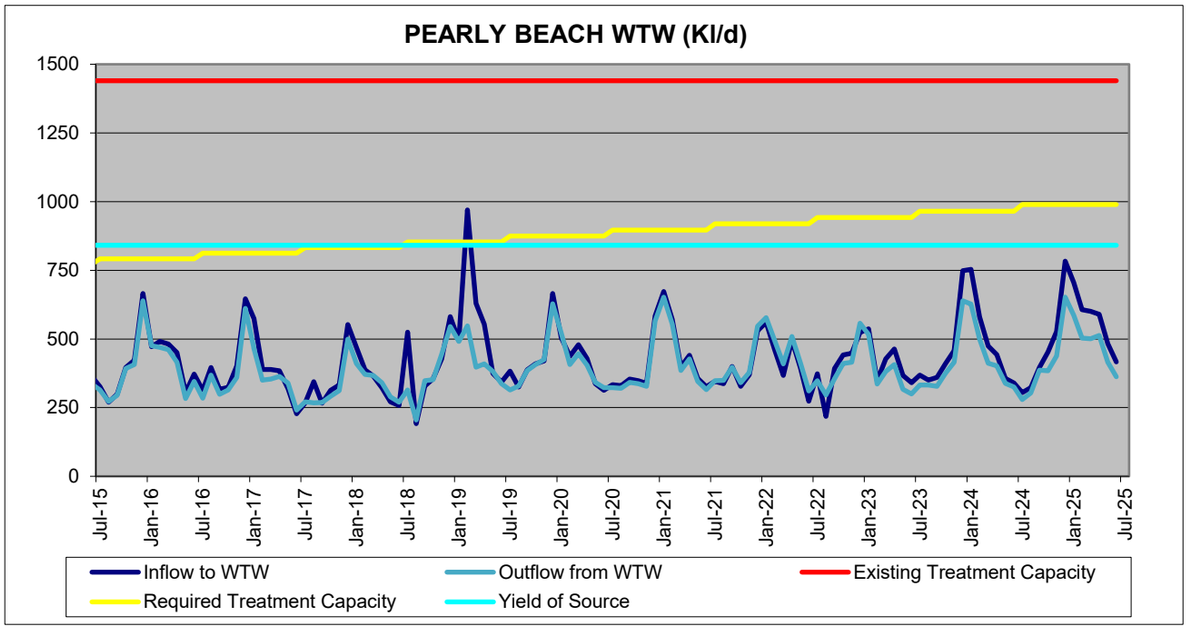
WTWs CAPACITIES

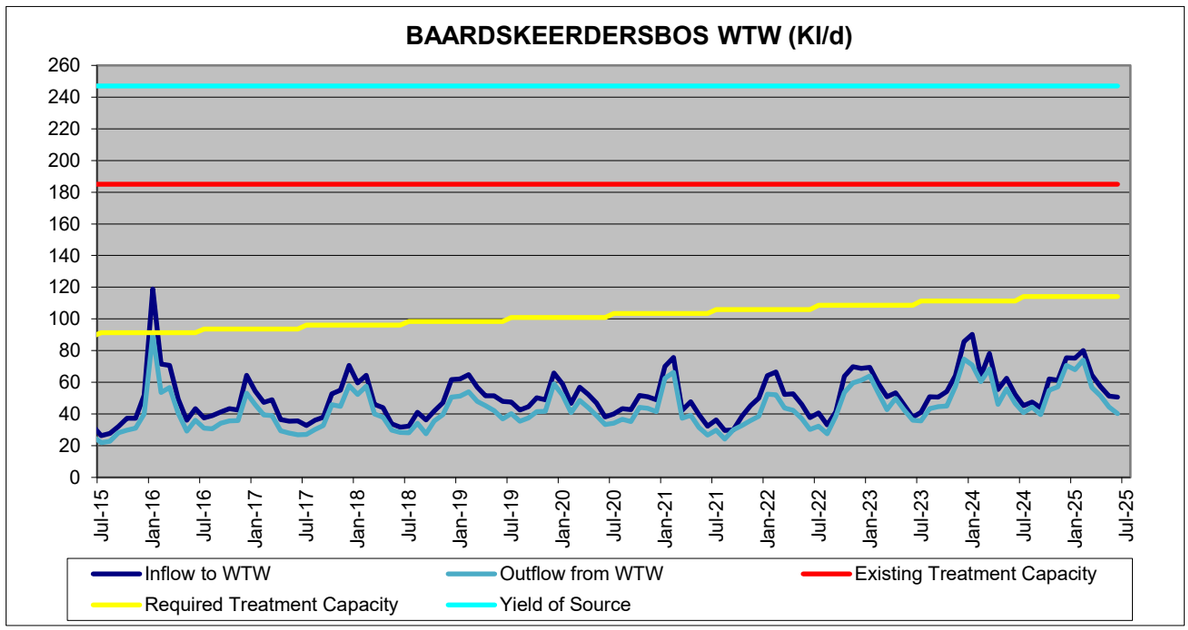


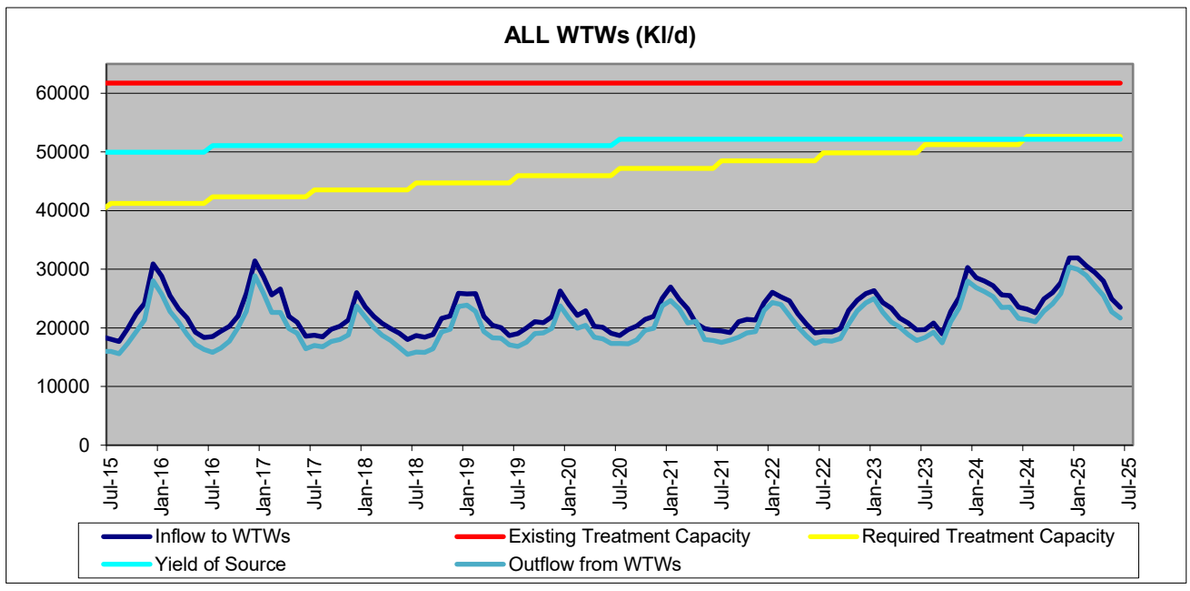


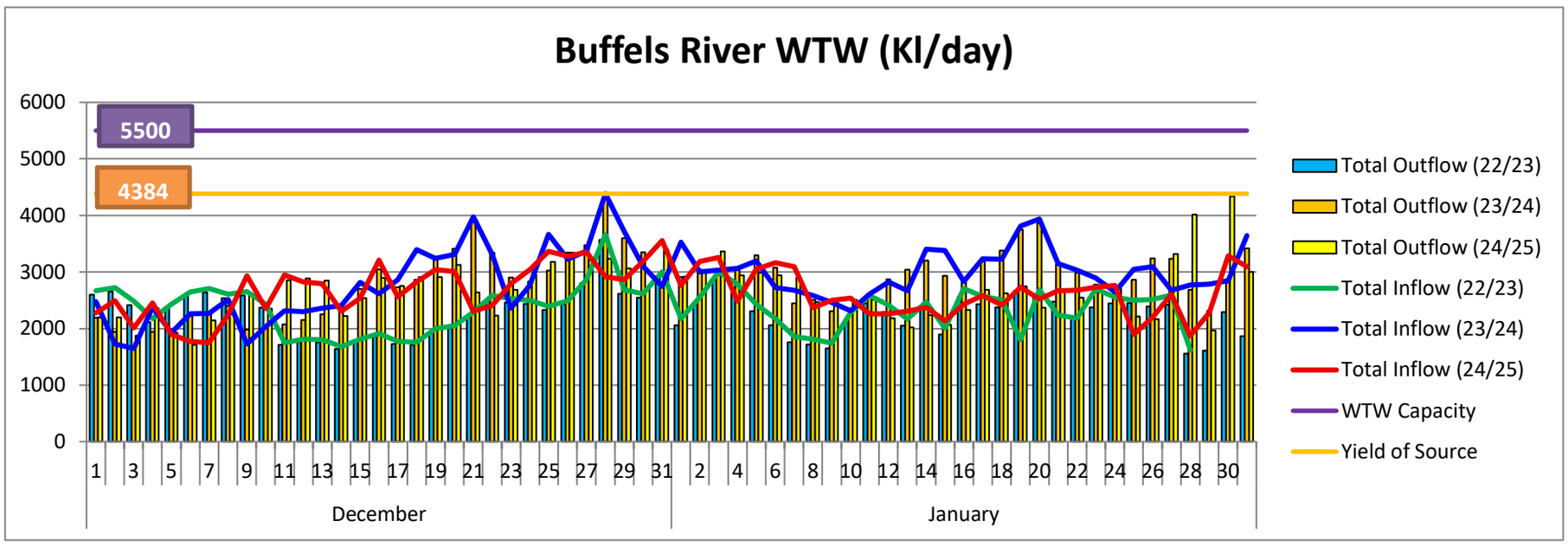


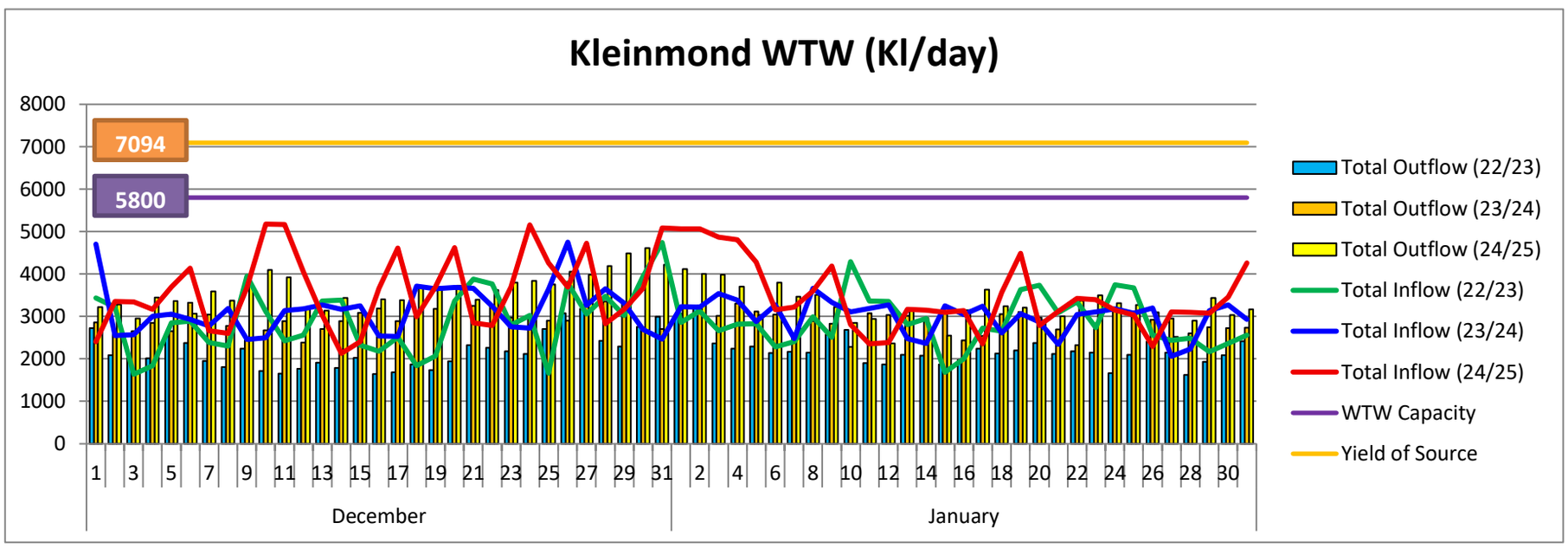
WTWs CAPACITIES

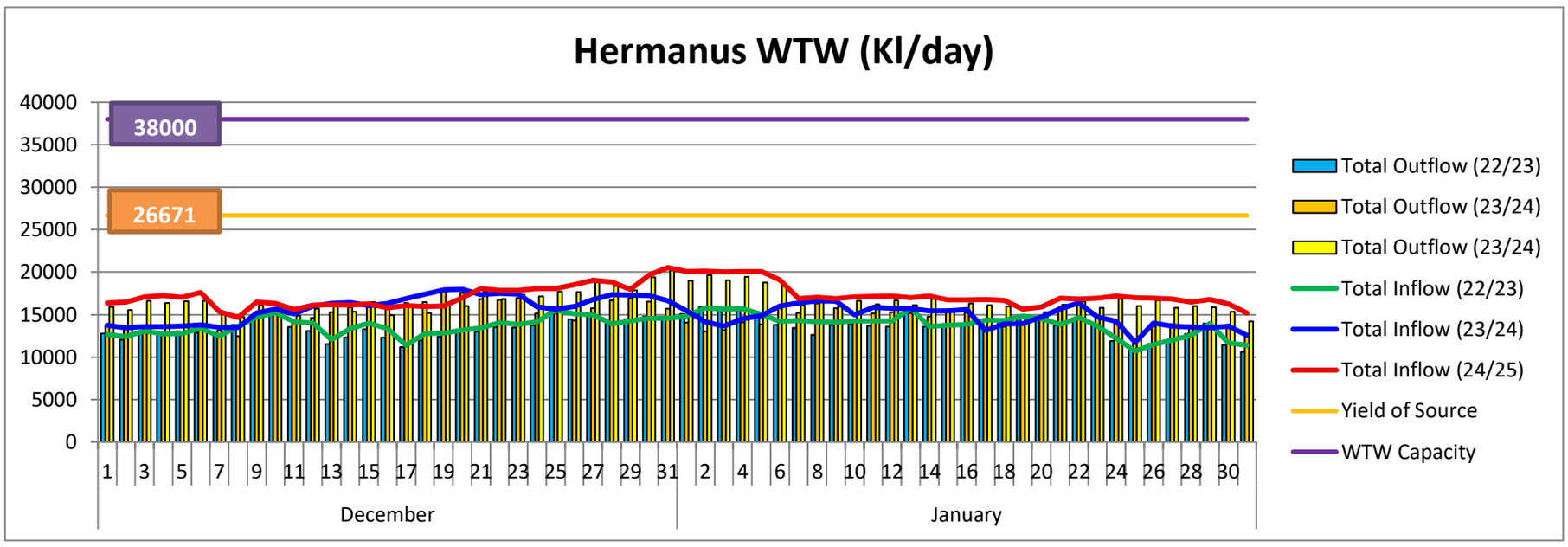


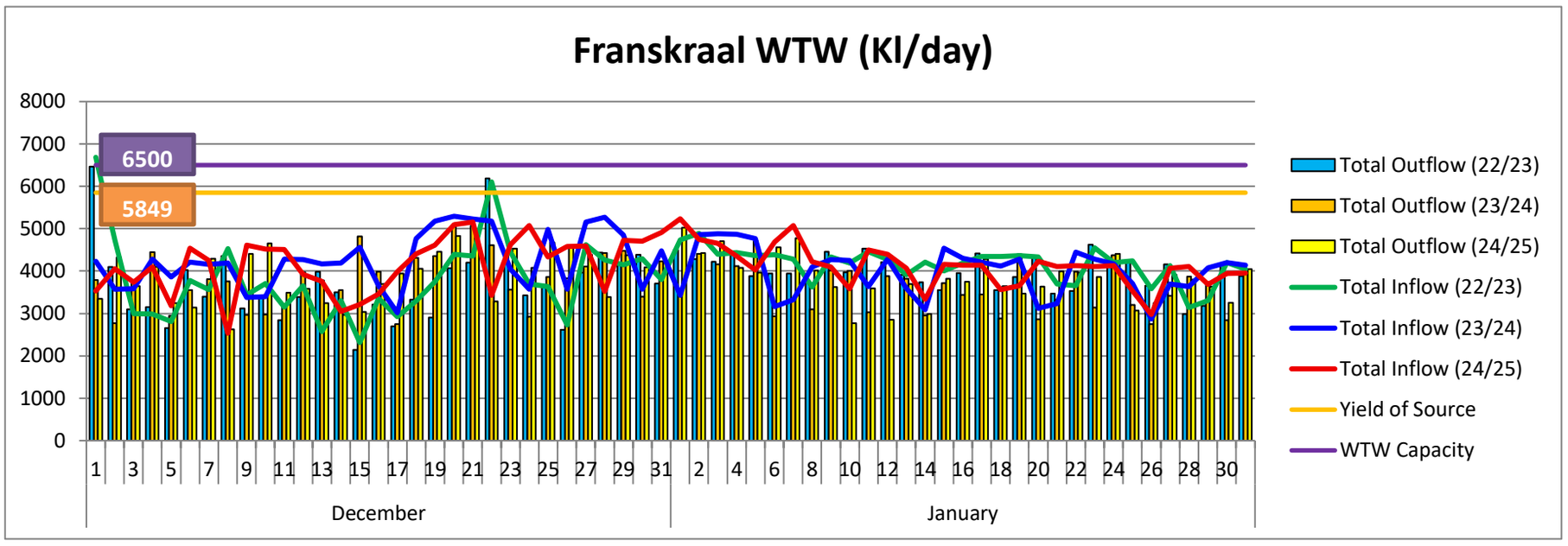


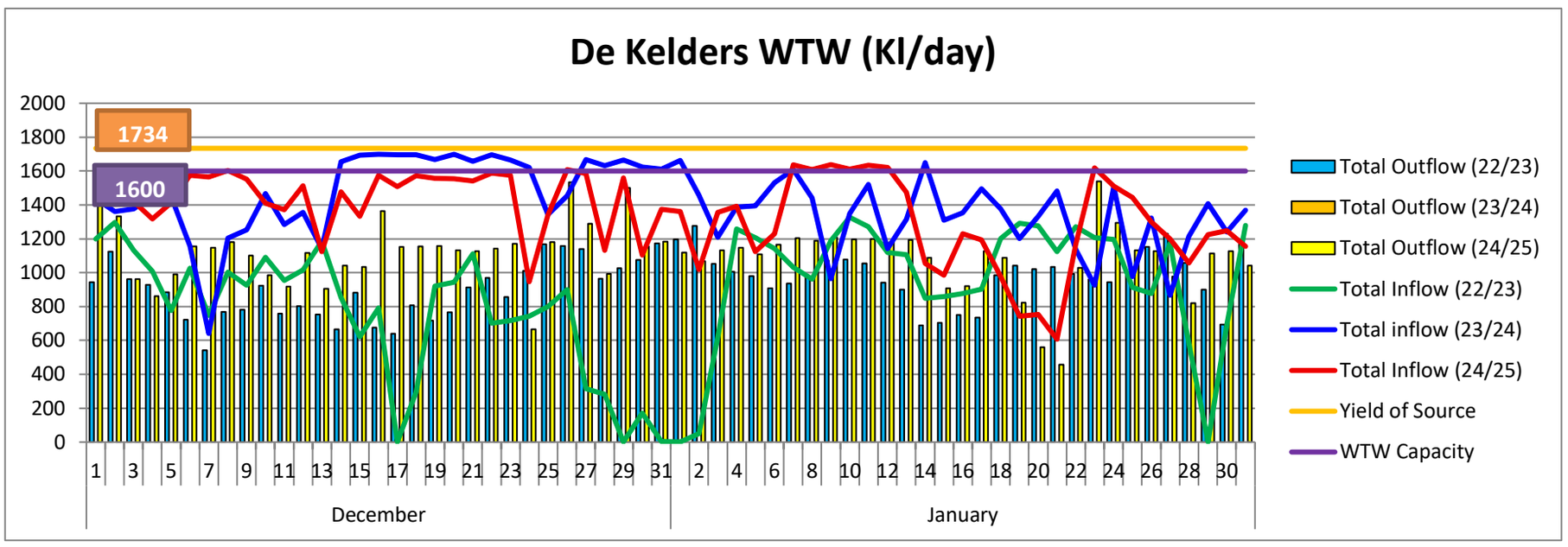


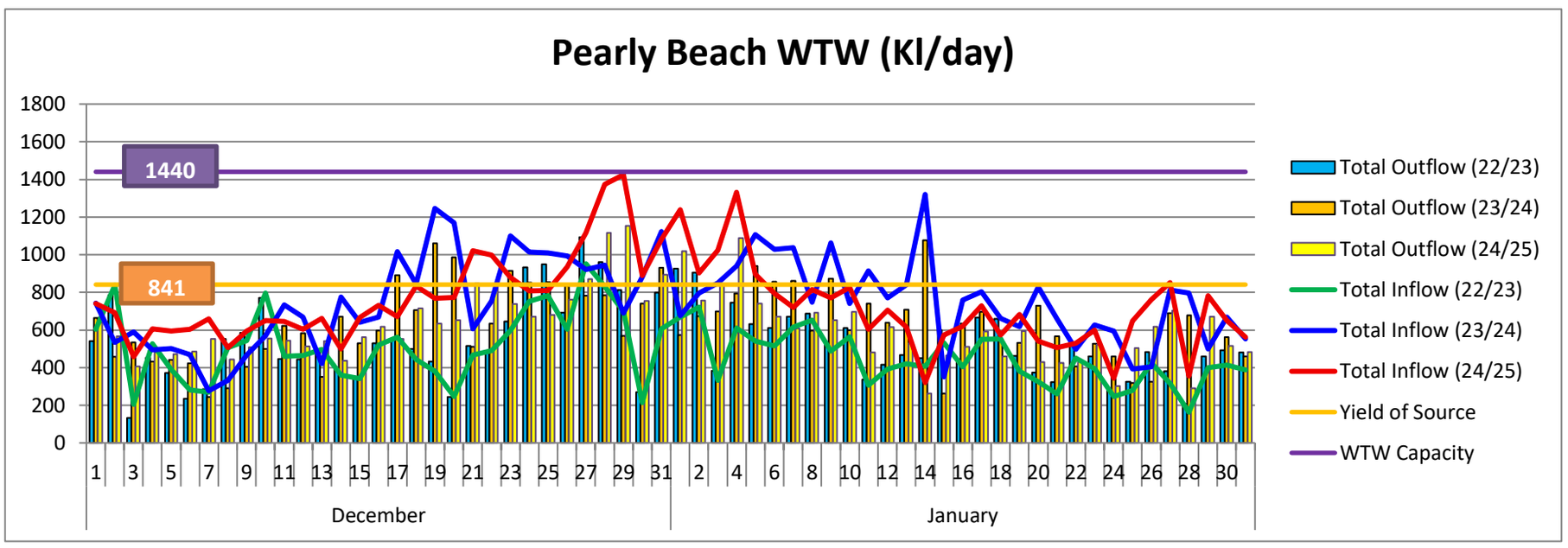

Buffels River WTW (Kl/day)
6000
5000
4000
3000
2000
1000
0
5500
4384
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
December
January
Total Outflow (22/23)
Total Outflow (23/24)
Total Outflow (24/25)
Total Inflow (22/23)
Total Inflow (23/24)
Total Inflow (24/25)
WTW Capacity
Yield of Source

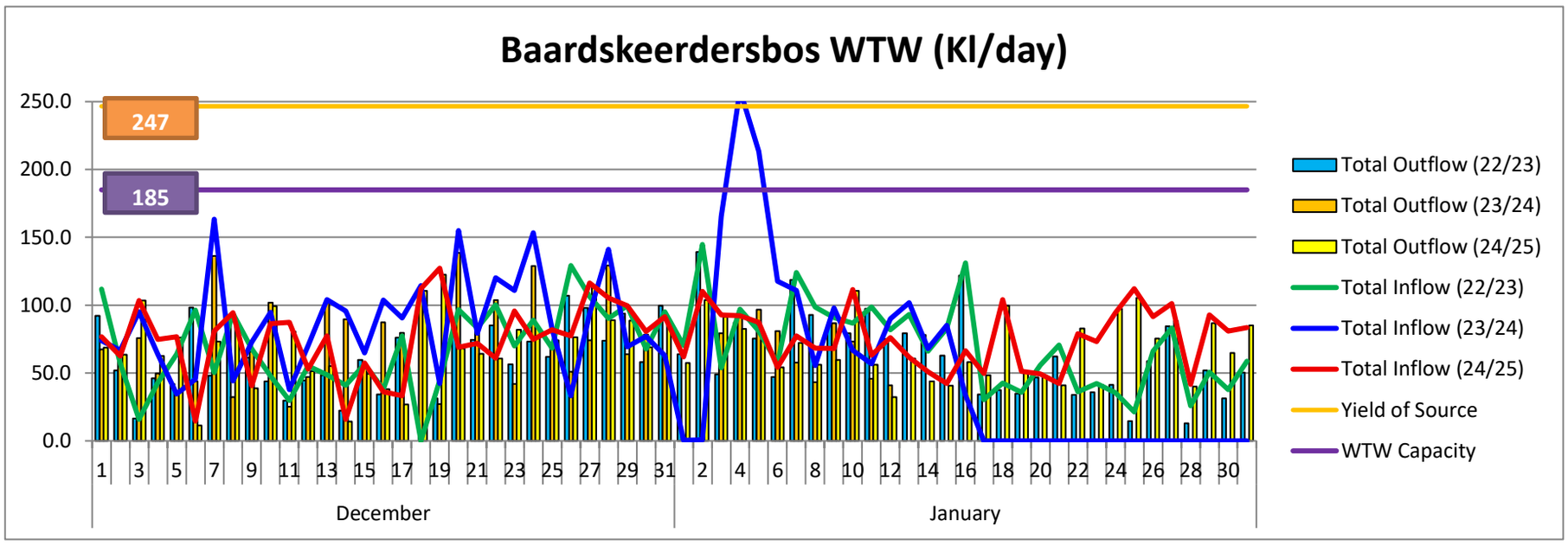

Kleinmond WTW (Kl/day)
8000
7000
6000
5000
4000
3000
2000
1000
0
7094
5800
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
December
January
Total Outflow (22/23)
Total Outflow (23/24)
Total Outflow (24/25)
Total Inflow (22/23)
Total Inflow (23/24)
Total Inflow (24/25)
WTW Capacity
Yield of Source

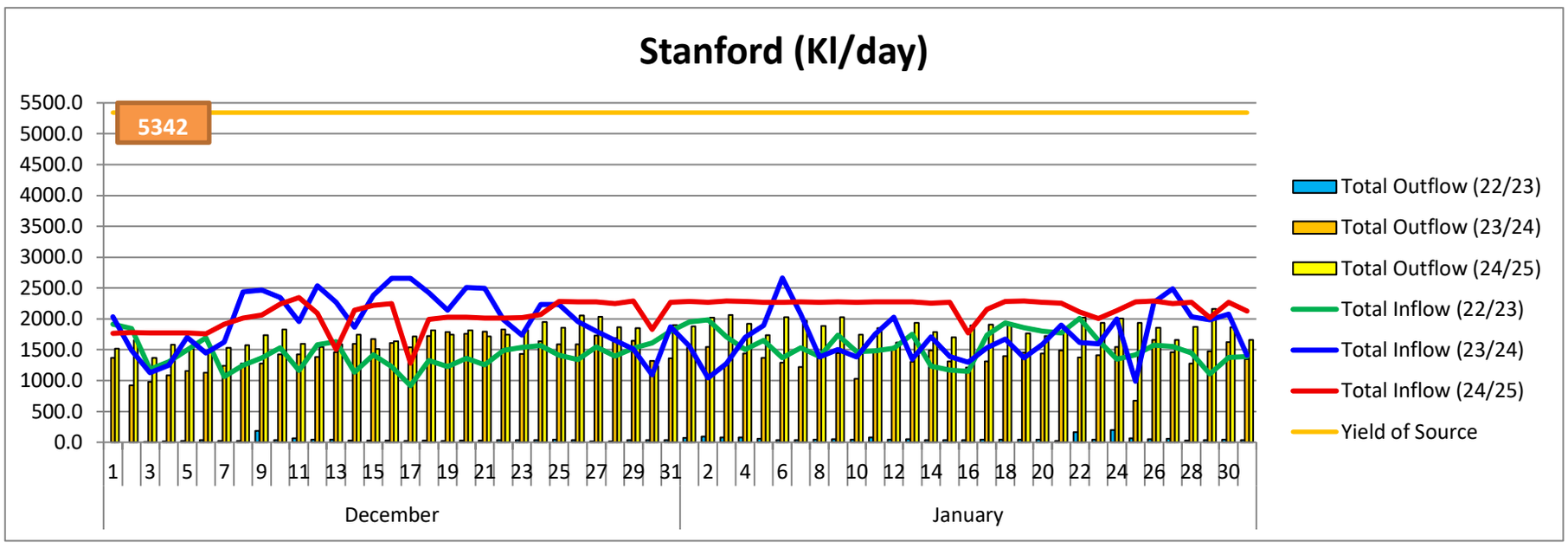

Hermanus WTW (Kl/day)
40000
35000
30000
25000
20000
15000
10000
5000
0
38000
26671
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
December
January
Total Outflow (22/23)
Total Outflow (23/24)
Total Outflow (23/24)
Total Inflow (22/23)
Total Inflow (23/24)
Total Inflow (24/25)
Yield of Source
WTW Capacity

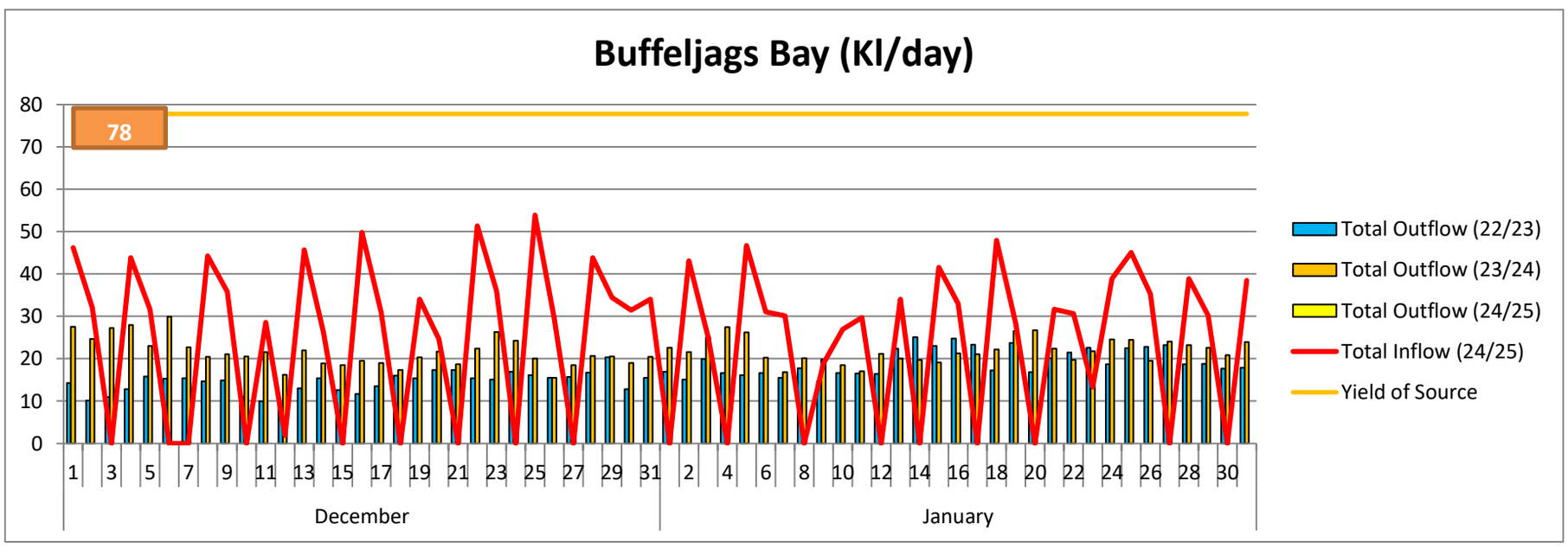

Franskraal WTW (Kl/day)
8000
7000
6000
5000
4000
3000
2000
1000
0
6500
5849
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
December
January
Total Outflow (22/23)
Total Outflow (23/24)
Total Outflow (24/25)
Total Inflow (22/23)
Total Inflow (23/24)
Total Inflow (24/25)
Yield of Source
WTW Capacity


De Kelders WTW (Kl/day)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
1734
1600
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
December
January
Total Outflow (22/23)
Total Outflow (23/24)
Total Outflow (24/25)
Total Inflow (22/23)
Total inflow (23/24)
Total Inflow (24/25)
Yield of Source
WTW Capacity


Pearly Beach WTW (Kl/day)
1800
1600
1400
1200
1000
800
600
400
200
0
1440
841
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
December
January
Total Outflow (22/23)
Total Outflow (23/24)
Total Outflow (24/25)
Total Inflow (22/23)
Total Inflow (23/24)
Total Inflow (24/25)
Yield of Source
WTW Capacity


Baardskeerdersbos WTW (Kl/day)
250.0
200.0
150.0
100.0
50.0
0.0
247
185
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
December
January
Total Outflow (22/23)
Total Outflow (23/24)
Total Outflow (24/25)
Total Inflow (22/23)
Total Inflow (23/24)
Total Inflow (24/25)
Yield of Source
WTW Capacity


Stanford (Kl/day)
5500.0
5000.0
4500.0
4000.0
3500.0
3000.0
2500.0
2000.0
1500.0
1000.0
500.0
0.0
5342
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
December
January
Total Outflow (22/23)
Total Outflow (23/24)
Total Outflow (24/25)
Total Inflow (22/23)
Total Inflow (23/24)
Total Inflow (24/25)
Yield of Source


Buffeljags Bay (Kl/day)
80
70
60
50
40
30
20
10
0
78
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
December
January
Total Outflow (22/23)
Total Outflow (23/24)
Total Outflow (24/25)
Total Inflow (24/25)
Yield of Source

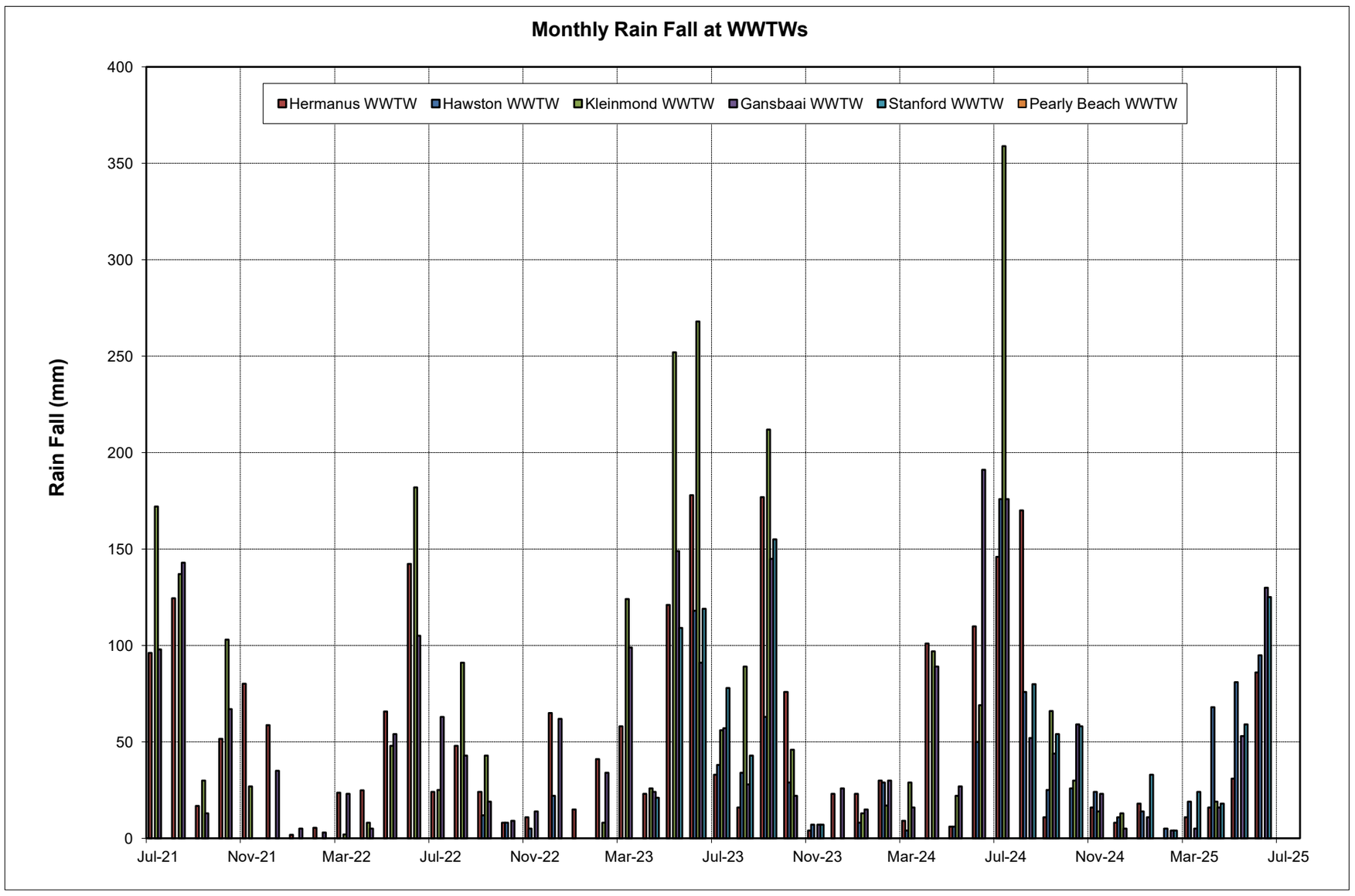
Current flows and capacities of WWTWs in Overstrand Municipality's Management Area

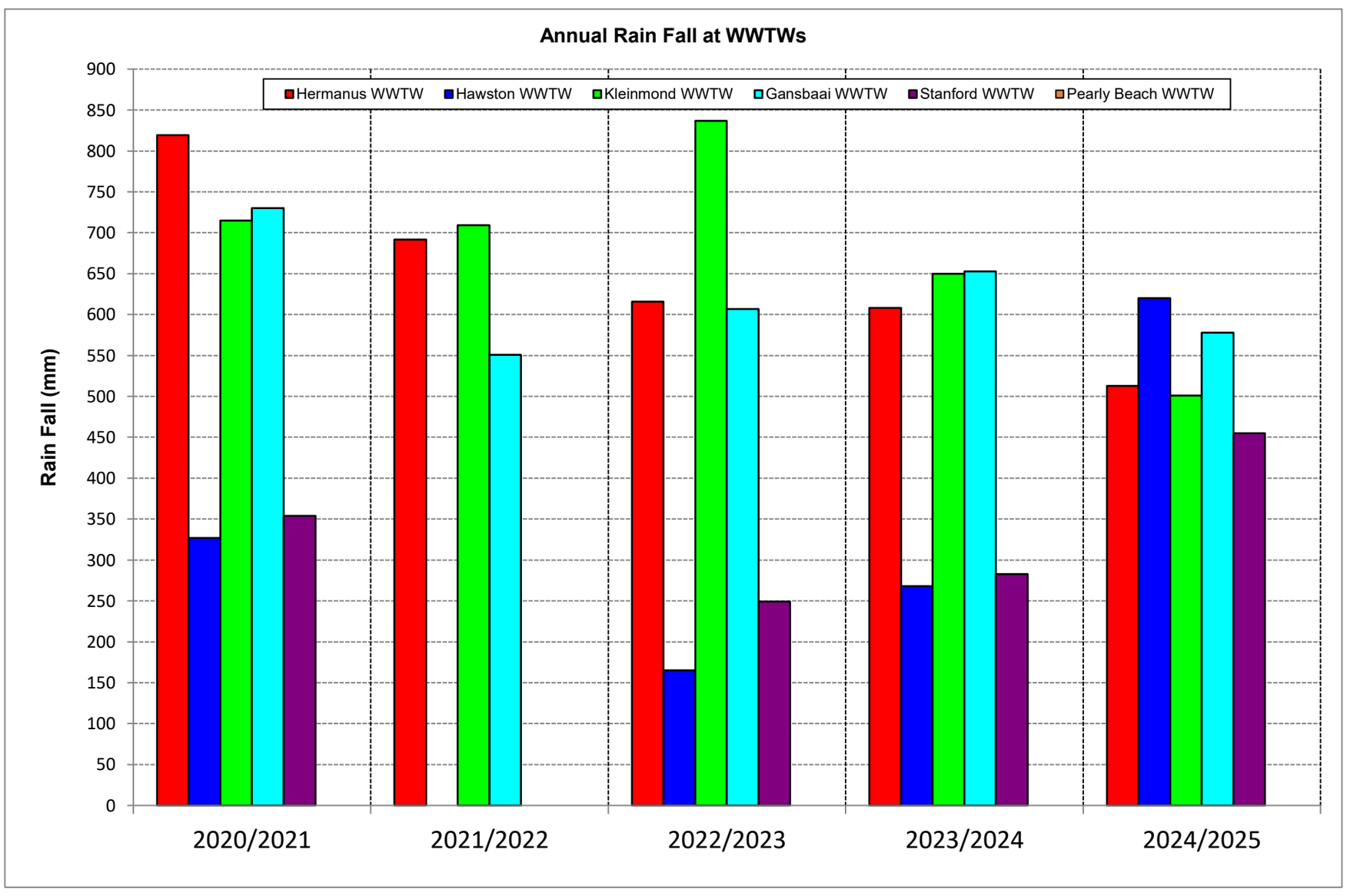
Date	Hermanus WWTW										Hawston WWTW										Kleinmond WWTW									
	Rain fall	In flow		Re-use for Irrigation		Discharge Sea Outflow		Design Capacity	Design Organic Load	Raw Sewerage COD	Actual Organic Load	Rain fall	In flow		Out flow		Design Capacity	Design Organic Load	Raw Sewerage COD	Actual Organic Load	Rain fall	In flow		Design Capacity	Design Organic Load	Raw Sewerage COD	Actual Organic Load			
	mm	ML	kl/d	ML	kl/d	ML	kl/d	kl/d	kg COD/d	mg/l	kg COD/d	mm	ML	kl/d	ML	kl/d	kl/d	kg COD/d	mg/l	kg COD/d	mm	ML	kl/d	kl/d	kg COD/d	mg/l	kg COD/d			
Jan-01	119.627	3859						7300									700							997						
Feb-01	91.999	3286						7300									700							997						
Mar-01	91.263	2944						7300									700							997						
Apr-01	87.489	2916						7300									700							997						
May-01	84.685	2732						7300									700							997						
Jun-01	68.350	2278						7300									700							997						
Jul-01	106.560	3437						7300									700							997						
Aug-01	109.658	3537						7300									700							997						
Sep-01	125.935	4198						7300									700							997						
Oct-01	112.946	3643						7300									700							997						
Nov-01	107.458	3582						7300									700							997						
Dec-01	135.956	4386						7300									700							997						
Jan-02	155.277	5009						7300									700							997						
Feb-02	111.052	3966						7300									700							997						
Mar-02	112.131	3617						7300									700							997						
Apr-02	103.545	3452						7300									700							997						
May-02	98.628	3182						7300									700							997						
Jun-02	106.674	3556						7300									700							997						
Jul-02	111.305	3590						7300									700							997						
Aug-02	145.500	4694						7300									700							997						
Sep-02	125.051	4168						7300									700							997						
Oct-02	109.303	3526						7300									700							997						
Nov-02	93.154	3105						7300									700							997						
Dec-02	133.345	4301						7300									700				17.398	561		997						
Jan-03	138.475	4467						7300									700				20.047	647		997						
Feb-03	110.781	3956						7300									700				14.196	507		997						
Mar-03	124.162	4005						7300									700				16.966	538		997						
Apr-03	111.734	3724						7300									700				15.915	531		997						
May-03	124.035	4001						7300									700				15.475	499		997						
Jun-03	102.004	3400						7300									700				14.334	478		997						
Jul-03	103.733	3346						7300									700				15.747	508		997						
Aug-03	161.723	5217						7300									700				19.907	642		997						
Sep-03	30.091	1003						7300									700				18.773	626		997						
Oct-03	0.000	0						7300									700				16.270	525		997						
Nov-03	0.000	0						7300									700				16.030	534		997						
Dec-03	0.000	0						7300									700				24.682	796		997						
Jan-04	0.000	0						7300				4	4.087	131			700				21.912	707		997						
Feb-04	0.000	0						7300				0	4.125	142			700				18.342	632		997						
Mar-04	0.000	0						7300				4	4.478	144			700				19.578	632		997						
Apr-04	62.077	2069						7300				21	3.977	133			700				19.762	659		997						
May-04	52.935	1708						7300				7	3.265	105			700				17.787	573		997						
Jun-04	57.763	1925						7300				83.5	4.285	143			700				17.910	597		997						
Jul-04	142.438	4595						7300				104.5	3.218	104			700				19.163	618		997						
Aug-04	172.017	5549						7300				33	2.921	94			700				20.242	653		997						
Sep-04	62.163	2072						7300				20.5	3.015	101			700				19.757	659		997						
Oct-04	230.129	7424						7300				60	4.363	141			700				21.366	689		997						
Nov-04	143.095	4770						7300				23.5	2.319	77			700				18.654	622		997						
Dec-04	215.937	6966						7300				42.5	4.881	157			700				24.640	795		997						
Jan-05	173.163	5586						7300				45	3.038	98			700				19.802	639		997						
Feb-05	107.031	3823						7300				17	2.665	95			700				15.474	553		997						
Mar-05	120.886	3900						7300				63	4.592	148			700				17.343	559		997						
Apr-05	481.548	16052						7300				135.5	3.860	129			700				20.787	693		997						
May-05	383.184	12361						7300				50	2.718	88			700				18.224	588		997						
Jun-05	812.498	27083						7300				109	4.017	134			700				23.315	777		997						
Jul-05	352.812	11381						7300				0	3.052	98			700				19.252	621		997						
Aug-05	372.247	12008						7300				34.5	5.547	192			700				20.631	666		997						
Sep-05	332.078	11069						7300				32	3.325	111			700				22.880	763		997						
Oct-05	230.687	7442						7300				19	2.799	89			700				20.549	673		997						
Nov-05	183.009	6100						7300				4	7.351	245			700				20.938	698		997						
Dec-05	160.085	5164						7300				11	8.789	284			700				24.728	798		997						
Jan-06	131.843	4247						7300				0	8.078	261			700				23.005	742		997						
Feb-06	99.346	3548						7300				0	6.994	250			700				18.669	667		997						
Mar-06	106.513	3436						7300				0	7.506	242			700				19.720	636		997						
Apr-06	119.029	3968						7300				6	8.212	274			700				22.341	745		997						
May-06	131.614	4246						7300				20	8.292	267			700				21.663	699		997						
Jun-06	128.843	4295						7300				0	7.609	254			700				19.872	662		997						
Jul-06	182.137	5875						7300				0	9.153	295			700				24.238	782		997						
Aug-06	176.085	5680						7300				0	9.392	303			700				27.307	881		997						
Sep-06	135.105	4504						7300				0	8.639	288			700				21.349	712		997						
Oct-06	133.307	4300						7300				50	7.887	254			700				20.064	647		997						
Nov-06	153.224	5107						7300				0	7.679	256			700				19.571	652		997						
Dec-06	158.658	5118						7300				26	8.993	290			700				23.843	769		997						
Jan-07	140.902	4545						7300				0	9.234	298			700				25.147	811		997						
Feb-07	124.476	4446						7300				0	8.080	289			700				18.288	653		997						
Mar-07	132.245	4266						7300				41	8.827	317			700				20.423	659		997						
Apr-07	130.063	4335						7300				0	9.676	323			700				19.951	665		997						
May-07	145.349	4689						7300				5	9.071	293			700				21.827	704		997						
Jun-07	142.930	4764						7300				10	9.527	318			700				23.732	791		997						
Jul-07	223.548	7211						7300				108	11.138	359			700				30.506	984		997						
Aug-07	209.744	6766						7300				18	11.143	359			700				29.417	949		997						
Sep-07	175.644	5855						7300				0	9.749	325			700				25.220	841		997						
Oct-07	147.465	4758						7300				17	9.838	317			700				28.175	909		997						
Nov-07	174.316	5811						7300				0	10.928	364			700				26.919	897		997						
Dec-07	180.163	5812						7300				0	12.312	397			700				26.159	844		997						
Jan-08	146.294	4719						7300				0	9.915	320			700				24.788	800		997						
Feb-08	130.095	4486						7300				0	9.911	342			700				22.287	769		997						
Mar-08	132.003	4258						7300				21.5	9.864	318			700				20.672	667		997						
Apr-08	125.510	4184						7300				0	9.979	333			700				21.960	732		997						
May-08	126.161	4070						7300				22	9.961	321			700				21.080	680		997						
Jun-08	129.793	4326						7300				25	9.362	312			700				22.367	746		997						
Jul-08	170.625	5504						7300				68	11.948	385			700				30.496	984		997						
Aug-08	148.339	4785						7300				63	10.856	350			700				27.510	887		997						
Sep-08	178.173	5939						7300				98	12.566	419			700				39.429	1314		997						
Oct-08	173.726	5604						7300				8	10.765	347			700				32.000	1032		997						
Nov-08	256.006	8534						7300				163	12.163	405			700				32.717	1091		997						
Dec-08	191.770	6186						7300				0	11.438	369			700				36.437	1175		997						
Jan-09	162.272	5235						7300					10.878	351			700				29.453	950		997						
Feb-09	117.470	4195						7300					9.126	326			700				16.848	602		997						
Mar-09	134.745	4347						7300					10.320	333			700				22.650	731		997						
Apr-09	127.997	4267						7300					9.919	331			700				24.297	810		997						
May-09	129.545	4179						7300					9.370	302			700				23.179	748		997						
Jun-09	149.071	4969						7300					10.731	358			700				31.406	1047		997						
Jul-09	166.050	5422						7300					13.390	432			700				26.610	858		997						
Aug-09	170.085	5487						7300					11.579	374			700				21.703	700		997						
Sep-09	177.562	5919						7300					10.478	349			700				22.909	764		997						
Oct-09	180.572	5825						7300					10.021	323			700				26.213	846		997						
Nov-09	135.281	4509						7300					9.059	302			700				25.219	841		997						
Dec-09	131.993	4258						7300					10.621	343			700				33.505	1081		997						
Jan-10	134.936	4353						7300					9.503	307			700				28.538	922		997						
Feb-10	112.877	4031						7300					8.683	310			700				20.594	736		997						
Mar-10	124.574	4019						7300					9.783	316			700				25.608	826		997						
Apr-10	117.086	3903						7300					9.631	321			700				22.155	739		997						
May-10	127.615	4117						7300					10.035	324			700				25.159	812		997						
Jun-10	161.401	5047	6.444	215				7300					10.174	339			700				27.865	929		997						
Jul-10	171.094	5519	4.763	154				7300					10.191	329			700				31.016	1001		997						
Aug-10	144.345	4656	8.000	261				7300					9.471	306			700				25.839	834		997						
Sep-10	107.651	3922	15.446	515				7300					9.174	306			700				27.845	928		997						
Oct-10	71.229	2298	15.114	488				7300					9.555	308			700				27.593	890		997						
Nov-10	109.420	3647	32.553	1085				7300					9.649	322			700				27.147	905		997						
Dec-10	140.158	4521	50.972	1644				7300					11.241	363			700				32.889	1061		997						
Jan-11	126.679	4086	61.866	1996				7300					9.690	313			700				27.947	902		997						
Feb-11	103.974	3713	65.602	2343				7300					8.764	313			700				21.187	757		997						
Mar-11	112.6	115.030	3711	42.808	1381			7300					9.005	290			700				23.338	753		997						
Apr-11	41.8	117.684	3923	21.333	711			7300					9.339	311			700				23.281	776		997						
May-11	92.4	123.779	3993	6.874	222			7300					9.073	293			700				24.694	797		997						
Jun-11	113.7	154.529	5151	8.486	283			7300					9.210	307			700				31.236	1041		997						
Jul-11	81.6	172.466	5563	10.017	323			7300	5400	533	2965		10.689	345			700	968	917	316	30.735	991		997	843	650	644			
Aug-11	60.4	159.955	5160	22.443	724	92.349		7300	5400	460	2374		9.379	303			700	968	880	266	30.706	991		997	843	382	378			
Sep-11	24.9	127.491	4250	20.025	668	-		7300	5400	360	1530		9.036	301			700	968	837	252	34.329	811		997	843	610	495			
Oct-11	36.5	123.085	3970	48.822	1575	-		7300	5400	698	2771		9.273	299			700	968	1058	316	23.497	758		997	843	680	515			
Nov-11	37.5	113.744	3791	49.698	1657	-		7300	5400	664	2518		9.052	302			700	968	1359	410	25.659	855		997	843	305	261			
Dec-11	22.2	130.356	4205	76.363	2463	-		7300	5400	758	3187		10.540	340			700	968	3538	1203	34.093	1100		997	843	630	693			
Jan-12	11.2	120.714	3894	83.798	2703	-		7300	5400	586	2282		8.620	278			700	968	743	207	27.373	883		997	843	1629	1438			
Feb-12	16.1	108.757	3750	79.887	2755	-		7300	5400	762	2858		8.099	279			700	968	571	159	23.556	812		997	843	577	469			
Mar-12	21.8	119.802	3865	55.538	1792	-		7300	5400	719	2779		9.147	295			700	968	596	176	25.331	817		997	843	1112	909			
Apr-12	68.1	117.385	3913	82.326	2744	-		7300	5400	547	2140		9.025	301			700	968	697	210	27.312	910		997	843	945	860			
May-12	56.4	110.018	3549	83.949	2708	-		7300	5400	730	2591		8.329	269			700	968	933	251	26.125	843		997	843	1387	1169			
Jun-12	74.1	112.166	3739	54.829	1828	-		7300	5400	687	2569		8.157	272			700	968	1003	273	29.058	969		997	843	1162	1126			
Jul-12	100.3	129.841	4188	14.668	473	-		7300	5400	880	3686		9.073	293			700	968	3313	970	30.927	998		997	843	1742	1738			
Aug-12	128.3	108.148	3489	9.479	306	-		7300	5400	366	1277		13.286	429			700	968	522	224	42.694	1377		997	843	1258	733			
Sep-12	82.5	67.350	2245	22.069	736	-		7300	5400	793	1780		10.506	353			700	968	2595	916	34.582	1166		997	843	1409	1643			
Oct-12	123.0	118.585	3825	13.316	430	-		7300	5400	472	1806		11.302	365			700	968	791	288	35.564	1147		997	843	730	837			
Nov-12	10.9	157.767	5259	81.983	1729	-		7300	5400	663	3487		9.218	289			700	968	1661	480	29.165	972		997	843	1779	1729			
Dec-12	8.6	152.014	4904	62.098	2003	-		12000	9000	781	3630		10.852	350	9.170	296	700	968	1125	394	37.103	1197		997	843	1021	1222			
Jan-13	22.8	146.229	4717	78.123	2520	-		12000	9000	769	3627		8.706	281	7.357	237	700	968	739	208	2.273	883		997	843	829	732			
Feb-13	44.1	115.993	4143	62.718	2240	38.378	1371	12000	9000	691	2863		8.580	306	7.250	259	700	968	738	226	31.439	1123		997	843	1068	1199			
Mar-13	44.2	153.569	4954	55.386	1787	148.752	4798	12000	9000	371	1638		9.256	299	7.821	252	700	968	1292	386	24.648	795		997	843	602	479			
Apr-13	46.8	155.980	5199	18.898	630	161.247	4708	12000	9000	366	1903		9.246	308	7.813	260	700	968	710	219	29.345	978		997	843	517	506			
May-13	42.7	153.769	4960	16.774	541	135.543	4372	12000	9000	503	2495		9.367	302	7.915	255	700	968	777	235	28.623	923		997	843	502	464			
Jun-13	147.3	218.505	7284	17.078	569	211.063	7035	12000	9000	551	4013		10.944	365	9.248	308	700	968	574	209	27.018	901		997	843	1158	1043			
Jul-13	60.8	190.095	6132	12.496	403	189.259	6073	12000	9000	417	2557		8.428	272	7.122	230	700	968	1424	387	27.845	1023		997	843	580	708	37		
Aug-13	188.5	277.798	8961	14.370	464	290.214	9362	12000	9000	276	2473		13.107	423	11.075	357	700	968	542	229	38.805	1252		997	843	1014	1269			
Sep-13	119.4	290.330	9678	42.550	1418	304.907	10164	12000	9000	413	3997		11.173	372	9.441	315	700	968	1139	424	56.613	1887		997	843	297	560	46		
Oct-13	41.6	216.274	6977	19.378	625	213.579	6890	12000	9000	777	5421		9.654	311	8.158	263	700	968	2012	627	51.950	1676		997	843	672	1126	58		
Nov-13	172.9	256.498	8550	40.025	1334	231.613	7720	12000	9000	884	7558		11.042	368	9.340	311	700	968	1255	462	43.436	1448		997	843	547	83	111		
Dec-13	10.1	217.175	7006	58.508	1887	159.315	5139	12000	9000	366	2564		9.222	297	7.793	251	700	968	996	296	51.421	1659		997	843	388	644	27		
Jan-14	157.9	303.483	9790	45.001	1452	286.028	9227	12000	9000	358	3305		12.401	400	10.479	338	700	968	1026	410	47.164	1521		997	843	379	575	95		
Feb-14	17.0	175.095	6253	45.695	1632	143.968	5142	12000	9000	427	2670		8.580	306	7.250	259	700	968	494	151	35.900	1282		997	843	624	800	15		
Mar-14	20.1	186.034	6001	33.155	1070	157.529	5082	12000	9000	535	3211		9.256	299	7.821	252	700	968	743	222	28.428	917		997	843	764	701	21		
Apr-14	44.1	180.792	6026	22.677	756	167.318	5577	12000	9000	596	3592		9.715	324	8.209	274	700	968	1606	520	32.298	1077		997	843	681	733	44		
May-14	44.1	172.608	5568	11.098	358	169.968	5483	12000	9000	480	2879		8.852	318	8.325	269	700	968	1840	565	44.499	1113		997	843	807	898	40		
Jun-14	188.8	263.549	8785	7.231	241	281.009	9367	12000	9000	274	2407		13.589	453	11.483	383	700	968	1840	833	56.656	1889		997	843	1069	2019	181		
Jul-14	100.3	285.370	9205	12.496	403	295.705	9539	12000	9000	388	3572		14.094	455	11.909	384	700	968	2357	1072	64.557	2082		997	843	342	712	112		
Aug-14	85.2	244.387	7883	15.499	500	250.043	8066	12000	9000	387	3051		13.031	420	11.011	355	700	968	3279	1378	52.597	1697		997	843	329	558	46		
Sep-14	35.8	217.472	7249	17.703	590	230.499	7683	12000	9000	429	3110		11.875	396	10.034	334	700	968	1412	559	43.266	1442		997	843	523	754	45		
Oct-14	9.0	202.356	6528	37.340	1205	183.328	5914	12000	9000	417	2722		10.440	337	8.822	285	700	968	609	205	35.957	1160		997	843	1000	1160	16		
Nov-14	34.6	176.522	5884	53.337	1778	126.356	4212	12000	9000	559	3289		8.984	299	7.591	253	700	968	1040	311	32.177	1073		997	843	824	884	54		
Dec-14	20.6	191.485	6177	72.847	2350	97.875	3157	12000	9000	474	2928		8.215	265	6.942	224	700	968	2042	541	41.132	1327		997	843	1140	1513	12		
Jan-15	18.5	163.720	5281	90.074	2906	59.691	1926	12000	9000	531	2804		8.316	268	7.027	227	700	968	1735	465	35.628	1149		997	843	1006	1156	20		
Feb-15	16.0	145.714	5204	39.323	1404	55.090	1968	12000	9000	816	4247		6.620	236	5.594	200	700	968	1429	338	25.495	911		997	843	875	888	16		
Mar-15	22.6	164.740	5314	80.136	2585	50.192	1619	12000	9000	708	3762		7.136	230	6.030	195	700	968	708	163	26.447	853		997	843	724	618	13		
Apr-15	21.1	162.715	5424	38.294	1276	32.048	1068	12000	9000	430	2332		7.034	234	5.944	198	700	968	430	101	27.948	932		997	843	808	753	14		

Date	Stanford WWTW										Gansbaai WWTW										Pearly Beach WWTW										Total WWTWs		
	Rain fall	In flow			Out flow		Design Capacity	Design Organic Load	Raw Sewerage COD	Actual Organic Load	Rain fall	In flow		Irrigation		Design Capacity	Design Organic Load	Raw Sewerage COD	Actual Organic Load		Rain fall	In flow		Design Capacity	Design Organic Load	Raw Sewerage COD	Actual Organic Load				Total flow	In flow	Design Capacity
	mm	ML	kl/d	ML	kl/d	kl/d	kg COD/d	mg/l	kg COD/d		mm	ML	kl/d

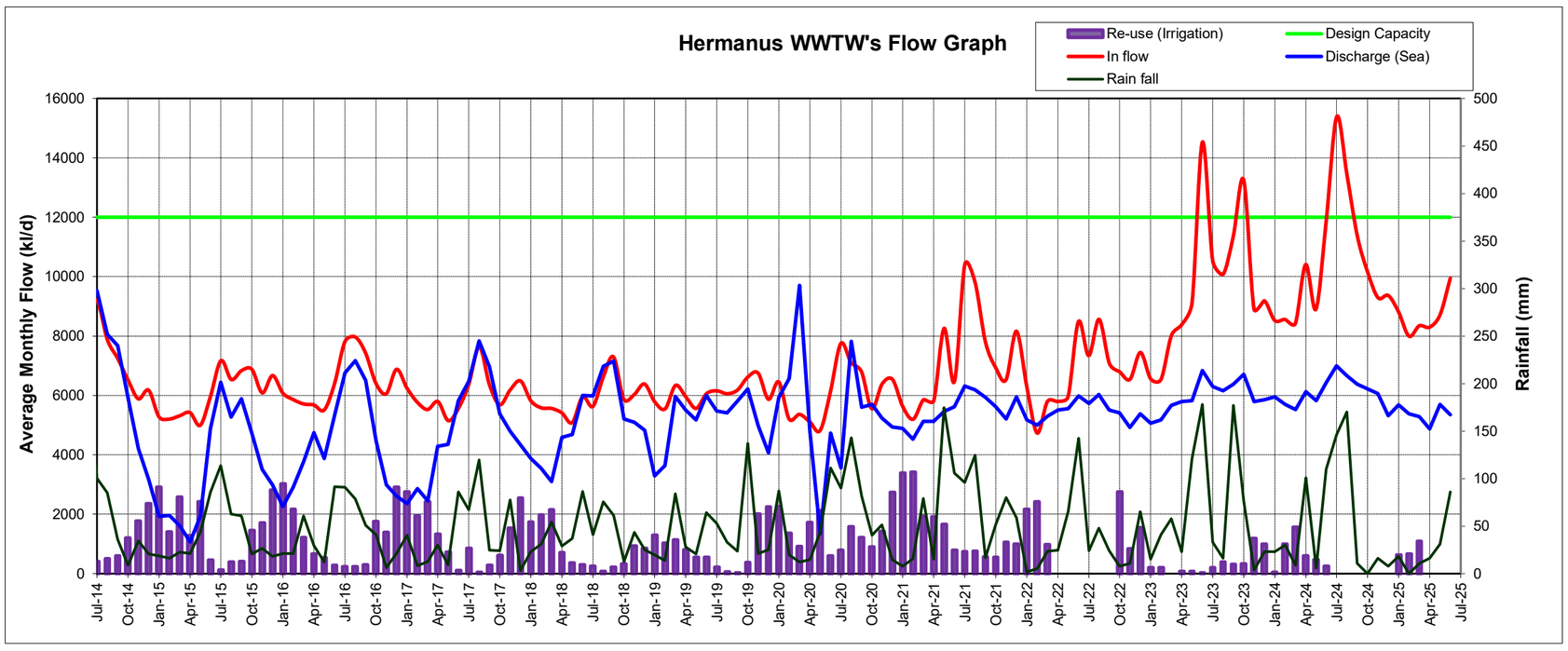
Current flows and capacities of WWTWs in Overstrand Municipality's Management Area

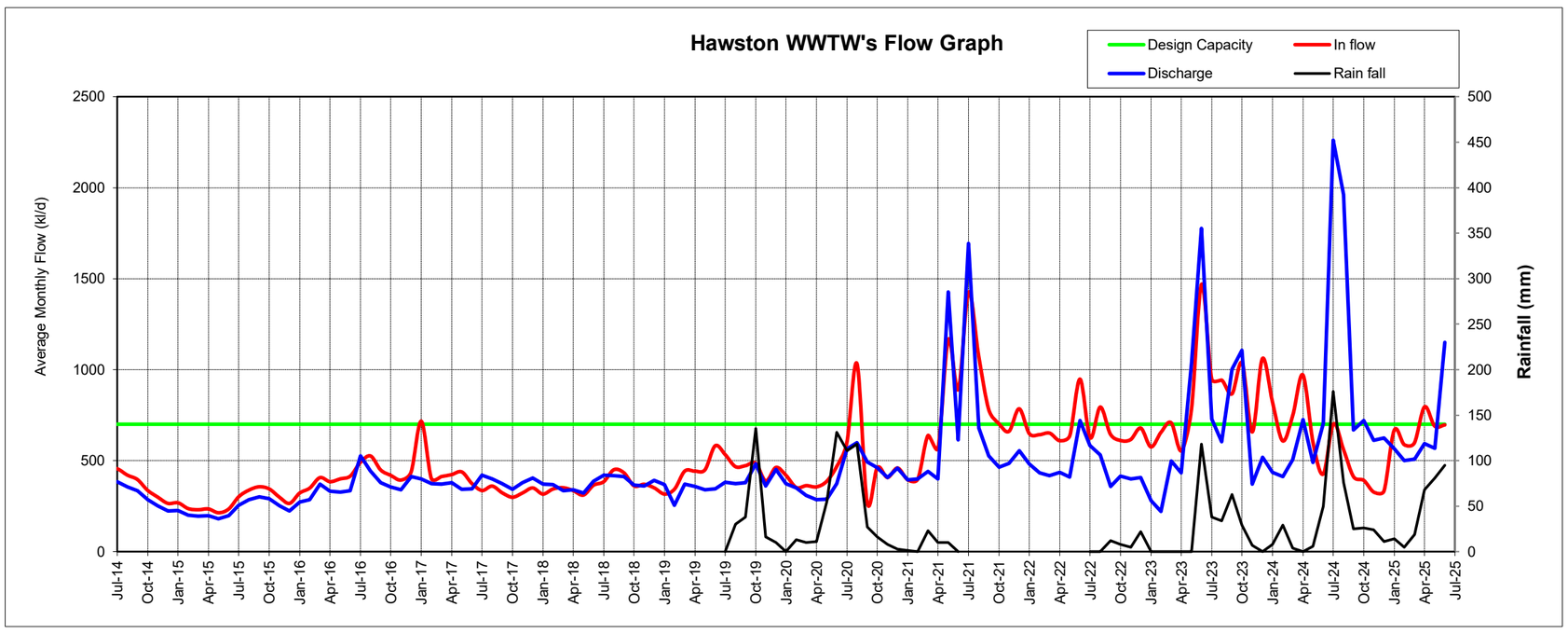
| Date | Hermanus WWTW | | | | | | | | | | | Hawston WWTW | | | | | | | | | | Kleinmond WWTW | | | | | | | | | | Stanford WWTW | | | | | | | | | | Gansbaai WWTW | | | | | | | | | | Pearly Beach WWTW | | | | | | | | | | Total WWTWs | | |
|---|---|---

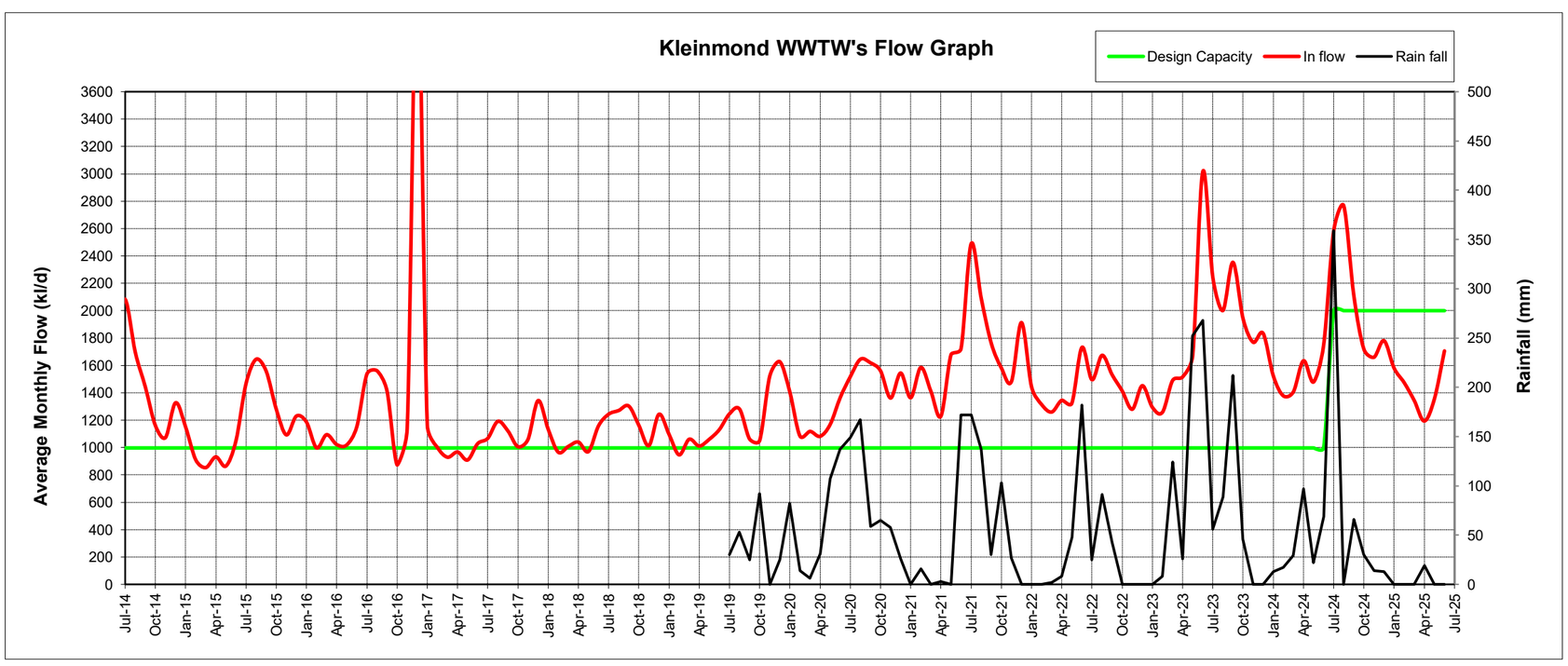

Monthly Rain Fall at WWTWs
Rain Fall (mm)
Hermanus WWTW
Hawston WWTW
Kleinmond WWTW
Gansbaai WWTW
Stanford WWTW
Pearly Beach WWTW
400
350
300
250
200
150
100
50
0
Jul-21
Nov-21
Mar-22
Jul-22
Nov-22
Mar-23
Jul-23
Nov-23
Mar-24
Jul-24
Nov-24
Mar-25
Jul-25


Annual Rain Fall at WWTWs
Rain Fall (mm)
Hermanus WWTW
Hawston WWTW
Kleinmond WWTW
Gansbaai WWTW
Stanford WWTW
Pearly Beach WWTW
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2020/2021
2021/2022
2022/2023
2023/2024
2024/2025

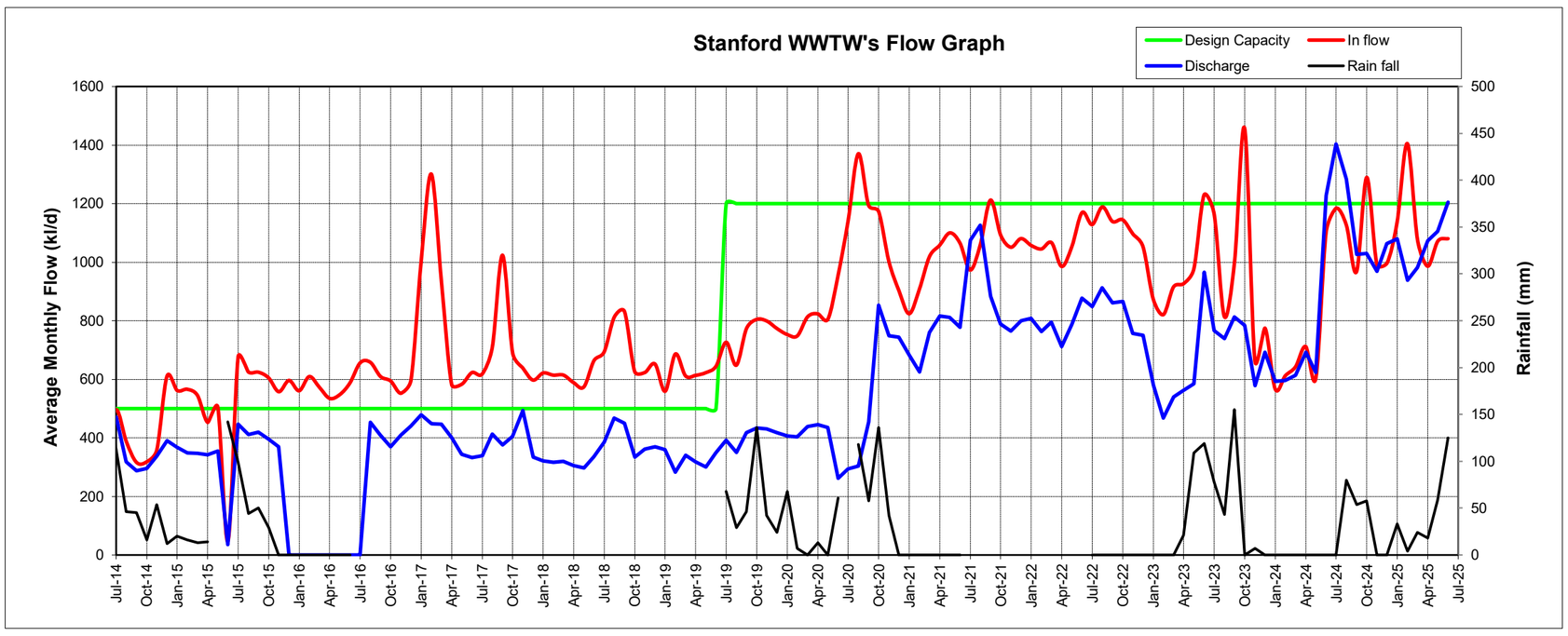
WWTWs FLOWS AND CAPACITIES

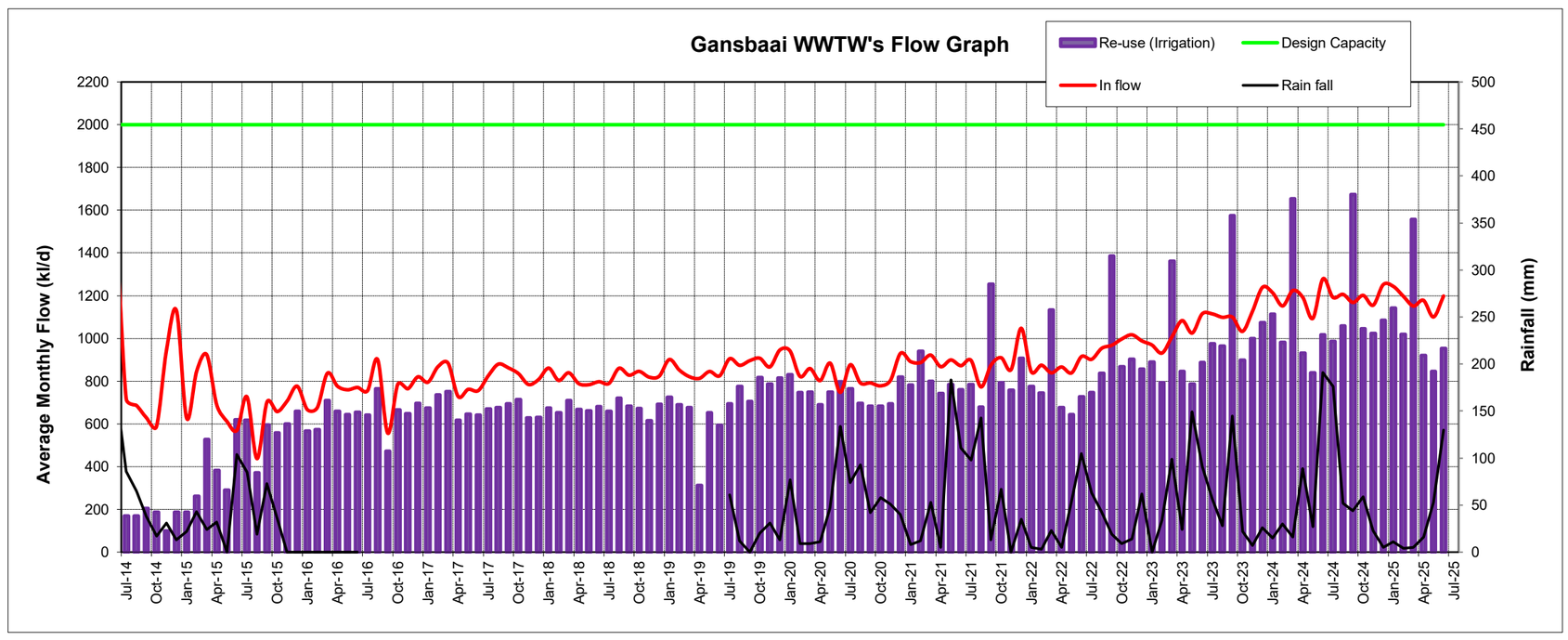


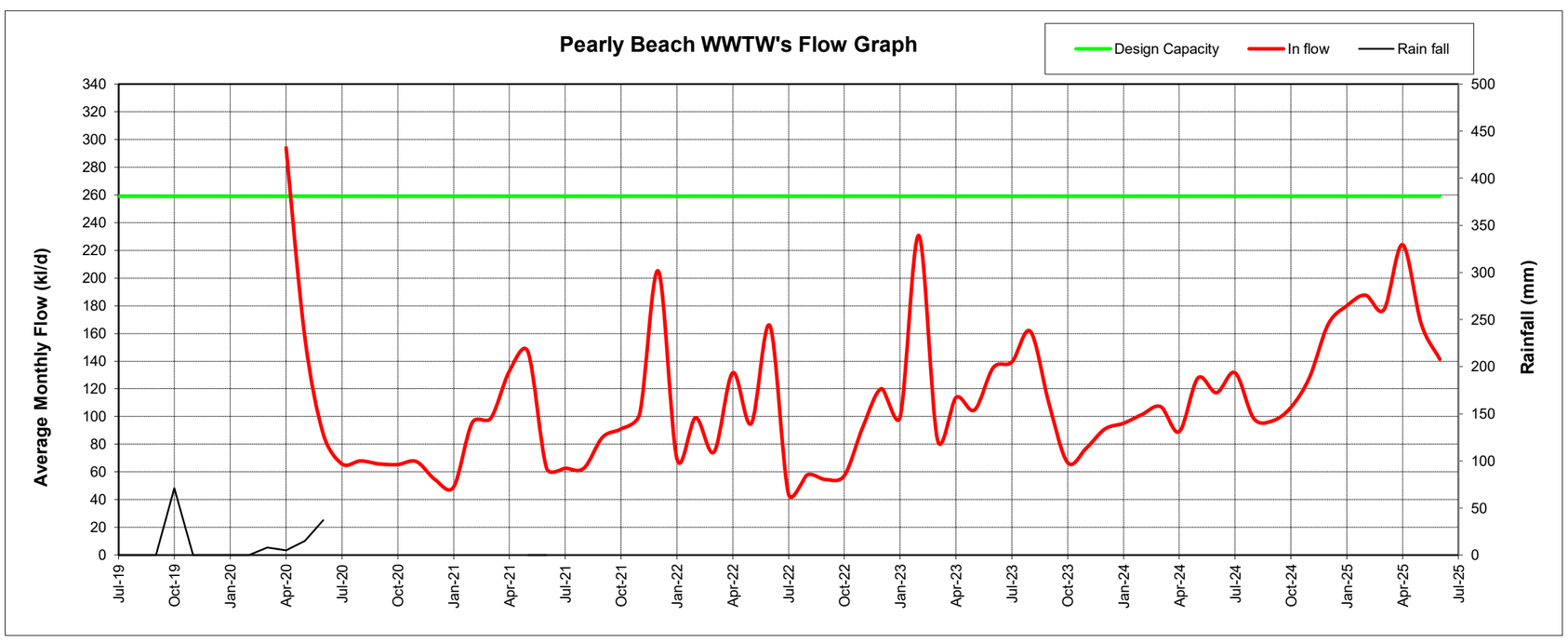


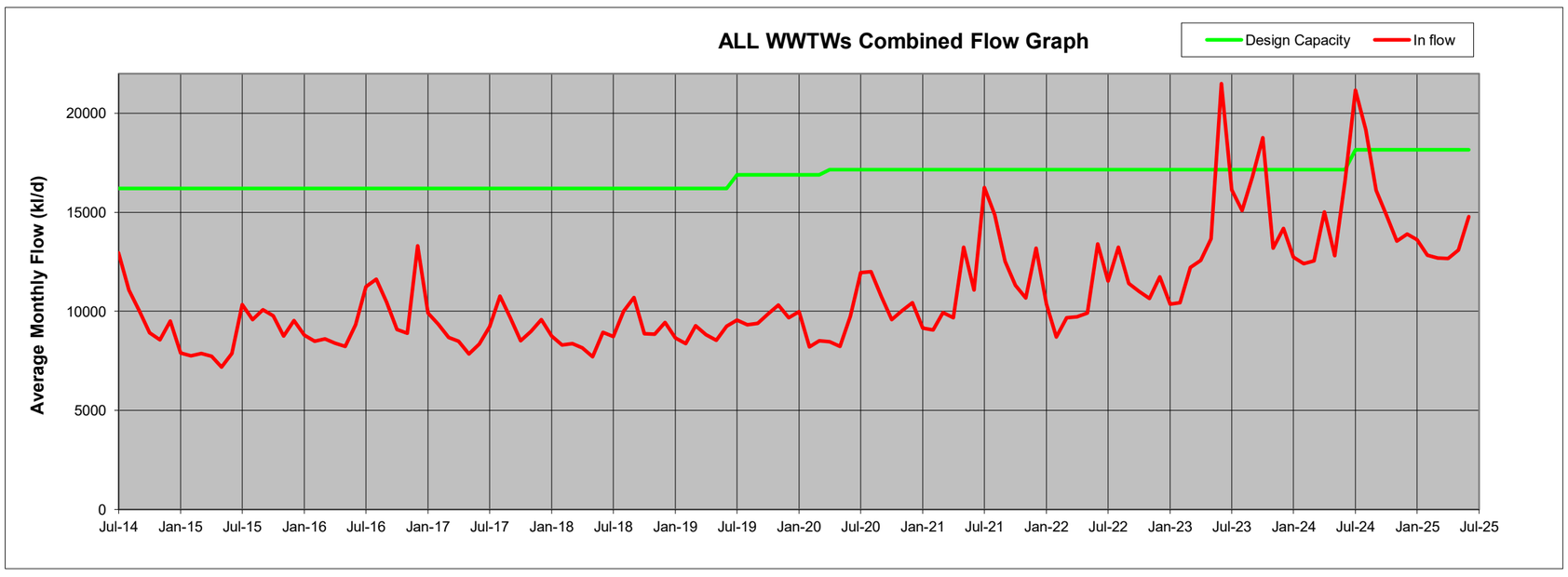


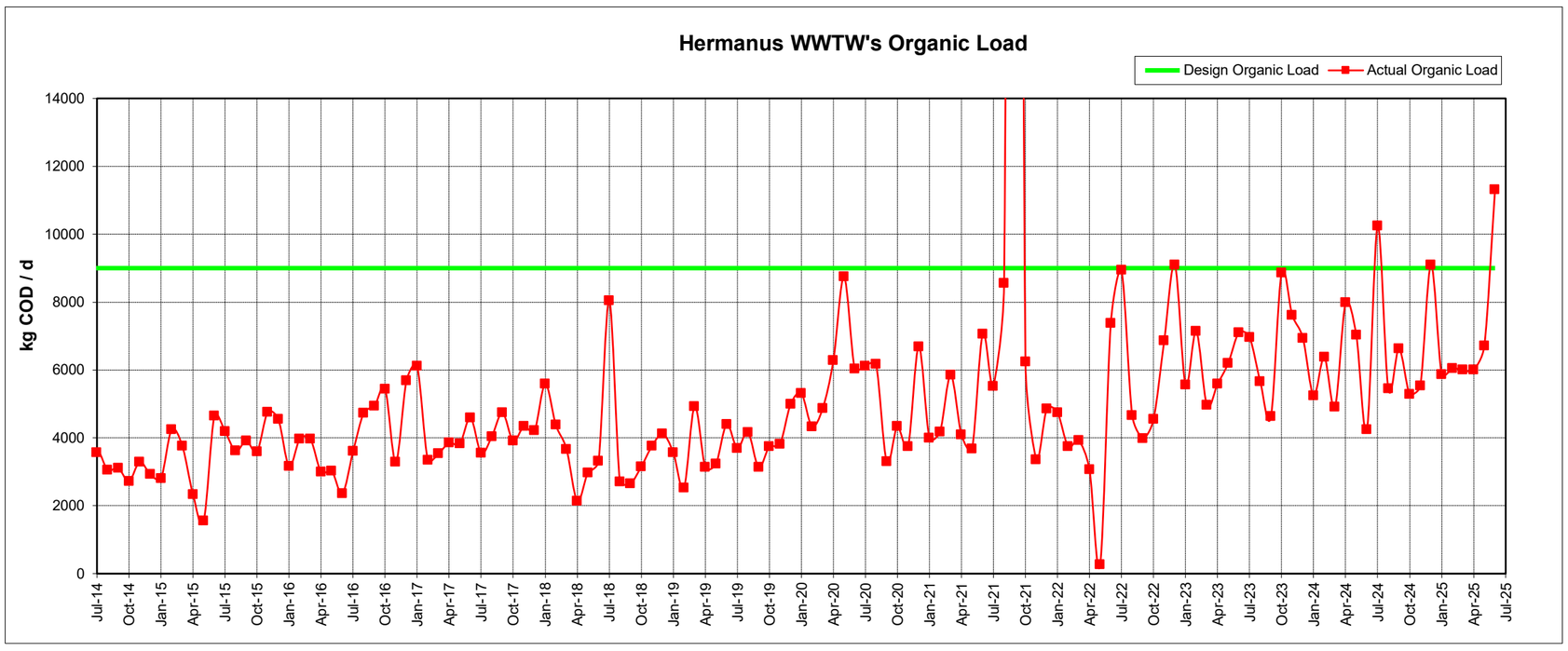
WWTWs FLOWS AND CAPACITIES

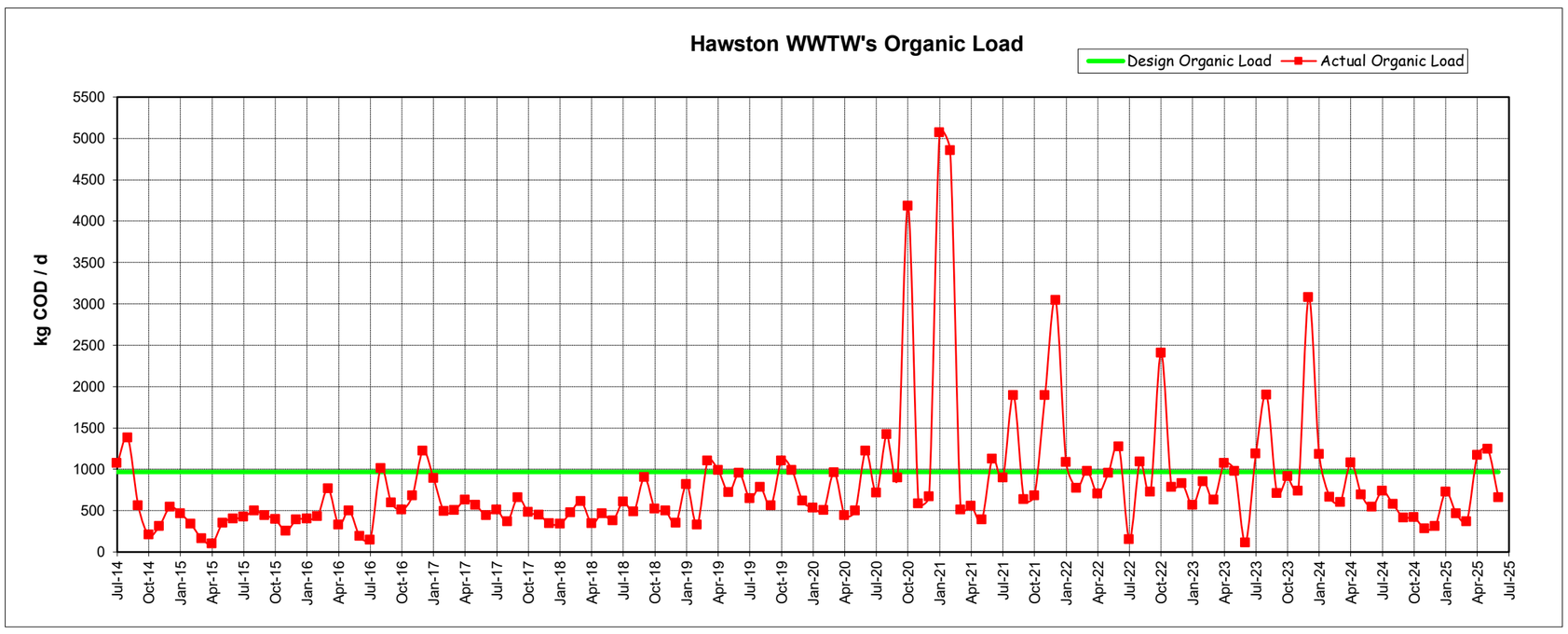


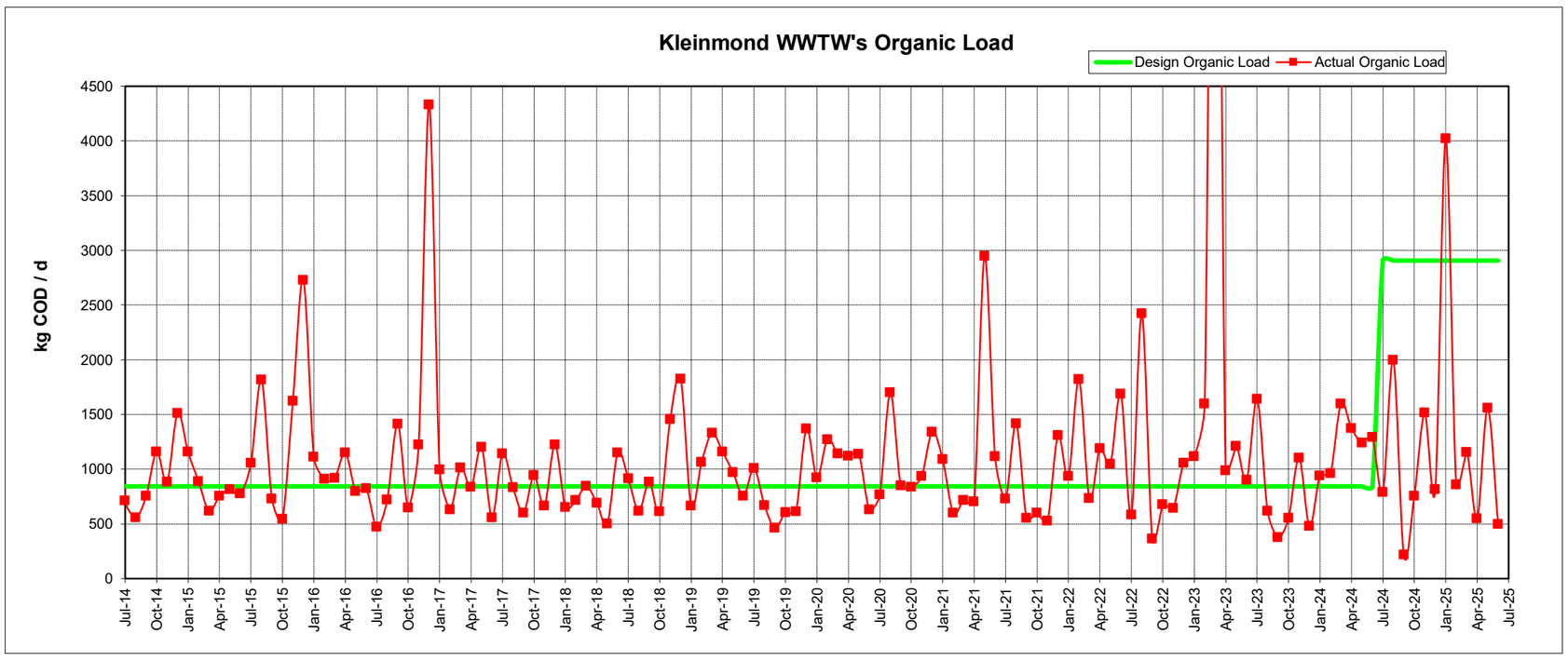


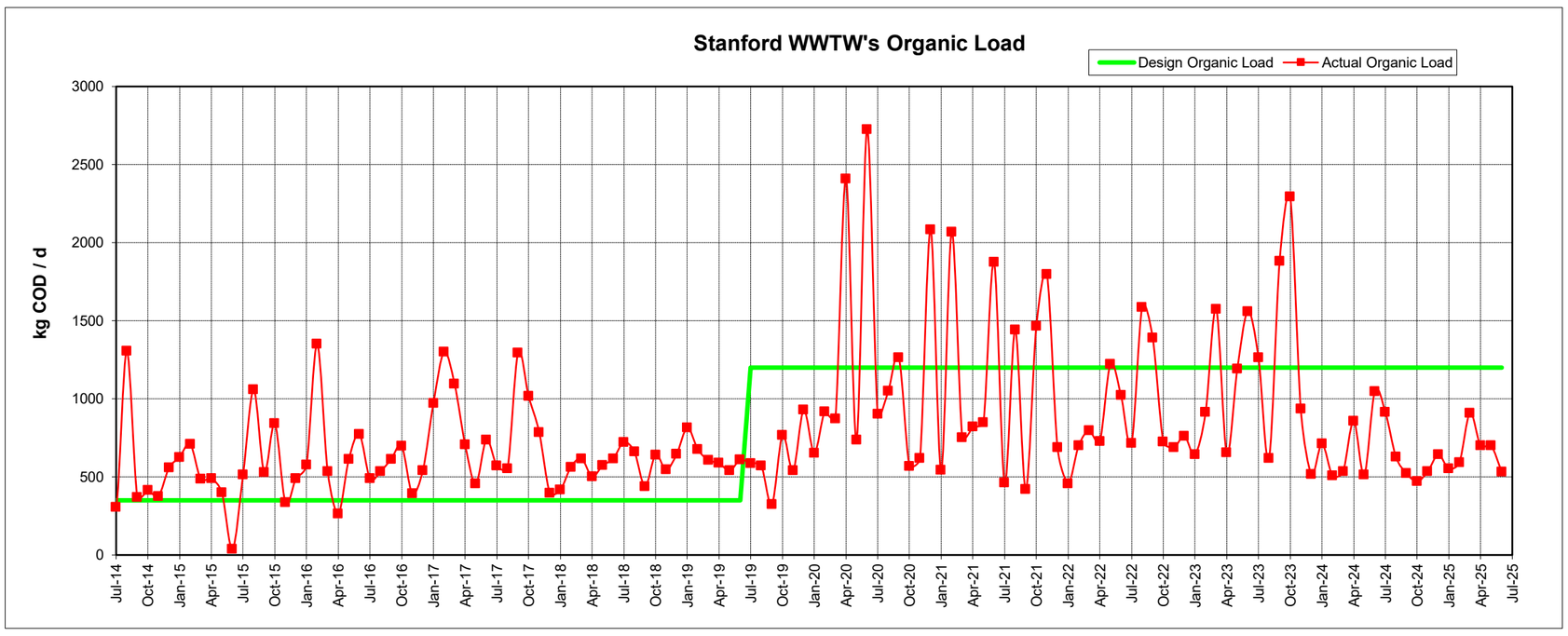


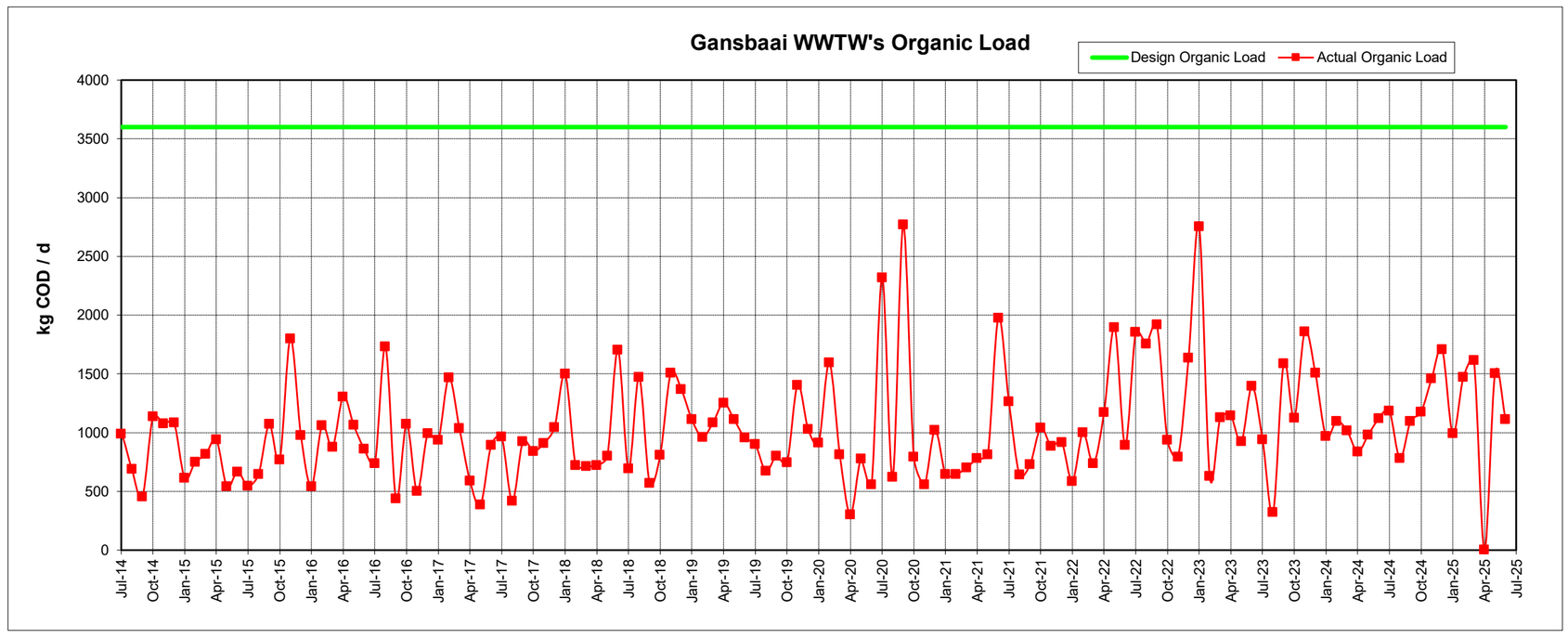


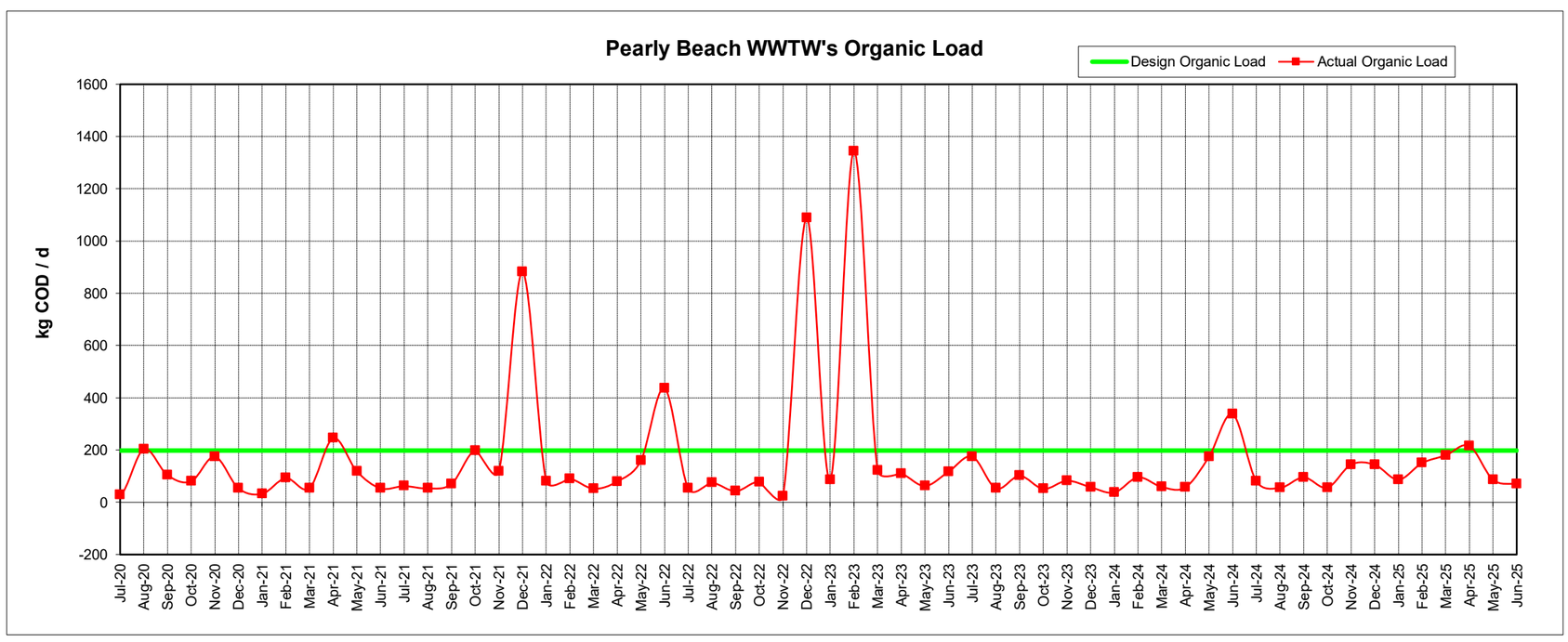

Hermanus WWTW's Organic Load
Design Organic Load
Actual Organic Load
kg COD / d
0
2000
4000
6000
8000
10000
12000
14000
Jul-14
Oct-14
Jan-15
Apr-15
Jul-15
Oct-15
Jan-16
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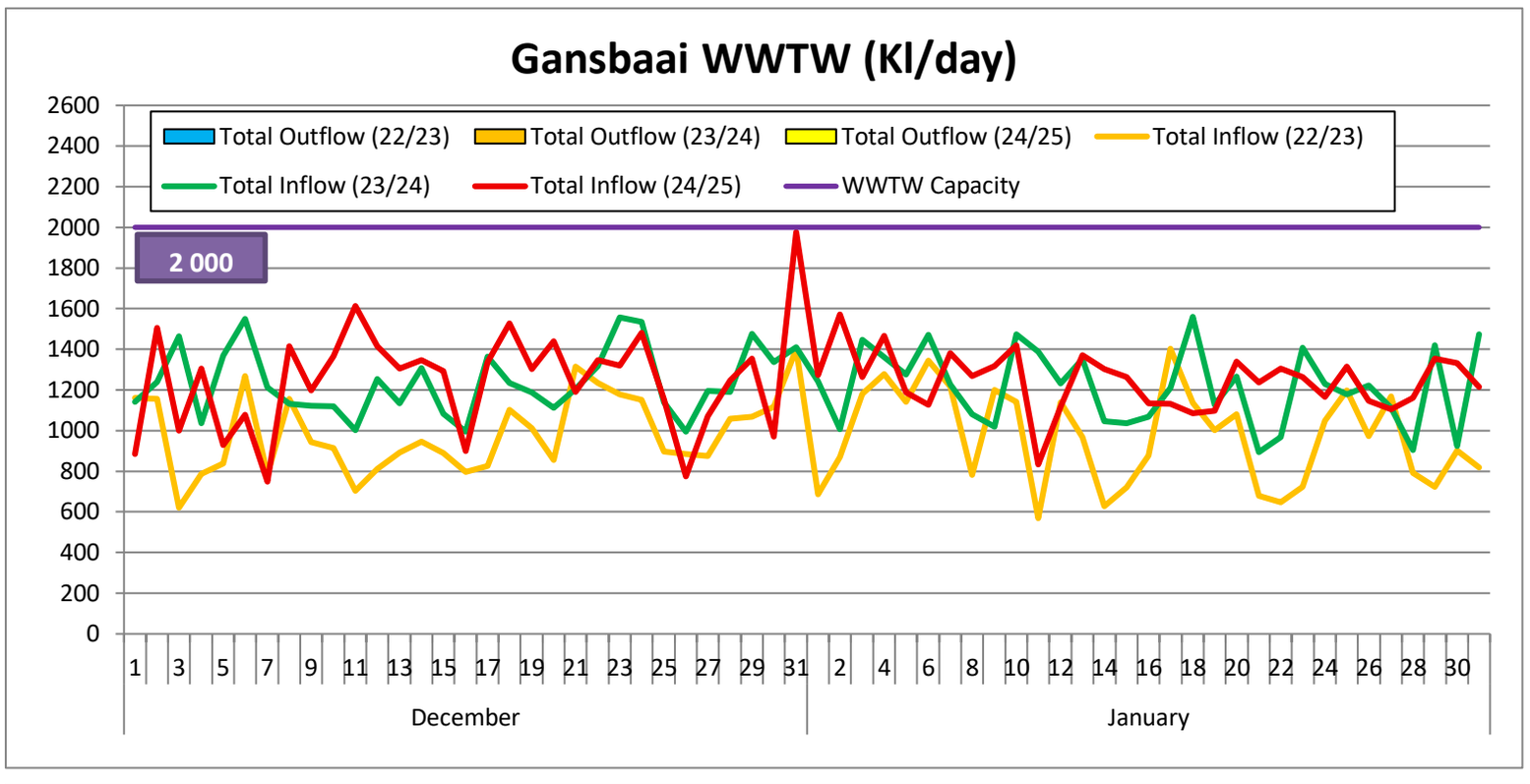

Hawston WWTW's Organic Load
Design Organic Load
Actual Organic Load
kg COD / d
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
Jul-14
Oct-14
Jan-15
Apr-15
Jul-15
Oct-15
Jan-16
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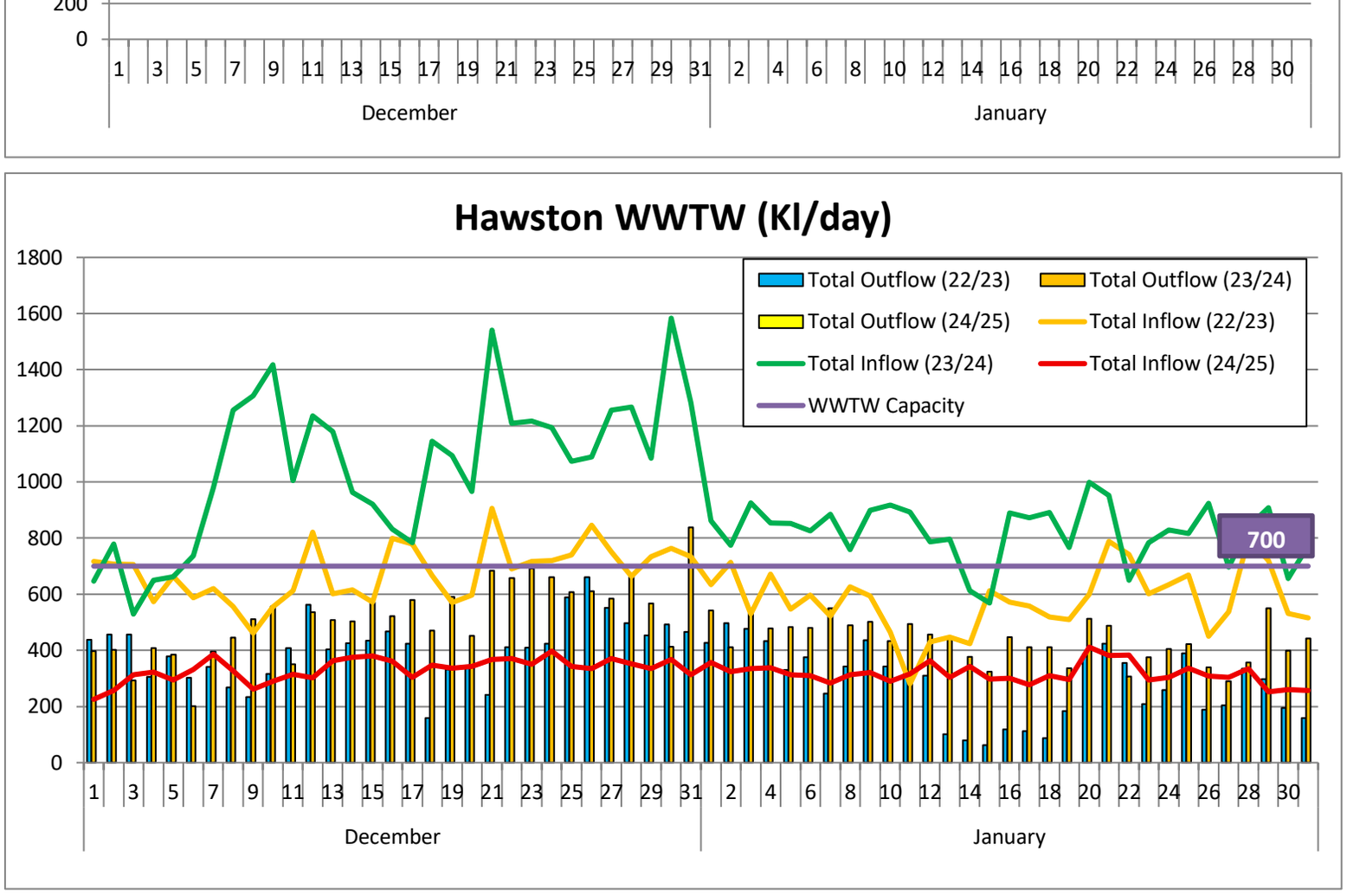

Kleinmond WWTW's Organic Load
Design Organic Load
Actual Organic Load
kg COD / d
0
500
1000
1500
2000
2500
3000
3500
4000
4500
Jul-14
Oct-14
Jan-15
Apr-15
Jul-15
Oct-15
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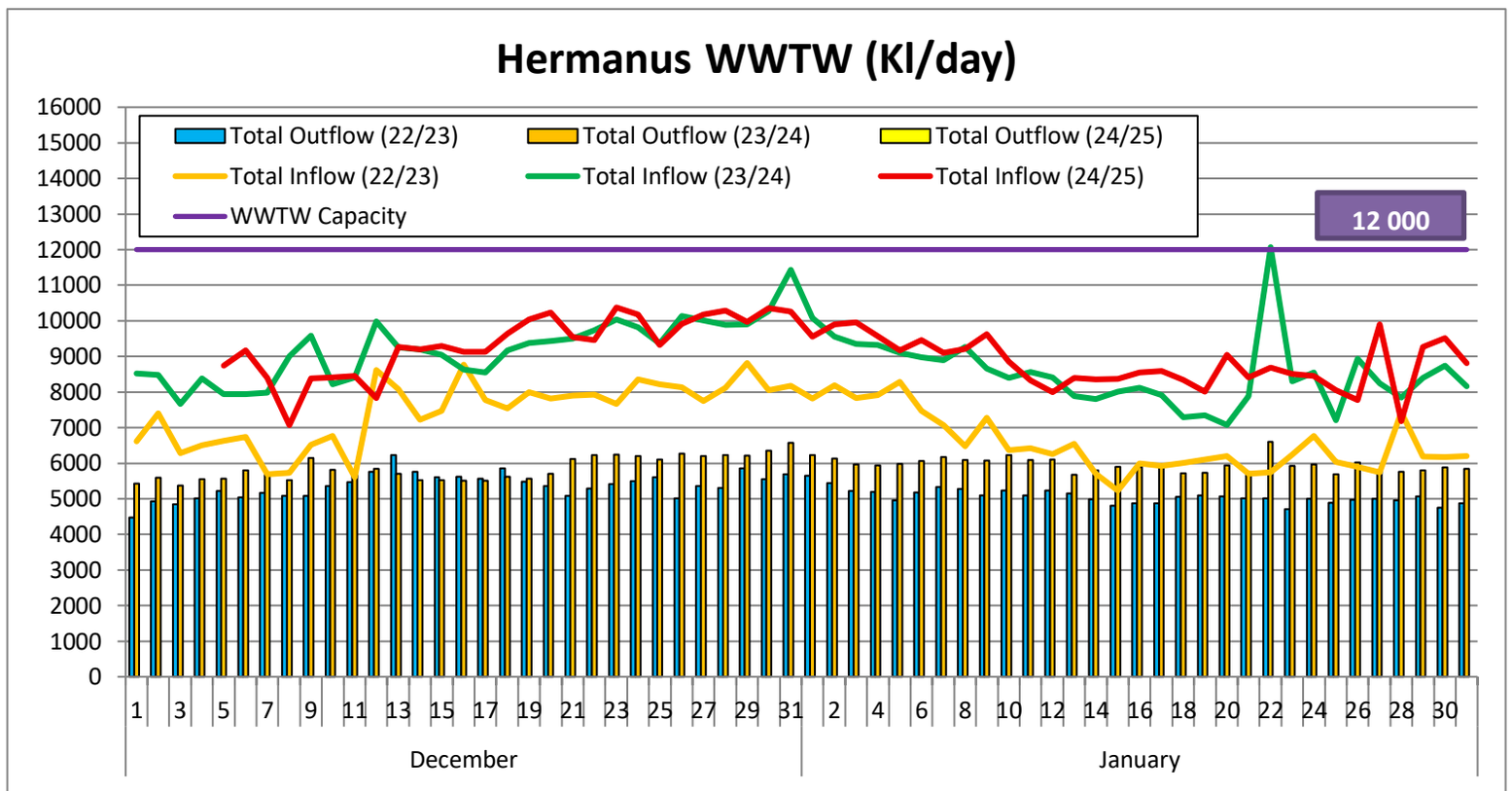

Stanford WWTW's Organic Load
Design Organic Load
Actual Organic Load
kg COD / d
0
500
1000
1500
2000
2500
3000
Jul-14
Oct-14
Jan-15
Apr-15
Jul-15
Oct-15
Jan-16
Apr-16
Jul-16
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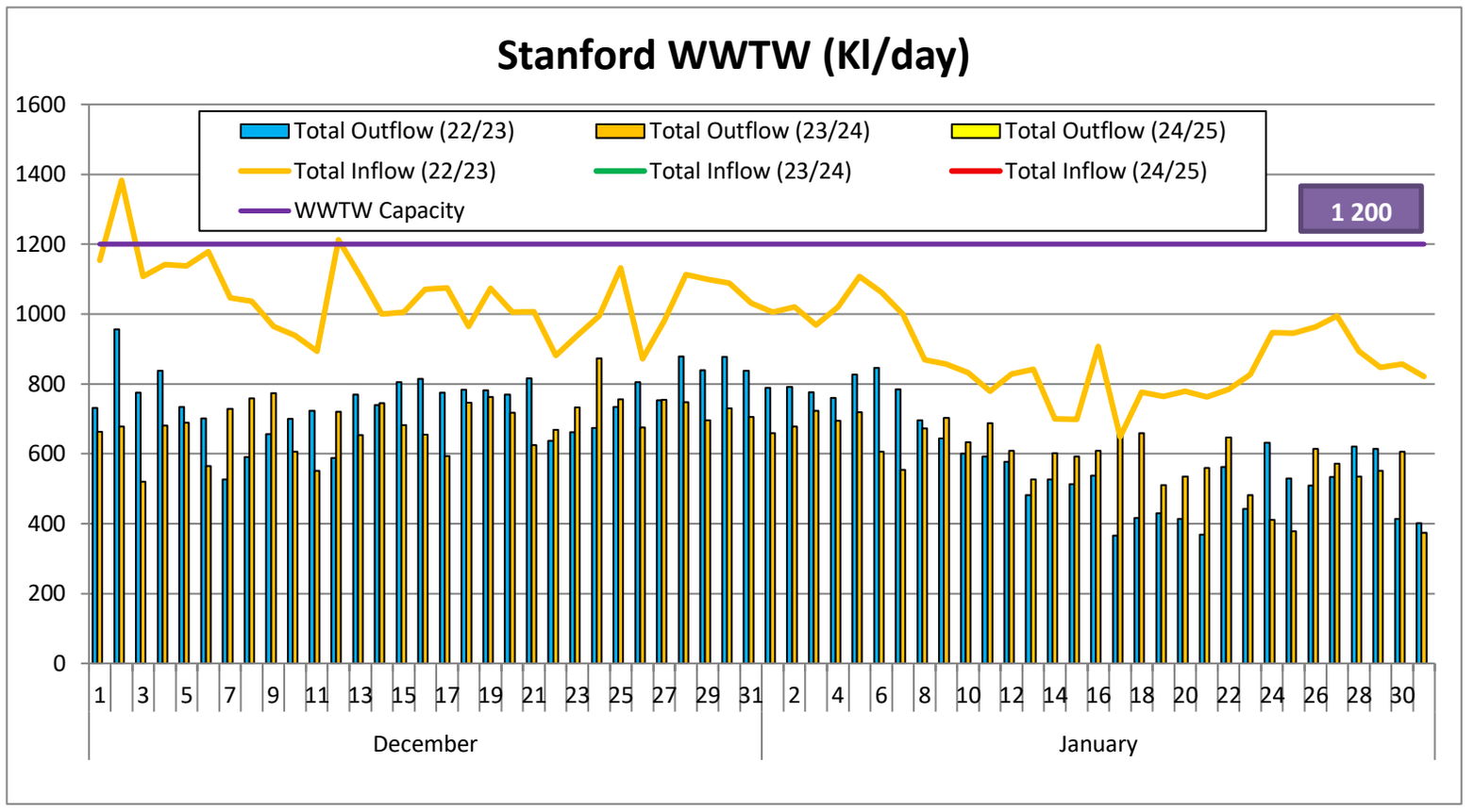

Gansbaai WWTW's Organic Load
Design Organic Load
Actual Organic Load
kg COD / d
0
500
1000
1500
2000
2500
3000
3500
4000
Jul-14
Oct-14
Jan-15
Apr-15
Jul-15
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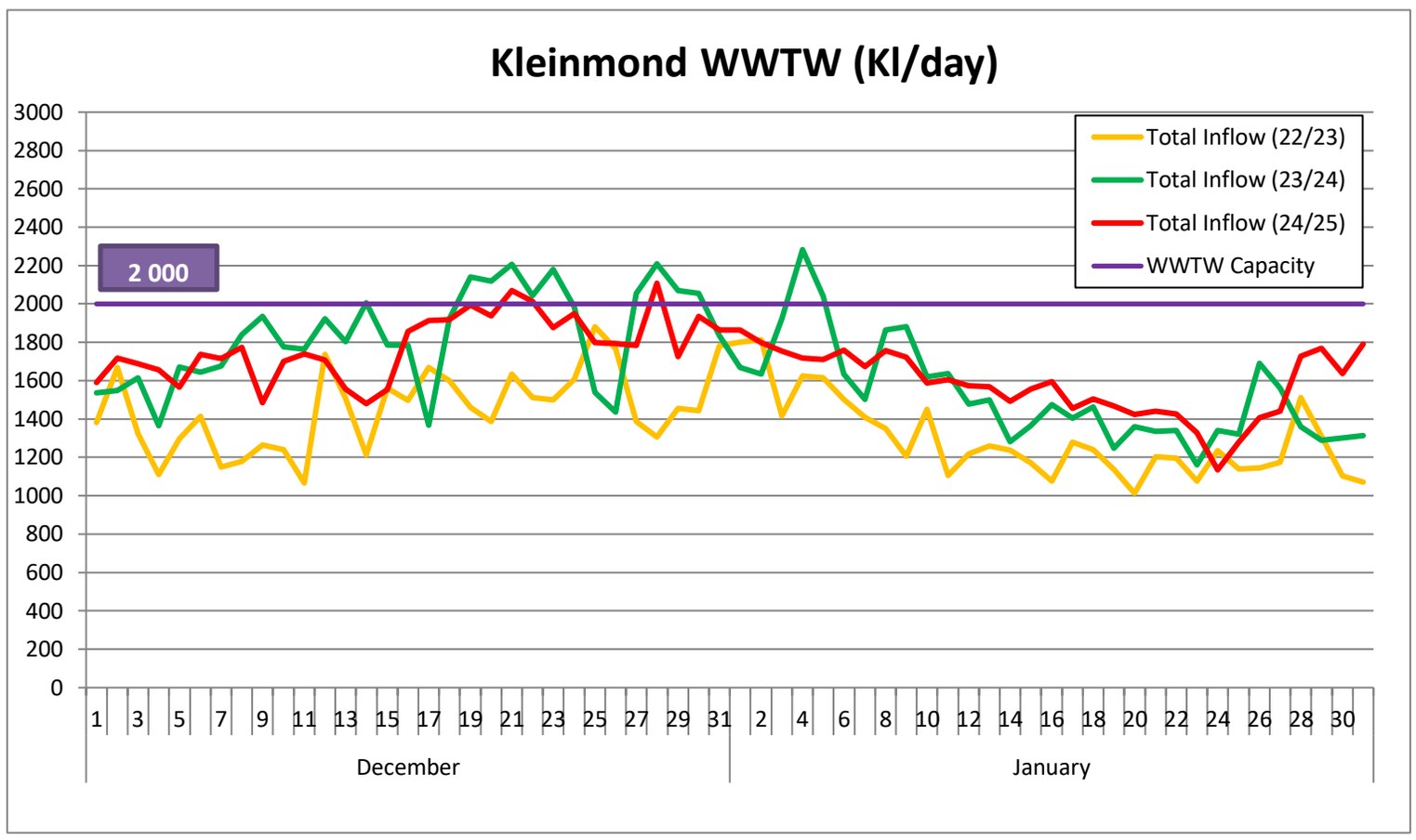

Pearly Beach WWTW's Organic Load
Design Organic Load
Actual Organic Load
kg COD / d
-200
0
200
400
600
800
1000
1200
1400
1600
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21
Mar-21
Apr-21
May-21
Jun-21
Jul-21
Aug-21
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May-25
Jun-25

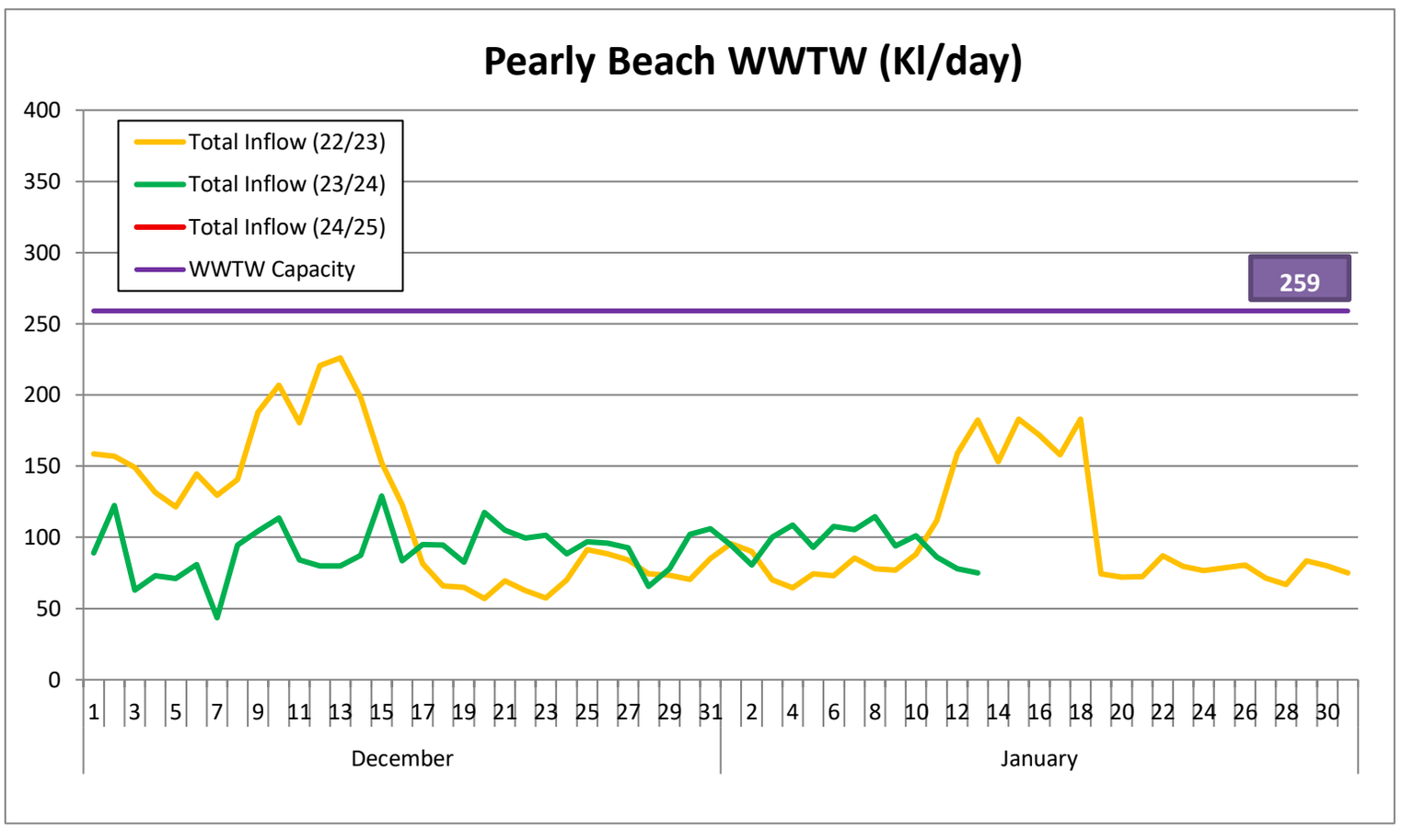

Gansbaai WWTW (Kl/day)
Total Outflow (22/23)
Total Outflow (23/24)
Total Outflow (24/25)
Total Inflow (22/23)
Total Inflow (23/24)
Total Inflow (24/25)
WWTW Capacity
2 000
December
January


Hawston WWTW (Kl/day)
Total Outflow (22/23)
Total Outflow (23/24)
Total Outflow (24/25)
Total Inflow (22/23)
Total Inflow (23/24)
Total Inflow (24/25)
WWTW Capacity
700
December
January


Hermanus WWTW (Kl/day)
Total Outflow (22/23)
Total Outflow (23/24)
Total Outflow (24/25)
Total Inflow (22/23)
Total Inflow (23/24)
Total Inflow (24/25)
WWTW Capacity
12 000
December
January


Stanford WWTW (Kl/day)
Total Outflow (22/23)
Total Outflow (23/24)
Total Outflow (24/25)
Total Inflow (22/23)
Total Inflow (23/24)
Total Inflow (24/25)
WWTW Capacity
1 200
1600
1400
1200
1000
800
600
400
200
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
December
January


Kleinmond WWTW (Kl/day)
Total Inflow (22/23)
Total Inflow (23/24)
Total Inflow (24/25)
WWTW Capacity
2 000
3000
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
December
January


Pearly Beach WWTW (Kl/day)
Total Inflow (22/23)
Total Inflow (23/24)
Total Inflow (24/25)
WWTW Capacity
259
400
350
300
250
200
150
100
50
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
December
January

ANNEXURE B

No Drop Spreadsheets and ILIs

SUMMARY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

P10376

S1. SYSTEM NAME AND CONTACT DETAILS

Name of Water Undertaking		Overstrand Municipality (Betty's Bay, Pringle Bay & Rooi Els)
Name of Water Supply System		Buffels River (Bulk treated water supply to each area, ILI for three networks combined)
Contact Details:	Name	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

S2. Performance Indicators of Water Loss

Viewpoint	Level	Parameter	Typical Range Excellent	Good	Poor	Actual PI	Units
Operations management of distribution system at current pressure	**Basic**	% of year system is pressurised	100	100	<100	100	%
		Current Annual Real Losses (CARL) (when system is pressurised - see note 2)	30 to 100	100 to 200	>200	143	Litres/connection/day
	Detailed	Unavoidable Annual Real Losses (UARL) (see note 3)	n/a	n/a	n/a	61	Litres/connection/day
		Consumption	n/a	n/a	n/a	344	Litres/connection/day
		Infrastructure Leakage Index (ILI) (= CARL/UARL : see note 4)	1	2	>3.0	2.4	non dimensional
Financial management aspects of water losses	**Basic**	Volume of non-revenue water as a% of system input volume (see note 5)	<10%	20%	30%	37	%
	Detailed	Value of non-revenue water as a % of annual cost of running the system (see note 6)	<5%	10%	15%	7	%

Notes:

Note1: taken from data in "AQUA" article, December 1999 or estimated by WRP

Note 2: takes account of % of time system is pressurised, but not system pressure, density of connections or customet meter location

Note 3: takes account of density of connections and customer meter location at current pressure

Note 4: measures overall efficiency of management of distribution system at current operating pressure

Note 5: strongly influenced by average consumption per service connection

Note 6: Allows different values of Rand/m3 for different components of non-revenue water

S3. Key Operating Parameters which influence Unavoidable Annual Real Losses (UARL)

Variable	Typical Range Low	Medium	High	Actual PI	Units
Average Operating Pressure	30	45	100	43	Metres
Density of connections	20	45	120	30	per km of mains

4. Key Components of Annual System Input Volume

Component	m3/year	m3/connection/day	% of System Input Volume
Water Exported		not applicable	
Authorised Consumption excluding exports	525735	0.34	68.6
Apparent Losses	21631	0.01	2.8
Actual Consumption excluding exports	547366	0.36	71.4
Real Losses	218718	0.14	28.6
System Input Volume	766084	0.50	100.0

DATA ENTRY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

Note: Note: An example has been included to assist you in completing this data sheet. The example input data can be seen in the pale blue shaded areas. Your input data should appear in the pale yellow shaded areas. The light green shaded areas are protected calculation fields and nothing can be entered in these fields.
Use the units as shown. If you have to use other units; you have to change the appropriate cells.

D1. GENERAL

Name of Water Undertaking		Overstrand Municipality (Betty's Bay, Pringle Bay & Rooi Els)
Name of Water Supply System		Buffels River (Bulk treated water supply to each area, ILI for three networks combined)
Contact Details:	**Name**	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

D2. SYSTEM DATA

Input Description	Variable	Example Data	Actual Data	Units	
Length of Mains (Transmission + Distribution)	Lm	1500	139	km	
Number of Service Connections	Ns	60000	4182	Number	See Notes 1 & 2
Density of Service Connections (per km of mains)	Ns/Lm	40	30	Per km	
Percentage of time system is pressurised during year	T	100	100	%	See Note 3
Average operating pressure when system pressurised	P	45	43	metres	See Note 4
Population served by the supply system	Pop	100000	3897	Number	

Note 1: The number of service connections is not always the same as the number of meters or billed accounts. For South African conditions, however, you can use the total of the number of metered accounts plus the estimated number of unmetered connections

Note 2: In South Africa customer meters are usually located close to the street/stand boundary. If this is not the case for your system, then add a note here.

Service Connection from Financial System for 2024/2025 = 4182, No informal Areas

Note 3: Use T in % eg. If T = 80%, use 80 and not 0.8

Note 4: If you do not have an accurate figure, please make a best estimate and provide brief details of how you derived it.

Insert your comments in this space.

D3. UNAVOIDABLE ANNUAL REAL LOSSES (UARL)

Details	Calculation	Example Result	Actual Data	Units
On mains	$18 \times Lm \times P \times 365 \times T/10^8$	443	40	10^3 m^3/yr
On Service Connections	$0.8 \times Ns \times P \times 365 \times T/10^8$	788	53	10^3 m^3/yr
Total Volume of UARL		**1232**	**93**	10^3 m^3/yr

UARL in litres/service conn./day when the system is pressurised	Annual Volume of UARL x 10^6 / (Ns x 365 x T/100)	**56**	**61**	Litres/ conn./day

D4. ANNUAL WATER BALANCE DATA

D4a. Data Period

		Example Data	Actual Data
12-MONTH PERIOD FOR WHICH DATA APPLIES	**Start Date**	April 1, 1998	July 1, 2024
	End Date	March 31, 1999	June 30, 2025

D4b. System Input Volume

Water Supplied	**Example Data**					**Actual Data**				
	Metered 10^3 m^3/yr	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Metered 10^3 m^3/yr**	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
		+/- %	**10^3 m^3/yr**				**+/- %**	**10^3 m^3/yr**		
From Own Sources:	36000	2.00%	720		36720	766				766
From Other Suppliers:	1000			280	1280					
Total:	37000		720	280	38000	**766**				**766**

D4c. Components of Authorised Consumption

Components of Authorised Consumption	**Example Data**					**Actual Data**				
	Billed Metered 10^3 m^3/yr	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Billed Metered 10^3 m^3/yr**	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
Water Exported:	1500				1500					
Households:	24500	500			25000	451				451
Non-households:	6900	100			7000	24				24
Standpipes:		500	10		510					
Firefighting:				100	100			0		0
Mains Flushing:				100	100				46	46
Building water:	1040				1040					
Other (specify):						5				5
Other (specify):										
TOTALS:	33940	1100	10	200	35250	**480**		**0**	**46**	**526**

D4d. Components of Water Losses

Details	**Example Result**	**Actual Result**	**Units**
Water Losses = System Input – Authorised Consumption	2750	240	10^3 m^3/yr
Percentage of Total Losses estimated to represent the Apparent Losses	20	9	%
Apparent Losses	550	22	10^3 m^3/yr

Annual Real Losses (ARL) = Water Losses – Apparent Losses	**2200**	**219**	10^3 m^3/yr

D5. SELECTED OPERATIONAL PERFORMANCE INDICATORS

D5a. Current Annual Real Losses per Connection (CARL) at Current Pressures

Details	Calculation	Example Result	Actual Result	Units
CARL is expressed in Litres/service connection/day, when system is pressurised	ARL x 10^6 / (Ns x T/100 x 365)	**100**	**143**	Litres /conn./day
Consumption in litres/conn/day		**1610**	**344**	Litres /conn./day

D5b. Infrastructure Leakage Index (ILI)

Details	Calculation	Example Result	Actual Result
ILI is the ratio of Current Annual Real Losses (CARL) to Unavoidable Annual Real Losses	CARL / UARL	**1.79**	**2.36**

D5c. Non-Revenue Water as a % by Volume of System Input

Description of Unbilled Items	Example Result			Actual Result		
	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input
Unbilled Consumption	210	38000	0.55	46	766	5.96
Apparent Losses:	550	38000	1.45	22	766	2.82
Real Losses:	2200	38000	5.79	219	766	28.55
Total Unbilled:	**2960**	**38000**	**7.79**	**286**	**766**	**37.33**

D6. SELECTED FINANCIAL PERFORMANCE INDICATORS

D6a. Local Valuation of Real and Apparent Losses

Details	Example Result	Actual Result	Units
Unit Value of Real Losses (eg bulk purchase price)	0.15	0.10	R /m^3
Unit Value of Apparent Losses (eg selling price)	2.70	14.81	R /m^3

D6b. Annual Cost of Running System

Details	Example Cost	Actual Cost	Units
Annual Cost of running system in 1000's of Rand per year	45000	15508	10^3 R/year

D6c. Non-Revenue Water as % by Value of Cost of Running System

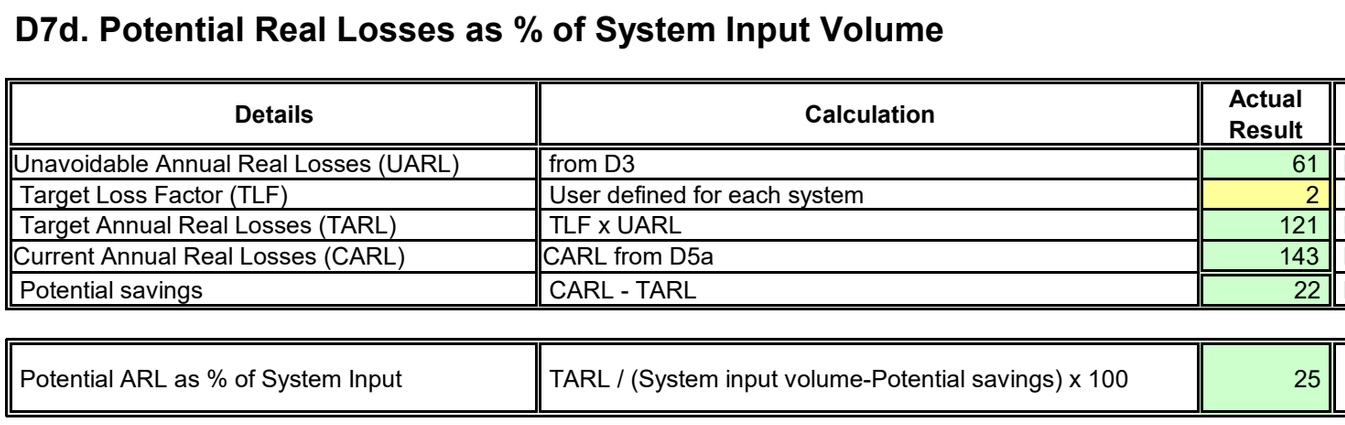
Description of Unbilled Items	Example Result				Actual Result			
	Volume 10^3 m^3/yr	Unit Value R /m^3	Value 10^3 R/year	% of Annual Running Costs Costs	Volume 10^3 m^3/yr	Unit Value (R /m^3)	Value 10^3 R/year	% of Annual Running Costs Costs
Unbilled Consumption	210	2.70	567	1.26	46	14.81	676	4.36
Apparent Losses:	550	2.70	1485	3.30	22	14.81	320	2.07
Real Losses:	2200	0.15	330	0.73	219	0.10	22	0.14
Total Unbilled:	2960		**2382**	**5.29**	286		1018	**6.56**

D7. RELATIONSHIP BETWEEN REAL LOSSES EXPRESSED AS % OF SYSTEM INPUT

D7a. Real losses curve definition

Curve Definition					
Consumption litres/serv conn/day	Real losses in litres/service connection/day				
	50	100	200	500	1000
100	33.3	50.0	66.7	83.3	90.9
250	16.7	28.6	44.4	66.7	80.0
500	9.1	16.7	28.6	50.0	66.7
1000	4.8	9.1	16.7	33.3	50.0
2000	2.4	4.8	9.1	20.0	33.3
3000	1.6	3.2	6.3	14.3	25.0
5000	1.0	2.0	3.8	9.1	16.7
10000	0.5	1.0	2.0	4.8	9.1

D7b. Components of water balance in litres/service connection/day (Actual Results)



D7c. Current Real Losses as % of System Input Volume

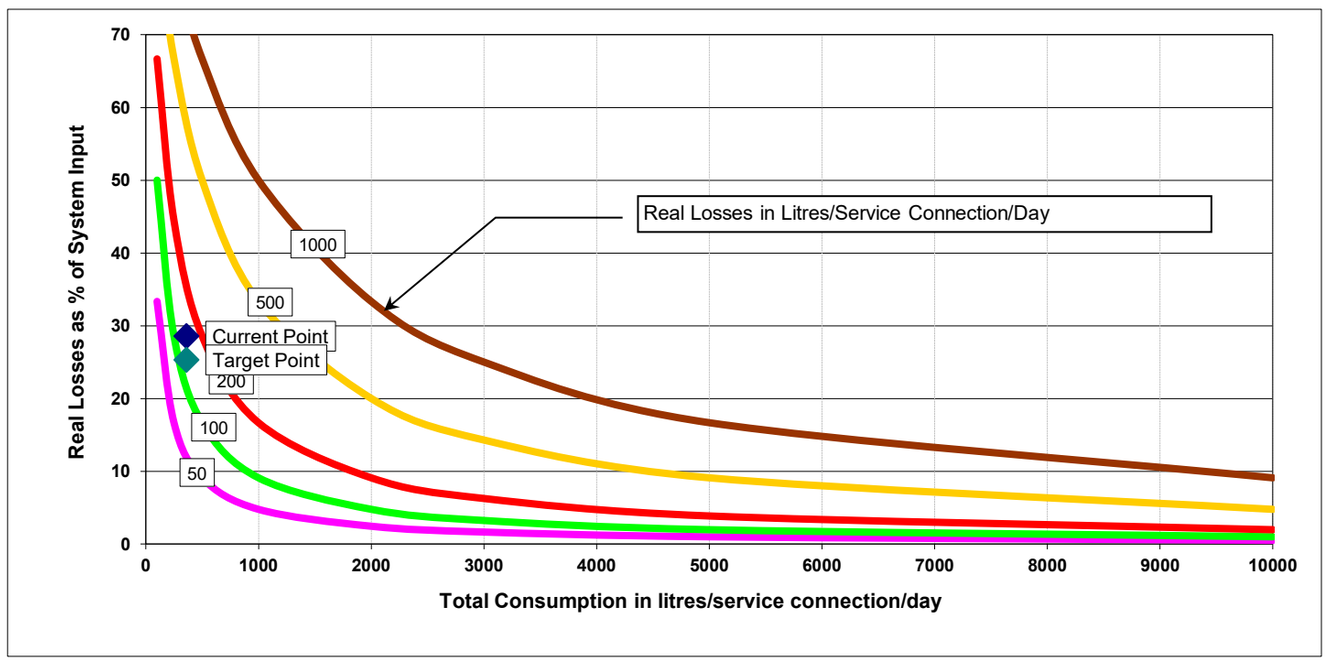
Details	Calculation	Actual Result	Units
System Input Volume	from D7b	502	Litres/conn/day
Total Consumption	from D7b	359	Litres/conn/day
Annual Real Losses	from D7b	143	Litres/conn/day

ARL as % of System Input	ARL / System input volume x 100	29	%

D7d. Potential Real Losses as % of System Input Volume

Details	Calculation	Actual Result	Units
Unavoidable Annual Real Losses (UARL)	from D3	61	Litres/conn/day
Target Loss Factor (TLF)	User defined for each system	2	Dimensionless
Target Annual Real Losses (TARL)	TLF x UARL	121	Litres/conn/day
Current Annual Real Losses (CARL)	CARL from D5a	143	Litres/conn/day
Potential savings	CARL - TARL	22	Litres/conn/day
Potential ARL as % of System Input	TARL / (System input volume-Potential savings) x 100	25	%

D7e. Real Losses as a % of System Input Volume versus Consumption in litres/service connectio for different values of Real Losses in litres/service connection/day



SUMMARY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

P10376

S1. SYSTEM NAME AND CONTACT DETAILS

Name of Water Undertaking		Overstrand Municipality (Kleinmond)
Name of Water Supply System		Kleinmond
Contact Details:	Name	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

S2. Performance Indicators of Water Loss

Viewpoint	Level	Parameter	Typical Range Excellent	Good	Poor	Actual PI	Units
Operations management of distribution system at current pressure	**Basic**	% of year system is pressurised	100	100	<100	100	%
		Current Annual Real Losses (CARL) (when system is pressurised - see note 2)	30 to 100	100 to 200	>200	253	Litres/connection/day
	Detailed	Unavoidable Annual Real Losses (UARL) (see note 3)	n/a	n/a	n/a	55	Litres/connection/day
		Consumption	n/a	n/a	n/a	388	Litres/connection/day
		Infrastructure Leakage Index (ILI) (= CARL/UARL : see note 4)	1	2	>3.0	4.6	non dimensional
Financial management aspects of water losses	**Basic**	Volume of non-revenue water as a% of system input volume (see note 5)	<10%	20%	30%	43	%
	Detailed	Value of non-revenue water as a % of annual cost of running the system (see note 6)	<5%	10%	15%	4	%

Notes:

Note1: taken from data in "AQUA" article, December 1999 or estimated by WRP

Note 2: takes account of % of time system is pressurised, but not system pressure, density of connections or customet meter location

Note 3: takes account of density of connections and customer meter location at current pressure

Note 4: measures overall efficiency of management of distribution system at current operating pressure

Note 5: strongly influenced by average consumption per service connection

Note 6: Allows different values of Rand/m3 for different components of non-revenue water

S3. Key Operating Parameters which influence Unavoidable Annual Real Losses (UARL)

Variable	Typical Range Low	Medium	High	Actual PI	Units
Average Operating Pressure	30	45	100	49	Metres
Density of connections	20	45	120	56	per km of mains

4. Key Components of Annual System Input Volume

Component	m3/year	m3/connection/day	% of System Input Volume
Water Exported		not applicable	
Authorised Consumption excluding exports	591357	0.39	58.3
Apparent Losses	38139	0.03	3.8
Actual Consumption excluding exports	629496	0.41	62.0
Real Losses	385627	0.25	38.0
System Input Volume	1015123	0.67	100.0

DATA ENTRY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

Note: Note: An example has been included to assist you in completing this data sheet. The example input data can be seen in the pale blue shaded areas. Your input data should appear in the pale yellow shaded areas. The light green shaded areas are protected calculation fields and nothing can be entered in these fields.
Use the units as shown. If you have to use other units; you have to change the appropriate cells.

D1. GENERAL

Name of Water Undertaking	Overstrand Municipality (Kleinmond)	
Name of Water Supply System	Kleinmond	
Contact Details:	**Name**	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

D2. SYSTEM DATA

Input Description	Variable	Example Data	Actual Data	Units	
Length of Mains (Transmission + Distribution)	Lm	1500	75	km	
Number of Service Connections	Ns	60000	4174	Number	See Notes 1 & 2
Density of Service Connections (per km of mains)	Ns/Lm	40	56	Per km	
Percentage of time system is pressurised during year	T	100	100	%	See Note 3
Average operating pressure when system pressurised	P	45	49	metres	See Note 4
Population served by the supply system	Pop	100000	9138	Number	

Note 1: The number of service connections is not always the same as the number of meters or billed accounts. For South African conditions, however, you can use the total of the number of metered accounts plus the estimated number of unmetered connections

Note 2: In South Africa customer meters are usually located close to the street/stand boundary. If this is not the case for your system, then add a note here.

4 139 Service Connection from Financial System for 2024/2025 + 35 Standpipes in informal Areas = 4 174

Note 3: Use T in % eg. If T = 80%, use 80 and not 0.8

Note 4: If you do not have an accurate figure, please make a best estimate and provide brief details of how you derived it.

Insert your comments in this space.

D3. UNAVOIDABLE ANNUAL REAL LOSSES (UARL)

Details	Calculation	Example Result	Actual Data	Units
On mains	18 x Lm x P x 365 x T/10^8	443	24	10^3 m^3/yr
On Service Connections	0.8 x Ns x P x 365 x T/10^8	788	60	10^3 m^3/yr
Total Volume of UARL		**1232**	**84**	10^3 m^3/yr

UARL in litres/service conn./day when the system is pressurised	Annual Volume of UARL x 10^6 / (Ns x 365 x T/100)	**56**	**55**	Litres/ conn./day

D4. ANNUAL WATER BALANCE DATA

D4a. Data Period

		Example Data	Actual Data
12-MONTH PERIOD FOR WHICH DATA APPLIES	**Start Date**	April 1, 1998	July 1, 2024
	End Date	March 31, 1999	June 30, 2025

D4b. System Input Volume

Water Supplied	**Example Data**					**Actual Data**				
	Metered 10^3 m^3/yr	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Metered 10^3 m^3/yr**	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
		+/- %	**10^3 m^3/yr**				**+/- %**	**10^3 m^3/yr**		
From Own Sources:	36000	2.00%	720		36720	1015				1015
From Other Suppliers:	1000			280	1280					
Total:	37000		720	280	38000	**1015**				**1015**

D4c. Components of Authorised Consumption

Components of Authorised Consumption	**Example Data**					**Actual Data**				
	Billed Metered 10^3 m^3/yr	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Billed Metered 10^3 m^3/yr**	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
Water Exported:	1500				1500					
Households:	24500	500			25000	473				473
Non-households:	6900	100			7000	54				54
Standpipes:		500	10		510					
Firefighting:				100	100			0		0
Mains Flushing:				100	100				9	9
Building water:	1040				1040			0		0
Other (specify):						55				55
Other (specify):										
TOTALS:	33940	1100	10	200	35250	**582**		**0**	**9**	**591**

D4d. Components of Water Losses

Details	**Example Result**	**Actual Result**	**Units**
Water Losses = System Input – Authorised Consumption	2750	424	10^3 m^3/yr
Percentage of Total Losses estimated to represent the Apparent Losses	20	9	%
Apparent Losses	550	38	10^3 m^3/yr

Annual Real Losses (ARL) = Water Losses – Apparent Losses	**2200**	**386**	10^3 m^3/yr

D5. SELECTED OPERATIONAL PERFORMANCE INDICATORS

D5a. Current Annual Real Losses per Connection (CARL) at Current Pressures

Details	Calculation	Example Result	Actual Result	Units
CARL is expressed in Litres/service connection/day, when system is pressurised	ARL x 10^6 / (Ns x T/100 x 365)	**100**	**253**	Litres /conn./day
Consumption in litres/conn/day		**1610**	**388**	Litres /conn./day

D5b. Infrastructure Leakage Index (ILI)

Details	Calculation	Example Result	Actual Result
ILI is the ratio of Current Annual Real Losses (CARL) to Unavoidable Annual Real Losses	CARL / UARL	**1.79**	**4.58**

D5c. Non-Revenue Water as a % by Volume of System Input

Description of Unbilled Items	Example Result			Actual Result		
	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input
Unbilled Consumption	210	38000	0.55	9	1015	0.92
Apparent Losses:	550	38000	1.45	38	1015	3.76
Real Losses:	2200	38000	5.79	386	1015	37.99
Total Unbilled:	**2960**	**38000**	**7.79**	**433**	**1015**	**42.67**

D6. SELECTED FINANCIAL PERFORMANCE INDICATORS

D6a. Local Valuation of Real and Apparent Losses

Details	Example Result	Actual Result	Units
Unit Value of Real Losses (eg bulk purchase price)	0.15	0.10	R /m^3
Unit Value of Apparent Losses (eg selling price)	2.70	14.81	R /m^3

D6b. Annual Cost of Running System

Details	Example Cost	Actual Cost	Units
Annual Cost of running system in 1000's of Rand per year	45000	20549	10^3 R/year

D6c. Non-Revenue Water as % by Value of Cost of Running System

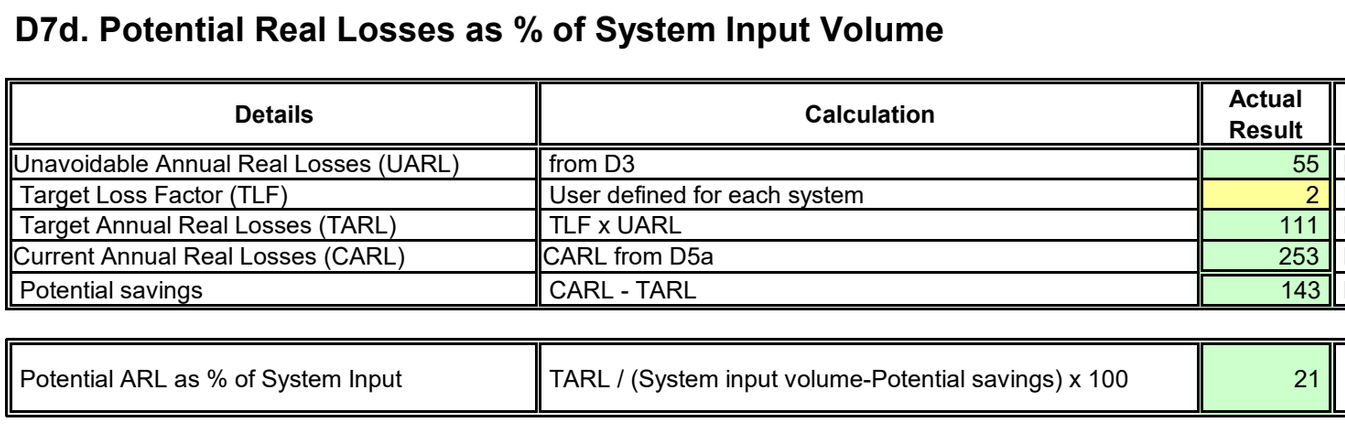
Description of Unbilled Items	Example Result				Actual Result			
	Volume 10^3 m^3/yr	Unit Value R /m^3	Value 10^3 R/year	% of Annual Running Costs Costs	Volume 10^3 m^3/yr	Unit Value (R /m^3)	Value 10^3 R/year	% of Annual Running Costs Costs
Unbilled Consumption	210	2.70	567	1.26	9	14.81	138	0.67
Apparent Losses:	550	2.70	1485	3.30	38	14.81	565	2.75
Real Losses:	2200	0.15	330	0.73	386	0.10	39	0.19
Total Unbilled:	2960		**2382**	**5.29**	433		742	**3.61**

D7. RELATIONSHIP BETWEEN REAL LOSSES EXPRESSED AS % OF SYSTEM INPUT

D7a. Real losses curve definition

Curve Definition					
Consumption litres/serv conn/day	Real losses in litres/service connection/day				
	50	100	200	500	1000
100	33.3	50.0	66.7	83.3	90.9
250	16.7	28.6	44.4	66.7	80.0
500	9.1	16.7	28.6	50.0	66.7
1000	4.8	9.1	16.7	33.3	50.0
2000	2.4	4.8	9.1	20.0	33.3
3000	1.6	3.2	6.3	14.3	25.0
5000	1.0	2.0	3.8	9.1	16.7
10000	0.5	1.0	2.0	4.8	9.1

D7b. Components of water balance in litres/service connection/day (Actual Results)



D7c. Current Real Losses as % of System Input Volume

Details	Calculation	Actual Result	Units
System Input Volume	from D7b	666	Litres/conn/day
Total Consumption	from D7b	413	Litres/conn/day
Annual Real Losses	from D7b	253	Litres/conn/day

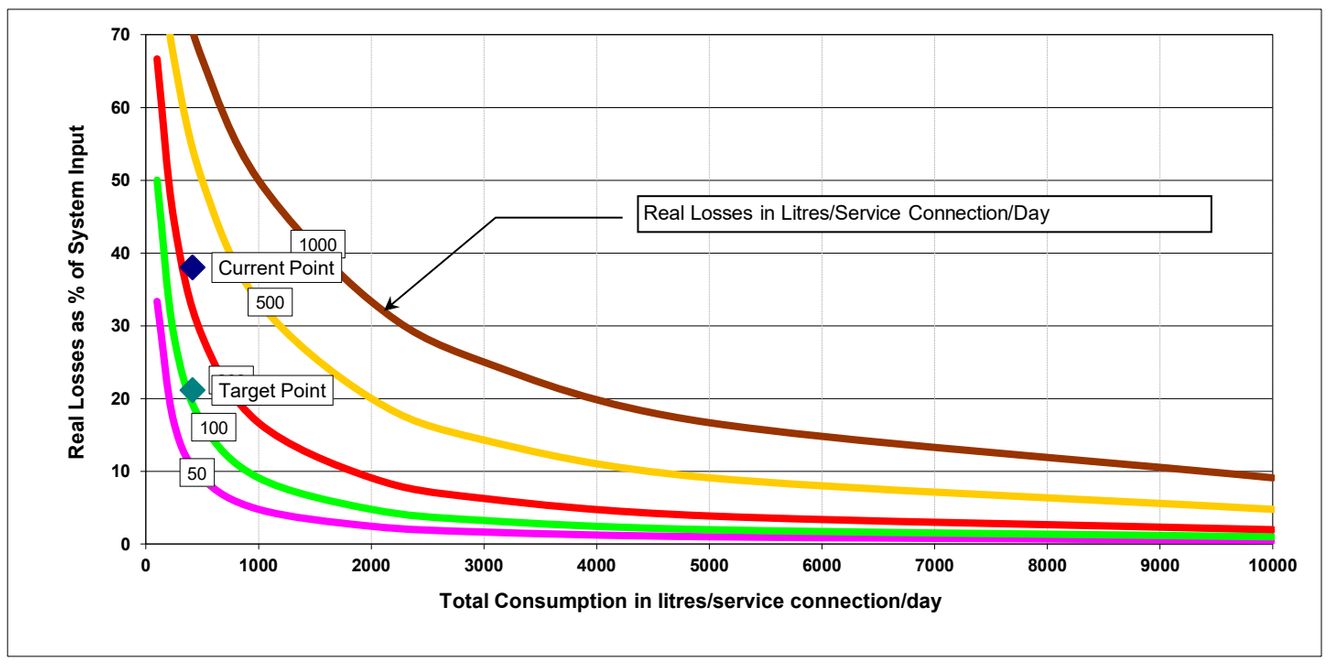
ARL as % of System Input	ARL / System input volume x 100	38	%

D7d. Potential Real Losses as % of System Input Volume

Details	Calculation	Actual Result	Units
Unavoidable Annual Real Losses (UARL)	from D3	55	Litres/conn/day
Target Loss Factor (TLF)	User defined for each system	2	Dimensionless
Target Annual Real Losses (TARL)	TLF x UARL	111	Litres/conn/day
Current Annual Real Losses (CARL)	CARL from D5a	253	Litres/conn/day
Potential savings	CARL - TARL	143	Litres/conn/day

Potential ARL as % of System Input	TARL / (System input volume-Potential savings) x 100	21	%

D7e. Real Losses as a % of System Input Volume versus Consumption in litres/service connectio for different values of Real Losses in litres/service connection/day



SUMMARY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

P10376

S1. SYSTEM NAME AND CONTACT DETAILS

Name of Water Undertaking		Overstrand Municipality (Stanford)
Name of Water Supply System		Stanford
Contact Details:	Name	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

S2. Performance Indicators of Water Loss

Viewpoint	Level	Parameter	Typical Range Excellent	Good	Poor	Actual PI	Units
Operations management of distribution system at current pressure	**Basic**	% of year system is pressurised	100	100	<100	100	%
		Current Annual Real Losses (CARL) (when system is pressurised - see note 2)	30 to 100	100 to 200	>200	251	Litres/connection/day
	Detailed	Unavoidable Annual Real Losses (UARL) (see note 3)	n/a	n/a	n/a	54	Litres/connection/day
		Consumption	n/a	n/a	n/a	407	Litres/connection/day
		Infrastructure Leakage Index (ILI) (= CARL/UARL : see note 4)	1	2	>3.0	4.7	non dimensional
Financial management aspects of water losses	**Basic**	Volume of non-revenue water as a% of system input volume (see note 5)	<10%	20%	30%	41	%
	Detailed	Value of non-revenue water as a % of annual cost of running the system (see note 6)	<5%	10%	15%	3	%

Notes:

Note1: taken from data in "AQUA" article, December 1999 or estimated by WRP

Note 2: takes account of % of time system is pressurised, but not system pressure, density of connections or customet meter location

Note 3: takes account of density of connections and customer meter location at current pressure

Note 4: measures overall efficiency of management of distribution system at current operating pressure

Note 5: strongly influenced by average consumption per service connection

Note 6: Allows different values of Rand/m3 for different components of non-revenue water

S3. Key Operating Parameters which influence Unavoidable Annual Real Losses (UARL)

Variable	Typical Range Low	Medium	High	Actual PI	Units
Average Operating Pressure	30	45	100	49	Metres
Density of connections	20	45	120	60	per km of mains

4. Key Components of Annual System Input Volume

Component	m3/year	m3/connection/day	% of System Input Volume
Water Exported		not applicable	
Authorised Consumption excluding exports	306934	0.41	59.6
Apparent Losses	18750	0.02	3.6
Actual Consumption excluding exports	325684	0.43	63.2
Real Losses	189578	0.25	36.8
System Input Volume	515262	0.68	100.0

DATA ENTRY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

Note: Note: An example has been included to assist you in completing this data sheet. The example input data can be seen in the pale blue shaded areas. Your input data should appear in the pale yellow shaded areas. The light green shaded areas are protected calculation fields and nothing can be entered in these fields.
Use the units as shown. If you have to use other units; you have to change the appropriate cells.

D1. GENERAL

Name of Water Undertaking	Overstrand Municipality (Stanford)	
Name of Water Supply System	Stanford	
Contact Details:	**Name**	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

D2. SYSTEM DATA

Input Description	Variable	Example Data	Actual Data	Units	
Length of Mains (Transmission + Distribution)	Lm	1500	35	km	
Number of Service Connections	Ns	60000	2067	Number	See Notes 1 & 2
Density of Service Connections (per km of mains)	Ns/Lm	40	60	Per km	
Percentage of time system is pressurised during year	T	100	100	%	See Note 3
Average operating pressure when system pressurised	P	45	49	metres	See Note 4
Population served by the supply system	Pop	100000	6717	Number	

Note 1: The number of service connections is not always the same as the number of meters or billed accounts. For South African conditions, however, you can use the total of the number of metered accounts plus the estimated number of unmetered connections

Note 2: In South Africa customer meters are usually located close to the street/stand boundary. If this is not the case for your system, then add a note here.

2 051 Service Connection from Financial System for 2024/2025 + 16 Standpipes in informal Areas = 2 067

Note 3: Use T in % eg. If T = 80%, use 80 and not 0.8

Note 4: If you do not have an accurate figure, please make a best estimate and provide brief details of how you derived it.

Insert your comments in this space.

D3. UNAVOIDABLE ANNUAL REAL LOSSES (UARL)

Details	Calculation	Example Result	Actual Data	Units
On mains	18 x Lm x P x 365 x T/10^8	443	11	10^3 m^3/yr
On Service Connections	0.8 x Ns x P x 365 x T/10^8	788	30	10^3 m^3/yr
Total Volume of UARL		**1232**	**41**	10^3 m^3/yr

UARL in litres/service conn./day when the system is pressurised	Annual Volume of UARL x 10^6 / (Ns x 365 x T/100)	**56**	**54**	Litres/ conn./day

D4. ANNUAL WATER BALANCE DATA

D4a. Data Period

		Example Data	Actual Data
12-MONTH PERIOD FOR WHICH DATA APPLIES	**Start Date**	April 1, 1998	July 1, 2024
	End Date	March 31, 1999	June 30, 2025

D4b. System Input Volume

Water Supplied	**Example Data**					**Actual Data**				
	Metered 10^3 m^3/yr	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Metered 10^3 m^3/yr**	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
		+/- %	**10^3 m^3/yr**				**+/- %**	**10^3 m^3/yr**		
From Own Sources:	36000	2.00%	720		36720	515				515
From Other Suppliers:	1000			280	1280					
Total:	37000		720	280	38000	**515**				**515**

D4c. Components of Authorised Consumption

Components of Authorised Consumption	**Example Data**					**Actual Data**				
	Billed Metered 10^3 m^3/yr	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Billed Metered 10^3 m^3/yr**	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
Water Exported:	1500				1500					
Households:	24500	500			25000	261				261
Non-households:	6900	100			7000	31				31
Standpipes:		500	10		510					
Firefighting:				100	100			0		0
Mains Flushing:				100	100				2	2
Building water:	1040				1040			0		0
Other (specify):						12				12
Other (specify):										
TOTALS:	33940	1100	10	200	35250	**304**		**0**	**2**	**307**

D4d. Components of Water Losses

Details	**Example Result**	**Actual Result**	**Units**
Water Losses = System Input – Authorised Consumption	2750	208	10^3 m^3/yr
Percentage of Total Losses estimated to represent the Apparent Losses	20	9	%
Apparent Losses	550	19	10^3 m^3/yr

Annual Real Losses (ARL) = Water Losses – Apparent Losses	**2200**	**190**	10^3 m^3/yr

D5. SELECTED OPERATIONAL PERFORMANCE INDICATORS

D5a. Current Annual Real Losses per Connection (CARL) at Current Pressures

Details	Calculation	Example Result	Actual Result	Units
CARL is expressed in Litres/service connection/day, when system is pressurised	ARL x 10^6 / (Ns x T/100 x 365)	**100**	**251**	Litres /conn./day
Consumption in litres/conn/day		**1610**	**407**	Litres /conn./day

D5b. Infrastructure Leakage Index (ILI)

Details	Calculation	Example Result	Actual Result
ILI is the ratio of Current Annual Real Losses (CARL) to Unavoidable Annual Real Losses	CARL / UARL	**1.79**	**4.66**

D5c. Non-Revenue Water as a % by Volume of System Input

Description of Unbilled Items	Example Result			Actual Result		
	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input
Unbilled Consumption	210	38000	0.55	3	515	0.50
Apparent Losses:	550	38000	1.45	19	515	3.64
Real Losses:	2200	38000	5.79	190	515	36.79
Total Unbilled:	**2960**	**38000**	**7.79**	**211**	**515**	**40.93**

D6. SELECTED FINANCIAL PERFORMANCE INDICATORS

D6a. Local Valuation of Real and Apparent Losses

Details	Example Result	Actual Result	Units
Unit Value of Real Losses (eg bulk purchase price)	0.15	0.10	R /m^3
Unit Value of Apparent Losses (eg selling price)	2.70	14.81	R /m^3

D6b. Annual Cost of Running System

Details	Example Cost	Actual Cost	Units
Annual Cost of running system in 1000's of Rand per year	45000	10431	10^3 R/year

D6c. Non-Revenue Water as % by Value of Cost of Running System

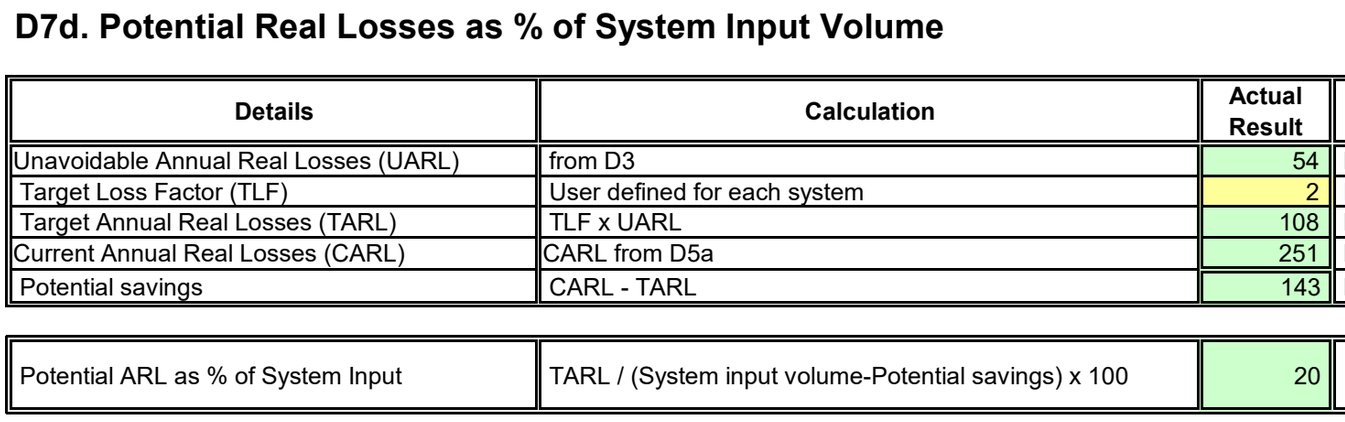
Description of Unbilled Items	Example Result				Actual Result			
	Volume 10^3 m^3/yr	Unit Value R /m^3	Value 10^3 R/year	% of Annual Running Costs Costs	Volume 10^3 m^3/yr	Unit Value (R /m^3)	Value 10^3 R/year	% of Annual Running Costs Costs
Unbilled Consumption	210	2.70	567	1.26	3	14.81	38	0.37
Apparent Losses:	550	2.70	1485	3.30	19	14.81	278	2.66
Real Losses:	2200	0.15	330	0.73	190	0.10	19	0.18
Total Unbilled:	2960		**2382**	**5.29**	211		335	**3.21**

D7. RELATIONSHIP BETWEEN REAL LOSSES EXPRESSED AS % OF SYSTEM INPUT

D7a. Real losses curve definition

Curve Definition					
Consumption litres/serv conn/day	Real losses in litres/service connection/day				
	50	100	200	500	1000
100	33.3	50.0	66.7	83.3	90.9
250	16.7	28.6	44.4	66.7	80.0
500	9.1	16.7	28.6	50.0	66.7
1000	4.8	9.1	16.7	33.3	50.0
2000	2.4	4.8	9.1	20.0	33.3
3000	1.6	3.2	6.3	14.3	25.0
5000	1.0	2.0	3.8	9.1	16.7
10000	0.5	1.0	2.0	4.8	9.1

D7b. Components of water balance in litres/service connection/day (Actual Results)



D7c. Current Real Losses as % of System Input Volume

Details	Calculation	Actual Result	Units
System Input Volume	from D7b	683	Litres/conn/day
Total Consumption	from D7b	432	Litres/conn/day
Annual Real Losses	from D7b	251	Litres/conn/day

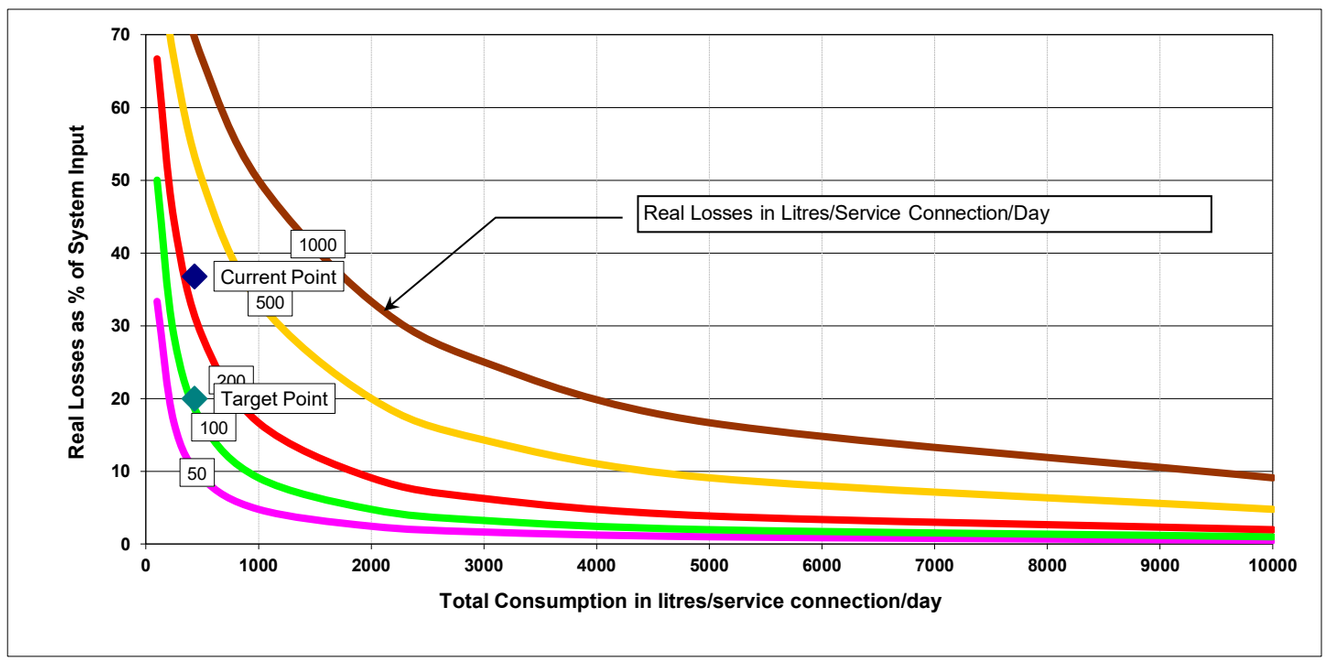
ARL as % of System Input	ARL / System input volume x 100	37	%

D7d. Potential Real Losses as % of System Input Volume

Details	Calculation	Actual Result	Units
Unavoidable Annual Real Losses (UARL)	from D3	54	Litres/conn/day
Target Loss Factor (TLF)	User defined for each system	2	Dimensionless
Target Annual Real Losses (TARL)	TLF x UARL	108	Litres/conn/day
Current Annual Real Losses (CARL)	CARL from D5a	251	Litres/conn/day
Potential savings	CARL - TARL	143	Litres/conn/day

Potential ARL as % of System Input	TARL / (System input volume-Potential savings) x 100	20	%

D7e. Real Losses as a % of System Input Volume versus Consumption in litres/service connectio for different values of Real Losses in litres/service connection/day



SUMMARY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

P10376

S1. SYSTEM NAME AND CONTACT DETAILS

Name of Water Undertaking		Overstrand Municipality (Hermanus)
Name of Water Supply System		Greater Hermanus
Contact Details:	Name	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

S2. Performance Indicators of Water Loss

Viewpoint	Level	Parameter	Typical Range Excellent	Good	Poor	Actual PI	Units
Operations management of distribution system at current pressure	**Basic**	% of year system is pressurised	100	100	<100	100	%
		Current Annual Real Losses (CARL) (when system is pressurised - see note 2)	30 to 100	100 to 200	>200	149	Litres/connection/day
	Detailed	Unavoidable Annual Real Losses (UARL) (see note 3)	n/a	n/a	n/a	47	Litres/connection/day
		Consumption	n/a	n/a	n/a	446	Litres/connection/day
		Infrastructure Leakage Index (ILI) (= CARL/UARL : see note 4)	1	2	>3.0	3.1	non dimensional
Financial management aspects of water losses	**Basic**	Volume of non-revenue water as a% of system input volume (see note 5)	<10%	20%	30%	27	%
	Detailed	Value of non-revenue water as a % of annual cost of running the system (see note 6)	<5%	10%	15%	2	%

Notes:

Note1: taken from data in "AQUA" article, December 1999 or estimated by WRP

Note 2: takes account of % of time system is pressurised, but not system pressure, density of connections or customet meter location

Note 3: takes account of density of connections and customer meter location at current pressure

Note 4: measures overall efficiency of management of distribution system at current operating pressure

Note 5: strongly influenced by average consumption per service connection

Note 6: Allows different values of Rand/m3 for different components of non-revenue water

S3. Key Operating Parameters which influence Unavoidable Annual Real Losses (UARL)

Variable	Typical Range Low	Medium	High	Actual PI	Units
Average Operating Pressure	30	45	100	44	Metres
Density of connections	20	45	120	62	per km of mains

4. Key Components of Annual System Input Volume

Component	m3/year	m3/connection/day	% of System Input Volume
Water Exported		not applicable	
Authorised Consumption excluding exports	3762425	0.45	73.6
Apparent Losses	94616	0.01	1.9
Actual Consumption excluding exports	3857041	0.46	75.4
Real Losses	1257039	0.15	24.6
System Input Volume	5114080	0.61	100.0

DATA ENTRY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

Note: Note: An example has been included to assist you in completing this data sheet. The example input data can be seen in the pale blue shaded areas. Your input data should appear in the pale yellow shaded areas. The light green shaded areas are protected calculation fields and nothing can be entered in these fields.
Use the units as shown. If you have to use other units; you have to change the appropriate cells.

D1. GENERAL

Name of Water Undertaking		Overstrand Municipality (Hermanus)
Name of Water Supply System		Greater Hermanus
Contact Details:	**Name**	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

D2. SYSTEM DATA

Input Description	Variable	Example Data	Actual Data	Units	
Length of Mains (Transmission + Distribution)	Lm	1500	370	km	
Number of Service Connections	Ns	60000	23109	Number	See Notes 1 & 2
Density of Service Connections (per km of mains)	Ns/Lm	40	62	Per km	
Percentage of time system is pressurised during year	T	100	100	%	See Note 3
Average operating pressure when system pressurised	P	45	44	metres	See Note 4
Population served by the supply system	Pop	100000	83361	Number	

Note 1: The number of service connections is not always the same as the number of meters or billed accounts. For South African conditions, however, you can use the total of the number of metered accounts plus the estimated number of unmetered connections

Note 2: In South Africa customer meters are usually located close to the street/stand boundary. If this is not the case for your system, then add a note here.

22 670 Service Connection from Financial System for 2024/2025 + 439 Standpipes in informal Areas = 23 109

Note 3: Use T in % eg. If T = 80%, use 80 and not 0.8

Note 4: If you do not have an accurate figure, please make a best estimate and provide brief details of how you derived it.

Insert your comments in this space.

D3. UNAVOIDABLE ANNUAL REAL LOSSES (UARL)

Details	Calculation	Example Result	Actual Data	Units
On mains	18 x Lm x P x 365 x T/10^8	443	106	10^3 m^3/yr
On Service Connections	0.8 x Ns x P x 365 x T/10^8	788	294	10^3 m^3/yr
Total Volume of UARL		**1232**	**400**	10^3 m^3/yr

UARL in litres/service conn./day when the system is pressurised	Annual Volume of UARL x 10^6 / (Ns x 365 x T/100)	**56**	**47**	Litres/ conn./day

D4. ANNUAL WATER BALANCE DATA

D4a. Data Period

		Example Data	Actual Data
12-MONTH PERIOD FOR WHICH DATA APPLIES	**Start Date**	April 1, 1998	July 1, 2024
	End Date	March 31, 1999	June 30, 2025

D4b. System Input Volume

Water Supplied	**Example Data**					**Actual Data**				
	Metered 10^3 m^3/yr	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Metered 10^3 m^3/yr**	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
		+/- %	**10^3 m^3/yr**				**+/- %**	**10^3 m^3/yr**		
From Own Sources:	36000	2.00%	720		36720	5114				5114
From Other Suppliers:	1000			280	1280					
Total:	37000		720	280	38000	**5114**				**5114**

D4c. Components of Authorised Consumption

Components of Authorised Consumption	**Example Data**					**Actual Data**				
	Billed Metered 10^3 m^3/yr	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Billed Metered 10^3 m^3/yr**	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
Water Exported:	1500				1500					
Households:	24500	500			25000	3177				3177
Non-households:	6900	100			7000	371				371
Standpipes:		500	10		510					
Firefighting:				100	100			1		1
Mains Flushing:				100	100				28	28
Building water:	1040				1040			0		0
Other (specify):						186				186
Other (specify):										
TOTALS:	33940	1100	10	200	35250	**3733**		**1**	**28**	**3762**

D4d. Components of Water Losses

Details	**Example Result**	**Actual Result**	**Units**
Water Losses = System Input – Authorised Consumption	2750	1352	10^3 m^3/yr
Percentage of Total Losses estimated to represent the Apparent Losses	20	7	%
Apparent Losses	550	95	10^3 m^3/yr

Annual Real Losses (ARL) = Water Losses – Apparent Losses	**2200**	**1257**	10^3 m^3/yr

D5. SELECTED OPERATIONAL PERFORMANCE INDICATORS

D5a. Current Annual Real Losses per Connection (CARL) at Current Pressures

Details	Calculation	Example Result	Actual Result	Units
CARL is expressed in Litres/service connection/day, when system is pressurised	ARL x 10^6 / (Ns x T/100 x 365)	**100**	**149**	Litres /conn./day
Consumption in litres/conn/day		**1610**	**446**	Litres /conn./day

D5b. Infrastructure Leakage Index (ILI)

Details	Calculation	Example Result	Actual Result
ILI is the ratio of Current Annual Real Losses (CARL) to Unavoidable Annual Real Losses	CARL / UARL	**1.79**	**3.14**

D5c. Non-Revenue Water as a % by Volume of System Input

Description of Unbilled Items	Example Result			Actual Result		
	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input
Unbilled Consumption	210	38000	0.55	29	5114	0.57
Apparent Losses:	550	38000	1.45	95	5114	1.85
Real Losses:	2200	38000	5.79	1257	5114	24.58
Total Unbilled:	**2960**	**38000**	**7.79**	**1381**	**5114**	**27.00**

D6. SELECTED FINANCIAL PERFORMANCE INDICATORS

D6a. Local Valuation of Real and Apparent Losses

Details	Example Result	Actual Result	Units
Unit Value of Real Losses (eg bulk purchase price)	0.15	0.10	R /m^3
Unit Value of Apparent Losses (eg selling price)	2.70	14.81	R /m^3

D6b. Annual Cost of Running System

Details	Example Cost	Actual Cost	Units
Annual Cost of running system in 1000's of Rand per year	45000	103525	10^3 R/year

D6c. Non-Revenue Water as % by Value of Cost of Running System

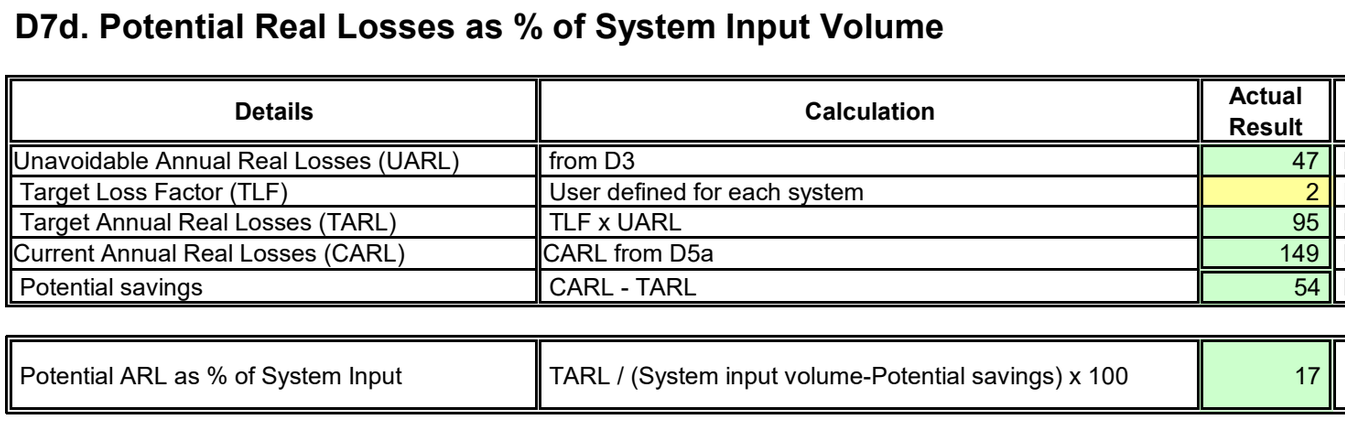
Description of Unbilled Items	Example Result				Actual Result			
	Volume 10^3 m^3/yr	Unit Value R /m^3	Value 10^3 R/year	% of Annual Running Costs Costs	Volume 10^3 m^3/yr	Unit Value (R /m^3)	Value 10^3 R/year	% of Annual Running Costs Costs
Unbilled Consumption	210	2.70	567	1.26	29	14.81	429	0.41
Apparent Losses:	550	2.70	1485	3.30	95	14.81	1401	1.35
Real Losses:	2200	0.15	330	0.73	1257	0.10	126	0.12
Total Unbilled:	2960		**2382**	**5.29**	1381		1956	**1.89**

D7. RELATIONSHIP BETWEEN REAL LOSSES EXPRESSED AS % OF SYSTEM INPUT

D7a. Real losses curve definition

Curve Definition					
Consumption litres/serv conn/day	Real losses in litres/service connection/day				
	50	100	200	500	1000
100	33.3	50.0	66.7	83.3	90.9
250	16.7	28.6	44.4	66.7	80.0
500	9.1	16.7	28.6	50.0	66.7
1000	4.8	9.1	16.7	33.3	50.0
2000	2.4	4.8	9.1	20.0	33.3
3000	1.6	3.2	6.3	14.3	25.0
5000	1.0	2.0	3.8	9.1	16.7
10000	0.5	1.0	2.0	4.8	9.1

D7b. Components of water balance in litres/service connection/day (Actual Results)



D7c. Current Real Losses as % of System Input Volume

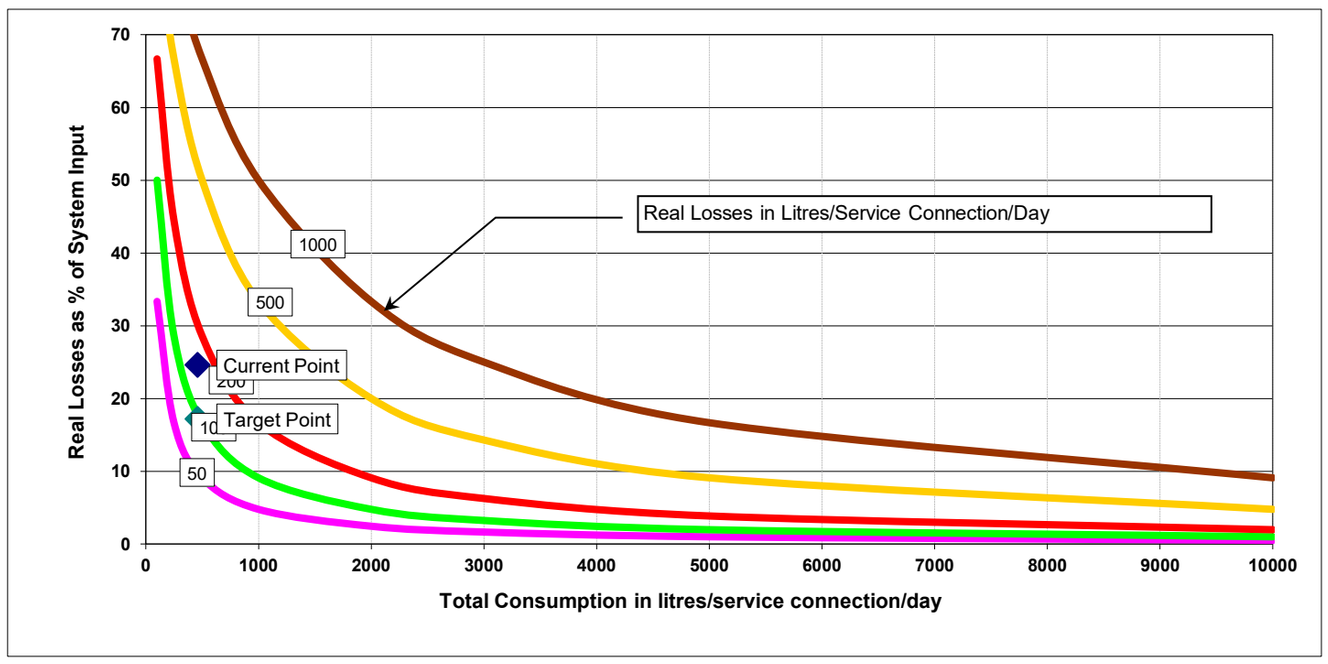
Details	Calculation	Actual Result	Units
System Input Volume	from D7b	606	Litres/conn/day
Total Consumption	from D7b	457	Litres/conn/day
Annual Real Losses	from D7b	149	Litres/conn/day

ARL as % of System Input	ARL / System input volume x 100	25	%

D7d. Potential Real Losses as % of System Input Volume

Details	Calculation	Actual Result	Units
Unavoidable Annual Real Losses (UARL)	from D3	47	Litres/conn/day
Target Loss Factor (TLF)	User defined for each system	2	Dimensionless
Target Annual Real Losses (TARL)	TLF x UARL	95	Litres/conn/day
Current Annual Real Losses (CARL)	CARL from D5a	149	Litres/conn/day
Potential savings	CARL - TARL	54	Litres/conn/day
Potential ARL as % of System Input	TARL / (System input volume-Potential savings) x 100	17	%

D7e. Real Losses as a % of System Input Volume versus Consumption in litres/service connectio for different values of Real Losses in litres/service connection/day



SUMMARY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

P10376

S1. SYSTEM NAME AND CONTACT DETAILS

Name of Water Undertaking		Overstrand Municipality (Gansbaai)
Name of Water Supply System		Greater Gansbaai
Contact Details:	Name	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

S2. Performance Indicators of Water Loss

Viewpoint	Level	Parameter	Typical Range Excellent	Good	Poor	Actual PI	Units
Operations management of distribution system at current pressure	**Basic**	% of year system is pressurised	100	100	<100	100	%
		Current Annual Real Losses (CARL) (when system is pressurised - see note 2)	30 to 100	100 to 200	>200	147	Litres/connection/day
	Detailed	Unavoidable Annual Real Losses (UARL) (see note 3)	n/a	n/a	n/a	45	Litres/connection/day
		Consumption	n/a	n/a	n/a	358	Litres/connection/day
		Infrastructure Leakage Index (ILI) (= CARL/UARL : see note 4)	1	2	>3.0	3.2	non dimensional
Financial management aspects of water losses	**Basic**	Volume of non-revenue water as a% of system input volume (see note 5)	<10%	20%	30%	32	%
	Detailed	Value of non-revenue water as a % of annual cost of running the system (see note 6)	<5%	10%	15%	3	%

Notes:

Note1: taken from data in "AQUA" article, December 1999 or estimated by WRP

Note 2: takes account of % of time system is pressurised, but not system pressure, density of connections or customet meter location

Note 3: takes account of density of connections and customer meter location at current pressure

Note 4: measures overall efficiency of management of distribution system at current operating pressure

Note 5: strongly influenced by average consumption per service connection

Note 6: Allows different values of Rand/m3 for different components of non-revenue water

S3. Key Operating Parameters which influence Unavoidable Annual Real Losses (UARL)

Variable	Typical Range Low	Medium	High	Actual PI	Units
Average Operating Pressure	30	45	100	39	Metres
Density of connections	20	45	120	47	per km of mains

4. Key Components of Annual System Input Volume

Component	m3/year	m3/connection/day	% of System Input Volume
Water Exported		not applicable	
Authorised Consumption excluding exports	1086373	0.36	68.9
Apparent Losses	44051	0.01	2.8
Actual Consumption excluding exports	1130424	0.37	71.7
Real Losses	445409	0.15	28.3
System Input Volume	1575833	0.52	100.0

DATA ENTRY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

Note: Note: An example has been included to assist you in completing this data sheet. The example input data can be seen in the pale blue shaded areas. Your input data should appear in the pale yellow shaded areas. The light green shaded areas are protected calculation fields and nothing can be entered in these fields.
Use the units as shown. If you have to use other units; you have to change the appropriate cells.

D1. GENERAL

Name of Water Undertaking		Overstrand Municipality (Gansbaai)
Name of Water Supply System		Greater Gansbaai
Contact Details:	**Name**	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

D2. SYSTEM DATA

Input Description	Variable	Example Data	Actual Data	Units	
Length of Mains (Transmission + Distribution)	Lm	1500	176	km	
Number of Service Connections	Ns	60000	8319	Number	See Notes 1 & 2
Density of Service Connections (per km of mains)	Ns/Lm	40	47	Per km	
Percentage of time system is pressurised during year	T	100	100	%	See Note 3
Average operating pressure when system pressurised	P	45	39	metres	See Note 4
Population served by the supply system	Pop	100000	24788	Number	

Note 1: The number of service connections is not always the same as the number of meters or billed accounts. For South African conditions, however, you can use the total of the number of metered accounts plus the estimated number of unmetered connections

Note 2: In South Africa customer meters are usually located close to the street/stand boundary. If this is not the case for your system, then add a note here.

8 308 Service Connection from Financial System for 2024/2025 + 11 Standpipes in informal Areas = 8 319

Note 3: Use T in % eg. If T = 80%, use 80 and not 0.8

Note 4: If you do not have an accurate figure, please make a best estimate and provide brief details of how you derived it.

Insert your comments in this space.

D3. UNAVOIDABLE ANNUAL REAL LOSSES (UARL)

Details	Calculation	Example Result	Actual Data	Units
On mains	18 x Lm x P x 365 x T/10^8	443	45	10^3 m^3/yr
On Service Connections	0.8 x Ns x P x 365 x T/10^8	788	94	10^3 m^3/yr
Total Volume of UARL		**1232**	**138**	10^3 m^3/yr

UARL in litres/service conn./day when the system is pressurised	Annual Volume of UARL x 10^6 / (Ns x 365 x T/100)	**56**	**45**	Litres/ conn./day

D4. ANNUAL WATER BALANCE DATA

D4a. Data Period

		Example Data	Actual Data
12-MONTH PERIOD FOR WHICH DATA APPLIES	**Start Date**	April 1, 1998	July 1, 2024
	End Date	March 31, 1999	June 30, 2025

D4b. System Input Volume

Water Supplied	Example Data					Actual Data				
	Metered 10^3 m^3/yr	Correction to Source Meter data		Unmetered 10^3 m^3/yr	Total 10^3 m^3/yr	Metered 10^3 m^3/yr	Correction to Source Meter data		Unmetered 10^3 m^3/yr	Total 10^3 m^3/yr
		+/- %	10^3 m^3/yr				+/- %	10^3 m^3/yr		
From Own Sources:	36000	2.00%	720		36720	1576				1576
From Other Suppliers:	1000			280	1280					
Total:	37000		720	280	38000	**1576**				**1576**

D4c. Components of Authorised Consumption

Components of Authorised Consumption	Example Data					Actual Data				
	Billed Metered 10^3 m^3/yr	Billed Unmetered 10^3 m^3/yr	Unbilled Metered 10^3 m^3/yr	Unbilled Unmetered 10^3 m^3/yr	Total 10^3 m^3/yr	Billed Metered 10^3 m^3/yr	Billed Unmetered 10^3 m^3/yr	Unbilled Metered 10^3 m^3/yr	Unbilled Unmetered 10^3 m^3/yr	Total 10^3 m^3/yr
Water Exported:	1500				1500					
Households:	24500	500			25000	813				813
Non-households:	6900	100			7000	183				183
Standpipes:		500	10		510					
Firefighting:				100	100			1		1
Mains Flushing:				100	100				9	9
Building water:	1040				1040			0		0
Other (specify):						81				81
Other (specify):										
TOTALS:	33940	1100	10	200	35250	**1077**		**1**	**9**	**1086**

D4d. Components of Water Losses

Details	Example Result	Actual Result	Units
Water Losses = System Input – Authorised Consumption	2750	489	10^3 m^3/yr
Percentage of Total Losses estimated to represent the Apparent Losses	20	9	%
Apparent Losses	550	44	10^3 m^3/yr

Annual Real Losses (ARL) = Water Losses – Apparent Losses	**2200**	**445**	10^3 m^3/yr

D5. SELECTED OPERATIONAL PERFORMANCE INDICATORS

D5a. Current Annual Real Losses per Connection (CARL) at Current Pressures

Details	Calculation	Example Result	Actual Result	Units
CARL is expressed in Litres/service connection/day, when system is pressurised	ARL x 10^6 / (Ns x T/100 x 365)	**100**	**147**	Litres /conn./day
Consumption in litres/conn/day		**1610**	**358**	Litres /conn./day

D5b. Infrastructure Leakage Index (ILI)

Details	Calculation	Example Result	Actual Result
ILI is the ratio of Current Annual Real Losses (CARL) to Unavoidable Annual Real Losses	CARL / UARL	**1.79**	**3.23**

D5c. Non-Revenue Water as a % by Volume of System Input

Description of Unbilled Items	Example Result			Actual Result		
	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input
Unbilled Consumption	210	38000	0.55	10	1576	0.62
Apparent Losses:	550	38000	1.45	44	1576	2.80
Real Losses:	2200	38000	5.79	445	1576	28.26
Total Unbilled:	**2960**	**38000**	**7.79**	**499**	**1576**	**31.68**

D6. SELECTED FINANCIAL PERFORMANCE INDICATORS

D6a. Local Valuation of Real and Apparent Losses

Details	Example Result	Actual Result	Units
Unit Value of Real Losses (eg bulk purchase price)	0.15	0.10	R /m^3
Unit Value of Apparent Losses (eg selling price)	2.70	14.81	R /m^3

D6b. Annual Cost of Running System

Details	Example Cost	Actual Cost	Units
Annual Cost of running system in 1000's of Rand per year	45000	31900	10^3 R/year

D6c. Non-Revenue Water as % by Value of Cost of Running System

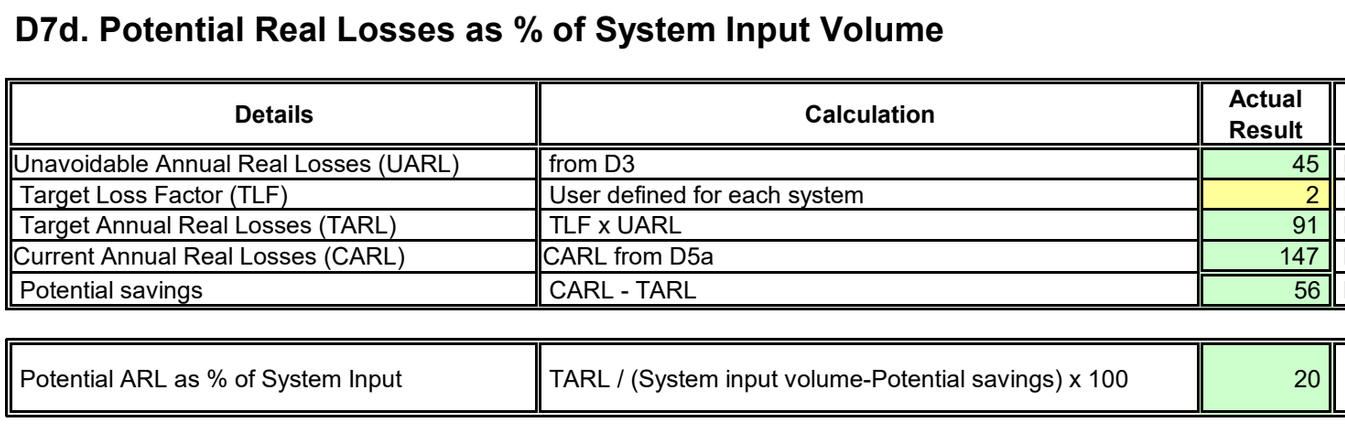
Description of Unbilled Items	Example Result				Actual Result			
	Volume 10^3 m^3/yr	Unit Value R /m^3	Value 10^3 R/year	% of Annual Running Costs Costs	Volume 10^3 m^3/yr	Unit Value (R /m^3)	Value 10^3 R/year	% of Annual Running Costs Costs
Unbilled Consumption	210	2.70	567	1.26	10	14.81	146	0.46
Apparent Losses:	550	2.70	1485	3.30	44	14.81	652	2.05
Real Losses:	2200	0.15	330	0.73	445	0.10	45	0.14
Total Unbilled:	2960		**2382**	**5.29**	499		842	**2.64**

D7. RELATIONSHIP BETWEEN REAL LOSSES EXPRESSED AS % OF SYSTEM INPUT

D7a. Real losses curve definition

Curve Definition					
Consumption litres/serv conn/day	Real losses in litres/service connection/day				
	50	100	200	500	1000
100	33.3	50.0	66.7	83.3	90.9
250	16.7	28.6	44.4	66.7	80.0
500	9.1	16.7	28.6	50.0	66.7
1000	4.8	9.1	16.7	33.3	50.0
2000	2.4	4.8	9.1	20.0	33.3
3000	1.6	3.2	6.3	14.3	25.0
5000	1.0	2.0	3.8	9.1	16.7
10000	0.5	1.0	2.0	4.8	9.1

D7b. Components of water balance in litres/service connection/day (Actual Results)



D7c. Current Real Losses as % of System Input Volume

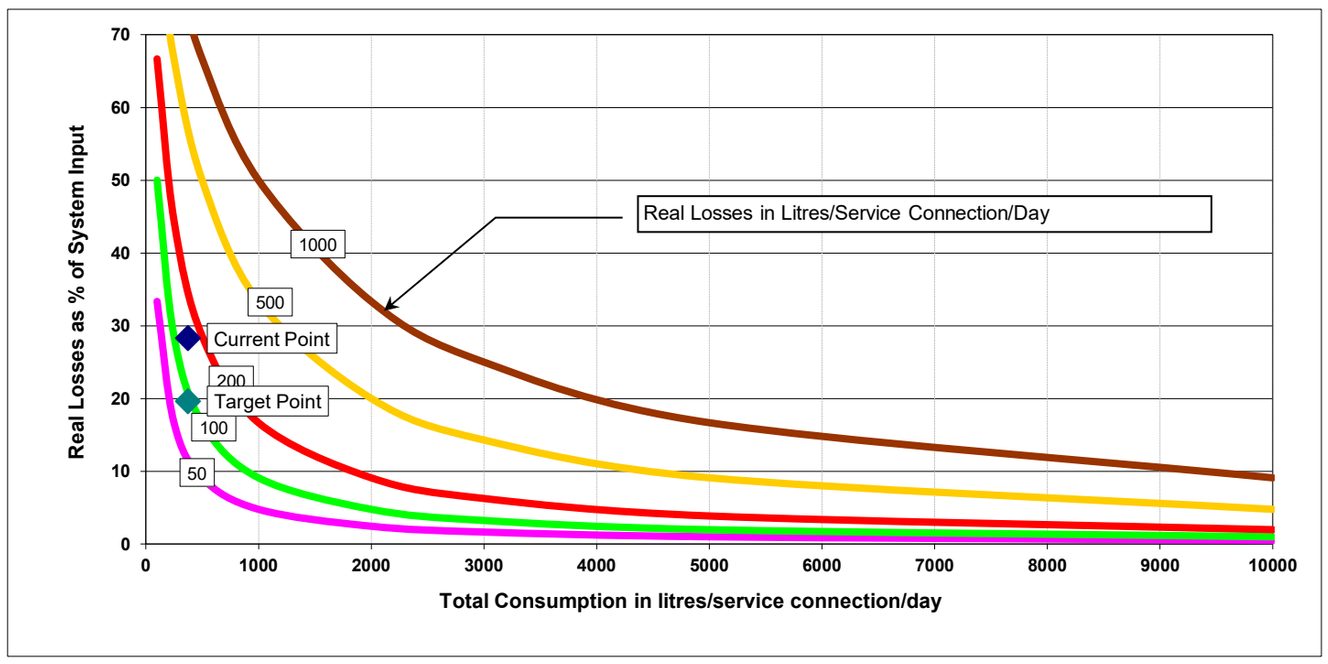
Details	Calculation	Actual Result	Units
System Input Volume	from D7b	519	Litres/conn/day
Total Consumption	from D7b	372	Litres/conn/day
Annual Real Losses	from D7b	147	Litres/conn/day

ARL as % of System Input	ARL / System input volume x 100	28	%

D7d. Potential Real Losses as % of System Input Volume

Details	Calculation	Actual Result	Units
Unavoidable Annual Real Losses (UARL)	from D3	45	Litres/conn/day
Target Loss Factor (TLF)	User defined for each system	2	Dimensionless
Target Annual Real Losses (TARL)	TLF x UARL	91	Litres/conn/day
Current Annual Real Losses (CARL)	CARL from D5a	147	Litres/conn/day
Potential savings	CARL - TARL	56	Litres/conn/day
Potential ARL as % of System Input	TARL / (System input volume-Potential savings) x 100	20	%

D7e. Real Losses as a % of System Input Volume versus Consumption in litres/service connectio for different values of Real Losses in litres/service connection/day



SUMMARY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

P10376

S1. SYSTEM NAME AND CONTACT DETAILS

Name of Water Undertaking		Overstrand Municipality (Pearly Beach)
Name of Water Supply System		Pearly Beach
Contact Details:	Name	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

S2. Performance Indicators of Water Loss

Viewpoint	Level	Parameter	Typical Range Excellent	Good	Poor	Actual PI	Units
Operations management of distribution system at current pressure	**Basic**	% of year system is pressurised	100	100	<100	100	%
		Current Annual Real Losses (CARL) (when system is pressurised - see note 2)	30 to 100	100 to 200	>200	55	Litres/connection/day
	Detailed	Unavoidable Annual Real Losses (UARL) (see note 3)	n/a	n/a	n/a	49	Litres/connection/day
		Consumption	n/a	n/a	n/a	179	Litres/connection/day
		Infrastructure Leakage Index (ILI) (= CARL/UARL : see note 4)	1	2	>3.0	1.1	non dimensional
Financial management aspects of water losses	**Basic**	Volume of non-revenue water as a% of system input volume (see note 5)	<10%	20%	30%	26	%
	Detailed	Value of non-revenue water as a % of annual cost of running the system (see note 6)	<5%	10%	15%	2	%

Notes:

Note1: taken from data in "AQUA" article, December 1999 or estimated by WRP

Note 2: takes account of % of time system is pressurised, but not system pressure, density of connections or customet meter location

Note 3: takes account of density of connections and customer meter location at current pressure

Note 4: measures overall efficiency of management of distribution system at current operating pressure

Note 5: strongly influenced by average consumption per service connection

Note 6: Allows different values of Rand/m3 for different components of non-revenue water

S3. Key Operating Parameters which influence Unavoidable Annual Real Losses (UARL)

Variable	Typical Range Low	Medium	High	Actual PI	Units
Average Operating Pressure	30	45	100	40	Metres
Density of connections	20	45	120	43	per km of mains

4. Key Components of Annual System Input Volume

Component	m3/year	m3/connection/day	% of System Input Volume
Water Exported		not applicable	
Authorised Consumption excluding exports	120981	0.18	74.8
Apparent Losses	3678	0.01	2.3
Actual Consumption excluding exports	124659	0.18	77.0
Real Losses	37186	0.05	23.0
System Input Volume	161845	0.24	100.0

DATA ENTRY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

Note: Note: An example has been included to assist you in completing this data sheet. The example input data can be seen in the pale blue shaded areas. Your input data should appear in the pale yellow shaded areas. The light green shaded areas are protected calculation fields and nothing can be entered in these fields.
Use the units as shown. If you have to use other units; you have to change the appropriate cells.

D1. GENERAL

Name of Water Undertaking		Overstrand Municipality (Pearly Beach)
Name of Water Supply System		Pearly Beach
Contact Details:	**Name**	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

D2. SYSTEM DATA

Input Description	Variable	Example Data	Actual Data	Units	
Length of Mains (Transmission + Distribution)	Lm	1500	43	km	
Number of Service Connections	Ns	60000	1853	Number	See Notes 1 & 2
Density of Service Connections (per km of mains)	Ns/Lm	40	43	Per km	
Percentage of time system is pressurised during year	T	100	100	%	See Note 3
Average operating pressure when system pressurised	P	45	40	metres	See Note 4
Population served by the supply system	Pop	100000	1374	Number	

Note 1: The number of service connections is not always the same as the number of meters or billed accounts. For South African conditions, however, you can use the total of the number of metered accounts plus the estimated number of unmetered connections

Note 2: In South Africa customer meters are usually located close to the street/stand boundary. If this is not the case for your system, then add a note here.

1 842 Service Connection from Financial System for 2024/2025+ 11 Standpipes in informal Areas = 1 853

Note 3: Use T in % eg. If T = 80%, use 80 and not 0.8

Note 4: If you do not have an accurate figure, please make a best estimate and provide brief details of how you derived it.

Insert your comments in this space.

D3. UNAVOIDABLE ANNUAL REAL LOSSES (UARL)

Details	Calculation	Example Result	Actual Data	Units
On mains	18 x Lm x P x 365 x T/10^8	443	11	10^3 m^3/yr
On Service Connections	0.8 x Ns x P x 365 x T/10^8	788	22	10^3 m^3/yr
Total Volume of UARL		**1232**	**33**	10^3 m^3/yr

UARL in litres/service conn./day when the system is pressurised	Annual Volume of UARL x 10^6 / (Ns x 365 x T/100)	**56**	**49**	Litres/ conn./day

D4. ANNUAL WATER BALANCE DATA

D4a. Data Period

		Example Data	Actual Data
12-MONTH PERIOD FOR WHICH DATA APPLIES	**Start Date**	April 1, 1998	July 1, 2024
	End Date	March 31, 1999	June 30, 2025

D4b. System Input Volume

Water Supplied	**Example Data**					**Actual Data**				
	Metered 10^3 m^3/yr	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Metered 10^3 m^3/yr**	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
		+/- %	**10^3 m^3/yr**				**+/- %**	**10^3 m^3/yr**		
From Own Sources:	36000	2.00%	720		36720	162				162
From Other Suppliers:	1000			280	1280					
Total:	37000		720	280	38000	**162**				**162**

D4c. Components of Authorised Consumption

Components of Authorised Consumption	**Example Data**					**Actual Data**				
	Billed Metered 10^3 m^3/yr	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Billed Metered 10^3 m^3/yr**	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
Water Exported:	1500				1500					
Households:	24500	500			25000	117				117
Non-households:	6900	100			7000	2				2
Standpipes:		500	10		510					
Firefighting:				100	100			0		0
Mains Flushing:				100	100				1	1
Building water:	1040				1040					
Other (specify):						0				0
Other (specify):										
TOTALS:	33940	1100	10	200	35250	**120**		**0**	**1**	**121**

D4d. Components of Water Losses

Details	**Example Result**	**Actual Result**	**Units**
Water Losses = System Input – Authorised Consumption	2750	41	10^3 m^3/yr
Percentage of Total Losses estimated to represent the Apparent Losses	20	9	%
Apparent Losses	550	4	10^3 m^3/yr

Annual Real Losses (ARL) = Water Losses – Apparent Losses	**2200**	**37**	10^3 m^3/yr

D5. SELECTED OPERATIONAL PERFORMANCE INDICATORS

D5a. Current Annual Real Losses per Connection (CARL) at Current Pressures

Details	Calculation	Example Result	Actual Result	Units
CARL is expressed in Litres/service connection/day, when system is pressurised	ARL x 10^6 / (Ns x T/100 x 365)	**100**	**55**	Litres /conn./day
Consumption in litres/conn/day		**1610**	**179**	Litres /conn./day

D5b. Infrastructure Leakage Index (ILI)

Details	Calculation	Example Result	Actual Result
ILI is the ratio of Current Annual Real Losses (CARL) to Unavoidable Annual Real Losses	CARL / UARL	**1.79**	**1.13**

D5c. Non-Revenue Water as a % by Volume of System Input

Description of Unbilled Items	Example Result			Actual Result		
	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input
Unbilled Consumption	210	38000	0.55	1	162	0.55
Apparent Losses:	550	38000	1.45	4	162	2.27
Real Losses:	2200	38000	5.79	37	162	22.98
Total Unbilled:	**2960**	**38000**	**7.79**	**42**	**162**	**25.80**

D6. SELECTED FINANCIAL PERFORMANCE INDICATORS

D6a. Local Valuation of Real and Apparent Losses

Details	Example Result	Actual Result	Units
Unit Value of Real Losses (eg bulk purchase price)	0.15	0.10	R /m^3
Unit Value of Apparent Losses (eg selling price)	2.70	14.81	R /m^3

D6b. Annual Cost of Running System

Details	Example Cost	Actual Cost	Units
Annual Cost of running system in 1000's of Rand per year	45000	3276	10^3 R/year

D6c. Non-Revenue Water as % by Value of Cost of Running System

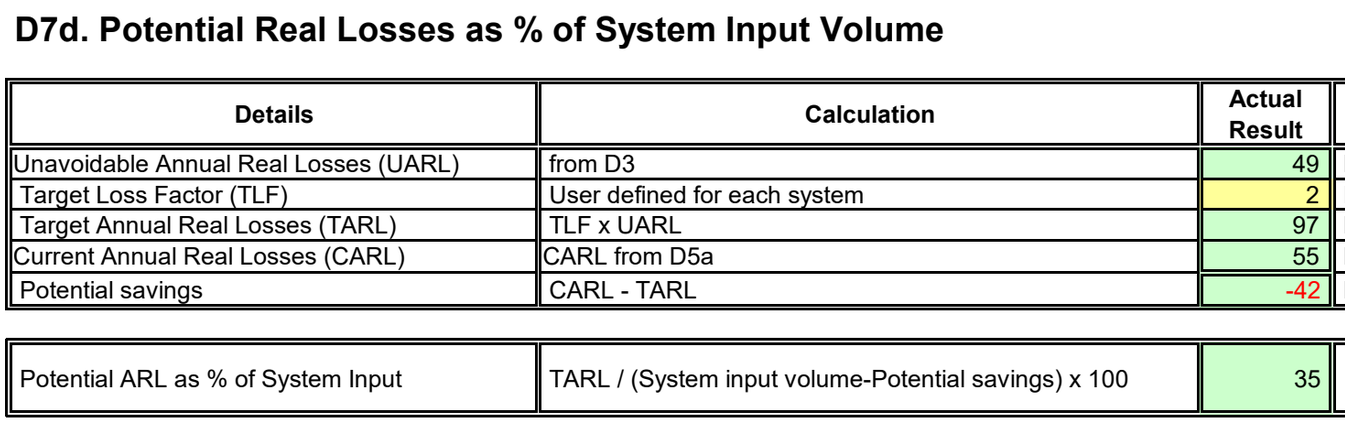
Description of Unbilled Items	Example Result				Actual Result			
	Volume 10^3 m^3/yr	Unit Value R /m^3	Value 10^3 R/year	% of Annual Running Costs Costs	Volume 10^3 m^3/yr	Unit Value (R /m^3)	Value 10^3 R/year	% of Annual Running Costs Costs
Unbilled Consumption	210	2.70	567	1.26	1	14.81	13	0.40
Apparent Losses:	550	2.70	1485	3.30	4	14.81	54	1.66
Real Losses:	2200	0.15	330	0.73	37	0.10	4	0.11
Total Unbilled:	2960		**2382**	**5.29**	42		71	**2.18**

D7. RELATIONSHIP BETWEEN REAL LOSSES EXPRESSED AS % OF SYSTEM INPUT

D7a. Real losses curve definition

Curve Definition					
Consumption litres/serv conn/day	Real losses in litres/service connection/day				
	50	100	200	500	1000
100	33.3	50.0	66.7	83.3	90.9
250	16.7	28.6	44.4	66.7	80.0
500	9.1	16.7	28.6	50.0	66.7
1000	4.8	9.1	16.7	33.3	50.0
2000	2.4	4.8	9.1	20.0	33.3
3000	1.6	3.2	6.3	14.3	25.0
5000	1.0	2.0	3.8	9.1	16.7
10000	0.5	1.0	2.0	4.8	9.1

D7b. Components of water balance in litres/service connection/day (Actual Results)



D7c. Current Real Losses as % of System Input Volume

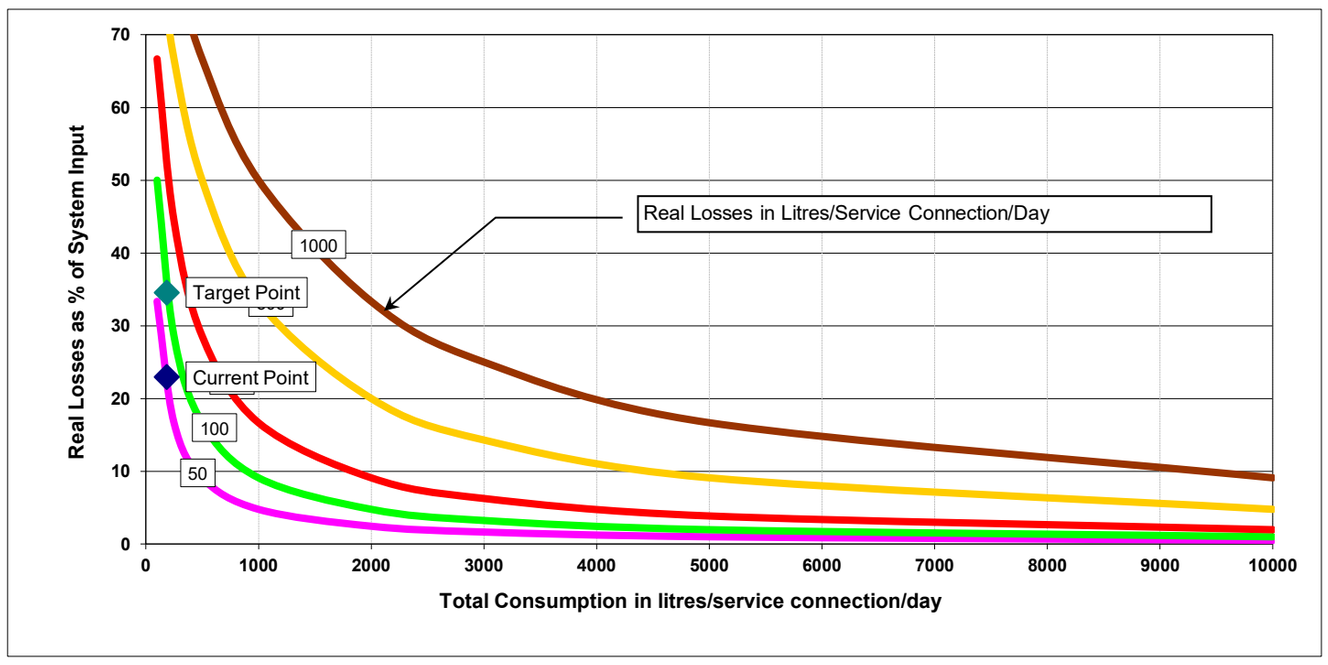
Details	Calculation	Actual Result	Units
System Input Volume	from D7b	239	Litres/conn/day
Total Consumption	from D7b	184	Litres/conn/day
Annual Real Losses	from D7b	55	Litres/conn/day

ARL as % of System Input	ARL / System input volume x 100	23	%

D7d. Potential Real Losses as % of System Input Volume

Details	Calculation	Actual Result	Units
Unavoidable Annual Real Losses (UARL)	from D3	49	Litres/conn/day
Target Loss Factor (TLF)	User defined for each system	2	Dimensionless
Target Annual Real Losses (TARL)	TLF x UARL	97	Litres/conn/day
Current Annual Real Losses (CARL)	CARL from D5a	55	Litres/conn/day
Potential savings	CARL - TARL	-42	Litres/conn/day
Potential ARL as % of System Input	TARL / (System input volume-Potential savings) x 100	35	%

D7e. Real Losses as a % of System Input Volume versus Consumption in litres/service connectio for different values of Real Losses in litres/service connection/day



SUMMARY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

P10376

S1. SYSTEM NAME AND CONTACT DETAILS

Name of Water Undertaking		Overstrand Municipality (Baardskeerdersbos)
Name of Water Supply System		Baardskeerdersbos
Contact Details:	Name	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

S2. Performance Indicators of Water Loss

Viewpoint	Level	Parameter	Typical Range Excellent	Good	Poor	Actual PI	Units
Operations management of distribution system at current pressure	**Basic**	% of year system is pressurised	100	100	<100	100	%
		Current Annual Real Losses (CARL) (when system is pressurised - see note 2)	30 to 100	100 to 200	>200	164	Litres/connection/day
	Detailed	Unavoidable Annual Real Losses (UARL) (see note 3)	n/a	n/a	n/a	95	Litres/connection/day
		Consumption	n/a	n/a	n/a	355	Litres/connection/day
		Infrastructure Leakage Index (ILI) (= CARL/UARL : see note 4)	1	2	>3.0	1.7	non dimensional
Financial management aspects of water losses	**Basic**	Volume of non-revenue water as a% of system input volume (see note 5)	<10%	20%	30%	35	%
	Detailed	Value of non-revenue water as a % of annual cost of running the system (see note 6)	<5%	10%	15%	3	%

Notes:

Note1: taken from data in "AQUA" article, December 1999 or estimated by WRP

Note 2: takes account of % of time system is pressurised, but not system pressure, density of connections or customet meter location

Note 3: takes account of density of connections and customer meter location at current pressure

Note 4: measures overall efficiency of management of distribution system at current operating pressure

Note 5: strongly influenced by average consumption per service connection

Note 6: Allows different values of Rand/m3 for different components of non-revenue water

S3. Key Operating Parameters which influence Unavoidable Annual Real Losses (UARL)

Variable	Typical Range Low	Medium	High	Actual PI	Units
Average Operating Pressure	30	45	100	52	Metres
Density of connections	20	45	120	17	per km of mains

4. Key Components of Annual System Input Volume

Component	m3/year	m3/connection/day	% of System Input Volume
Water Exported		not applicable	
Authorised Consumption excluding exports	12942	0.35	66.3
Apparent Losses	591	0.02	3.0
Actual Consumption excluding exports	13533	0.37	69.4
Real Losses	5974	0.16	30.6
System Input Volume	19507	0.53	100.0

DATA ENTRY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

Note: Note: An example has been included to assist you in completing this data sheet. The example input data can be seen in the pale blue shaded areas. Your input data should appear in the pale yellow shaded areas. The light green shaded areas are protected calculation fields and nothing can be entered in these fields.
Use the units as shown. If you have to use other units; you have to change the appropriate cells.

D1. GENERAL

Name of Water Undertaking		Overstrand Municipality (Baardskeerdersbos)
Name of Water Supply System		Baardskeerdersbos
Contact Details:	**Name**	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

D2. SYSTEM DATA

Input Description	Variable	Example Data	Actual Data	Units	
Length of Mains (Transmission + Distribution)	Lm	1500	6	km	
Number of Service Connections	Ns	60000	100	Number	See Notes 1 & 2
Density of Service Connections (per km of mains)	Ns/Lm	40	17	Per km	
Percentage of time system is pressurised during year	T	100	100	%	See Note 3
Average operating pressure when system pressurised	P	45	52	metres	See Note 4
Population served by the supply system	Pop	100000	130	Number	

Note 1: The number of service connections is not always the same as the number of meters or billed accounts. For South African conditions, however, you can use the total of the number of metered accounts plus the estimated number of unmetered connections

Note 2: In South Africa customer meters are usually located close to the street/stand boundary. If this is not the case for your system, then add a note here.

100 Service Connection from Financial System for 2024/2025, No Informal Areas.

Note 3: Use T in % eg. If T = 80%, use 80 and not 0.8

Note 4: If you do not have an accurate figure, please make a best estimate and provide brief details of how you derived it.

Insert your comments in this space.

D3. UNAVOIDABLE ANNUAL REAL LOSSES (UARL)

Details	Calculation	Example Result	Actual Data	Units
On mains	18 x Lm x P x 365 x T/10^8	443	2	10^3 m^3/yr
On Service Connections	0.8 x Ns x P x 365 x T/10^8	788	2	10^3 m^3/yr
Total Volume of UARL		**1232**	**3**	10^3 m^3/yr

UARL in litres/service conn./day when the system is pressurised	Annual Volume of UARL x 10^6 / (Ns x 365 x T/100)	**56**	**95**	Litres/ conn./day

D4. ANNUAL WATER BALANCE DATA

D4a. Data Period

		Example Data	Actual Data
12-MONTH PERIOD FOR WHICH DATA APPLIES	**Start Date**	April 1, 1998	July 1, 2024
	End Date	March 31, 1999	June 30, 2025

D4b. System Input Volume

Water Supplied	**Example Data**					**Actual Data**				
	Metered 10^3 m^3/yr	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Metered 10^3 m^3/yr**	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
		+/- %	**10^3 m^3/yr**				**+/- %**	**10^3 m^3/yr**		
From Own Sources:	36000	2.00%	720		36720	20				20
From Other Suppliers:	1000			280	1280					
Total:	37000		720	280	38000	**20**				**20**

D4c. Components of Authorised Consumption

Components of Authorised Consumption	**Example Data**					**Actual Data**				
	Billed Metered 10^3 m^3/yr	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Billed Metered 10^3 m^3/yr**	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
Water Exported:	1500				1500					
Households:	24500	500			25000	12				12
Non-households:	6900	100			7000	0				0
Standpipes:		500	10		510					
Firefighting:				100	100			0		0
Mains Flushing:				100	100				0	0
Building water:	1040				1040					
Other (specify):						0				0
Other (specify):										
TOTALS:	33940	1100	10	200	35250	**13**		**0**	**0**	**13**

D4d. Components of Water Losses

Details	**Example Result**	**Actual Result**	**Units**
Water Losses = System Input – Authorised Consumption	2750	7	10^3 m^3/yr
Percentage of Total Losses estimated to represent the Apparent Losses	20	9	%
Apparent Losses	550	1	10^3 m^3/yr

Annual Real Losses (ARL) = Water Losses – Apparent Losses	**2200**	**6**	10^3 m^3/yr

D5. SELECTED OPERATIONAL PERFORMANCE INDICATORS

D5a. Current Annual Real Losses per Connection (CARL) at Current Pressures

Details	Calculation	Example Result	Actual Result	Units
CARL is expressed in Litres/service connection/day, when system is pressurised	ARL x 10^6 / (Ns x T/100 x 365)	**100**	**164**	Litres /conn./day
Consumption in litres/conn/day		**1610**	**355**	Litres /conn./day

D5b. Infrastructure Leakage Index (ILI)

Details	Calculation	Example Result	Actual Result
ILI is the ratio of Current Annual Real Losses (CARL) to Unavoidable Annual Real Losses	CARL / UARL	**1.79**	**1.72**

D5c. Non-Revenue Water as a % by Volume of System Input

Description of Unbilled Items	Example Result			Actual Result		
	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input
Unbilled Consumption	210	38000	0.55	0	20	1.06
Apparent Losses:	550	38000	1.45	1	20	3.03
Real Losses:	2200	38000	5.79	6	20	30.63
Total Unbilled:	**2960**	**38000**	**7.79**	**7**	**20**	**34.71**

D6. SELECTED FINANCIAL PERFORMANCE INDICATORS

D6a. Local Valuation of Real and Apparent Losses

Details	Example Result	Actual Result	Units
Unit Value of Real Losses (eg bulk purchase price)	0.15	0.10	R /m^3
Unit Value of Apparent Losses (eg selling price)	2.70	14.81	R /m^3

D6b. Annual Cost of Running System

Details	Example Cost	Actual Cost	Units
Annual Cost of running system in 1000's of Rand per year	45000	395	10^3 R/year

D6c. Non-Revenue Water as % by Value of Cost of Running System

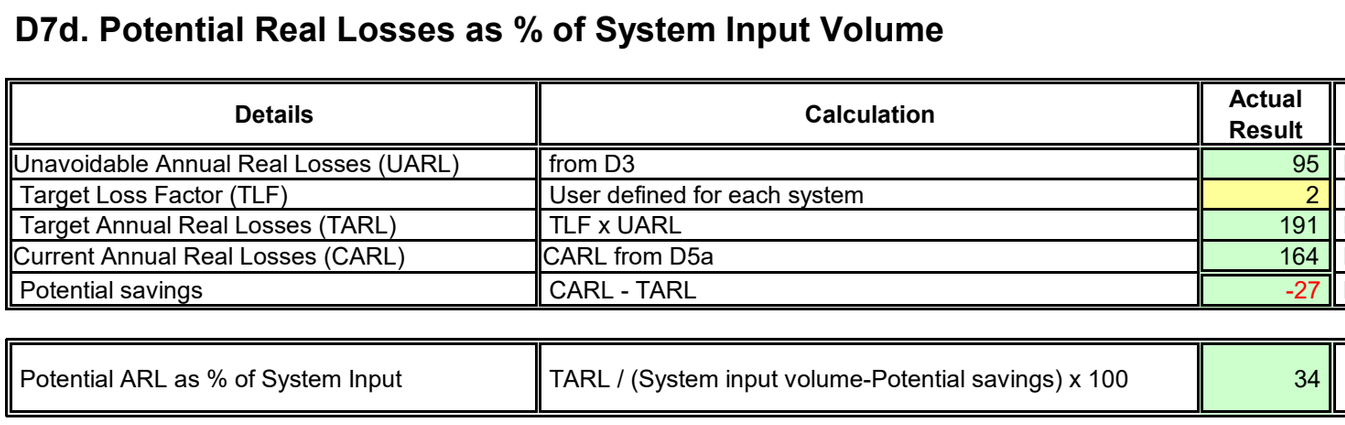
Description of Unbilled Items	Example Result				Actual Result			
	Volume 10^3 m^3/yr	Unit Value R /m^3	Value 10^3 R/year	% of Annual Running Costs Costs	Volume 10^3 m^3/yr	Unit Value (R /m^3)	Value 10^3 R/year	% of Annual Running Costs Costs
Unbilled Consumption	210	2.70	567	1.26	0	14.81	3	0.77
Apparent Losses:	550	2.70	1485	3.30	1	14.81	9	2.22
Real Losses:	2200	0.15	330	0.73	6	0.10	1	0.15
Total Unbilled:	2960		**2382**	**5.29**	7		12	**3.14**

D7. RELATIONSHIP BETWEEN REAL LOSSES EXPRESSED AS % OF SYSTEM INPUT

D7a. Real losses curve definition

Curve Definition					
Consumption litres/serv conn/day	Real losses in litres/service connection/day				
	50	100	200	500	1000
100	33.3	50.0	66.7	83.3	90.9
250	16.7	28.6	44.4	66.7	80.0
500	9.1	16.7	28.6	50.0	66.7
1000	4.8	9.1	16.7	33.3	50.0
2000	2.4	4.8	9.1	20.0	33.3
3000	1.6	3.2	6.3	14.3	25.0
5000	1.0	2.0	3.8	9.1	16.7
10000	0.5	1.0	2.0	4.8	9.1

D7b. Components of water balance in litres/service connection/day (Actual Results)



D7c. Current Real Losses as % of System Input Volume

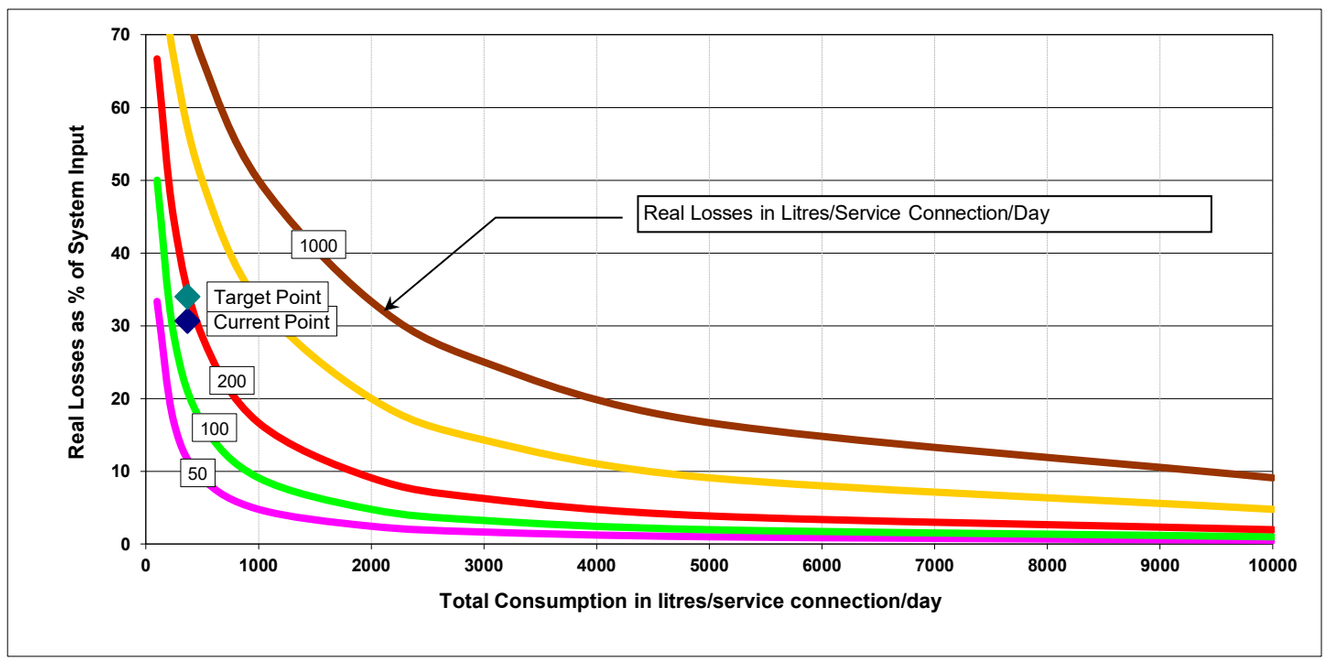
Details	Calculation	Actual Result	Units
System Input Volume	from D7b	534	Litres/conn/day
Total Consumption	from D7b	371	Litres/conn/day
Annual Real Losses	from D7b	164	Litres/conn/day

ARL as % of System Input	ARL / System input volume x 100	31	%

D7d. Potential Real Losses as % of System Input Volume

Details	Calculation	Actual Result	Units
Unavoidable Annual Real Losses (UARL)	from D3	95	Litres/conn/day
Target Loss Factor (TLF)	User defined for each system	2	Dimensionless
Target Annual Real Losses (TARL)	TLF x UARL	191	Litres/conn/day
Current Annual Real Losses (CARL)	CARL from D5a	164	Litres/conn/day
Potential savings	CARL - TARL	-27	Litres/conn/day
Potential ARL as % of System Input	TARL / (System input volume-Potential savings) x 100	34	%

D7e. Real Losses as a % of System Input Volume versus Consumption in litres/service connectio for different values of Real Losses in litres/service connection/day



SUMMARY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

P10376

S1. SYSTEM NAME AND CONTACT DETAILS

Name of Water Undertaking		Overstrand Municipality (Buffeljags Bay)
Name of Water Supply System		Buffeljags Bay
Contact Details:	Name	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

S2. Performance Indicators of Water Loss

Viewpoint	Level	Parameter	Typical Range Excellent	Good	Poor	Actual PI	Units
Operations management of distribution system at current pressure	**Basic**	% of year system is pressurised	100	100	<100	100	%
		Current Annual Real Losses (CARL) (when system is pressurised - see note 2)	30 to 100	100 to 200	>200	425	Litres/connection/day
	Detailed	Unavoidable Annual Real Losses (UARL) (see note 3)	n/a	n/a	n/a	7	Litres/connection/day
		Consumption	n/a	n/a	n/a	220	Litres/connection/day
		Infrastructure Leakage Index (ILI) (= CARL/UARL : see note 4)	1	2	>3.0	64.4	non dimensional
Financial management aspects of water losses	**Basic**	Volume of non-revenue water as a% of system input volume (see note 5)	<10%	20%	30%	68	%
	Detailed	Value of non-revenue water as a % of annual cost of running the system (see note 6)	<5%	10%	15%	5	%

Notes:

Note1: taken from data in "AQUA" article, December 1999 or estimated by WRP

Note 2: takes account of % of time system is pressurised, but not system pressure, density of connections or customet meter location

Note 3: takes account of density of connections and customer meter location at current pressure

Note 4: measures overall efficiency of management of distribution system at current operating pressure

Note 5: strongly influenced by average consumption per service connection

Note 6: Allows different values of Rand/m3 for different components of non-revenue water

S3. Key Operating Parameters which influence Unavoidable Annual Real Losses (UARL)

Variable	Typical Range Low	Medium	High	Actual PI	Units
Average Operating Pressure	30	45	100	6	Metres
Density of connections	20	45	120	64	per km of mains

4. Key Components of Annual System Input Volume

Component	m3/year	m3/connection/day	% of System Input Volume
Water Exported		not applicable	
Authorised Consumption excluding exports	2570	0.22	32.0
Apparent Losses	491	0.04	6.1
Actual Consumption excluding exports	3061	0.26	38.2
Real Losses	4960	0.42	61.8
System Input Volume	8020	0.69	100.0

DATA ENTRY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

Note: Note: An example has been included to assist you in completing this data sheet. The example input data can be seen in the pale blue shaded areas. Your input data should appear in the pale yellow shaded areas. The light green shaded areas are protected calculation fields and nothing can be entered in these fields.
Use the units as shown. If you have to use other units; you have to change the appropriate cells.

D1. GENERAL

Name of Water Undertaking		Overstrand Municipality (Buffeljags Bay)
Name of Water Supply System		Buffeljags Bay
Contact Details:	**Name**	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

D2. SYSTEM DATA

Input Description	Variable	Example Data	Actual Data	Units	
Length of Mains (Transmission + Distribution)	Lm	1500	1	km	
Number of Service Connections	Ns	60000	32	Number	See Notes 1 & 2
Density of Service Connections (per km of mains)	Ns/Lm	40	64	Per km	
Percentage of time system is pressurised during year	T	100	100	%	See Note 3
Average operating pressure when system pressurised	P	45	6	metres	See Note 4
Population served by the supply system	Pop	100000	157	Number	

Note 1: The number of service connections is not always the same as the number of meters or billed accounts. For South African conditions, however, you can use the total of the number of metered accounts plus the estimated number of unmetered connections

Note 2: In South Africa customer meters are usually located close to the street/stand boundary. If this is not the case for your system, then add a note here.

30 Service Connection from Financial System for 2024/2025 + 2 Standpipes in informal Areas = 32

Note 3: Use T in % eg. If T = 80%, use 80 and not 0.8

Note 4: If you do not have an accurate figure, please make a best estimate and provide brief details of how you derived it.

Insert your comments in this space.

D3. UNAVOIDABLE ANNUAL REAL LOSSES (UARL)

Details	Calculation	Example Result	Actual Data	Units
On mains	18 x Lm x P x 365 x T/10^8	443	0	10^3 m^3/yr
On Service Connections	0.8 x Ns x P x 365 x T/10^8	788	0	10^3 m^3/yr
Total Volume of UARL		**1232**	**0**	10^3 m^3/yr

UARL in litres/service conn./day when the system is pressurised	Annual Volume of UARL x 10^6 / (Ns x 365 x T/100)	**56**	**7**	Litres/ conn./day

D4. ANNUAL WATER BALANCE DATA

D4a. Data Period

12-MONTH PERIOD FOR WHICH DATA APPLIES		Example Data	Actual Data
	Start Date	April 1, 1998	July 1, 2024
	End Date	March 31, 1999	June 30, 2025

D4b. System Input Volume

Water Supplied	Example Data					Actual Data				
	Metered 10^3 m^3/yr	Correction to Source Meter data		Unmetered 10^3 m^3/yr	Total 10^3 m^3/yr	Metered 10^3 m^3/yr	Correction to Source Meter data		Unmetered 10^3 m^3/yr	Total 10^3 m^3/yr
		+/- %	10^3 m^3/yr				+/- %	10^3 m^3/yr		
From Own Sources:	36000	2.00%	720		36720	8				8
From Other Suppliers:	1000			280	1280					
Total:	37000		720	280	38000	**8**				**8**

D4c. Components of Authorised Consumption

Components of Authorised Consumption	Example Data					Actual Data				
	Billed Metered 10^3 m^3/yr	Billed Unmetered 10^3 m^3/yr	Unbilled Metered 10^3 m^3/yr	Unbilled Unmetered 10^3 m^3/yr	Total 10^3 m^3/yr	Billed Metered 10^3 m^3/yr	Billed Unmetered 10^3 m^3/yr	Unbilled Metered 10^3 m^3/yr	Unbilled Unmetered 10^3 m^3/yr	Total 10^3 m^3/yr
Water Exported:	1500				1500					
Households:	24500	500			25000	3				3
Non-households:	6900	100			7000					
Standpipes:		500	10		510					
Firefighting:				100	100					
Mains Flushing:				100	100				0	0
Building water:	1040				1040					
Other (specify):										
Other (specify):										
TOTALS:	33940	1100	10	200	35250	**3**			**0**	**3**

D4d. Components of Water Losses

Details	Example Result	Actual Result	Units
Water Losses = System Input – Authorised Consumption	2750	5	10^3 m^3/yr
Percentage of Total Losses estimated to represent the Apparent Losses	20	9	%
Apparent Losses	550	0	10^3 m^3/yr

Annual Real Losses (ARL) = Water Losses – Apparent Losses	**2200**	**5**	10^3 m^3/yr

D5. SELECTED OPERATIONAL PERFORMANCE INDICATORS

D5a. Current Annual Real Losses per Connection (CARL) at Current Pressures

Details	Calculation	Example Result	Actual Result	Units
CARL is expressed in Litres/service connection/day, when system is pressurised	ARL x 10^6 / (Ns x T/100 x 365)	**100**	**425**	Litres /conn./day
Consumption in litres/conn/day		**1610**	**220**	Litres /conn./day

D5b. Infrastructure Leakage Index (ILI)

Details	Calculation	Example Result	Actual Result
ILI is the ratio of Current Annual Real Losses (CARL) to Unavoidable Annual Real Losses	CARL / UARL	**1.79**	**64.38**

D5c. Non-Revenue Water as a % by Volume of System Input

Description of Unbilled Items	Example Result			Actual Result		
	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input
Unbilled Consumption	210	38000	0.55	0	8	0.21
Apparent Losses:	550	38000	1.45	0	8	6.12
Real Losses:	2200	38000	5.79	5	8	61.84
Total Unbilled:	**2960**	**38000**	**7.79**	**5**	**8**	**68.17**

D6. SELECTED FINANCIAL PERFORMANCE INDICATORS

D6a. Local Valuation of Real and Apparent Losses

Details	Example Result	Actual Result	Units
Unit Value of Real Losses (eg bulk purchase price)	0.15	0.10	R /m^3
Unit Value of Apparent Losses (eg selling price)	2.70	14.81	R /m^3

D6b. Annual Cost of Running System

Details	Example Cost	Actual Cost	Units
Annual Cost of running system in 1000's of Rand per year	45000	162	10^3 R/year

D6c. Non-Revenue Water as % by Value of Cost of Running System

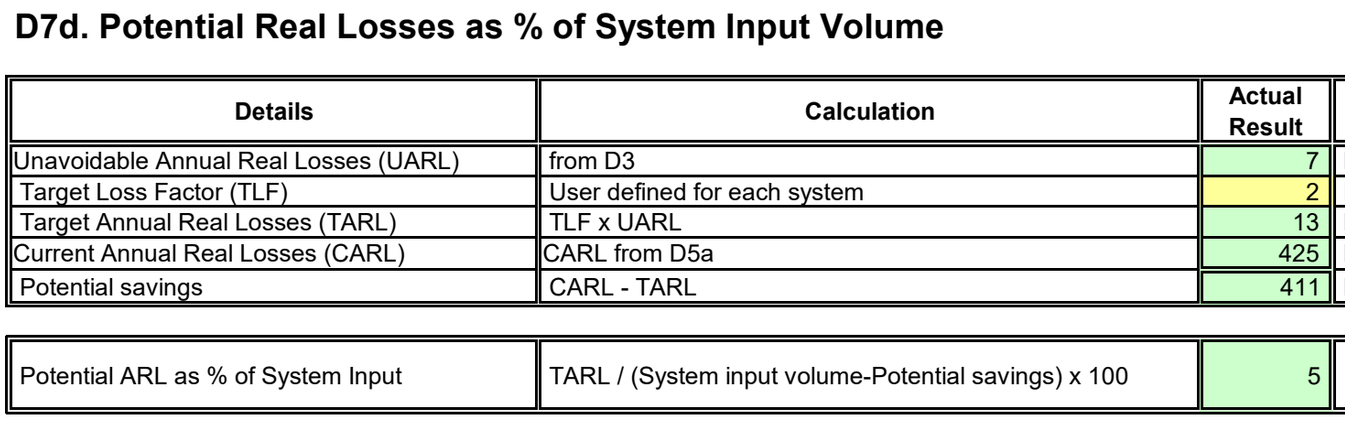
Description of Unbilled Items	Example Result				Actual Result			
	Volume 10^3 m^3/yr	Unit Value R /m^3	Value 10^3 R/year	% of Annual Running Costs Costs	Volume 10^3 m^3/yr	Unit Value (R /m^3)	Value 10^3 R/year	% of Annual Running Costs Costs
Unbilled Consumption	210	2.70	567	1.26	0	14.81	0	0.16
Apparent Losses:	550	2.70	1485	3.30	0	14.81	7	4.47
Real Losses:	2200	0.15	330	0.73	5	0.10	0	0.31
Total Unbilled:	2960		**2382**	**5.29**	5		8	**4.94**

D7. RELATIONSHIP BETWEEN REAL LOSSES EXPRESSED AS % OF SYSTEM INPUT

D7a. Real losses curve definition

Curve Definition					
Consumption litres/serv conn/day	Real losses in litres/service connection/day				
	50	100	200	500	1000
100	33.3	50.0	66.7	83.3	90.9
250	16.7	28.6	44.4	66.7	80.0
500	9.1	16.7	28.6	50.0	66.7
1000	4.8	9.1	16.7	33.3	50.0
2000	2.4	4.8	9.1	20.0	33.3
3000	1.6	3.2	6.3	14.3	25.0
5000	1.0	2.0	3.8	9.1	16.7
10000	0.5	1.0	2.0	4.8	9.1

D7b. Components of water balance in litres/service connection/day (Actual Results)



D7c. Current Real Losses as % of System Input Volume

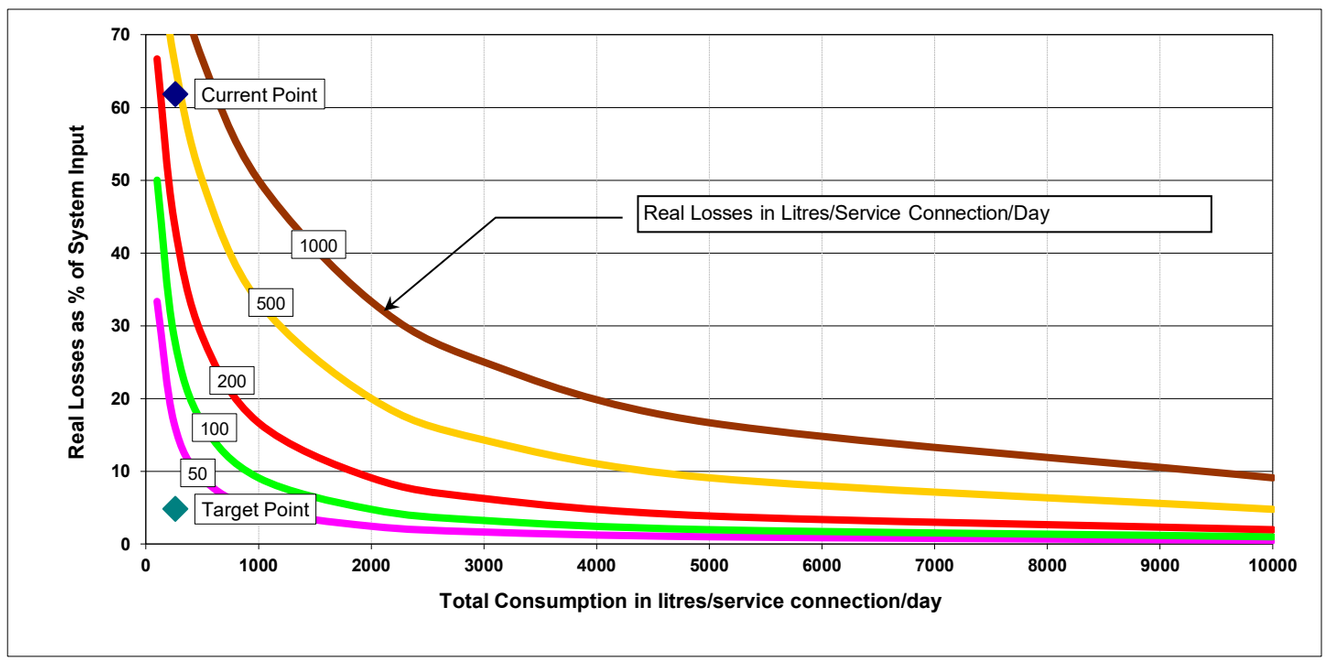
Details	Calculation	Actual Result	Units
System Input Volume	from D7b	687	Litres/conn/day
Total Consumption	from D7b	262	Litres/conn/day
Annual Real Losses	from D7b	425	Litres/conn/day

ARL as % of System Input	ARL / System input volume x 100	62	%

D7d. Potential Real Losses as % of System Input Volume

Details	Calculation	Actual Result	Units
Unavoidable Annual Real Losses (UARL)	from D3	7	Litres/conn/day
Target Loss Factor (TLF)	User defined for each system	2	Dimensionless
Target Annual Real Losses (TARL)	TLF x UARL	13	Litres/conn/day
Current Annual Real Losses (CARL)	CARL from D5a	425	Litres/conn/day
Potential savings	CARL - TARL	411	Litres/conn/day
Potential ARL as % of System Input	TARL / (System input volume-Potential savings) x 100	5	%

D7e. Real Losses as a % of System Input Volume versus Consumption in litres/service connectio for different values of Real Losses in litres/service connection/day



SUMMARY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

P10376

S1. SYSTEM NAME AND CONTACT DETAILS

Name of Water Undertaking		Overstrand Municipality
Name of Water Supply System		Whole Municipality
Contact Details:	Name	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

S2. Performance Indicators of Water Loss

Viewpoint	Level	Parameter	Typical Range Excellent	Good	Poor	Actual PI	Units
Operations management of distribution system at current pressure	**Basic**	% of year system is pressurised	100	100	<100	100	%
		Current Annual Real Losses (CARL) (when system is pressurised - see note 2)	30 to 100	100 to 200	>200	157	Litres/connection/day
	Detailed	Unavoidable Annual Real Losses (UARL) (see note 3)	n/a	n/a	n/a	52	Litres/connection/day
		Consumption	n/a	n/a	n/a	400	Litres/connection/day
		Infrastructure Leakage Index (ILI) (= CARL/UARL : see note 4)	1	2	>3.0	3.0	non dimensional
Financial management aspects of water losses	**Basic**	Volume of non-revenue water as a% of system input volume (see note 5)	<10%	20%	30%	31	%
	Detailed	Value of non-revenue water as a % of annual cost of running the system (see note 6)	<5%	10%	15%	3	%

Notes:

Note1: taken from data in "AQUA" article, December 1999 or estimated by WRP

Note 2: takes account of % of time system is pressurised, but not system pressure, density of connections or customet meter location

Note 3: takes account of density of connections and customer meter location at current pressure

Note 4: measures overall efficiency of management of distribution system at current operating pressure

Note 5: strongly influenced by average consumption per service connection

Note 6: Allows different values of Rand/m3 for different components of non-revenue water

S3. Key Operating Parameters which influence Unavoidable Annual Real Losses (UARL)

Variable	Typical Range Low	Medium	High	Actual PI	Units
Average Operating Pressure	30	45	100	45	Metres
Density of connections	20	45	120	52	per km of mains

4. Key Components of Annual System Input Volume

Component	m3/year	m3/connection/day	% of System Input Volume
Water Exported		not applicable	
Authorised Consumption excluding exports	6409320	0.40	69.9
Apparent Losses	248979	0.02	2.7
Actual Consumption excluding exports	6658299	0.42	72.6
Real Losses	2517455	0.16	27.4
System Input Volume	9175754	0.57	100.0

DATA ENTRY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

Note: Note: An example has been included to assist you in completing this data sheet. The example input data can be seen in the pale blue shaded areas. Your input data should appear in the pale yellow shaded areas. The light green shaded areas are protected calculation fields and nothing can be entered in these fields.
Use the units as shown. If you have to use other units; you have to change the appropriate cells.

D1. GENERAL

Name of Water Undertaking		Overstrand Municipality
Name of Water Supply System		Whole Municipality
Contact Details:	**Name**	Mr H Blignaut
	Address	PO Box 20
		Hermanus
		7200
	Telephone	+27(28) 313 5047
	Fax	+27(28) 316 3721
	E-mail	hblignaut@overstrand.gov.za

D2. SYSTEM DATA

Input Description	Variable	Example Data	Actual Data	Units	
Length of Mains (Transmission + Distribution)	Lm	1500	844	km	
Number of Service Connections	Ns	60000	43851	Number	See Notes 1 & 2
Density of Service Connections (per km of mains)	Ns/Lm	40	52	Per km	
Percentage of time system is pressurised during year	T	100	100	%	See Note 3
Average operating pressure when system pressurised	P	45	45	metres	See Note 4
Population served by the supply system	Pop	100000	129562	Number	

Note 1: The number of service connections is not always the same as the number of meters or billed accounts. For South African conditions, however, you can use the total of the number of metered accounts plus the estimated number of unmetered connections

Note 2: In South Africa customer meters are usually located close to the street/stand boundary. If this is not the case for your system, then add a note here.

43 322 Service Connection from Financial System for 2024/2025 + 529 Communal taps in informal areas = 43 851

Note 3: Use T in % eg. If T = 80%, use 80 and not 0.8

Note 4: If you do not have an accurate figure, please make a best estimate and provide brief details of how you derived it.

Insert your comments in this space.

D3. UNAVOIDABLE ANNUAL REAL LOSSES (UARL)

Details	Calculation	Example Result	Actual Data	Units
On mains	$18 \times Lm \times P \times 365 \times T/10^8$	443	250	10^3 m^3/yr
On Service Connections	$0.8 \times Ns \times P \times 365 \times T/10^8$	788	576	10^3 m^3/yr
Total Volume of UARL		**1232**	**826**	10^3 m^3/yr

UARL in litres/service conn./day when the system is pressurised	Annual Volume of UARL x 10^6 / (Ns x 365 x T/100)	**56**	**52**	Litres/ conn./day

D4. ANNUAL WATER BALANCE DATA

D4a. Data Period

		Example Data	Actual Data
12-MONTH PERIOD FOR WHICH DATA APPLIES	**Start Date**	April 1, 1998	July 1, 2024
	End Date	March 31, 1999	June 30, 2025

D4b. System Input Volume

Water Supplied	**Example Data**					**Actual Data**				
	Metered 10^3 m^3/yr	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Metered 10^3 m^3/yr**	**Correction to Source Meter data**		**Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
		+/- %	**10^3 m^3/yr**				**+/- %**	**10^3 m^3/yr**		
From Own Sources:	36000	2.00%	720		36720	9176				9176
From Other Suppliers:	1000			280	1280					
Total:	37000		720	280	38000	**9176**				**9176**

D4c. Components of Authorised Consumption

Components of Authorised Consumption	**Example Data**					**Actual Data**				
	Billed Metered 10^3 m^3/yr	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**	**Billed Metered 10^3 m^3/yr**	**Billed Unmetered 10^3 m^3/yr**	**Unbilled Metered 10^3 m^3/yr**	**Unbilled Unmetered 10^3 m^3/yr**	**Total 10^3 m^3/yr**
Water Exported:	1500				1500					
Households:	24500	500			25000	5308				5308
Non-households:	6900	100			7000	665				665
Standpipes:		500	10		510					
Firefighting:				100	100			3		3
Mains Flushing:				100	100				95	95
Building water:	1040				1040					
Other (specify):						339				339
Other (specify):										
TOTALS:	33940	1100	10	200	35250	**6312**		**3**	**95**	**6409**

D4d. Components of Water Losses

Details	**Example Result**	**Actual Result**	**Units**
Water Losses = System Input – Authorised Consumption	2750	2766	10^3 m^3/yr
Percentage of Total Losses estimated to represent the Apparent Losses	20	9	%
Apparent Losses	550	249	10^3 m^3/yr

Annual Real Losses (ARL) = Water Losses – Apparent Losses	**2200**	**2517**	10^3 m^3/yr

D5. SELECTED OPERATIONAL PERFORMANCE INDICATORS

D5a. Current Annual Real Losses per Connection (CARL) at Current Pressures

Details	Calculation	Example Result	Actual Result	Units
CARL is expressed in Litres/service connection/day, when system is pressurised	ARL x 10^6 / (Ns x T/100 x 365)	**100**	**157**	Litres /conn./day
Consumption in litres/conn/day		**1610**	**400**	Litres /conn./day

D5b. Infrastructure Leakage Index (ILI)

Details	Calculation	Example Result	Actual Result
ILI is the ratio of Current Annual Real Losses (CARL) to Unavoidable Annual Real Losses	CARL / UARL	**1.79**	**3.05**

D5c. Non-Revenue Water as a % by Volume of System Input

Description of Unbilled Items	Example Result			Actual Result		
	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input	Volume 10^3 m^3/yr	System Input 10^3 m^3/yr	% of System Input
Unbilled Consumption	210	38000	0.55	97	9176	1.06
Apparent Losses:	550	38000	1.45	249	9176	2.71
Real Losses:	2200	38000	5.79	2517	9176	27.44
Total Unbilled:	**2960**	**38000**	**7.79**	**2864**	**9176**	**31.21**

D6. SELECTED FINANCIAL PERFORMANCE INDICATORS

D6a. Local Valuation of Real and Apparent Losses

Details	Example Result	Actual Result	Units
Unit Value of Real Losses (eg bulk purchase price)	0.15	0.10	R /m^3
Unit Value of Apparent Losses (eg selling price)	2.70	14.81	R /m^3

D6b. Annual Cost of Running System

Details	Example Cost	Actual Cost	Units
Annual Cost of running system in 1000's of Rand per year	45000	185747	10^3 R/year

D6c. Non-Revenue Water as % by Value of Cost of Running System

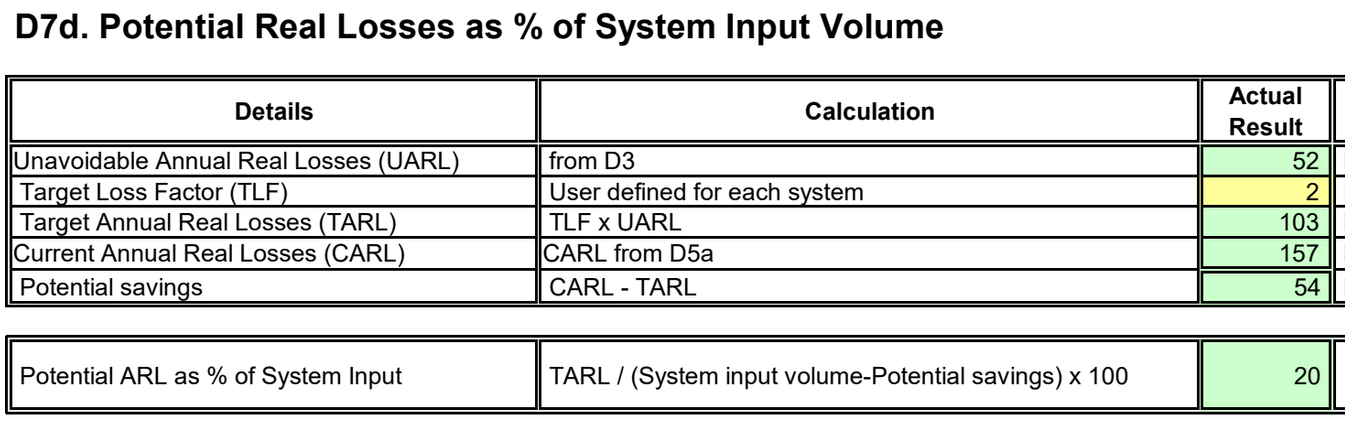
Description of Unbilled Items	Example Result				Actual Result			
	Volume 10^3 m^3/yr	Unit Value R /m^3	Value 10^3 R/year	% of Annual Running Costs Costs	Volume 10^3 m^3/yr	Unit Value (R /m^3)	Value 10^3 R/year	% of Annual Running Costs Costs
Unbilled Consumption	210	2.70	567	1.26	97	14.81	1443	0.78
Apparent Losses:	550	2.70	1485	3.30	249	14.81	3687	1.99
Real Losses:	2200	0.15	330	0.73	2517	0.10	252	0.14
Total Unbilled:	2960		**2382**	**5.29**	2864		5382	**2.90**

D7. RELATIONSHIP BETWEEN REAL LOSSES EXPRESSED AS % OF SYSTEM INPUT

D7a. Real losses curve definition

Curve Definition					
Consumption litres/serv conn/day	Real losses in litres/service connection/day				
	50	100	200	500	1000
100	33.3	50.0	66.7	83.3	90.9
250	16.7	28.6	44.4	66.7	80.0
500	9.1	16.7	28.6	50.0	66.7
1000	4.8	9.1	16.7	33.3	50.0
2000	2.4	4.8	9.1	20.0	33.3
3000	1.6	3.2	6.3	14.3	25.0
5000	1.0	2.0	3.8	9.1	16.7
10000	0.5	1.0	2.0	4.8	9.1

D7b. Components of water balance in litres/service connection/day (Actual Results)



D7c. Current Real Losses as % of System Input Volume

Details	Calculation	Actual Result	Units
System Input Volume	from D7b	573	Litres/conn/day
Total Consumption	from D7b	416	Litres/conn/day
Annual Real Losses	from D7b	157	Litres/conn/day

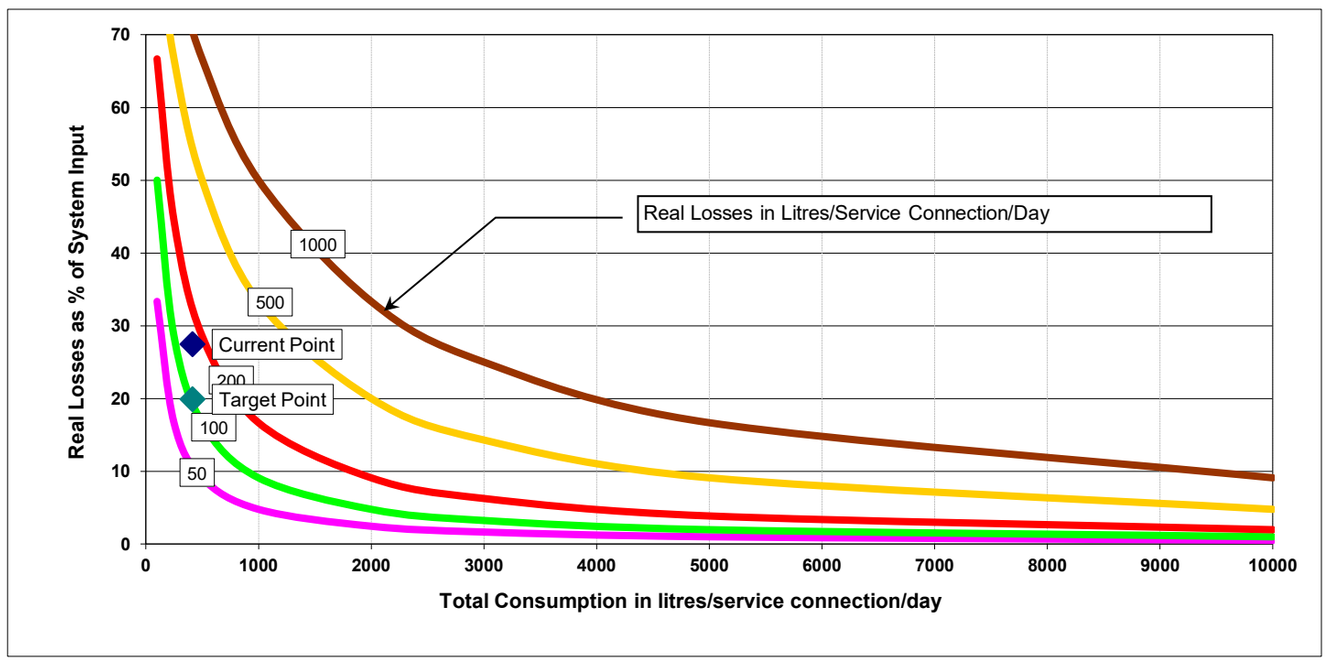
ARL as % of System Input	ARL / System input volume x 100	27	%

D7d. Potential Real Losses as % of System Input Volume

Details	Calculation	Actual Result	Units
Unavoidable Annual Real Losses (UARL)	from D3	52	Litres/conn/day
Target Loss Factor (TLF)	User defined for each system	2	Dimensionless
Target Annual Real Losses (TARL)	TLF x UARL	103	Litres/conn/day
Current Annual Real Losses (CARL)	CARL from D5a	157	Litres/conn/day
Potential savings	CARL - TARL	54	Litres/conn/day

Potential ARL as % of System Input	TARL / (System input volume-Potential savings) x 100	20	%

D7e. Real Losses as a % of System Input Volume versus Consumption in litres/service connectio for different values of Real Losses in litres/service connection/day



ANNEXURE C

Future Water Requirement Projections for the various distribution systems

Buffels River Distribution System (Betty's Bay , Pringle Bay and Rooi Els) - Input Variables for Water Demand Model								
Parameter / Variable	**Year**	**Income Categorization**				Com. & Ind. [D]	Other[E]	Total
		HI	MI	LI	Sub- Total			
		Units are presented in brackets with the "Parameter Description" - First Column						
Population[A]	2024	2492	1289	567	4348	-	-	-
	2029	2751	1495	1304	5550			
	2034	3037	1733	2313	7083			
	2039	3353	2009	3678	9040			
	2044	3702	2329	5506	11537			
	2049	4088	2699	7938	14725			
Growth (%/year)		Growth in Population				Growth in Demand		
	2024-2029	2.00%	3.00%	18.11%	5.00%	4%	2%	
	2029-2034	2.00%	3.00%	12.14%	5.00%	4%	2%	
	2034-2039	2.00%	3.00%	9.72%	5.00%	4%	2%	
	2039-2044	2.00%	3.00%	8.41%	5.00%	4%	2%	
	2044-2049	2.00%	3.00%	7.59%	5.00%	4%	2%	
Unit Demand (l/c/d)[B]	2024	310.0	265.0	190.0	-	-	-	-
Average Annual Daily Demand (Kl/d - NRW Excluded)	2024	772	342	108		65	99	1386
	2029	853	396	248		79	110	1686
	2034	942	459	439		96	121	2058
	2039	1040	532	699		117	134	2522
	2044	1148	617	1046		143	148	3101
	2049	1267	715	1508		174	163	3827
NRW (%) [C]	2024	34.9	34.9	34.9		34.9	34.9	-
	2029	30.0	30.0	30.0		30.0	30.0	
	2034	27.5	27.5	27.5		27.5	27.5	
	2039	25.0	25.0	25.0		25.0	25.0	
	2044	22.5	22.5	22.5		22.5	22.5	
	2049	20.0	20.0	20.0		20.0	20.0	
Average Annual Daily Demand (Kl/d)	2024	1186	525	166		100	153	2130
	2029	1218	566	354		113	157	2408
	2034	1299	633	606		133	167	2838
	2039	1386	710	932		156	178	3362
	2044	1481	796	1350		184	190	4002
	2049	1584	894	1885		217	204	4784
Average Peak Month Daily Demand (Kl/d)	2024	1697	750	237	-	143	218	3045
	2029	1742	809	506		162	224	3443
	2034	1857	906	867		190	239	4059
	2039	1982	1015	1332		224	255	4808
	2044	2118	1139	1930		263	272	5722
	2049	2265	1279	2696		310	291	6841
Peak Day Demand (Kl/d)	2024	2121	938	296		179	273	**3807**
	2029	2178	1011	633		202	280	**4304**
	2034	2321	1132	1084		238	299	**5073**
	2039	2478	1269	1665		279	319	**6010**
	2044	2647	1423	2413		329	340	**7153**
	2049	2831	1598	3370		388	364	**8552**
Total Annual Demand (Kl/year)	2024	433060	191559	60450		36506	55698	**777272**
	2029	444664	206525	129203		41306	57190	**878887**
	2034	474016	231163	221254		48522	60965	**1035919**
	2039	505907	259048	340077		57066	65067	**1227165**
	2044	540544	290621	492736		67190	69521	**1460613**
	2049	578154	326381	688104		79193	74359	**1746190**
Peak Month Factor[F]	**1.43**							
Peak Day Factor[G]	**1.25**							

Notes : → TO USE THIS SHEET, FILL IN THE VARIABLES IN THE SHADED BLOCKS ABOVE

References:

(A) - Projected population for 2024/2025 is based on the Census 2011 data and the estimated future population growth, as agreed with Municipality during January 2014.

(B) - Residential unit demands estimated.

(C) - Non-Revenue Water (NRW): Calculated NRW from July 2024 to June 2025. Estimated reduction in NRW of 4.9% over the next five years.

(D) - Commercial and Industrial: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 65.11 kl/d

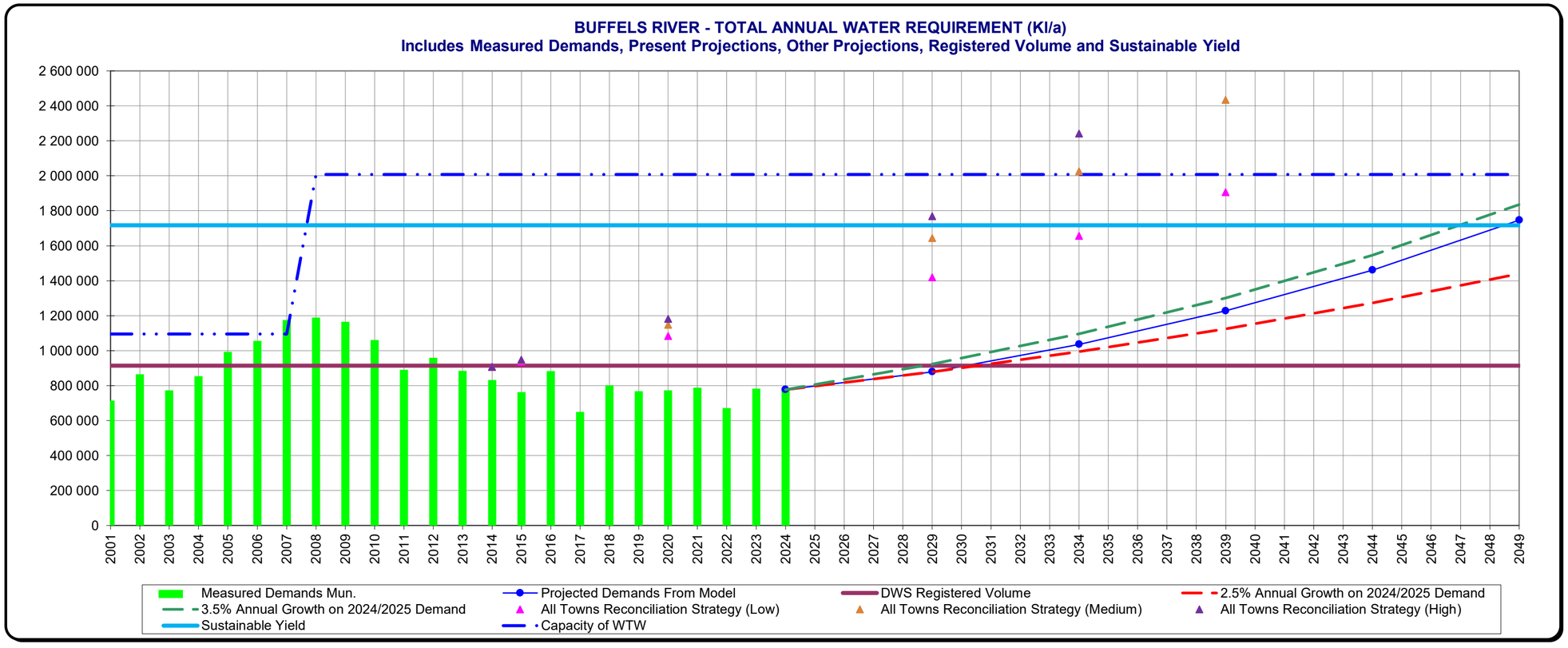
(E) - Others: Calculated from Billed Metered consumption data for the period July 2024 to June 2025 (Average 13.53 kl/d) and add holiday population usage
Holiday population usage: Average residential usage for Nov to Febr 1 412 kl/d and Mar - Oct 1151 kl/d, therefore add (261 kl/d x 120)/365= 85.81 kl/d with other users.

(F) - Peak Month Factor: Maximum value calculated from July 2020 to June 2025 data.

(G) - Peak Day Factor : Estimated

Buffels River Distribution System (Betty's Bay, Pringle Bay and Rooi Els) Annual Water Requirement (Kl/a)															
Year *	Measured raw water supplied	Projected requirements from WSDP model	Other Projections					Capacity of WTW	DWS Registered Volume (WARMS)			Sustainable Yield		
			2.5% Annual Growth on 2024/2025 Demand	3.5% Annual Growth on 2024/2025 Demand	DWS's All Towns Reconciliation Strategy (June 2015)				Buffels River Register No. 22062465 Water Supply	Disa Kloof River Register No. 22062517 Water Supply	Total	Buffels River (Lyners Report, 2011)	Disakloof Cascades	Total
					Low Projection	Medium Projection	High Projection							
2001	714 180							1 095 000	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2002	864 840							1 095 000	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2003	772 740							1 095 000	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2004	853 805							1 095 000	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2005	993 071							1 095 000	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2006	1 055 810							1 095 000	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2007	1 175 136							1 095 000	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2008	1 189 339							2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2009	1 164 946							2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2010	1 060 903							2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2011	890 129							2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2012	959 091							2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2013	884 443							2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2014	832 082				907 000	907 000	907 000	2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2015	762 669				934 000	943 000	948 000	2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2016	882 833							2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2017	649 669							2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2018	801 120							2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2019	767 993							2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2020	772 751				1 083 000	1 148 000	1 181 000	2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2021	788 232							2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2022	671 598							2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2023	782 579							2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2024	776 600	777 272	776 600	776 600				2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2029		878 887	878 652	922 357	1 418 700	1 643 900	1 768 700	2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2034		1 035 919	994 114	1 095 471	1 656 000	2 025 400	2 240 000	2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2039		1 227 165	1 124 748	1 301 076	1 906 000	2 433 400	2 747 500	2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2044		1 460 613	1 272 550	1 545 270				2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000
2049		1 746 190	1 439 773	1 835 296				2 007 500	900 000	14 000	914 000	1 600 000	117 000	1 717 000

Note (*): The years in the above table refer to the Municipal Financial Years and is for the period July till June the following year. The measured demand for 2024 is therefore from July 2024 up to June 2025.



Kleinmond Distribution System - Input Variables for Water Demand Model								
Parameter / Variable	Year	Income Categorization				Com. & Ind. [D]	Other[E]	Total
		HI	MI	LI	Sub- Total			
		Units are presented in brackets with the "Parameter Description" - First Column						
Population[A]	2024	3079	3811	2853	9742	-	-	-
	2029	3236	4208	3851	11294			
	2034	3401	4646	5046	13093			
	2039	3574	5129	6475	15178			
	2044	3756	5663	8176	17596			
	2049	3948	6253	10197	20398			
Growth (%/year)		Growth in Population				Growth in Demand		
	2024-2029	1.00%	2.00%	6.18%	3.00%	4%	5%	
	2029-2034	1.00%	2.00%	5.56%	3.00%	4%	5%	
	2034-2039	1.00%	2.00%	5.11%	3.00%	4%	5%	
	2039-2044	1.00%	2.00%	4.78%	3.00%	4%	5%	
	2044-2049	1.00%	2.00%	4.52%	3.00%	4%	5%	
Unit Demand (l/c/d)[B]	2024	200.0	150.0	70.0	-	-	-	-
Average Annual Daily Demand (Kl/d - NRW Excluded)	2024	616	572	200	-	144	152	1683
	2029	647	631	270		175	194	1917
	2034	680	697	353		213	247	2191
	2039	715	769	453		260	315	2512
	2044	751	849	572		316	403	2892
	2049	790	938	714		384	514	3339
NRW (%) [C]	2024	42.7	42.7	42.7		42.7	42.7	-
	2029	35.0	35.0	35.0		35.0	35.0	
	2034	32.5	32.5	32.5		32.5	32.5	
	2039	30.0	30.0	30.0		30.0	30.0	
	2044	27.5	27.5	27.5		27.5	27.5	
	2049	25.0	25.0	25.0		25.0	25.0	
Average Annual Daily Demand (Kl/d)	2024	1075	998	348		252	265	2937
	2029	996	971	415		270	298	2949
	2034	1008	1032	523		316	366	3246
	2039	1021	1099	647		371	451	3589
	2044	1036	1172	789		436	555	3988
	2049	1053	1251	952		512	685	4453
Average Peak Month Daily Demand (Kl/d)	2024	1354	1257	439		317	334	3701
	2029	1254	1224	522		340	375	3716
	2034	1270	1301	659		398	461	4089
	2039	1287	1385	816		467	568	4522
	2044	1306	1476	995		549	700	5025
	2049	1327	1576	1199		645	863	5610
Peak Day Demand (Kl/d)	2024	1692	1571	549		396	417	**4626**
	2029	1568	1529	653		425	469	**4645**
	2034	1587	1626	824		498	577	**5112**
	2039	1608	1731	1020		584	710	**5653**
	2044	1632	1845	1243		686	875	**6282**
	2049	1658	1970	1499		807	1079	**7013**
Total Annual Demand (Kl/year)	2024	392206	364156	127194		91804	96664	**1072025**
	2029	363382	354429	151355		98462	108756	**1076385**
	2034	367773	376826	191013		115358	133663	**1184632**
	2039	372728	401187	236326		135338	164499	**1310077**
	2044	378232	427669	288133		158981	202707	**1455723**
	2049	384275	456442	347393		186977	250088	**1625176**
Peak Month Factor[F]	**1.26**							
Peak Day Factor[G]	**1.25**							

Notes : → TO USE THIS SHEET, FILL IN THE VARIABLES IN THE SHADED BLOCKS ABOVE

References:

(A) - Projected population for 2024/2025 is based on the Census 2011 data and the estimated future population growth, as agreed with Municipality during January 2014.

(B) - Residential unit demands estimated.

(C) - Non-Revenue Water (NRW): Calculated NRW from July 2024 to June 2025. Estimated reduction in NRW of 7.7% over the next five years.

(D) - Commercial and Industrial: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 144.12 kl/d.

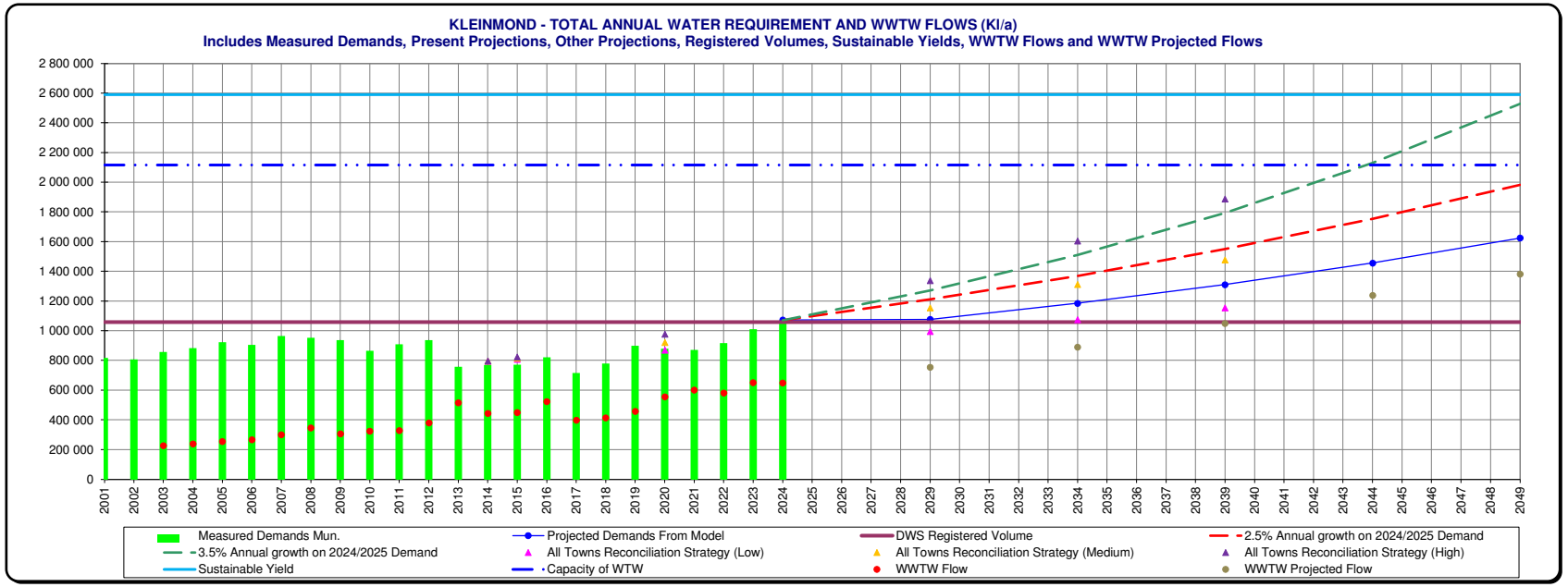
(E) - Others: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 151.75 kl/d.

(F) - Peak Month Factor: Maximum value calculated from July 2020 to June 2025 data.

(G) - Peak Day Factor : Estimated

Kleinmond Distribution System Annual Water Requirement (Kl/a)																WWTW FLOWS AND POJECTIONS (Kl/a)		
Year *	Measured raw water supplied	Projected requirements from WSDP model	Other Projections					Capacity of WTW	DWS Registered Volume (WARMS)			Sustainable Yield				Metered Annual WWTW Flow	Percentage (WWTW Flow / Raw Water Volume)	Projected WWTW Flow
			2.5% Annual growth on 2024/2025 Demand	3.5% Annual growth on 2024/2025 Demand	DWS's All Towns Reconciliation Strategy (June 2015)				Palmiet River Register No. 22062465 Water Supply	Groundwater (Die Oog) Register No. 22062526 Water Supply	Total	Palmiet River	Dorpsfontein	Borehole (Pumping 18 hours per day)	Total			
					Low Projection	Medium Projection	High Projection											
2001	816 874							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370			
2002	807 498							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370			
2003	856 727							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	226 680	26.5%	
2004	882 443							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	238 767	27.1%	
2005	922 882							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	254 548	27.6%	
2006	905 664							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	265 740	29.3%	
2007	964 719							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	299 550	31.1%	
2008	953 661							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	346 422	36.3%	
2009	936 748							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	306 129	32.7%	
2010	865 079							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	324 012	37.5%	
2011	908 556							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	327 774	36.1%	
2012	937 438							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	378 881	40.4%	
2013	757 170							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	515 015	68.0%	
2014	770 268				795 000	795 000	795 000	2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	443 495	57.6%	
2015	772 220				807 000	815 000	823 000	2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	450 218	58.3%	
2016	820 956							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	522 470	63.6%	
2017	716 358							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	397 727	55.5%	
2018	779 610							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	412 483	52.9%	
2019	898 489							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	458 086	51.0%	
2020	880 390				869 000	922 000	977 000	2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	554 671	63.0%	
2021	871 522							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	601 483	69.0%	
2022	918 124							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	580 603	63.2%	
2023	1 010 616							2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	650 381	64.4%	
2024	1 069 747	1 072 025	1 069 747	1 069 747				2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370	648 231	60.6%	
2029		1 076 385	1 210 321	1 270 524	995 000	1 154 200	1 337 900	2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370		70.0%	753 469
2034		1 184 632	1 369 367	1 508 984	1 073 800	1 312 400	1 604 400	2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370		75.0%	888 474
2039		1 310 077	1 549 313	1 792 199	1 154 800	1 477 900	1 887 400	2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370		80.0%	1 048 062
2044		1 455 723	1 752 905	2 128 571				2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370		85.0%	1 237 364
2049		1 625 176	1 983 251	2 528 074				2 117 000	949 000	110 000	1 059 000	2 247 000	58 400	283 970	2 589 370		85.0%	1 381 399

Note (*): The years in the above table refer to the Municipal Financial Years and is for the period July till June the following year. The measured demand for 2024 is therefore from July 2024 up to June 2025.



Greater Hermanus - Input Variables for Water Demand Model								
Parameter / Variable	**Year**	**Income Categorization**				Com. & Ind. [(D)]	Other[(E)]	Total
		HI	MI	LI	Sub- Total			
		Units are presented in brackets with the "Parameter Description" - First Column						
Population[(A)]	2024	31381	41662	20939	93983	-	-	-
	2029	34647	48298	39886	122831			
	2034	38253	55991	66292	160536			
	2039	42234	64909	102671	209814			
	2044	46630	75247	152341	274218			
	2049	51483	87232	219677	358392			
Growth (%/year)		Growth in Population				Growth in Demand		
	2024-2029	2.00%	3.00%	13.76%	5.50%	3%	5%	
	2029-2034	2.00%	3.00%	10.69%	5.50%	3%	5%	
	2034-2039	2.00%	3.00%	9.14%	5.50%	3%	5%	
	2039-2044	2.00%	3.00%	8.21%	5.50%	3%	5%	
	2044-2049	2.00%	3.00%	7.60%	5.50%	3%	5%	
Unit Demand (l/c/d)[(B)]	2024	125.0	95.0	65.0	-	-	-	-
Average Annual Daily Demand (Kl/d - NRW Excluded)	2024	3923	3958	1361		1017	509	10767
	2029	4331	4588	2593		1179	650	13340
	2034	4782	5319	4309		1366	829	16605
	2039	5279	6166	6674		1584	1058	20762
	2044	5829	7148	9902		1836	1351	26066
	2049	6435	8287	14279		2129	1724	32854
NRW (%) [(C)]	2024	27.0	27.0	27.0		27.0	27.0	-
	2029	25.0	25.0	25.0		25.0	25.0	
	2034	22.5	22.5	22.5		22.5	22.5	
	2039	20.0	20.0	20.0		20.0	20.0	
	2044	17.5	17.5	17.5		17.5	17.5	
	2049	15.0	15.0	15.0		15.0	15.0	
Average Annual Daily Demand (Kl/d)	2024	5373	5422	1864		1393	697	14750
	2029	5774	6118	3457		1572	866	17787
	2034	6170	6863	5560		1763	1070	21426
	2039	6599	7708	8342		1980	1323	25952
	2044	7065	8665	12003		2226	1637	31596
	2049	7571	9749	16799		2504	2028	38652
Average Peak Month Daily Demand (Kl/d)	2024	6878	6940	2387	-	1783	893	18880
	2029	7391	7831	4425		2012	1109	22767
	2034	7897	8785	7117		2257	1369	27426
	2039	8447	9866	10678		2534	1693	33218
	2044	9043	11091	15363		2849	2096	40442
	2049	9691	12479	21502		3206	2596	49474
Peak Day Demand (Kl/d)	2024	8597	8675	2983		2228	1116	**23600**
	2029	9239	9788	5531		2514	1386	**28459**
	2034	9872	10981	8896		2821	1712	**34282**
	2039	10559	12333	13347		3168	2117	**41523**
	2044	11304	13864	19204		3561	2619	**50553**
	2049	12114	15599	26878		4007	3245	**61843**
Total Annual Demand (Kl/year)	2024	1961298	1978967	680528		508365	254520	**5383678**
	2029	2107687	2232987	1261737		573619	316177	**6492206**
	2034	2251990	2505140	2029388		643530	390514	**7820562**
	2039	2408680	2813389	3044827		722715	482830	**9472441**
	2044	2578790	3162656	4380959		812436	597554	**11532394**
	2049	2763452	3558550	6131570		914135	740216	**14107922**
Peak Month Factor[(F)]		**1.28**						
Peak Day Factor[(G)]		**1.25**						

Notes : → TO USE THIS SHEET, FILL IN THE VARIABLES IN THE SHADED BLOCKS ABOVE

References:

(A) - Projected population for 2024/2025 is based on the Census 2011 data and the estimated future population growth, as agreed with Municipality during January 2014.

(B) - Residential unit demands estimated.

(C) - Non-Revenue Water (NRW): Calculated NRW from July 2024 to June 2025. Estimated reduction in NRW of 2.0% over the next five years.

(D) - Commercial and Industrial: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 1016.73 kl/d.

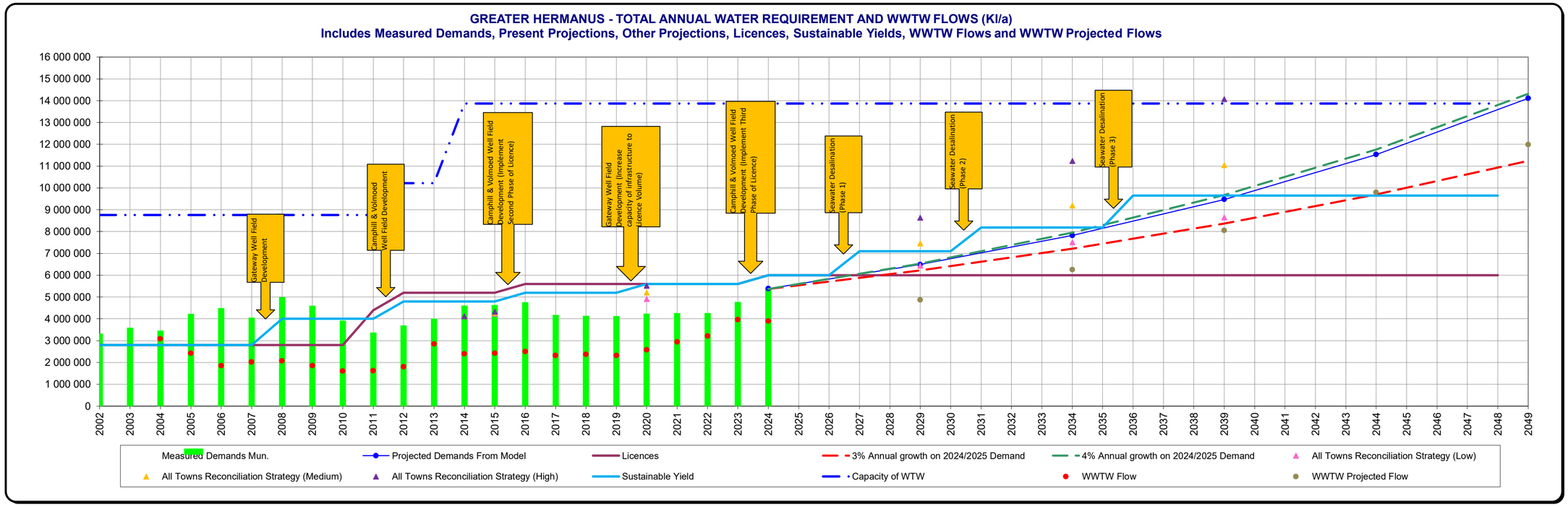
(E) - Others: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 509.04 kl/d.

(F) - Peak Month Factor: Maximum value calculated from July 2020 to June 2025 data.

(G) - Peak Day Factor : Estimated

Hermanus Distribution System Annual Water Requirement (Kl/a)																	WWTW FLOWS AND POJECTIONS (Kl/a)		
Year *	Measured raw water supplied	Projected requirements from WSDP model	Other Projections					Capacity of WTW	Licences				Sustainable Yield					Metered Annual WWTW Flow	Percentage (WWTW Flow / Raw Water Volume)	Projected WWTW Flow
			3% Annual growth on 2024/2025 Demand	4% Annual growth on 2024/2025 Demand	DWS's All Towns Reconciliation Strategy (June 2015)				Onrus River Register No. 22062198 Water Supply	Gateway Well Field (Licence 18/G40H/A/1035)	Camphill and Volmoed Well Fields (Licence 18/G40H/A/2377)	Total	De Bos Dam	Gateway Well Field	Camphill and Volmoed Well Fields	Seawater Desalination	Total			
					Low Projection	Medium Projection	High Projection													
2002	3 329 031							8 760 000	2 800 000			2 800 000	2 800 000				2 800 000		0.0%	
2003	3 595 524							8 760 000	2 800 000			2 800 000	2 800 000				2 800 000		0.0%	
2004	3 465 753							8 760 000	2 800 000			2 800 000	2 800 000				2 800 000	3 085 696	89.0%	
2005	4 230 487							8 760 000	2 800 000			2 800 000	2 800 000				2 800 000	2 425 830	57.3%	
2006	4 493 666							8 760 000	2 800 000			2 800 000	2 800 000				2 800 000	1 861 639	41.4%	
2007	4 058 465							8 760 000	2 800 000			2 800 000	2 800 000				2 800 000	2 024 855	49.9%	
2008	4 996 163							8 760 000	2 800 000			2 800 000	2 800 000	1 200 000			4 000 000	2 069 817	41.4%	
2009	4 604 446							8 760 000	2 800 000			2 800 000	2 800 000	1 200 000			4 000 000	1 855 011	40.3%	
2010	3 921 834							8 760 000	2 800 000			2 800 000	2 800 000	1 200 000			4 000 000	1 609 934	41.1%	
2011	3 375 238							10 220 000	2 800 000	1 600 000		4 400 000	2 800 000	1 200 000			4 000 000	1 625 285	48.2%	
2012	3 698 894							10 220 000	2 800 000	1 600 000	800 000	5 200 000	2 800 000	1 200 000	800 000		4 800 000	1 797 630	48.6%	
2013	4 012 029							10 220 000	2 800 000	1 600 000	800 000	5 200 000	2 800 000	1 200 000	800 000		4 800 000	2 855 750	71.2%	
2014	4 611 987				4 115 000	4 115 000	4 115 000	13 870 000	2 800 000	1 600 000	800 000	5 200 000	2 800 000	1 200 000	800 000		4 800 000	2 398 259	52.0%	
2015	4 636 164				4 238 000	4 280 000	4 321 000	13 870 000	2 800 000	1 600 000	800 000	5 200 000	2 800 000	1 200 000	800 000		4 800 000	2 428 713	52.4%	
2016	4 765 620							13 870 000	2 800 000	1 600 000	1 200 000	5 600 000	2 800 000	1 200 000	1 200 000		5 200 000	2 500 178	52.5%	
2017	4 182 703							13 870 000	2 800 000	1 600 000	1 200 000	5 600 000	2 800 000	1 200 000	1 200 000		5 200 000	2 317 952	55.4%	
2018	4 141 553							13 870 000	2 800 000	1 600 000	1 200 000	5 600 000	2 800 000	1 200 000	1 200 000		5 200 000	2 372 416	57.3%	
2019	4 128 705							13 870 000	2 800 000	1 600 000	1 200 000	5 600 000	2 800 000	1 200 000	1 200 000		5 200 000	2 314 986	56.1%	
2020	4 242 199				4 914 000	5 207 000	5 515 000	13 870 000	2 800 000	1 600 000	1 200 000	5 600 000	2 800 000	1 600 000	1 200 000		5 600 000	2 579 566	60.8%	
2021	4 265 761							13 870 000	2 800 000	1 600 000	1 200 000	5 600 000	2 800 000	1 600 000	1 200 000		5 600 000	2 936 829	68.8%	
2022	4 267 244							13 870 000	2 800 000	1 600 000	1 200 000	5 600 000	2 800 000	1 600 000	1 200 000		5 600 000	3 212 685	75.3%	
2023	4 776 898							13 870 000	2 800 000	1 600 000	1 200 000	5 600 000	2 800 000	1 600 000	1 200 000		5 600 000	3 958 614	82.9%	
2024	5 369 338	5 383 678	5 369 338	5 369 338				13 870 000	2 800 000	1 600 000	1 600 000	6 000 000	2 800 000	1 600 000	1 600 000		6 000 000	3 895 703	72.6%	
2029		6 492 206	6 224 534	6 532 621	6 434 100	7 457 000	8 636 200	13 870 000	2 800 000	1 600 000	1 600 000	6 000 000	2 800 000	1 600 000	1 600 000		6 000 000		75.0%	4 869 155
2034		7 820 562	7 215 941	7 947 932	7 511 400	9 187 800	11 242 600	13 870 000	2 800 000	1 600 000	1 600 000	6 000 000	2 800 000	1 600 000	1 600 000	1 095 000	7 095 000		80.0%	6 256 449
2039		9 472 441	8 365 254	9 669 874	8 646 900	11 038 800	14 067 100	13 870 000	2 800 000	1 600 000	1 600 000	6 000 000	2 800 000	1 600 000	1 600 000	2 190 000	8 190 000		85.0%	8 051 575
2044		11 532 394	9 697 622	11 764 881				13 870 000	2 800 000	1 600 000	1 600 000	6 000 000	2 800 000	1 600 000	1 600 000	3 650 000	9 650 000		85.0%	9 802 535
2049		14 107 922	11 242 201	14 313 776				13 870 000	2 800 000	1 600 000	1 600 000	6 000 000	2 800 000	1 600 000	1 600 000	3 650 000	9 650 000		85.0%	11 991 733

Note (*): The years in the above table refer to the Municipal Financial Years and is for the period July till June the following year. The measured demand for 2024 is therefore from July 2024 up to June 2025.



Stanford - Input Variables for Water Demand Model								
Parameter / Variable	**Year**	**Income Categorization**				Com. & Ind. [D]	Other[E]	Total
		HI	MI	LI	Sub- Total			
		Units are presented in brackets with the "Parameter Description" - First Column						
Population[A]	2024	1288	4866	2347	8501	-	-	-
	2029	1354	5920	3320	10594			
	2034	1423	7203	4576	13202			
	2039	1495	8764	6193	16452			
	2044	1572	10662	8269	20503			
	2049	1652	12972	10926	25550			
Growth (%/year)		Growth in Population				Growth in Demand		
	2024-2029	1.00%	4.00%	7.18%	4.50%	2%	5%	
	2029-2034	1.00%	4.00%	6.63%	4.50%	2%	5%	
	2034-2039	1.00%	4.00%	6.24%	4.50%	2%	5%	
	2039-2044	1.00%	4.00%	5.95%	4.50%	2%	5%	
	2044-2049	1.00%	4.00%	5.73%	4.50%	2%	5%	
Unit Demand (l/c/d)[B]	2024	165.0	115.0	70.0	-	-	-	-
Average Annual Daily Demand (Kl/d - NRW Excluded)	2024	213	560	164		75	10	1021
	2029	223	681	232		82	13	1232
	2034	235	828	320		91	16	1491
	2039	247	1008	434		100	21	1809
	2044	259	1226	579		111	26	2202
	2049	273	1492	765		122	34	2685
NRW (%) [C]	2024	40.9	40.9	40.9		40.9	40.9	-
	2029	35.0	35.0	35.0		35.0	35.0	
	2034	30.0	30.0	30.0		30.0	30.0	
	2039	25.0	25.0	25.0		25.0	25.0	
	2044	20.0	20.0	20.0		20.0	20.0	
	2049	15.0	15.0	15.0		15.0	15.0	
Average Annual Daily Demand (Kl/d)	2024	360	947	278		126	17	1728
	2029	344	1047	358		127	20	1895
	2034	335	1183	458		130	23	2129
	2039	329	1344	578		134	28	2412
	2044	324	1533	724		139	33	2752
	2049	321	1755	900		144	40	3159
Average Peak Month Daily Demand (Kl/d)	2024	475	1250	367	-	167	22	2280
	2029	454	1383	472		167	26	2501
	2034	443	1562	604		171	31	2811
	2039	434	1774	763		177	36	3184
	2044	428	2023	955		183	44	3633
	2049	423	2317	1188		190	52	4170
Peak Day Demand (Kl/d)	2024	593	1562	459		208	28	**2850**
	2029	567	1728	590		209	32	**3126**
	2034	553	1953	755		214	38	**3514**
	2039	543	2217	954		221	46	**3980**
	2044	535	2529	1194		229	55	**4541**
	2049	529	2896	1485		238	65	**5213**
Total Annual Demand (Kl/year)	2024	131245	345608	101473		46060	6151	**630539**
	2029	125419	382318	130505		46238	7138	**691619**
	2034	122401	431924	167040		47404	8460	**777229**
	2039	120069	490468	210990		48849	10077	**880453**
	2044	118306	559434	264084		50563	12057	**1004444**
	2049	117027	640599	328421		52541	14483	**1153072**
Peak Month Factor[F]	**1.32**							
Peak Day Factor[G]	**1.25**							

Notes : → TO USE THIS SHEET, FILL IN THE VARIABLES IN THE SHADED BLOCKS ABOVE

References:

(A) - Projected population for 2024/2025 is based on the Census 2011 data and the estimated future population growth, as agreed with Municipality during January 2014.

(B) - Residential unit demands estimated.

(C) - Non-Revenue Water (NRW): Calculated NRW from July 2024 to June 2025. Estimated reduction in NRW of 5.9% over the next five years.

(D) - Commercial and Industrial: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 74.58 kl/d.

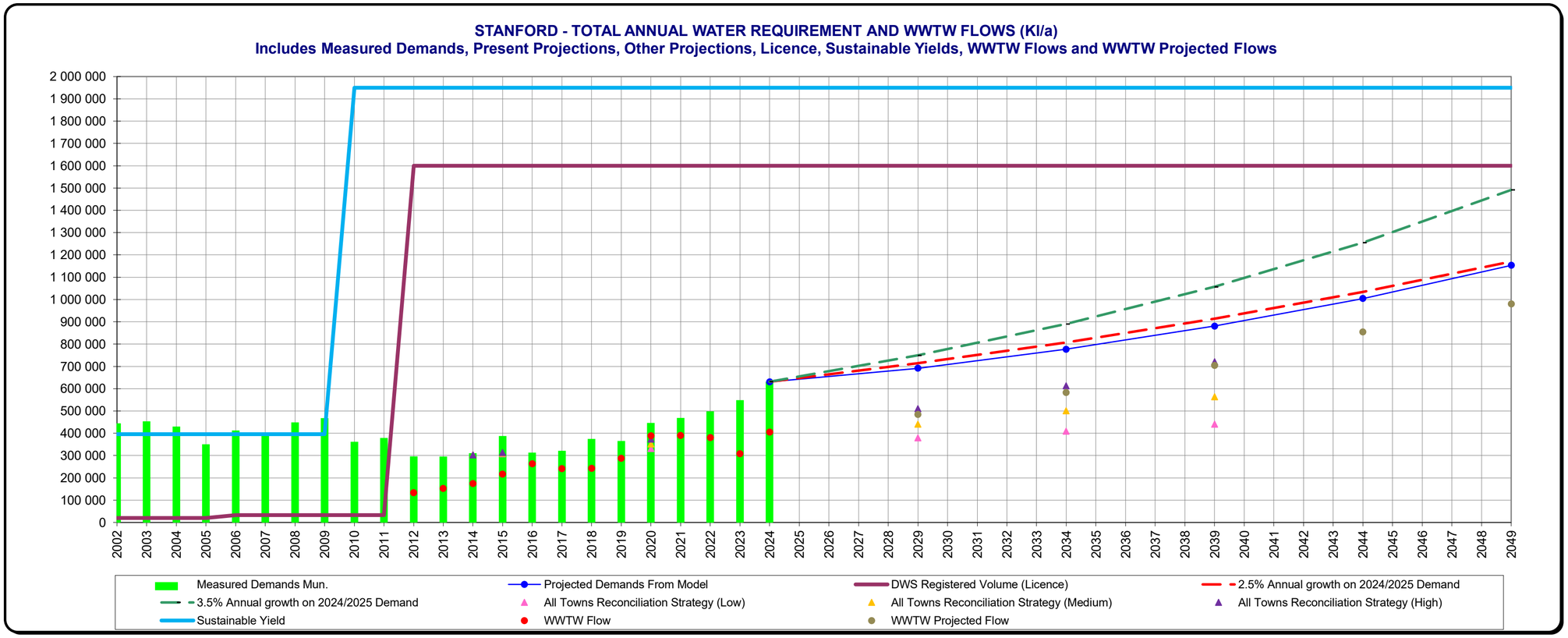
(E) - Others: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 9.96 kl/d.

(F) - Peak Month Factor: Maximum value calculated from July 2020 to June 2025 data.

(G) - Peak Day Factor : Estimated

Stanford Distribution System Annual Water Requirement (Kl/a)														WWTW FLOWS AND POJECTIONS (Kl/a)		
Year *	Measured raw water supplied	Projected requirements from WSDP model	Other Projection					Registered Volume (WARMS)				Sustainable Yield			Metered Annual WWTW Flow	Percentage (WWTW Flow / Raw Water Volume)	Projected WWTW Flow
			2.5% Annual growth on 2024/2025 Demand	3.5% Annual growth on 2024/2025 Demand	DWS's All Towns Reconciliation Strategy (June 2015)			Groundwater (Die Oog) Register No. 22062269 Water Supply	Groundwater (Die Oog) Register No. 22062269 Industry (Urban)	Kouevlakte Boreholes (KVE01 & KVE02)	Total	Kouevlakte Exploration Boreholes (KVE01 & KVE02)	Stanford Spring	Total			
					Low Projection	Medium Projection	High Projection										
2002	444 563							20 000			20 000		396 000	396 000			
2003	453 580							20 000			20 000		396 000	396 000			
2004	430 203							20 000			20 000		396 000	396 000			
2005	350 630							20 000			20 000		396 000	396 000			
2006	412 552							20 000	13 455		33 455		396 000	396 000			
2007	398 800							20 000	13 455		33 455		396 000	396 000			
2008	448 820							20 000	13 455		33 455		396 000	396 000			
2009	467 953							20 000	13 455		33 455		396 000	396 000			
2010	361 810							20 000	13 455		33 455	1 554 000	396 000	1 950 000			
2011	379 130							20 000	13 455		33 455	1 554 000	396 000	1 950 000			
2012	296 392							1 600 000			1 600 000	1 554 000	396 000	1 950 000	133 719	45.1%	
2013	295 818							1 600 000			1 600 000	1 554 000	396 000	1 950 000	152 873	51.7%	
2014	310 787				303 000	303 000	303 000	1 600 000			1 600 000	1 554 000	396 000	1 950 000	174 717	56.2%	
2015	387 777				308 000	311 000	314 000	1 600 000			1 600 000	1 554 000	396 000	1 950 000	216 501	55.8%	
2016	313 302							1 600 000			1 600 000	1 554 000	396 000	1 950 000	263 147	84.0%	
2017	321 479							1 600 000			1 600 000	1 554 000	396 000	1 950 000	241 796	75.2%	
2018	374 810							1 600 000			1 600 000	1 554 000	396 000	1 950 000	242 546	64.7%	
2019	365 453							1 600 000			1 600 000	1 554 000	396 000	1 950 000	287 228	78.6%	
2020	446 512				332 000	352 000	373 000	1 600 000			1 600 000	1 554 000	396 000	1 950 000	388 477	87.0%	
2021	468 903							1 600 000			1 600 000	1 554 000	396 000	1 950 000	390 670	83.3%	
2022	498 341							1 600 000			1 600 000	1 554 000	396 000	1 950 000	380 449	76.3%	
2023	548 595							1 600 000			1 600 000	1 554 000	396 000	1 950 000	308 789	56.3%	
2024	631 166	630 539	631 166	631 166				1 600 000			1 600 000	1 554 000	396 000	1 950 000	404 529	64.1%	
2029		691 619	714 106	749 627	379 700	440 200	510 700	1 600 000			1 600 000	1 554 000	396 000	1 950 000		70.0%	484 133
2034		777 229	807 946	890 322	409 800	500 400	612 400	1 600 000			1 600 000	1 554 000	396 000	1 950 000		75.0%	582 922
2039		880 453	914 117	1 057 423	440 800	563 400	720 400	1 600 000			1 600 000	1 554 000	396 000	1 950 000		80.0%	704 362
2044		1 004 444	1 034 239	1 255 887				1 600 000			1 600 000	1 554 000	396 000	1 950 000		85.0%	853 777
2049		1 153 072	1 170 146	1 491 600				1 600 000			1 600 000	1 554 000	396 000	1 950 000		85.0%	980 111

Note *: The years in the above table refer to the Municipal Financial Years and is for the period July till June the following year. The measured demand for 2024 is therefore from July 2024 up to June 2025.



Greater Gansbaai - Input Variables for Water Demand Model								
Parameter / Variable	**Year**	**Income Categorization**				Com. & Ind. [D]	Other[E]	Total
		HI	MI	LI	Sub- Total			
		Units are presented in brackets with the "Parameter Description" - First Column						
Population[A]	2024	6941	12917	6860	26718	-	-	-
	2029	7663	15715	11537	34915			
	2034	8460	19120	18053	45633			
	2039	9341	23262	27037	59640			
	2044	10313	28302	39332	77948			
	2049	11387	34434	56054	101874			
Growth (%/year)		Growth in Population				Growth in Demand		
	2024-2029	2.00%	4.00%	10.96%	5.50%	2%	2%	
	2029-2034	2.00%	4.00%	9.37%	5.50%	2%	2%	
	2034-2039	2.00%	4.00%	8.41%	5.50%	2%	2%	
	2039-2044	2.00%	4.00%	7.78%	5.50%	2%	2%	
	2044-2049	2.00%	4.00%	7.34%	5.50%	2%	2%	
Unit Demand (l/c/d)[B]	2024	140.0	100.0	60.0	-	-	-	-
Average Annual Daily Demand (Kl/d - NRW Excluded)	2024	972	1292	412		500	221	3397
	2029	1073	1572	692		555	244	4136
	2034	1184	1912	1083		616	270	5065
	2039	1308	2326	1622		684	298	6237
	2044	1444	2830	2360		758	329	7721
	2049	1594	3443	3363		841	363	9605
NRW (%) [C]	2024	31.7	31.7	31.7		31.7	31.7	-
	2029	25.0	25.0	25.0		25.0	25.0	
	2034	22.5	22.5	22.5		22.5	22.5	
	2039	20.0	20.0	20.0		20.0	20.0	
	2044	17.5	17.5	17.5		17.5	17.5	
	2049	15.0	15.0	15.0		15.0	15.0	
Average Annual Daily Demand (Kl/d)	2024	1423	1891	603		733	324	4973
	2029	1430	2095	923		740	326	5515
	2034	1528	2467	1398		795	348	6536
	2039	1635	2908	2028		854	372	7797
	2044	1750	3431	2861		919	398	9359
	2049	1875	4051	3957		990	427	11300
Average Peak Month Daily Demand (Kl/d)	2024	1750	2326	741	-	901	398	6117
	2029	1759	2577	1135		911	400	6783
	2034	1880	3034	1719		978	428	8039
	2039	2011	3577	2494		1051	458	9590
	2044	2153	4220	3518		1131	490	11511
	2049	2307	4983	4867		1218	525	13899
Peak Day Demand (Kl/d)	2024	2187	2908	927		1127	498	**7646**
	2029	2199	3222	1419		1138	501	**8479**
	2034	2350	3793	2149		1222	535	**10049**
	2039	2513	4471	3118		1314	572	**11988**
	2044	2691	5274	4398		1413	612	**14389**
	2049	2884	6228	6084		1522	656	**17374**
Total Annual Demand (Kl/year)	2024	519270	690275	219974		267465	118189	**1815174**
	2029	522099	764801	336890		270244	118834	**2012867**
	2034	557845	900481	510133		290164	126970	**2385593**
	2039	596659	1061336	740143		311878	135804	**2845820**
	2044	638797	1252148	1044095		335544	145395	**3415980**
	2049	684540	1478623	1444216		361337	155806	**4124523**
Peak Month Factor[F]	**1.23**							
Peak Day Factor[G]	**1.25**							

Notes : → TO USE THIS SHEET, FILL IN THE VARIABLES IN THE SHADED BLOCKS ABOVE

References:

(A) - Projected population for 2024/2025 is based on the Census 2011 data and the estimated future population growth, as agreed with Municipality during January 2014.

(B) - Residential unit demands estimated.

(C) - Non-Revenue Water (NRW): Calculated NRW from July 2024 to June 2025. Estimated reduction in NRW of 6.7% over the next five years.

(D) - Commercial and Industrial: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 500.49 kl/d.

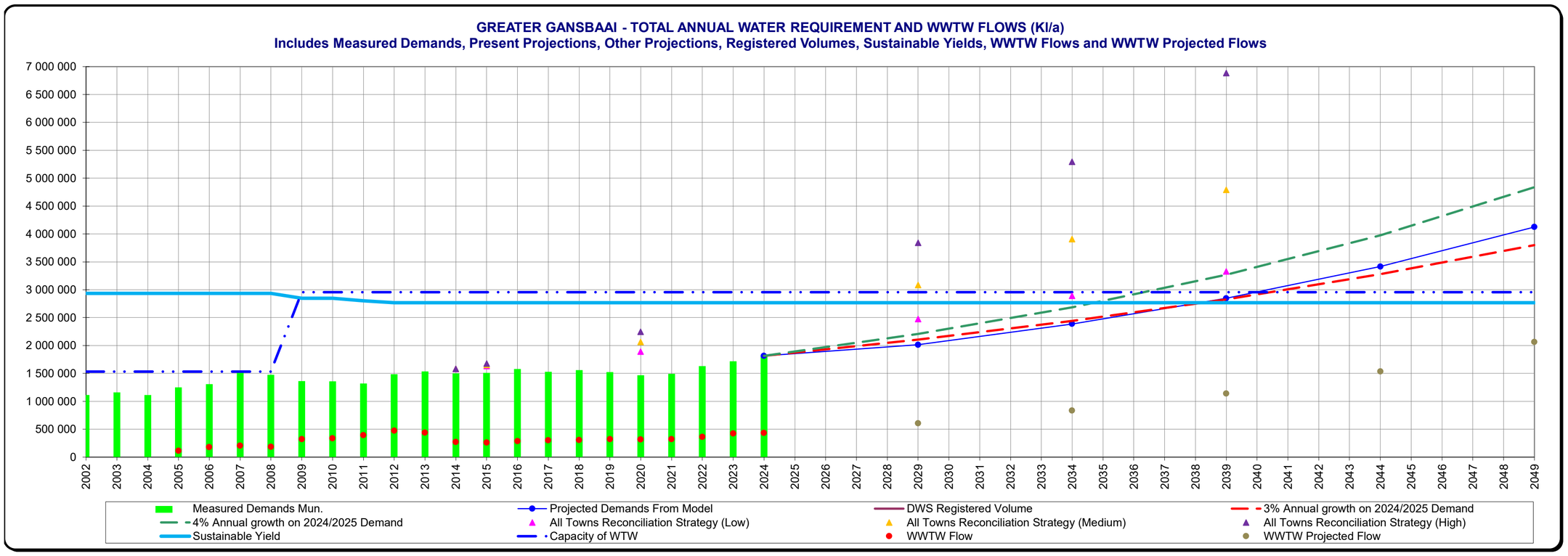
(E) - Others: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 221.16 kl/d.

(F) - Peak Month Factor: Maximum value calculated from July 2020 to June 2025 data.

(G) - Peak Day Factor : Estimated

Greater Gansbaai Distribution System Annual Water Requirement (Kl/a)																		WWTW FLOWS AND POJECTIONS (Kl/a)		
Year *	Measured raw water supplied	Projected requirements from WSDP model	Other Projections					Capacity of WTW	DWS Registered Volume (WARMS)		Sustainable Yields								Metered Annual WWTW Flow	Percentage (WWTW Flow / Raw Water Volume)	Projected WWTW Flow
			3% Annual growth on 2024/2025 Demand	4% Annual growth on 2024/2025 Demand	DWS's All Towns Reconciliation Strategy (June 2015)						Franskraal Dam	Kraaibosch Dam	Klipgat Spring	De Kelders Spring	Stanfords Bay Spring	Perlemoen Bay Spring	Klipfontein Borehole	Total			
					Low Projection	Medium Projection	High Projection														
2002	1 113 975							1 533 000			135 000	2 000 000	480 411	152 570	35 149	43 644	88 501	2 935 275			
2003	1 160 549							1 533 000			135 000	2 000 000	480 411	152 570	35 149	43 644	88 501	2 935 275			
2004	1 112 828							1 533 000			135 000	2 000 000	480 411	152 570	35 149	43 644	88 501	2 935 275			
2005	1 250 689							1 533 000			135 000	2 000 000	480 411	152 570	35 149	43 644	88 501	2 935 275	114 513		
2006	1 308 292							1 533 000			135 000	2 000 000	480 411	152 570	35 149	43 644	88 501	2 935 275	180 882		
2007	1 540 652							1 533 000			135 000	2 000 000	480 411	152 570	35 149	43 644	88 501	2 935 275	204 692		
2008	1 475 743							1 533 000			135 000	2 000 000	480 411	152 570	35 149	43 644	88 501	2 935 275	185 389		
2009	1 362 847							2 956 500			135 000	2 000 000	480 411	152 570	35 149	43 644		2 846 774	322 526		
2010	1 358 985							2 956 500			135 000	2 000 000	480 411	152 570	35 149	43 644		2 846 774	336 282		
2011	1 320 178							2 956 500			135 000	2 000 000	480 411	152 570	35 149			2 803 130	389 985		
2012	1 486 216							2 956 500			135 000	2 000 000	480 411	152 570				2 767 981	472 390	31.8%	
2013	1 535 945							2 956 500			135 000	2 000 000	480 411	152 570				2 767 981	439 450	28.6%	
2014	1 501 361				1 582 000	1 582 000	1 582 000	2 956 500			135 000	2 000 000	480 411	152 570				2 767 981	272 453	18.1%	
2015	1 511 060				1 630 000	1 654 000	1 677 000	2 956 500			135 000	2 000 000	480 411	152 570				2 767 981	259 063	17.1%	
2016	1 579 802							2 956 500			135 000	2 000 000	480 411	152 570				2 767 981	285 258	18.1%	
2017	1 529 544							2 956 500			135 000	2 000 000	480 411	152 570				2 767 981	300 253	19.6%	
2018	1 559 727							2 956 500			135 000	2 000 000	480 411	152 570				2 767 981	304 848	19.5%	
2019	1 524 604							2 956 500			135 000	2 000 000	480 411	152 570				2 767 981	319 058	20.9%	
2020	1 467 816				1 889 000	2 061 000	2 245 000	2 956 500			135 000	2 000 000	480 411	152 570				2 767 981	313 684	21.4%	
2021	1 492 845							2 956 500			135 000	2 000 000	480 411	152 570				2 767 981	320 462	21.5%	
2022	1 631 362							2 956 500			135 000	2 000 000	480 411	152 570				2 767 981	363 738	22.3%	
2023	1 718 103							2 956 500			135 000	2 000 000	480 411	152 570				2 767 981	422 836	24.6%	
2024	1 815 037	1 815 174	1 815 037	1 815 037				2 956 500			135 000	2 000 000	480 411	152 570				2 767 981	433 268	23.9%	
2029		2 012 867	2 104 125	2 208 270	2 474 000	3 086 100	3 842 500	2 956 500			135 000	2 000 000	480 411	152 570				2 767 981		30.0%	603 860
2034		2 385 593	2 439 258	2 686 698	2 888 600	3 908 000	5 291 600	2 956 500			135 000	2 000 000	480 411	152 570				2 767 981		35.0%	834 957
2039		2 845 820	2 827 769	3 268 779	3 325 600	4 793 000	6 881 100	2 956 500			135 000	2 000 000	480 411	152 570				2 767 981		40.0%	1 138 328
2044		3 415 980	3 278 159	3 976 970				2 956 500			135 000	2 000 000	480 411	152 570				2 767 981		45.0%	1 537 191
2049		4 124 523	3 800 284	4 838 592				2 956 500			135 000	2 000 000	480 411	152 570				2 767 981		50.0%	2 062 261

Note (*): The years in the above table refer to the Municipal Financial Years and is for the period July till June the following year. The measured demand for 2024 is therefore from July 2024 up to June 2025.



Pearly Beach - Input Variables for Water Demand Model								
Parameter / Variable	**Year**	**Income Categorization**				Com. & Ind. [D]	Other[E]	Total
		HI	MI	LI	Sub- Total			
		Units are presented in brackets with the "Parameter Description" - First Column						
Population[A]	2024	408	866	949	2223	-	-	-
	2029	450	1054	1470	2974			
	2034	497	1282	2201	3980			
	2039	549	1560	3218	5326			
	2044	606	1898	4624	7128			
	2049	669	2309	6561	9539			
Growth (%/year)		Growth in Population				Growth in Demand		
	2024-2029	2.00%	4.00%	9.16%	6.00%	2%	2%	
	2029-2034	2.00%	4.00%	8.40%	6.00%	2%	2%	
	2034-2039	2.00%	4.00%	7.89%	6.00%	2%	2%	
	2039-2044	2.00%	4.00%	7.52%	6.00%	2%	2%	
	2044-2049	2.00%	4.00%	7.25%	6.00%	2%	2%	
Unit Demand (l/c/d)[B]	2024	240.0	190.0	80.0	-	-	-	-
Average Annual Daily Demand (Kl/d - NRW Excluded)	2024	98	165	76		7	41	386
	2029	108	200	118		7	46	479
	2034	119	244	176		8	50	598
	2039	132	296	257		9	56	750
	2044	145	361	370		10	61	947
	2049	161	439	525		11	68	1203
NRW (%) [C]	2024	25.8	25.8	25.8		25.8	25.8	-
	2029	20.0	20.0	20.0		20.0	20.0	
	2034	18.8	18.8	18.8		18.8	18.8	
	2039	17.5	17.5	17.5		17.5	17.5	
	2044	16.3	16.3	16.3		16.3	16.3	
	2049	15.0	15.0	15.0		15.0	15.0	
Average Annual Daily Demand (Kl/d)	2024	132	222	102		9	56	521
	2029	135	250	147		9	57	599
	2034	147	300	217		10	62	735
	2039	160	359	312		11	67	909
	2044	174	431	442		12	73	1131
	2049	189	516	617		13	80	1415
Average Peak Month Daily Demand (Kl/d)	2024	215	362	167	-	15	91	849
	2029	220	408	240		15	93	976
	2034	239	489	353		17	101	1199
	2039	260	586	509		18	110	1482
	2044	283	702	720		20	119	1844
	2049	308	841	1006		21	130	2307
Peak Day Demand (Kl/d)	2024	269	452	208		19	113	**1061**
	2029	275	510	300		19	116	**1220**
	2034	299	611	442		21	126	**1499**
	2039	325	732	636		22	137	**1853**
	2044	354	877	900		24	149	**2305**
	2049	385	1052	1258		27	162	**2884**
Total Annual Demand (Kl/year)	2024	48148	80950	37329		3325	20326	**190079**
	2029	49305	91348	53662		3405	20814	**218535**
	2034	53600	109429	79100		3702	22627	**268457**
	2039	58282	131119	113886		4025	24604	**331916**
	2044	63387	157146	161223		4378	26759	**412893**
	2049	68956	188380	225380		4762	29110	**516588**
Peak Month Factor[F]	**1.63**							
Peak Day Factor[G]	**1.25**							

Notes : → TO USE THIS SHEET, FILL IN THE VARIABLES IN THE SHADED BLOCKS ABOVE

References:

(A) - Projected population for 2024/2025 is based on the Census 2011 data and the estimated future population growth, as agreed with Municipality during January 2014.

(B) - Residential unit demands estimated.

(C) - Non-Revenue Water (NRW): Calculated NRW from July 2024 to June 2025. Estimated reduction in NRW of 5.8% over the next five years.

(D) - Commercial and Industrial: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 6.76 kl/d.

(E) - Others: Calculated from Billed Metered consumption data for the period July 2024 to June 2025 (Average 0.82 kl/d) and add holiday population usage

Holiday population usage: Average residential usage for Nov to Febr 404.12 kl/d and Mar - Oct 280.93 kl/d, therefore add (123.19 kl/d x 120)/365= 40.50 kl/d with other users.

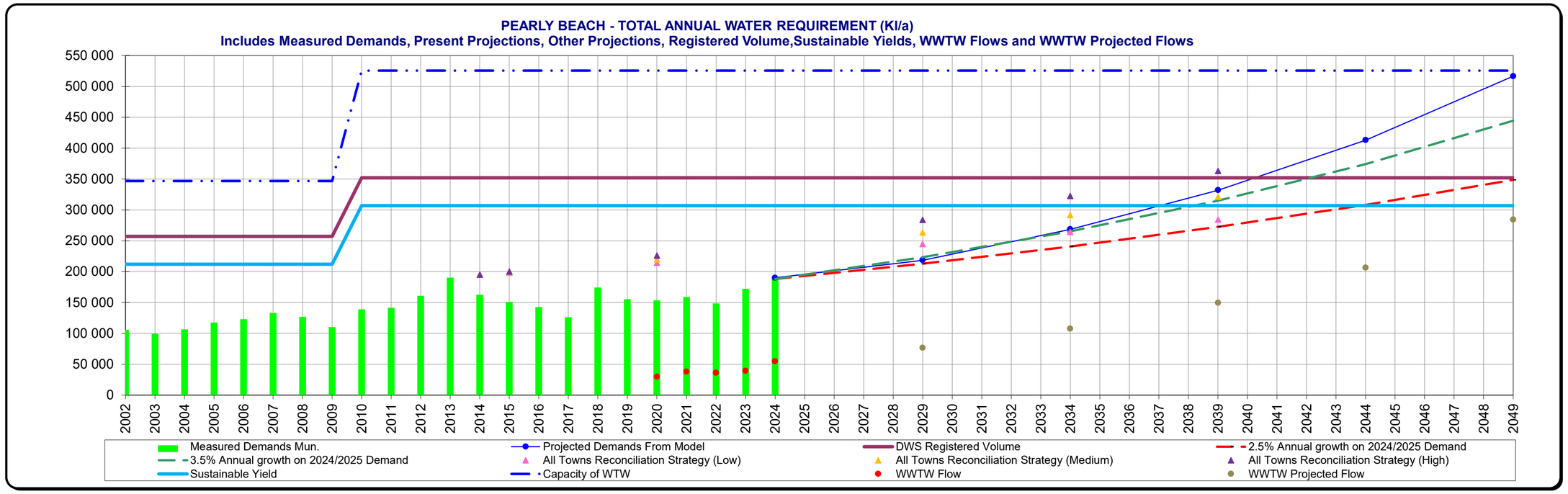
(F) - Peak Month Factor: Maximum value calculated from July 2020 to June 2025 data.

(G) - Peak Day Factor : Estimated

Pearly Beach Distribution System Annual Water Requirement (Kl/a)															WWTW FLOWS AND POJECTIONS (Kl/a)		
Year *	Measured raw water supplied	Projected requirements from WSDP model	Other Projection					Capacity of WTW	DWS Registered Volume (WARMS)			Sustainable Yields			Metered Annual WWTW Flow	Percentage (WWTW Flow / Raw Water Volume)	Projected WWTW Flow
			2.5% Annual growth on 2024/2025 Demand	3.5% Annual growth on 2024/2025 Demand	DWS's All Towns Reconciliation Strategy (June 2015)				Koekemoer Dam Agreement	Seven Boreholes (**)	Total	Koekemoer Dam Agreement	Seven Springs feeding Pearly Beach Dam	Total			
					Low Projection	Medium Projection	High Projection										
2002	105 683							346 750		257 070	257 070		212 000	212 000			
2003	99 201							346 750		257 070	257 070		212 000	212 000			
2004	106 451							346 750		257 070	257 070		212 000	212 000			
2005	117 653							346 750		257 070	257 070		212 000	212 000			
2006	122 981							346 750		257 070	257 070		212 000	212 000			
2007	133 059							346 750		257 070	257 070		212 000	212 000			
2008	126 760							346 750		257 070	257 070		212 000	212 000			
2009	110 198							346 750		257 070	257 070		212 000	212 000			
2010	138 969							525 600	94 900	257 070	351 970	94 900	212 000	306 900			
2011	141 542							525 600	94 900	257 070	351 970	94 900	212 000	306 900			
2012	160 831							525 600	94 900	257 070	351 970	94 900	212 000	306 900			
2013	190 304							525 600	94 900	257 070	351 970	94 900	212 000	306 900			
2014	162 746				195 000	195 000	195 000	525 600	94 900	257 070	351 970	94 900	212 000	306 900			
2015	150 919				198 000	199 000	200 000	525 600	94 900	257 070	351 970	94 900	212 000	306 900			
2016	142 581							525 600	94 900	257 070	351 970	94 900	212 000	306 900			
2017	126 233							525 600	94 900	257 070	351 970	94 900	212 000	306 900			
2018	174 354							525 600	94 900	257 070	351 970	94 900	212 000	306 900			
2019	155 368							525 600	94 900	257 070	351 970	94 900	212 000	306 900			
2020	153 406				214 000	220 000	226 000	525 600	94 900	257 070	351 970	94 900	212 000	306 900	29 531	19.3%	
2021	158 837							525 600	94 900	257 070	351 970	94 900	212 000	306 900	37 775	23.8%	
2022	148 586							525 600	94 900	257 070	351 970	94 900	212 000	306 900	35 947	24.2%	
2023	172 150							525 600	94 900	257 070	351 970	94 900	212 000	306 900	39 168	22.8%	
2024	188 066	190 079	188 066	188 066				525 600	94 900	257 070	351 970	94 900	212 000	306 900	54 824	29.2%	
2029		218 535	212 779	223 363	244 600	263 200	283 600	525 600	94 900	257 070	351 970	94 900	212 000	306 900		35.0%	76 487
2034		268 457	240 740	265 286	264 000	291 600	322 400	525 600	94 900	257 070	351 970	94 900	212 000	306 900		40.0%	107 383
2039		331 916	272 376	315 076	284 000	321 100	362 900	525 600	94 900	257 070	351 970	94 900	212 000	306 900		45.0%	149 362
2044		412 893	308 168	374 212				525 600	94 900	257 070	351 970	94 900	212 000	306 900		50.0%	206 447
2049		516 588	348 664	444 446				525 600	94 900	257 070	351 970	94 900	212 000	306 900		55.0%	284 124

Note (*): The years in the above table refer to the Municipal Financial Years and is for the period July till June the following year. The measured demand for 2024 is therefore from July 2024 up to June 2025.

(**) Pearly Beach is registered according to the WARMS database for abstraction from seven production boreholes, each with a different registration number. It is assumed that these abstractions rates refer to the seven springs feeding the Pearly Beach Dam (DWS's Reconciliation Strategy)



Baardskeerdersbos - Input Variables for Water Demand Model								
Parameter / Variable	Year	Income Categorization				Com. & Ind. [D]	Other[E]	Total
		HI	MI	LI	Sub- Total			
		Units are presented in brackets with the "Parameter Description" - First Column						
Population[A]	2024	5	77	27	110	-	-	-
	2029	6	78	29	113			
	2034	6	79	31	116			
	2039	6	80	33	118			
	2044	6	81	35	121			
	2049	6	82	37	124			
Growth (%/year)		Growth in Population				Growth in Demand		
	2024-2029	0.25%	0.25%	1.24%	0.50%	5%	2%	
	2029-2034	0.25%	0.25%	1.20%	0.50%	5%	2%	
	2034-2039	0.25%	0.25%	1.17%	0.50%	5%	2%	
	2039-2044	0.25%	0.25%	1.14%	0.50%	5%	2%	
	2044-2049	0.25%	0.25%	1.11%	0.50%	5%	2%	
Unit Demand (l/c/d)[B]	2024	360.0	320.0	170.0	-	-	-	-
Average Annual Daily Demand (Kl/d - NRW Excluded)	2024	2	25	5		1.0	6.6	39
	2029	2	25	5		1.2	7.2	40
	2034	2	25	5		1.6	8.0	42
	2039	2	26	6		2.0	8.8	44
	2044	2	26	6		2.6	9.7	46
	2049	2	26	6		3.3	10.7	49
NRW (%) [C]	2024	34.7	34.7	34.7		34.7	34.7	-
	2029	30.0	30.0	30.0		30.0	30.0	
	2034	30.0	30.0	30.0		30.0	30.0	
	2039	30.0	30.0	30.0		30.0	30.0	
	2044	30.0	30.0	30.0		30.0	30.0	
	2049	30.0	30.0	30.0		30.0	30.0	
Average Annual Daily Demand (Kl/d)	2024	3	38	7		1	10	59
	2029	3	36	7		2	10	58
	2034	3	36	8		2	11	60
	2039	3	37	8		3	13	63
	2044	3	37	8		4	14	66
	2049	3	37	9	-	5	15	69
Average Peak Month Daily Demand (Kl/d)	2024	5	58	11		2	15	91
	2029	4	55	11		3	16	89
	2034	4	56	12		3	18	93
	2039	5	56	12		4	19	97
	2044	5	57	13		6	21	102
	2049	5	58	14		7	24	107
Peak Day Demand (Kl/d)	2024	6	73	14		3	19	**114**
	2029	6	69	14		3	20	**111**
	2034	6	69	14		4	22	**116**
	2039	6	70	15		6	24	**121**
	2044	6	71	16		7	27	**127**
	2049	6	72	17		9	30	**134**
Total Annual Demand (Kl/year)	2024	1106	13760	2611		542	3661	**21680**
	2029	1044	12998	2590		646	3771	**21048**
	2034	1058	13161	2749		824	4163	**21954**
	2039	1071	13326	2913		1051	4597	**22958**
	2044	1084	13494	3083		1342	5075	**24078**
	2049	1098	13663	3259		1713	5603	**25336**
Peak Month Factor[F]	**1.54**							
Peak Day Factor[G]	**1.25**							

Notes : → TO USE THIS SHEET, FILL IN THE VARIABLES IN THE SHADED BLOCKS ABOVE

References:

(A) - Projected population for 2024/2025 is based on the Census 2011 data and the estimated future population growth, as agreed with Municipality during January 2014.

(B) - Residential unit demands estimated.

(C) - Non-Revenue Water (NRW): Calculated NRW from July 2024 to June 2025. Estimated reduction in NRW of 4.7% over the next five years.

(D) - Commercial and Industrial: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 0.97 kl/d.

(E) - Others: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 0.04 kl/d and add holiday population usage
Holiday population usage: Average residential usage for Nov to Febr 44.93 kl/d and Mar - Oct 25.13 kl/d, therefore add (19.8 kl/d x 120)/365= 6.51 kl/d with other users.

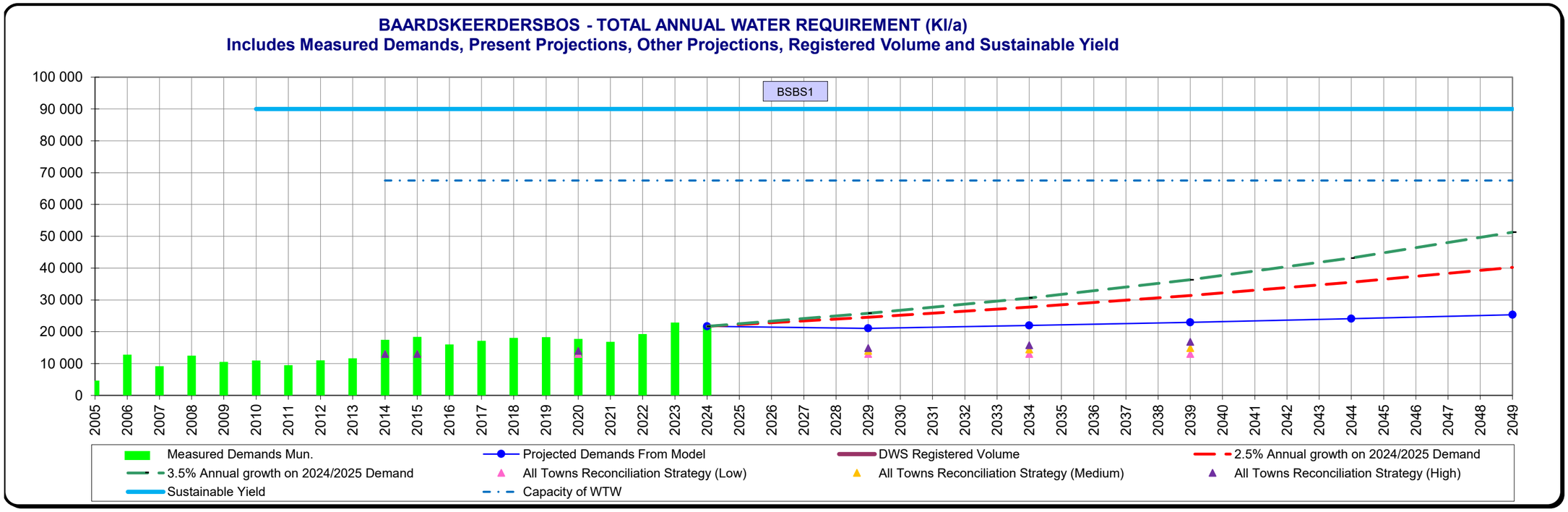
(F) - Peak Month Factor: Maximum value calculated from July 2020 to June 2025 data.

(G) - Peak Day Factor : Estimated

Baardskeerdersbos Distribution System Annual Water Requirement (Kl/a)												
Year *	Measured raw water supplied	Projected requirements from WSDP model	Other Projection					Capacity of WTW	DWS Registered Volume (WARMS)	Sustainable Yield		
			2.5% Annual growth on 2024/2025 Demand	3.5% Annual growth on 2024/2025 Demand	DWS's All Towns Reconciliation Strategy (June 2015)					Boskloof Stream **	BSBS1 (8.7 l/s over 8 hrs/d)	Total
					Low Projection	Medium Projection	High Projection					
2002										315 360		315 360
2003										315 360		315 360
2004										315 360		315 360
2005	4 642									315 360		315 360
2006	12 795									315 360		315 360
2007	9 173									315 360		315 360
2008	12 489									315 360		315 360
2009	10 531									315 360		315 360
2010	10 954									315 360	90 000	405 360
2011	9 495									315 360	90 000	405 360
2012	11 019									315 360	90 000	405 360
2013	11 652									315 360	90 000	405 360
2014	17 466				13 000	13 000	13 000	67 525			90 000	90 000
2015	18 380				13 000	13 000	13 000	67 525			90 000	90 000
2016	16 019							67 525			90 000	90 000
2017	17 154							67 525			90 000	90 000
2018	18 077							67 525			90 000	90 000
2019	18 311							67 525			90 000	90 000
2020	17 741				13 000	14 000	14 000	67 525			90 000	90 000
2021	16 838							67 525			90 000	90 000
2022	19 274							67 525			90 000	90 000
2023	22 888							67 525			90 000	90 000
2024	21 695	21 680	21 695	21 695				67 525			90 000	90 000
2029		21 048	24 546	25 767	13 000	14 000	14 900	67 525			90 000	90 000
2034		21 954	27 771	30 603	13 000	14 400	15 800	67 525			90 000	90 000
2039		22 958	31 421	36 347	13 000	14 900	16 800	67 525			90 000	90 000
2044		24 078	35 550	43 168				67 525			90 000	90 000
2049		25 336	40 221	51 271				67 525			90 000	90 000

Note (*): The years in the above table refer to the Municipal Financial Years and is for the period July till June the following year. The measured demand for 2024 is therefore from July 2024 up to June 2025.

(**) The demand of the town cannot be met during the summer months, due to the low flow of the stream. New borehole was commissioned in 2013



Buffeljags Bay - Input Variables for Water Demand Model								
Parameter / Variable	**Year**	**Income Categorization**				Com. & Ind. (D)	Other[E]	Total
		HI	MI	LI	Sub- Total			
		Units are presented in brackets with the "Parameter Description" - First Column						
Population[A]	2024	32	44	2	77	-	-	-
	2029	32	44	3	79			
	2034	33	45	4	81			
	2039	33	45	5	83			
	2044	33	46	6	86			
	2049	34	46	7	88			
Growth (%/year)		Growth in Population				Growth in Demand		
	2024-2029	0.25%	0.25%	8.57%	0.50%	2%	5%	
	2029-2034	0.25%	0.25%	6.18%	0.50%	2%	5%	
	2034-2039	0.25%	0.25%	4.87%	0.50%	2%	5%	
	2039-2044	0.25%	0.25%	4.05%	0.50%	2%	5%	
	2044-2049	0.25%	0.25%	3.48%	0.50%	2%	5%	
Unit Demand (l/c/d)[B]	2024	115.0	75.0	40.0	-	-	-	-
Average Annual Daily Demand (Kl/d - NRW Excluded)	2024	4	3	0		0.0	0.0	7
	2029	4	3	0		0.0	0.0	7
	2034	4	3	0		0.0	0.0	7
	2039	4	3	0		0.0	0.0	7
	2044	4	3	0		0.0	0.0	8
	2049	4	3	0		0.0	0.0	8
NRW (%) [C]	2024	68.2	68.2	68.2		68.2	68.2	-
	2029	60.0	60.0	60.0		60.0	60.0	
	2034	50.0	50.0	50.0		50.0	50.0	
	2039	40.0	40.0	40.0		40.0	40.0	
	2044	30.0	30.0	30.0		30.0	30.0	
	2049	20.0	20.0	20.0		20.0	20.0	
Average Annual Daily Demand (Kl/d)	2024	11	10	0		0	0	22
	2029	9	8	0		0	0	18
	2034	7	7	0		0	0	15
	2039	6	6	0		0	0	12
	2044	5	5	0		0	0	11
	2049	5	4	0		0	0	10
Average Peak Month Daily Demand (Kl/d)	2024	16	15	0	-	0	0	31
	2029	13	12	0		0	0	25
	2034	11	9	0		0	0	20
	2039	9	8	0		0	0	17
	2044	8	7	1		0	0	15
	2049	7	6	1		0	0	14
Peak Day Demand (Kl/d)	2024	20	18	0		0	0	**39**
	2029	16	15	1		0	0	**31**
	2034	13	12	1		0	0	**26**
	2039	11	10	1		0	0	**22**
	2044	10	9	1		0	0	**19**
	2049	9	8	1		0	0	**17**
Total Annual Demand (Kl/year)	2024	4192	3758	91		0	0	**8041**
	2029	3374	3026	109		0	0	**6509**
	2034	2733	2451	118		0	0	**5302**
	2039	2306	2068	124		0	0	**4499**
	2044	2002	1795	130		0	0	**3927**
	2049	1774	1590	135		0	0	**3499**
Peak Month Factor[F]	**1.41**							
Peak Day Factor[G]	**1.25**							

Notes : → TO USE THIS SHEET, FILL IN THE VARIABLES IN THE SHADED BLOCKS ABOVE

References:

(A) - Projected population for 2024/2025 is based on the Census 2011 data and the estimated future population growth, as agreed with Municipality during January 2014.

(B) - Residential unit demands estimated.

(C) - Non-Revenue Water (NRW): Calculated NRW from July 2024 to June 2025. Estimated reduction in NRW of 8.2% over the next five years.

(D) - Commercial and Industrial: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 0 kl/d.

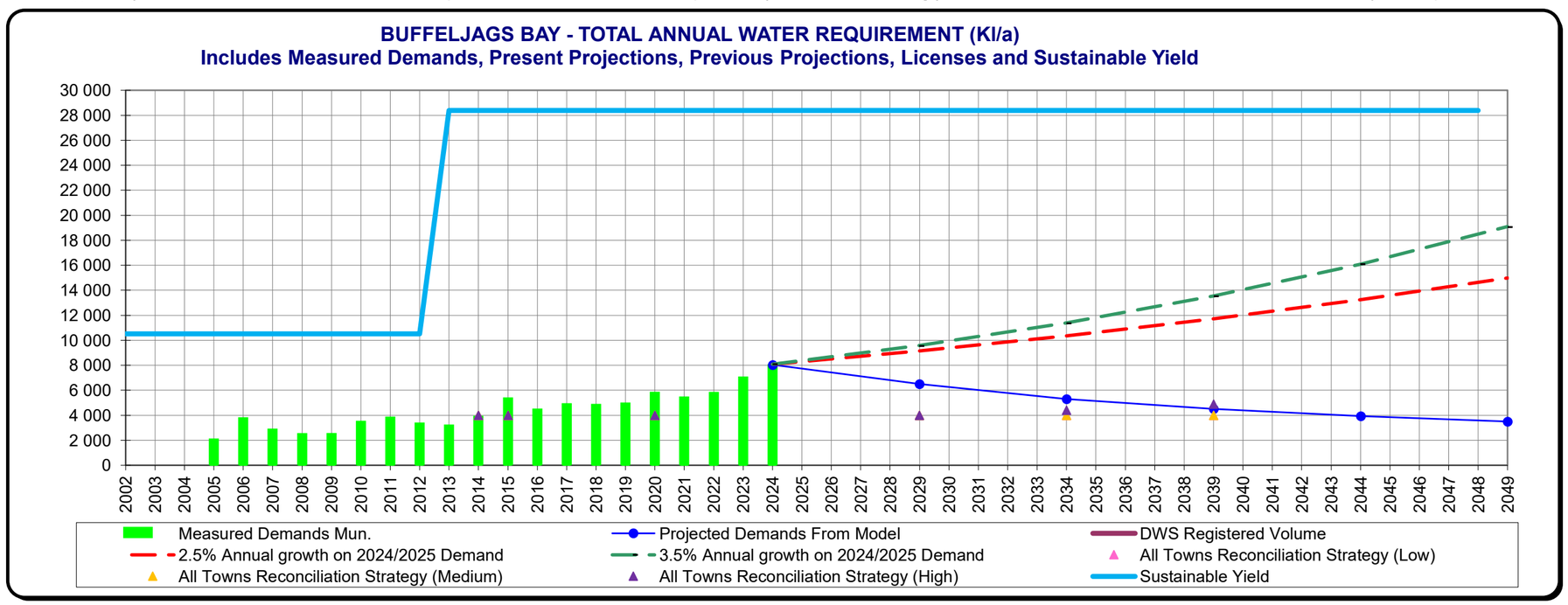
(E) - Others: Calculated from Billed Metered consumption data for the period July 2024 to June 2025. Average 0 kl/d.

(F) - Peak Month Factor: Maximum value calculated from July 2020 to June 2025 data.

(G) - Peak Day Factor : Estimated

Buffeljags Bay Distribution System Annual Water Requirement (Kl/a)											
Year *	Measured raw water supplied	Projected requirements from WSDP model	Other Projection					DWS Registered Volume (WARMS)	Sustainable Yield		
			2.5% Annual growth on 2024/2025 Demand	3.5% Annual growth on 2024/2025 Demand	DWS's All Towns Reconciliation Strategy (June 2015)				BJS1 (1 l/s over 8 hrs/d cycle)	BJB3 (0.9l/s over 24 hrs/d cycle)	Total
					Low Projection	Medium Projection	High Projection				
2002									10 512		10 512
2003									10 512		10 512
2004									10 512		10 512
2005	2 142								10 512		10 512
2006	3 841								10 512		10 512
2007	2 933								10 512		10 512
2008	2 572								10 512		10 512
2009	2 582								10 512		10 512
2010	3 560								10 512		10 512
2011	3 895								10 512		10 512
2012	3 418								10 512		10 512
2013	3 258									28 382	28 382
2014	3 962				4 000	4 000	4 000			28 382	28 382
2015	5 427				4 000	4 000	4 000			28 382	28 382
2016	4 533									28 382	28 382
2017	4 966									28 382	28 382
2018	4 912									28 382	28 382
2019	5 019									28 382	28 382
2020	5 879				4 000	4 000	4 000			28 382	28 382
2021	5 504									28 382	28 382
2022	5 872									28 383	28 383
2023	7 100									28 383	28 383
2024	8 080	8 041	8 080	8 080						28 382	28 382
2029		6 509	9 142	9 597	4 000	4 000	4 000			28 382	28 382
2034		5 302	10 343	11 398	4 000	4 000	4 400			28 382	28 382
2039		4 499	11 702	13 537	4 000	4 000	4 900			28 382	28 382
2044		3 927	13 240	16 077						28 382	28 382
2049		3 499	14 980	19 095						28 382	28 382

Note (*): The years in the above table refer to the Municipal Financial Years and is for the period July till June the following year. The measured demand for 2024 is therefore from July 2024 up to June 2025.



ANNEXURE D

Water Quality Compliance Sample Results for 2024/2025

Final Effluent Quality Compliance Sample Results for 2024/2025

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Buffels River			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	133	122	91.7%	Good	P	Yes	**7.02**
Conductivity	mS/m	Aesthetic	≤ 170	67	67	100.0%	Excellent	P/N	Yes	**12.01**
Turbidity	NTU	Operational	≤ 1	158	122	77.2%	**Unacceptable**	P/R	**No**	**0.78**
		Aesthetic	≤ 5	158	158	100.0%	Excellent	P/R	Yes	**0.78**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	112	111	99.1%	Excellent	R	Yes	**10.17**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	112	112	100.0%	Excellent	N	Yes	**23.74**
		Aesthetic	≤ 300	112	112	100.0%	Excellent	R	Yes	**23.74**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	63	63	100.0%	Excellent	N	Yes	**19.99**
		Aesthetic	≤ 100	63	63	100.0%	Excellent	R	Yes	**19.99**
Aluminium (as Al)	ug/L	Operational	≤ 300	126	122	96.8%	Excellent	N	Yes	**116.62**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	150	150	100.0%	Excellent	P	Yes	**0.00**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	83	79	95.2%	Excellent	N	Yes	**1.61**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	152	150	98.7%	Excellent	P	Yes	**93.86**
Free Chlorine	mg/L	Chronic Health	≤ 5	149	148	99.3%	Excellent	P/N	Yes	**0.64**
Total Hardness (as $CaCO_3$)			-	13						**12.68**
Calcium Hardness (as CaCO3)			-	13						**5.72**
Magnesium Hardness (as CaCO3)			-	13						**7.28**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	2	2	100.0%	Excellent	N	Yes	**82.00**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	2	2	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	2	2	100.0%	Excellent	R	Yes	**30.25**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	2	2	100.0%	Excellent	R	Yes	**0.08**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	2	2	100.0%	Excellent	R	Yes	**0.32**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	2	2	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	2	2	100.0%	Excellent	R	Yes	**0.02**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	2	2	100.0%	Excellent	N	Yes	**14.45**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	2	2	100.0%	Excellent	N	Yes	**4.11**
		Aesthetic	≤ 250	2	2	100.0%	Excellent	N	Yes	**4.11**
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	2	2	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	2	2	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	2	2	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	2	2	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	2	2	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	2	2	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	2	2	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	2	2	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	2	2	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	2	2	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	2	2	100.0%	Excellent	N	Yes	**25.50**
Bromoform	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Chloroform	ug/L	Chronic Health	≤ 300	2	2	100.0%	Excellent	N	Yes	**27.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	2	2	100.0%	Excellent	N	Yes	**0.40**
Microcystins	µg/L	Chronic Health	≤ 1	2	2	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	2	2	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**0.55**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Total Chlorine	mg/L		-	0						
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	154	154	100.0%	**Excellent**
Acute Health Chemical	10	10	100.0%	**Excellent**
Chronic Health	366	365	99.7%	**Excellent**
Aesthetic	526	525	99.8%	**Excellent**
Operational Efficiency	654	597	91.3%	**Good**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Buffels River WTW			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	26	25	96.2%	Excellent	P	Yes	**6.27**
Conductivity	mS/m	Aesthetic	≤ 170	14	14	100.0%	Excellent	P/N	Yes	**11.82**
Turbidity	NTU	Operational	≤ 1	31	25	80.6%	**Unacceptable**	P/R	**No**	**0.72**
		Aesthetic	≤ 5	31	31	100.0%	Excellent	P/R	Yes	**0.72**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	14	14	100.0%	Excellent	R	Yes	**10.00**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	15	15	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 300	15	15	100.0%	Excellent	R	Yes	**20.00**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	2	2	100.0%	Excellent	N	Yes	**24.60**
		Aesthetic	≤ 100	2	2	100.0%	Excellent	R	Yes	**24.60**
Aluminium (as Al)	ug/L	Operational	≤ 300	25	25	100.0%	Excellent	N	Yes	**56.54**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	52	52	100.0%	Excellent	P	Yes	**0.00**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	15	15	100.0%	Excellent	N	Yes	**0.07**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	52	52	100.0%	Excellent	P	Yes	**4.10**
Free Chlorine	mg/L	Chronic Health	≤ 5	52	51	98.1%	Excellent	P/N	Yes	**1.42**
Total Hardness (as $CaCO_3$)			-	13						**12.68**
Calcium Hardness (as CaCO3)			-	13						**5.72**
Magnesium Hardness (as CaCO3)			-	13						**7.28**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	1	1	100.0%	Excellent	N	Yes	**79.00**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	1	1	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	1	1	100.0%	Excellent	R	Yes	**30.50**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	1	1	100.0%	Excellent	R	Yes	**0.08**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	1	1	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	1	1	100.0%	Excellent	R	Yes	**0.45**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	1	1	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	1	1	100.0%	Excellent	R	Yes	**0.03**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	1	1	100.0%	Excellent	N	Yes	**14.20**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	1	1	100.0%	Excellent	N	Yes	**4.04**
		Aesthetic	≤ 250	1	1	100.0%	Excellent	N	Yes	**4.04**
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	1	1	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	1	1	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	1	1	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	1	1	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	1	1	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	1	1	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	1	1	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	1	1	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	1	1	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	1	1	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	1	1	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	1	1	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	1	1	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	1	1	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	1	1	100.0%	Excellent	N	Yes	**31.00**
Bromoform	ug/L	Chronic Health	≤ 100	1	1	100.0%	Excellent	N	Yes	**20.00**
Chloroform	ug/L	Chronic Health	≤ 300	1	1	100.0%	Excellent	N	Yes	**34.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	1	1	100.0%	Excellent	N	Yes	**20.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	1	1	100.0%	Excellent	N	Yes	**0.80**
Microcystins	µg/L	Chronic Health	≤ 1	1	1	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	1	1	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	1	1	100.0%	Excellent	N	Yes	**0.50**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Total Chlorine	mg/L		-	0						
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	54	54	100.0%	**Excellent**
Acute Health Chemical	5	5	100.0%	**Excellent**
Chronic Health	90	89	98.9%	**Excellent**
Aesthetic	83	83	100.0%	**Excellent**
Operational Efficiency	150	143	95.3%	**Excellent**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Kleinmond			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	75	72	96.0%	Excellent	P	Yes	**6.73**
Conductivity	mS/m	Aesthetic	≤ 170	41	41	100.0%	Excellent	P/N	Yes	**13.13**
Turbidity	NTU	Operational	≤ 1	76	74	97.4%	Excellent	P/R	**Yes**	**0.47**
		Aesthetic	≤ 5	76	75	98.7%	Excellent	P/R	Yes	**0.47**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	41	41	100.0%	Excellent	R	Yes	**10.00**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	15	15	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 300	15	15	100.0%	Excellent	R	Yes	**20.00**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	2	2	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 100	2	2	100.0%	Excellent	R	Yes	**20.00**
Aluminium (as Al)	ug/L	Operational	≤ 300	74	74	100.0%	Excellent	N	Yes	**29.46**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	99	99	100.0%	Excellent	P	Yes	**0.00**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	42	42	100.0%	Excellent	N	Yes	**0.12**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	99	99	100.0%	Excellent	P	Yes	**6.28**
Free Chlorine	mg/L	Chronic Health	≤ 5	96	96	100.0%	Excellent	P/N	Yes	**0.61**
Total Hardness (as $CaCO_3$)			-	13						**20.95**
Calcium Hardness (as CaCO3)			-	13						**9.54**
Magnesium Hardness (as CaCO3)			-	13						**11.42**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	2	2	100.0%	Excellent	N	Yes	**99.50**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	2	2	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	2	2	100.0%	Excellent	R	Yes	**32.25**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	2	2	100.0%	Excellent	R	Yes	**0.12**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	2	2	100.0%	Excellent	R	Yes	**0.31**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	2	2	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	2	2	100.0%	Excellent	R	Yes	**0.02**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	2	2	100.0%	Excellent	N	Yes	**16.65**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	2	2	100.0%	Excellent	N	Yes	**4.16**
		Aesthetic	≤ 250	2	2	100.0%	Excellent	N	Yes	
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	2	2	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	2	2	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	2	2	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	2	2	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	2	2	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	2	2	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	2	2	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	2	2	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	2	2	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	2	2	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	2	2	100.0%	Excellent	N	Yes	**22.50**
Bromoform	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Chloroform	ug/L	Chronic Health	≤ 300	2	2	100.0%	Excellent	N	Yes	**20.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**29.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	2	2	100.0%	Excellent	N	Yes	**0.75**
Microcystins	µg/L	Chronic Health	≤ 1	2	2	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	2	2	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**0.85**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Total Chlorine	mg/L		-	0						
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	103	103	100.0%	**Excellent**
Acute Health Chemical	10	10	100.0%	**Excellent**
Chronic Health	155	155	100.0%	**Excellent**
Aesthetic	189	188	99.5%	**Excellent**
Operational Efficiency	368	363	98.6%	**Excellent**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Kleinmond WTW			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	26	24	92.3%	Good	P	Yes	**6.50**
Conductivity	mS/m	Aesthetic	≤ 170	14	14	100.0%	Excellent	P/N	Yes	**13.16**
Turbidity	NTU	Operational	≤ 1	25	25	100.0%	Excellent	P/R	Yes	**0.33**
		Aesthetic	≤ 5	25	25	100.0%	Excellent	P/R	Yes	**0.33**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	14	14	100.0%	Excellent	R	Yes	**10.00**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	14	14	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 300	14	14	100.0%	Excellent	R	Yes	**20.00**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	1	1	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 100	1	1	100.0%	Excellent	R	Yes	**20.00**
Aluminium (as Al)	ug/L	Operational	≤ 300	25	25	100.0%	Excellent	N	Yes	**25.74**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	50	50	100.0%	Excellent	P	Yes	**0.00**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	15	15	100.0%	Excellent	N	Yes	**0.00**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	50	50	100.0%	Excellent	P	Yes	**1.26**
Free Chlorine	mg/L	Chronic Health	≤ 5	48	48	100.0%	Excellent	P/N	Yes	**0.98**
Total Hardness (as $CaCO_3$)			-	13						**20.95**
Calcium Hardness (as CaCO3)			-	13						**9.54**
Magnesium Hardness (as CaCO3)			-	13						**11.42**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	1	1	100.0%	Excellent	N	Yes	**90.00**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	1	1	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	1	1	100.0%	Excellent	R	Yes	**32.30**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	1	1	100.0%	Excellent	R	Yes	**0.11**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	1	1	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	1	1	100.0%	Excellent	R	Yes	**0.51**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	1	1	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	1	1	100.0%	Excellent	R	Yes	**0.03**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	1	1	100.0%	Excellent	N	Yes	**13.00**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	1	1	100.0%	Excellent	N	Yes	**4.26**
		Aesthetic	≤ 250	1	1	100.0%	Excellent	N	Yes	
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	1	1	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	1	1	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	1	1	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	1	1	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	1	1	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	1	1	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	1	1	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	1	1	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	1	1	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	1	1	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	1	1	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	1	1	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	1	1	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	1	1	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	1	1	100.0%	Excellent	N	Yes	**24.00**
Bromoform	ug/L	Chronic Health	≤ 100	1	1	100.0%	Excellent	N	Yes	**20.00**
Chloroform	ug/L	Chronic Health	≤ 300	1	1	100.0%	Excellent	N	Yes	**20.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	1	1	100.0%	Excellent	N	Yes	**30.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	1	1	100.0%	Excellent	N	Yes	**0.80**
Microcystins	µg/L	Chronic Health	≤ 1	1	1	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	1	1	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	1	1	100.0%	Excellent	N	Yes	**0.60**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Total Chlorine	mg/L		-	0						
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	52	52	100.0%	**Excellent**
Acute Health Chemical	5	5	100.0%	**Excellent**
Chronic Health	84	84	100.0%	**Excellent**
Aesthetic	75	75	100.0%	**Excellent**
Operational Efficiency	142	140	98.6%	**Excellent**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Greater Hermanus			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	289	288	99.7%	Excellent	P	Yes	**7.55**
Conductivity	mS/m	Aesthetic	≤ 170	137	137	100.0%	Excellent	P/N	Yes	**44.20**
Turbidity	NTU	Operational	≤ 1	294	286	97.3%	Excellent	P/R	Yes	**0.56**
		Aesthetic	≤ 5	294	293	99.7%	Excellent	P/R	Yes	**0.56**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	277	277	100.0%	Excellent	R	Yes	**10.01**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	289	289	100.0%	Excellent	N	Yes	**21.29**
		Aesthetic	≤ 300	289	289	100.0%	Excellent	R	Yes	**21.29**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	291	291	100.0%	Excellent	N	Yes	**23.46**
		Aesthetic	≤ 100	291	288	99.0%	Excellent	R	Yes	**23.46**
Aluminium (as Al)	ug/L	Operational	≤ 300	275	275	100.0%	Excellent	N	Yes	**49.69**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	300	300	100.0%	Excellent	P	Yes	**0.00**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	134	125	93.3%	Excellent	N	Yes	**7.45**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	314	296	94.3%	Excellent	P	Yes	**113.61**
Free Chlorine	mg/L	Chronic Health	≤ 5	298	298	100.0%	Excellent	P/N	Yes	**0.43**
Total Hardness (as $CaCO_3$)			-	13						**39.95**
Calcium Hardness (as CaCO3)			-	13						**11.06**
Magnesium Hardness (as CaCO3)			-	13						**28.91**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	2	2	100.0%	Excellent	N	Yes	**288.50**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	2	2	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	2	2	100.0%	Excellent	R	Yes	**94.20**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	2	2	100.0%	Excellent	R	Yes	**0.08**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	2	2	100.0%	Excellent	R	Yes	**0.42**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	2	2	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	2	2	100.0%	Excellent	R	Yes	**0.02**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	2	2	100.0%	Excellent	N	Yes	**60.80**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	2	2	100.0%	Excellent	N	Yes	**27.90**
		Aesthetic	≤ 250	2	2	100.0%	Excellent	N	Yes	**27.90**
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	2	2	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	2	2	100.0%	Excellent	N	Yes	**50.00**
Boron	mg/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	2	2	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	2	2	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	2	2	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	2	2	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	2	2	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	2	2	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	2	2	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	2	2	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	2	2	100.0%	Excellent	N	Yes	**20.00**
Bromoform	ug/L	Chronic Health	≤ 100	2	1	50.0%	Excellent	N	Yes	**217.00**
Chloroform	ug/L	Chronic Health	≤ 300	2	2	100.0%	Excellent	N	Yes	**20.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	2	1	50.0%	Excellent	N	Yes	**2.25**
Microcystins	µg/L	Chronic Health	≤ 1	2	2	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	2	2	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**2.45**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Total Chlorine	mg/L		-	0						
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	304	304	100.0%	**Excellent**
Acute Health Chemical	10	10	100.0%	**Excellent**
Chronic Health	920	918	99.8%	**Excellent**
Aesthetic	1302	1298	99.7%	**Excellent**
Operational Efficiency	1308	1272	97.2%	**Excellent**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Greater Hermanus WTW			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	49	48	98.0%	Excellent	P	Yes	**7.72**
Conductivity	mS/m	Aesthetic	≤ 170	26	26	100.0%	Excellent	P/N	Yes	**43.05**
Turbidity	NTU	Operational	≤ 1	50	49	98.0%	Excellent	P/R	Yes	**0.36**
		Aesthetic	≤ 5	50	50	100.0%	Excellent	P/R	Yes	**0.36**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	37	37	100.0%	Excellent	R	Yes	**10.00**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	49	49	100.0%	Excellent	N	Yes	**20.24**
		Aesthetic	≤ 300	49	49	100.0%	Excellent	R	Yes	**20.24**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	51	51	100.0%	Excellent	N	Yes	**37.47**
		Aesthetic	≤ 100	51	48	94.1%	Excellent	R	Yes	**37.47**
Aluminium (as Al)	ug/L	Operational	≤ 300	38	38	100.0%	Excellent	N	Yes	**36.86**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	60	60	100.0%	Excellent	P	Yes	**0.00**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	14	14	100.0%	Excellent	N	Yes	**0.36**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	63	57	90.5%	Good	P	Yes	**118.37**
Free Chlorine	mg/L	Chronic Health	≤ 5	59	59	100.0%	Excellent	P/N	Yes	**0.89**
Total Hardness (as $CaCO_3$)			-	13						**39.95**
Calcium Hardness (as CaCO3)			-	13						**11.06**
Magnesium Hardness (as CaCO3)			-	13						**28.91**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	1	1	100.0%	Excellent	N	Yes	**255.00**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	1	1	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	1	1	100.0%	Excellent	R	Yes	**85.40**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	1	1	100.0%	Excellent	R	Yes	**0.07**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	1	1	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	1	1	100.0%	Excellent	R	Yes	**0.51**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	1	1	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	1	1	100.0%	Excellent	R	Yes	**0.03**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	1	1	100.0%	Excellent	N	Yes	**43.90**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	1	1	100.0%	Excellent	N	Yes	**28.00**
		Aesthetic	≤ 250	1	1	100.0%	Excellent	N	Yes	**28.00**
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	1	1	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	1	1	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	1	1	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	1	1	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	1	1	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	1	1	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	1	1	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	1	1	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	1	1	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	1	1	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	1	1	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	1	1	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	1	1	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	1	1	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	1	1	100.0%	Excellent	N	Yes	**20.00**
Bromoform	ug/L	Chronic Health	≤ 100	1	0	0.0%	Excellent	N	Yes	**414.00**
Chloroform	ug/L	Chronic Health	≤ 300	1	1	100.0%	Excellent	N	Yes	**20.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	1	1	100.0%	Excellent	N	Yes	**20.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	1	0	0.0%	Excellent	N	Yes	**4.30**
Microcystins	µg/L	Chronic Health	≤ 1	1	1	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	1	1	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	1	1	100.0%	Excellent	N	Yes	**1.80**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Total Chlorine	mg/L		-	0						
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	62	62	100.0%	**Excellent**
Acute Health Chemical	5	5	100.0%	**Excellent**
Chronic Health	180	178	98.9%	**Excellent**
Aesthetic	220	217	98.6%	**Excellent**
Operational Efficiency	215	207	96.3%	**Excellent**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Stanford			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	97	97	100.0%	Excellent	P	Yes	**7.53**
Conductivity	mS/m	Aesthetic	≤ 170	62	61	98.4%	Excellent	P/N	Yes	**49.24**
Turbidity	NTU	Operational	≤ 1	98	97	99.0%	Excellent	P/R	Yes	**0.32**
		Aesthetic	≤ 5	98	98	100.0%	Excellent	P/R	Yes	**0.32**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	50	50	100.0%	Excellent	R	Yes	**10.00**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	2	2	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 300	2	2	100.0%	Excellent	R	Yes	**20.00**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	2	2	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 100	2	2	100.0%	Excellent	R	Yes	**20.00**
Aluminium (as Al)	ug/L	Operational	≤ 300	2	2	100.0%	Excellent	N	Yes	**10.00**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	124	123	99.2%	Excellent	P	Yes	**0.08**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	51	51	100.0%	Excellent	N	Yes	**0.86**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	124	123	99.2%	Excellent	P	Yes	**27.90**
Free Chlorine	mg/L	Chronic Health	≤ 5	121	120	99.2%	Excellent	P/N	Yes	**1.08**
Total Hardness (as $CaCO_3$)			-	119						**137.46**
Calcium Hardness (as CaCO3)			-	105						**121.71**
Magnesium Hardness (as CaCO3)			-	95						**16.09**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	2	2	100.0%	Excellent	N	Yes	**417.50**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	2	2	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	2	2	100.0%	Excellent	R	Yes	**96.45**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	2	2	100.0%	Excellent	R	Yes	**0.14**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	2	2	100.0%	Excellent	R	Yes	**1.86**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	2	2	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	2	2	100.0%	Excellent	R	Yes	**0.15**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	2	2	100.0%	Excellent	N	Yes	**52.25**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	2	2	100.0%	Excellent	N	Yes	**12.30**
		Aesthetic	≤ 250	2	2	100.0%	Excellent	N	Yes	**12.30**
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	2	2	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	2	2	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	2	2	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	2	2	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	2	2	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	2	2	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	2	2	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	2	2	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	2	2	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	2	2	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	2	2	100.0%	Excellent	N	Yes	**20.00**
Bromoform	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Chloroform	ug/L	Chronic Health	≤ 300	2	2	100.0%	Excellent	N	Yes	**20.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	2	2	100.0%	Excellent	N	Yes	**0.00**
Microcystins	µg/L	Chronic Health	≤ 1	2	2	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	2	2	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	2	1	50.0%	Excellent	N	Yes	**9.00**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Total Chlorine	mg/L		-	0						
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	128	127	99.2%	**Excellent**
Acute Health Chemical	10	10	100.0%	**Excellent**
Chronic Health	167	165	98.8%	**Excellent**
Aesthetic	228	227	99.6%	**Excellent**
Operational Efficiency	374	372	99.5%	**Excellent**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Stanford WTW			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	49	49	100.0%	Excellent	P	Yes	**7.56**
Conductivity	mS/m	Aesthetic	≤ 170	38	37	97.4%	Excellent	P/N	Yes	**55.40**
Turbidity	NTU	Operational	≤ 1	50	49	98.0%	Excellent	P/R	Yes	**0.33**
		Aesthetic	≤ 5	50	50	100.0%	Excellent	P/R	Yes	**0.33**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	26	26	100.0%	Excellent	R	Yes	**10.00**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	2	2	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 300	2	2	100.0%	Excellent	R	Yes	**20.00**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	2	2	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 100	2	2	100.0%	Excellent	R	Yes	**20.00**
Aluminium (as Al)	ug/L	Operational	≤ 300	2	2	100.0%	Excellent	N	Yes	**10.00**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	76	75	98.7%	Excellent	P	Yes	**0.13**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	27	27	100.0%	Excellent	N	Yes	**1.04**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	76	75	98.7%	Excellent	P	Yes	**26.11**
Free Chlorine	mg/L	Chronic Health	≤ 5	73	72	98.6%	Excellent	P/N	Yes	**1.11**
Total Hardness (as $CaCO_3$)			-	56						**152.94**
Calcium Hardness (as CaCO3)			-	52						**135.12**
Magnesium Hardness (as CaCO3)			-	48						**18.62**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	2	2	100.0%	Excellent	N	Yes	**417.50**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	2	2	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	2	2	100.0%	Excellent	R	Yes	**96.45**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	2	2	100.0%	Excellent	R	Yes	**0.14**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	2	2	100.0%	Excellent	R	Yes	**1.86**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	2	2	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	2	2	100.0%	Excellent	R	Yes	**0.15**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	2	2	100.0%	Excellent	N	Yes	**52.25**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	2	2	100.0%	Excellent	N	Yes	**12.30**
		Aesthetic	≤ 250	2	2	100.0%	Excellent	N	Yes	**12.30**
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	2	2	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	2	2	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	2	2	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	2	2	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	2	2	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	2	2	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	2	2	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	2	2	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	2	2	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	2	2	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	2	2	100.0%	Excellent	N	Yes	**20.00**
Bromoform	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Chloroform	ug/L	Chronic Health	≤ 300	2	2	100.0%	Excellent	N	Yes	**20.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	2	2	100.0%	Excellent	N	Yes	**0.00**
Microcystins	µg/L	Chronic Health	≤ 1	2	2	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	2	2	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	2	1	50.0%	**Unacceptable**	N	**No**	**9.00**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Total Chlorine	mg/L		-	0						
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	80	79	98.8%	**Excellent**
Acute Health Chemical	10	10	100.0%	**Excellent**
Chronic Health	119	117	98.3%	**Excellent**
Aesthetic	132	131	99.2%	**Excellent**
Operational Efficiency	206	204	99.0%	**Excellent**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Gansbaai			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	211	209	99.1%	Excellent	P	Yes	**7.13**
Conductivity	mS/m	Aesthetic	≤ 170	133	132	99.2%	Excellent	P/N	Yes	**53.60**
Turbidity	NTU	Operational	≤ 1	205	198	96.6%	Excellent	P/R	Yes	**0.42**
		Aesthetic	≤ 5	205	205	100.0%	Excellent	P/R	Yes	**0.42**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	209	209	100.0%	Excellent	R	Yes	**10.00**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	16	16	100.0%	Excellent	N	Yes	**21.04**
		Aesthetic	≤ 300	16	16	100.0%	Excellent	R	Yes	**21.04**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	4	4	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 100	4	4	100.0%	Excellent	R	Yes	**20.00**
Aluminium (as Al)	ug/L	Operational	≤ 300	178	173	97.2%	Excellent	N	Yes	**105.90**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	273	273	100.0%	Excellent	P	Yes	**0.00**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	121	116	95.9%	Excellent	N	Yes	**3.89**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	282	275	97.5%	Excellent	P	Yes	**59.60**
Free Chlorine	mg/L	Chronic Health	≤ 5	264	264	100.0%	Excellent	P/N	Yes	**0.68**
Total Hardness (as $CaCO_3$)			-	68						**91.47**
Calcium Hardness (as CaCO3)			-	35						**51.38**
Magnesium Hardness (as CaCO3)			-	35						**20.50**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	4	4	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	4	4	100.0%	Excellent	N	Yes	**308.50**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	4	4	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	4	4	100.0%	Excellent	R	Yes	**95.98**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	4	4	100.0%	Excellent	R	Yes	**0.09**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	4	4	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	4	4	100.0%	Excellent	R	Yes	**0.63**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	4	4	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	4	4	100.0%	Excellent	R	Yes	**0.04**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	4	4	100.0%	Excellent	N	Yes	**56.55**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	4	4	100.0%	Excellent	N	Yes	**30.86**
		Aesthetic	≤ 250	4	4	100.0%	Excellent	N	Yes	**30.86**
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	4	4	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	4	4	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	4	4	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	4	4	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	4	4	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	4	4	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	4	4	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	4	4	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	4	4	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	4	4	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	4	4	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	4	4	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	4	4	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	4	4	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	4	4	100.0%	Excellent	N	Yes	**20.00**
Bromoform	ug/L	Chronic Health	≤ 100	4	4	100.0%	Excellent	N	Yes	**20.00**
Chloroform	ug/L	Chronic Health	≤ 300	4	4	100.0%	Excellent	N	Yes	**20.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	4	4	100.0%	Excellent	N	Yes	**20.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	4	4	100.0%	Excellent	N	Yes	**0.13**
Microcystins	µg/L	Chronic Health	≤ 1	4	4	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	4	4	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	4	4	100.0%	Excellent	N	Yes	**4.33**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	4	4	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	4	4	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Total Chlorine	mg/L		-	0						
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	281	281	100.0%	**Excellent**
Acute Health Chemical	20	20	100.0%	**Excellent**
Chronic Health	368	368	100.0%	**Excellent**
Aesthetic	595	594	99.8%	**Excellent**
Operational Efficiency	1001	975	97.4%	**Excellent**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Gansbaai WTW			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	39	38	97.4%	Excellent	P	Yes	**6.95**
Conductivity	mS/m	Aesthetic	≤ 170	26	26	100.0%	Excellent	P/N	Yes	**46.42**
Turbidity	NTU	Operational	≤ 1	29	26	89.7%	**Unacceptable**	P/R	**No**	**0.40**
		Aesthetic	≤ 5	29	29	100.0%	Excellent	P/R	Yes	**0.40**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	38	38	100.0%	Excellent	R	Yes	**10.00**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	14	14	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 300	14	14	100.0%	Excellent	R	Yes	**20.00**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	2	2	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 100	2	2	100.0%	Excellent	R	Yes	**20.00**
Aluminium (as Al)	ug/L	Operational	≤ 300	27	26	96.3%	Excellent	N	Yes	**82.97**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	102	102	100.0%	Excellent	P	Yes	**0.00**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	28	28	100.0%	Excellent	N	Yes	**0.25**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	102	102	100.0%	Excellent	P	Yes	**13.58**
Free Chlorine	mg/L	Chronic Health	≤ 5	95	95	100.0%	Excellent	P/N	Yes	**1.29**
Total Hardness (as $CaCO_3$)			-	36						**71.29**
Calcium Hardness (as CaCO3)			-	35						**51.38**
Magnesium Hardness (as CaCO3)			-	35						**20.50**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	2	2	100.0%	Excellent	N	Yes	**301.50**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	2	2	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	2	2	100.0%	Excellent	R	Yes	**93.90**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	2	2	100.0%	Excellent	R	Yes	**0.11**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	2	2	100.0%	Excellent	R	Yes	**0.45**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	2	2	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	2	2	100.0%	Excellent	R	Yes	**0.03**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	2	2	100.0%	Excellent	N	Yes	**56.50**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	2	2	100.0%	Excellent	N	Yes	**30.68**
		Aesthetic	≤ 250	2	2	100.0%	Excellent	N	Yes	**30.68**
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	2	2	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	2	2	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	2	2	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	2	2	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	2	2	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	2	2	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	2	2	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	2	2	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	2	2	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	2	2	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	2	2	100.0%	Excellent	N	Yes	**20.00**
Bromoform	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Chloroform	ug/L	Chronic Health	≤ 300	2	2	100.0%	Excellent	N	Yes	**20.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	2	2	100.0%	Excellent	N	Yes	**0.20**
Microcystins	µg/L	Chronic Health	≤ 1	2	2	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	2	2	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**4.00**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Total Chlorine	mg/L		-	0						
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	106	106	100.0%	**Excellent**
Acute Health Chemical	10	10	100.0%	**Excellent**
Chronic Health	153	153	100.0%	**Excellent**
Aesthetic	123	123	100.0%	**Excellent**
Operational Efficiency	227	222	97.8%	**Excellent**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Pearly Beach			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	74	74	100.0%	Excellent	P	Yes	**7.25**
Conductivity	mS/m	Aesthetic	≤ 170	50	50	100.0%	Excellent	P/N	Yes	**47.7**
Turbidity	NTU	Operational	≤ 1	76	74	97.4%	Excellent	P/R	Yes	**0.43**
		Aesthetic	≤ 5	76	76	100.0%	Excellent	P/R	Yes	
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	74	74	100.0%	Excellent	R	Yes	**10**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	50	50	100.0%	Excellent	N	Yes	**20.902**
		Aesthetic	≤ 300	50	50	100.0%	Excellent	R	Yes	
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	2	2	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 100	2	2	100.0%	Excellent	R	Yes	
Aluminium (as Al)	ug/L	Operational	≤ 300	75	74	98.7%	Excellent	N	Yes	**97.312**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	100	100	100.0%	Excellent	P	Yes	**0**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	41	39	95.1%	Excellent	N	Yes	**5.6341**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	103	100	97.1%	Excellent	P	Yes	**77.563**
Free Chlorine	mg/L	Chronic Health	≤ 5	97	95	97.9%	Excellent	P/N	Yes	**1.20**
Total Hardness (as $CaCO_3$)			-	12						**57.07**
Calcium Hardness (as CaCO3)			-	12						**33.46**
Magnesium Hardness (as CaCO3)			-	12						**23.62**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	2	2	100.0%	Excellent	N	Yes	**0**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	2	2	100.0%	Excellent	N	Yes	**313.00**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	2	2	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	2	2	100.0%	Excellent	R	Yes	**108.00**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	2	2	100.0%	Excellent	R	Yes	**0.08**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	2	2	100.0%	Excellent	R	Yes	**0.14**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	2	2	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	2	2	100.0%	Excellent	R	Yes	**0.01**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	2	2	100.0%	Excellent	N	Yes	**60.40**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	2	2	100.0%	Excellent	N	Yes	**32.70**
		Aesthetic	≤ 250	2	2	100.0%	Excellent	N	Yes	**32.70**
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	2	2	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	2	2	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	2	2	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	2	2	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	2	2	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	2	2	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	2	2	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	2	2	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	2	2	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	2	2	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	2	2	100.0%	Excellent	N	Yes	**20.00**
Bromoform	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Chloroform	ug/L	Chronic Health	≤ 300	2	2	100.0%	Excellent	N	Yes	**20.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	2	2	100.0%	Excellent	N	Yes	**0.20**
Microcystins	µg/L	Chronic Health	≤ 1	2	2	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	2	2	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**1.25**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	≤ 150	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	≤ 70	0	0					
Potassium (as K)	mg/L	Operational / Health	≤ 50	0	0					
Cobalt (as Co)	ug/L	Chronic Health	≤500	0	0					
Total Chlorine	mg/L		-	0						
Vanadium (as V)	ug/L	Chronic Health	≤ 200	0	0					
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	104	104	100.0%	**Excellent**
Acute Health Chemical	10	10	100.0%	**Excellent**
Chronic Health	191	189	99.0%	**Excellent**
Aesthetic	266	266	100.0%	**Excellent**
Operational Efficiency	371	363	97.8%	**Excellent**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Pearly Beach WTW			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	25	25	100.0%	Excellent	P	Yes	**7.09**
Conductivity	mS/m	Aesthetic	≤ 170	25	25	100.0%	Excellent	P/N	Yes	**46.91**
Turbidity	NTU	Operational	≤ 1	27	25	92.6%	Good	P/R	Yes	**0.51**
		Aesthetic	≤ 5	27	27	100.0%	Excellent	P/R	Yes	**0.51**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	25	25	100.0%	Excellent	R	Yes	**10.00**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	25	25	100.0%	Excellent	N	Yes	**21.25**
		Aesthetic	≤ 300	25	25	100.0%	Excellent	R	Yes	**21.25**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	1	1	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 100	1	1	100.0%	Excellent	R	Yes	**20.00**
Aluminium (as Al)	ug/L	Operational	≤ 300	25	25	100.0%	Excellent	N	Yes	**82.90**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	51	51	100.0%	Excellent	P	Yes	**0.00**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	15	14	93.3%	Excellent	N	Yes	**1.00**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	51	51	100.0%	Excellent	P	Yes	**40.65**
Free Chlorine	mg/L	Chronic Health	≤ 5	51	49	96.1%	Excellent	P/N	Yes	**2.12**
Total Hardness (as $CaCO_3$)			-	12						**57.07**
Calcium Hardness (as CaCO3)			-	12						**33.46**
Magnesium Hardness (as CaCO3)			-	12						**23.62**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	1	1	100.0%	Excellent	N	Yes	**312.00**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	1	1	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	1	1	100.0%	Excellent	R	Yes	**107.00**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	1	1	100.0%	Excellent	R	Yes	**0.11**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	1	1	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	1	1	100.0%	Excellent	R	Yes	**0.17**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	1	1	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	1	1	100.0%	Excellent	R	Yes	**0.01**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	1	1	100.0%	Excellent	N	Yes	**60.10**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	1	1	100.0%	Excellent	N	Yes	**32.50**
		Aesthetic	≤ 250	1	1	100.0%	Excellent	N	Yes	**32.50**
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	1	1	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	1	1	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	1	1	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	1	1	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	1	1	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	1	1	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	1	1	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	1	1	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	1	1	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	1	1	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	1	1	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	1	1	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	1	1	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	1	1	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	1	1	100.0%	Excellent	N	Yes	**20.00**
Bromoform	ug/L	Chronic Health	≤ 100	1	1	100.0%	Excellent	N	Yes	**20.00**
Chloroform	ug/L	Chronic Health	≤ 300	1	1	100.0%	Excellent	N	Yes	**20.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	1	1	100.0%	Excellent	N	Yes	**20.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	1	1	100.0%	Excellent	N	Yes	**0.30**
Microcystins	µg/L	Chronic Health	≤ 1	1	1	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	1	1	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	1	1	100.0%	Excellent	N	Yes	**1.60**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Total Chlorine	mg/L		-	0						
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	53	53	100.0%	**Excellent**
Acute Health Chemical	5	5	100.0%	**Excellent**
Chronic Health	98	96	98.0%	**Excellent**
Aesthetic	110	110	100.0%	**Excellent**
Operational Efficiency	144	141	97.9%	**Excellent**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Baardskeerdersbos			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	76	75	98.7%	Excellent	P	Yes	**8.91**
Conductivity	mS/m	Aesthetic	≤ 170	38	38	100.0%	Excellent	P/N	Yes	**64.29**
Turbidity	NTU	Operational	≤ 1	113	97	85.8%	**Unacceptable**	P/R	**No**	**0.79**
		Aesthetic	≤ 5	113	112	99.1%	Excellent	P/R	Yes	**0.79**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	38	38	100.0%	Excellent	R	Yes	**10.03**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	98	98	100.0%	Excellent	N	Yes	**22.85**
		Aesthetic	≤ 300	98	98	100.0%	Excellent	R	Yes	**22.85**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	105	104	99.0%	Excellent	N	Yes	**38.72**
		Aesthetic	≤ 100	105	98	93.3%	Excellent	R	Yes	**38.72**
Aluminium (as Al)	ug/L	Operational	≤ 300	2	2	100.0%	Excellent	N	Yes	**10.00**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	100	100	100.0%	Excellent	P	Yes	**0.00**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	39	39	100.0%	Excellent	N	Yes	**0.08**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	138	100	72.5%	**Unacceptable**	P	**No**	**416.71**
Free Chlorine	mg/L	Chronic Health	≤ 5	97	97	100.0%	Excellent	P/N	Yes	**0.67**
Total Hardness (as $CaCO_3$)			-	12						**29.28**
Calcium Hardness (as CaCO3)			-	12						**11.83**
Magnesium Hardness (as CaCO3)			-	12						**17.47**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	2	2	100.0%	Excellent	N	Yes	**427.50**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	2	2	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	2	2	100.0%	Excellent	R	Yes	**89.80**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	2	2	100.0%	Excellent	R	Yes	**0.15**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	2	2	100.0%	Excellent	R	Yes	**0.33**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	2	2	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	2	2	100.0%	Excellent	R	Yes	**0.03**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	2	2	100.0%	Excellent	N	Yes	**96.15**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	2	2	100.0%	Excellent	N	Yes	**9.50**
		Aesthetic	≤ 250	2	2	100.0%	Excellent	N	Yes	**9.50**
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	2	2	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	2	2	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	2	2	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	2	2	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	2	2	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	2	2	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	2	2	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	2	2	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	2	2	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	2	2	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	2	2	100.0%	Excellent	N	Yes	**20.00**
Bromoform	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Chloroform	ug/L	Chronic Health	≤ 300	2	2	100.0%	Excellent	N	Yes	**20.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	2	2	100.0%	Excellent	N	Yes	**0.30**
Microcystins	µg/L	Chronic Health	≤ 1	2	2	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	2	2	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	2	1	50.0%	Excellent	N	Yes	**8.25**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Total Chlorine	mg/L		-	0						
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	104	104	100.0%	**Excellent**
Acute Health Chemical	10	10	100.0%	**Excellent**
Chronic Health	342	340	99.4%	**Excellent**
Aesthetic	406	398	98.0%	**Excellent**
Operational Efficiency	370	315	85.1%	**Unacceptable**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Baardskeerdersbos WTW			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	27	26	96.3%	Excellent	P	Yes	**9.05**
Conductivity	mS/m	Aesthetic	≤ 170	13	13	100.0%	Excellent	P/N	Yes	**64.17**
Turbidity	NTU	Operational	≤ 1	63	48	76.2%	**Unacceptable**	P/R	**No**	**1.13**
		Aesthetic	≤ 5	63	62	98.4%	Excellent	P/R	Yes	**1.13**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	13	13	100.0%	Excellent	R	Yes	**10.08**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	49	49	100.0%	Excellent	N	Yes	**23.19**
		Aesthetic	≤ 300	49	49	100.0%	Excellent	R	Yes	**23.19**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	56	55	98.2%	Excellent	N	Yes	**52.92**
		Aesthetic	≤ 100	56	49	87.5%	**Unacceptable**	R	**No**	**52.92**
Aluminium (as Al)	ug/L	Operational	≤ 300	1	1	100.0%	Excellent	N	Yes	**10.00**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	51	51	100.0%	Excellent	P	Yes	**0.00**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	14	14	100.0%	Excellent	N	Yes	**0.07**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	61	52	85.2%	**Unacceptable**	P	**No**	**275.11**
Free Chlorine	mg/L	Chronic Health	≤ 5	49	49	100.0%	Excellent	P/N	Yes	**1.17**
Total Hardness (as $CaCO_3$)			-	12						**29.28**
Calcium Hardness (as CaCO3)			-	12						**11.83**
Magnesium Hardness (as CaCO3)			-	12						**17.47**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	1	1	100.0%	Excellent	N	Yes	**414.00**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	1	1	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	1	1	100.0%	Excellent	R	Yes	**87.60**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	1	1	100.0%	Excellent	R	Yes	**0.15**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	1	1	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	1	1	100.0%	Excellent	R	Yes	**0.10**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	1	1	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	1	1	100.0%	Excellent	R	Yes	**0.01**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	1	1	100.0%	Excellent	N	Yes	**80.30**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	1	1	100.0%	Excellent	N	Yes	**8.60**
		Aesthetic	≤ 250	1	1	100.0%	Excellent	N	Yes	**8.60**
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	1	1	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	1	1	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	1	1	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	1	1	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	1	1	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	1	1	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	1	1	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	1	1	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	1	1	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	1	1	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	1	1	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	1	1	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	1	1	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	1	1	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	1	1	100.0%	Excellent	N	Yes	**20.00**
Bromoform	ug/L	Chronic Health	≤ 100	1	1	100.0%	Excellent	N	Yes	**20.00**
Chloroform	ug/L	Chronic Health	≤ 300	1	1	100.0%	Excellent	N	Yes	**20.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	1	1	100.0%	Excellent	N	Yes	**20.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	1	1	100.0%	Excellent	N	Yes	**0.10**
Microcystins	µg/L	Chronic Health	≤ 1	1	1	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	1	1	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	1	1	100.0%	Excellent	N	Yes	**3.20**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	1	1	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Total Chlorine	mg/L		-	0						
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	53	53	100.0%	**Excellent**
Acute Health Chemical	5	5	100.0%	**Excellent**
Chronic Health	175	174	99.4%	**Excellent**
Aesthetic	201	193	96.0%	**Excellent**
Operational Efficiency	167	142	85.0%	**Unacceptable**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Buffeljagsbaai			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	50	50	100.0%	Excellent	P	Yes	**7.56**
Conductivity	mS/m	Aesthetic	≤ 170	38	38	100.0%	Excellent	P/N	Yes	**156.17**
Turbidity	NTU	Operational	≤ 1	50	50	100.0%	Excellent	P/R	Yes	**0.30**
		Aesthetic	≤ 5	50	50	100.0%	Excellent	P/R	Yes	**0.30**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	26	26	100.0%	Excellent	R	Yes	**10.00**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	26	26	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 300	26	26	100.0%	Excellent	R	Yes	**20.00**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	2	2	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 100	2	2	100.0%	Excellent	R	Yes	**20.00**
Aluminium (as Al)	ug/L	Operational	≤ 300	2	2	100.0%	Excellent	N	Yes	**10.00**
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	77	77	100.0%	Excellent	P	Yes	**0.00**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	29	28	96.6%	Excellent	N	Yes	**5.86**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	80	77	96.3%	Excellent	P	Yes	**58.70**
Free Chlorine	mg/L	Chronic Health	≤ 5	75	75	100.0%	Excellent	P/N	Yes	**0.55**
Total Hardness (as $CaCO_3$)			-	11						**345.27**
Calcium Hardness (as CaCO3)			-	11						**257.45**
Magnesium Hardness (as CaCO3)			-	11						**88.02**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	2	2	100.0%	Excellent	N	Yes	**1052.50**
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	2	2	100.0%	Excellent	N	Yes	**0.10**
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	2	2	100.0%	Excellent	R	Yes	**299.00**
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	2	2	100.0%	Excellent	R	Yes	**0.20**
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**0.09**
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	2	2	100.0%	Excellent	R	Yes	**1.41**
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	2	2	100.0%	Excellent	N	Yes	**0.05**
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	2	2	100.0%	Excellent	R	Yes	**0.11**
Sodium (as Na)	mg/L	Aesthetic	≤ 200	2	2	100.0%	Excellent	N	Yes	**163.00**
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	2	2	100.0%	Excellent	N	Yes	**52.75**
		Aesthetic	≤ 250	2	2	100.0%	Excellent	N	Yes	**52.75**
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	2	2	100.0%	Excellent	N	Yes	**5.00**
Arsenic (as As)	ug/L	Chronic Health	≤ 10	2	2	100.0%	Excellent	N	Yes	**5.00**
Barium	µg/L	Chronic Health	≤ 700	2	2	100.0%	Excellent	N	Yes	**50.00**
Boron	µg/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**100.00**
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	2	2	100.0%	Excellent	N	Yes	**1.00**
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	2	2	100.0%	Excellent	N	Yes	**5.00**
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	2	2	100.0%	Excellent	N	Yes	**20.00**
Cyanide	ug/L	Acute Health Chemical	≤ 200	2	2	100.0%	Excellent	N	Yes	**10.00**
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	2	2	100.0%	Excellent	N	Yes	**3.00**
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	2	2	100.0%	Excellent	N	Yes	**1.00**
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	2	2	100.0%	Excellent	N	Yes	**5.00**
Selenium (as Se)	ug/L	Chronic Health	≤ 40	2	2	100.0%	Excellent	N	Yes	**20.00**
Uranium (as U)	ug/L	Chronic Health	≤ 30	2	2	100.0%	Excellent	N	Yes	**5.00**
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	2	2	100.0%	Excellent	N	Yes	**0.05**
Bromodichloromethane	ug/L	Chronic Health	≤ 60	2	2	100.0%	Excellent	N	Yes	**20.00**
Bromoform	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Chloroform	ug/L	Chronic Health	≤ 300	2	2	100.0%	Excellent	N	Yes	**20.00**
Dibromochloromethane	ug/L	Chronic Health	≤ 100	2	2	100.0%	Excellent	N	Yes	**20.00**
Total THM Ratio (Calc)		Chronic Health	≤ 1	2	2	100.0%	Excellent	N	Yes	**0.00**
Microcystins	µg/L	Chronic Health	≤ 1	2	2	100.0%	Excellent		Yes	**0.15**
Phenols	ug/L	Aesthetic	≤ 10	2	2	100.0%	Excellent	N	Yes	**10.00**
Total Organic Carbon	mg/L	Chronic Health	≤ 10	2	0	0.0%	Excellent	N	Yes	**16.10**
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	2	2	100.0%	Excellent	N	Yes	**0.00**
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Total Chlorine	mg/L		-	0						
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	81	81	100.0%	**Excellent**
Acute Health Chemical	10	10	100.0%	**Excellent**
Chronic Health	145	143	98.6%	**Excellent**
Aesthetic	156	156	100.0%	**Excellent**
Operational Efficiency	213	209	98.1%	**Excellent**

COMPLIANCE SAMPLE RESULTS FOR WATER (July 2024 - June 2025)

Buffeljagsbaai WTW			SANS 241:2015	Compliance Calculations						
Parameter	Unit	Risk	Standard Limits (SANS 241-2011 and SANS 241-2006 Class I)	Total Number of Samples	Number of Samples Complying	% Compliance Achieved	Performance	**Risk Character** P = prescribed monitoring R = identified risk N = negligible risk	Compliance Status (Yes / No)	Average
pH (at 25°C)	pH	Operational	≥5.0 - ≤ 9.7	24	24	100.0%	Excellent	P	Yes	**7.47**
Conductivity	mS/m	Aesthetic	≤ 170	24	24	100.0%	Excellent	P/N	Yes	**158.58**
Turbidity	NTU	Operational	≤ 1	24	24	100.0%	Excellent	P/R	Yes	**0.30**
		Aesthetic	≤ 5	24	24	100.0%	Excellent	P/R	Yes	**0.30**
Colour (as Pt)	mg/L Pt-Co	Aesthetic	≤ 15	12	12	100.0%	Excellent	R	Yes	**10.00**
Iron (as Fe)	ug/L	Chronic Health	≤ 2 000	12	12	100.0%	Excellent	N	Yes	**20.00**
		Aesthetic	≤ 300	12	12	100.0%	Excellent	R	Yes	**20.00**
Manganese (as Mn)	ug/L	Chronic Health	≤ 400	0	0			N		
		Aesthetic	≤ 100	0	0			R		
Aluminium (as Al)	ug/L	Operational	≤ 300	0	0			N		
Escherichia Coli (<1 taken as 0)	cfu/100ml	Acute Health Micro	≤ 0	51	51	100.0%	Excellent	P	Yes	**0.00**
Total Coliforms (<1 taken as 0)	cfu/100ml	Operational	≤ 10	14	14	100.0%	Excellent	N	Yes	**0.29**
Heterotrophic Plate Count	cfu/ml	Operational	≤ 1000	52	51	98.1%	Excellent	P	Yes	**45.15**
Free Chlorine	mg/L	Chronic Health	≤ 5	51	51	100.0%	Excellent	P/N	Yes	**0.53**
Total Hardness (as $CaCO_3$)			-	11						**345.27**
Calcium Hardness (as CaCO3)			-	11						**257.45**
Magnesium Hardness (as CaCO3)			-	11						**88.02**
Somatic Coliphages	cfu/10ml	Operational	≤ 0	0	0			N		
Total Dissolved Solids	mg/L	Aesthetic	≤ 1 200	0	0			N		
Ammonium (NH4-N)	mg/L	Aesthetic	≤ 1.5	0	0			N		
Chloride (as Cl)	mg/L	Aesthetic	≤ 300	0	0			R		
Fluoride (as F)	mg/L	Chronic Health	≤ 1.5	0	0			R		
Monochloramine (mg/l)	mg/L	Chronic Health	≤ 3	0	0			N		
Nitrate as Nitrogen	mg/L	Acute Health Chemical	≤11	0	0			R		
Nitrite as N	mg/L	Acute Health Chemical	≤0.9	0	0			N		
Nitrate/Nitrite Nitrogen (No3/No2-N)	mg/L	Acute Health Chemical	≤ 1	0	0			R		
Sodium (as Na)	mg/L	Aesthetic	≤ 200	0	0			N		
Sulphate (as SO_4^{2-})	mg/L	Acute Health Chemical	≤ 500	0	0			N		
		Aesthetic	≤ 250	0	0			N		
Antimony (as Sb)	ug/L	Chronic Health	≤ 20	0	0			N		
Arsenic (as As)	ug/L	Chronic Health	≤ 10	0	0			N		
Barium	µg/L	Chronic Health	≤ 700	0	0			N		
Boron	µg/L	Chronic Health	≤ 2400	0	0			N		
Cadmium (as Cd)	ug/L	Chronic Health	≤ 3	0	0			N		
Chromium (as Cr)	ug/L	Chronic Health	≤ 50	0	0			N		
Copper (as Cu)	ug/L	Chronic Health	≤ 2000	0	0			N		
Cyanide	ug/L	Acute Health Chemical	≤ 200	0	0			N		
Lead (as Pb)	ug/L	Chronic Health	≤ 2400	0	0			N		
Mercury (as Hg)	ug/L	Chronic Health	≤ 6	0	0			N		
Nickel (as Ni)	ug/L	Chronic Health	≤ 70	0	0			N		
Selenium (as Se)	ug/L	Chronic Health	≤ 40	0	0			N		
Uranium (as U)	ug/L	Chronic Health	≤ 30	0	0			N		
Zinc (as Zn)	mg/L	Aesthetic	≤ 5	0	0			N		
Bromodichloromethane	ug/L	Chronic Health	≤ 60	0	0			N		
Bromoform	ug/L	Chronic Health	≤ 100	0	0			N		
Chloroform	ug/L	Chronic Health	≤ 300	0	0			N		
Dibromochloromethane	ug/L	Chronic Health	≤ 100	0	0			N		
Total THM Ratio (Calc)		Chronic Health	≤ 1	0	0			N		
Microcystins	µg/L	Chronic Health	≤ 1	0	0					
Phenols	ug/L	Aesthetic	≤ 10	0	0			N		
Total Organic Carbon	mg/L	Chronic Health	≤ 10	0	0			N		
Cytopathogenic Viruses	cfu/10 l	Acute Health Micro	≤ 0	0	0					
Cryptosporidium Species	cfu/10 l	Acute Health Micro	≤ 0	0	0			N		
Giardia Species	cfu/10 l	Acute Health Micro	≤ 0	0	0			N		
Calcium (as Ca)	mg/L	Aesthetic / Operation	**≤ 150**	0	0					
Magnesium (as Mg)	mg/L	Aesthetic / Health	**≤ 70**	0	0					
Potassium (as K)	mg/L	Operational / Health	**≤ 50**	0	0					
Cobalt (as Co)	ug/L	Chronic Health	**≤500**	0	0					
Vanadium (as V)	ug/L	Chronic Health	**≤ 200**	0	0					**#DIV/0!**
Total Chlorine	mg/L		-	0						
Dissolved Organic Carbon	mg/L		-	0						
Langelier Saturation Index			-	0						
Total Alkalinity (as $CaCO_3$)			-	0						
$CaCO_3$ Precipitation Potential			-	0						

Acute Health Micro	51	51	100.0%	**Excellent**
Acute Health Chemical	0	0		
Chronic Health	63	63	100.0%	**Excellent**
Aesthetic	72	72	100.0%	**Excellent**
Operational Efficiency	114	113	99.1%	**Excellent**

Microbiological

								Microbiological	Microbiological	Overall
Kleinmond								16	12	75.0%
Hawston								14	12	85.7%
Hermanus								24	13	54.2%
Stanford								16	12	75.0%
Gansbaai								19	12	63.2%
Pearly Beach								14	12	85.7%
Total								**103**	**73**	**70.9%**

Chemical

	Number of samples				Number of samples complying				Percentage Compliance				
	Ammonia	Nitrites & Nitrates	COD	Ortho-Phosphate	Ammonia	Nitrites & Nitrates	COD	Ortho-Phosphate	Ammonia	Nitrites & Nitrates	COD	Ortho-Phosphate	Overall
Kleinmond	12	12	12	12	2	12	7	12	**16.7%**	**100.0%**	**58.3%**	**100.0%**	**68.8%**
Hawston	18	12	24	14	9	11	9	11	**50.0%**	**91.7%**	**37.5%**	**78.6%**	**58.8%**
Hermanus	17	12	15	13	9	12	11	11	**52.9%**	**100.0%**	**73.3%**	**84.6%**	**75.4%**
Stanford	13	12	12	12	12	12	12	12	**92.3%**	**100.0%**	**100.0%**	**100.0%**	**98.0%**
Gansbaai	14	17	18	15	12	11	12	12	**85.7%**	**64.7%**	**66.7%**	**80.0%**	**73.4%**
Pearly Beach	12	12	12	12	10	12	0	12	**83.3%**	**100.0%**	**0.0%**	**100.0%**	**70.8%**
Total	**86**	**77**	**93**	**78**	**54**	**70**	**51**	**70**	**62.8%**	**90.9%**	**54.8%**	**89.7%**	**73.4%**

Physical

	Number of samples			Number of samples complying			Percentage Compliance			
	pH	Electrical Conductivity	Suspended Solids	pH	Electrical Conductivity	Suspended Solids	pH	Electrical Conductivity	Suspended Solids	Overall
Kleinmond	12	12	12	12	12	10	**100.0%**	**100.0%**	**83.3%**	**94.4%**
Hawston	12	12	12	12	5	12	**100.0%**	**41.7%**	**100.0%**	**80.6%**
Hermanus	12	12	13	12	12	11	**100.0%**	**100.0%**	**84.6%**	**94.6%**
Stanford	12	12	12	12	8	12	**100.0%**	**66.7%**	**100.0%**	**88.9%**
Gansbaai	12	12	17	12	12	12	**100.0%**	**100.0%**	**70.6%**	**87.8%**
Pearly Beach	12	12	12	9	9	6	**75.0%**	**75.0%**	**50.0%**	**66.7%**
Total	**72**	**72**	**78**	**69**	**58**	**63**	**95.8%**	**80.6%**	**80.8%**	**85.6%**

ANNEXURE E

DWS’s scorecard for assessing the potential for WC/WDM efforts

MUNICIPAL SCORECARD FOR ASSESSING THE POTENTIAL FOR WC/WDM EFFORTS IN MUNICIPALITIES:

1. Development of Standard Water Balance	WSA has developed reliable water balance and results indicate UAW/NRW at less than 20%	4
	WSA has developed reliable water balance and results indicate UAW/NRW at 20% to 40%	3
	WSA has developed reliable water balance and results indicate UAW/NRW at more than 40%	2
	WSA has no water balance. Is currently developing one	1
	WSA has no water balance	0
2. Pressurised Supply to all consumers 100% of time	WSA maintains a pressurised supply to all areas within the water distribution network all of the time at a minimum of 20m	4
	WSA maintains a pressurised supply to all areas within the water distribution network however pressure drops below 10m	3
	Small isolated sections of the network experience intermittent supply	2
	Many sections of the network experience intermittent supply	1
	The entire network experiences intermittent supply	0
3. Residential Metering System	More than 98% of all connections are metered and billed.	4
	75% to 98% of all connections are metered and billed	3
	50 - 75% of connections are metered and billed	2
	Less than 50% of connections are metered and billed	1
	No metering takes place	0
4. Non Residential Metering System (Commercial, Industrial and Institutional)	More than 98% of all non-residential connections, including fire supply connections, are metered and billed based on met	4
	75% to 98% of all non-residential connections, including fire supply connections, are metered and billed based on metere	3
	50 - 75% of non-residential connections, including fire supply connections, are metered and billed based on metered	2
	Less than 50% of non-residential connections, including fire supply connections, are metered and billed based on metere	1
	No non—residential metering takes place	0
5. Effective Billing System including Informative Billing	WSA produces informative billing to all customers based on meter readings	4
	WSA produces informative billing to most customers based on meter readings	3
	WSA produces informative billing to only some customers based on meter readings	2
	WSA has an uninformative billing system in place	1
	WSA has no billing	0
6. Network (Leakage) Complaints System	Efficient reporting system in place (90% of reported leaks are repaired within 24 hours)	4
	Efficient reporting system in place (90% of reported leaks are repaired within 48 hours)	3
	Leakage reporting system in place response times need to be improved	2
	Leakage reporting system in place but few if any field response teams to undertake repairs	1
	No leakage reporting system in place and no plans to create one	0
7. Billing and Metering Complaints System	Efficient reporting system for metering and billing problems in place (90% dealt with within14 days)	4
	Efficient reporting system for metering and billing problems in place (90% dealt with within one month)	3
	Metering and billing problem reporting system in place response times need to be improved	2
	Metering and billing problem reporting system in place but very poor response time with many problems never resolved	1
	No Metering and billing problem reporting system in place	0
8. Asset Register for Water Reticulation System	WSA has a comprehensive and accurate asset register in place which is available digitally	4
	WSA has a partially completed accurate asset register in place	3
	WSA has a poor asset register in place	2
	SA is in the process of developing an asset register	1
	WSA has no asset register in place and no immediate intention of generating an asset register	0
9. Asset Management - Capital Works	2% or more of the value of the water network is invested annually into new capital works related to the existing	4
	1% - 2% of the value of the water network is invested annually into new capital works related to the existing infrastructure	3
	Less than 1% of the value of the water network is invested annually into new capital works related to the existing infrastru	2
	No estimate of asset value of water supply system is available but WSA feels that sufficient budget is spent on new	1
	No estimate of asset value of water supply system is available and WSA feels that insufficient budget is spent on new Ca	0
10. Asset Management - Operations and Maintenance	2% or more of the value of the water network is invested annually into the maintenance of the existing infrastructure	4
	1% - 2% of the value of the water network is invested annually into the maintenance of the existing infrastructure	3
	Less than 1% of the value of the water network is invested annually into the maintenance of the existing infrastructure	2
	No estimate of asset value of water supply system is available but WSA feels that sufficient budget is spent on operations	1
	No estimate of asset value of water supply system is available and WSA feels that insufficient budget is spent on operatio	0
11. Dedicated WDM support	Efficient WDM Section in place with sufficient resources	4
	WDM section in place requires some resources and capacity building	3
	WDM section in place. Major resources and capacity building required	2
	No WDM section currently in place, intention to create WDM section	1
	No WDM Section and no intention to create WDM section	0
12. Active Leakage Control	Active leakage detection and repair undertaken continuously with average sweep time of 12 months or less	4
	Active leakage detection and repair undertaken continuously with average sweep time of 48 months	3
	Active leakage detection and repair is undertaken on an add-hoc basis	2
	No active leakage detection is currently undertaken however the WSA intends to initiate such measures	1
	No active leakage detection is undertaken and the WSA has no intention to conduct such measures	0
13. Effective Sectorisation	Reticulation network has been sectorised and is checked regularly to maintain discrete zones	4
	Reticulation network has been sectorised but is not checked regularly to ensure discrete zones	3
	Only portions of the reticulation network have been sectorised	2
	Few if any zones have been created but plans are in place to sectorise the system	1
	No sectorisation has been undertaken and no plans are in place to implement such measures	0
14. Effective Bulk Meter Management	All bulk water sources to the WSA are metered by the WSA using some form of check metering (either permanent or ter	4
	All bulk water sources to the WSA are metered by the Bulk water supplier or by the WSA	3
	Few bulk meters are operational	2
	No Bulk metering in place, however, WSA has plans to install bulk meters	1
	No Bulk metering in place and no plans for such meters have been made	0

MUNICIPAL SCORECARD FOR ASSESSING THE POTENTIAL FOR WC/WDM EFFORTS IN MUNICIPALITIES:

15. Effective Zone Meter Management and Assessment of Minimum Night Flows	All inlet points to discrete zones are metered and accurate with Minimum Night Flows logged and analysed on a regular b	4
	All inlet points to discrete zones are metered and accurate but no Minimum Night Flow analyses are undertaken	3
	All inlet points to discrete zones are metered but many are broken or considered to be inaccurate	2
	Zone inputs are currently not metered although the WSA has planned to install meters on all zone inlets	1
	No accurate zone metering is in place and there are no plans to introduce such measures	0
16. Pressure Management and Maintenance of Pressure Reducing Valves	Reticulation is comprehensively sectorised into pressure zones which are all discrete. All PRV's are maintained under ma	4
	Reticulation is comprehensively sectorised into pressure zones which are all discrete. PRV's are only maintained when pr	3
	Reticulation is sectorised in pressure zones but the zones are not verified and little or no maintenance is undertaken on th	2
	WSA intends to introduce pressure zones and the use of PRVs to manage system pressures.	1
	No Discrete pressure zones and no PRV maintenance	0
17. As-Built Drawings of Bulk and Reticulation Infrastructure	Accurate as-built drawings for all reticulation are available digitally	4
	As-build drawings available digitally for the majority of the network and available in hardcopy for the remainder of the netv	3
	A mixture of digital and hard copy as-built drawings available for the majority of the network but many problems are know	2
	Only some hard copy as-built drawings are available for portions of the network	1
	No as-built drawings available	0
18. Schematic Layout of Water Infrastructure	An up-to date and detailed schematic of the whole bulk reticulation network is available showing all bulk mains, pumps, re	4
	A detailed schematic of the bulk reticulation network is available but is known to be outdated and/or inaccurate.	3
	Only a rough schematic of the bulk reticulation network is available which is known to be inaccurate and/or outdated	2
	No schematic of the bulk reticulation is available although the WSA is planning to develop such a schematic.	1
	No schematic of the bulk reticulation is available and the WSA has no plans to develop such a schematic.	0
19. Regulations and Bylaws	Regulations and Bylaws are in place which address WDM issues and some form of enforcement is undertaken	4
	Regulations and Bylaws are in place which address WDM issues but are not enforced	3
	Regulations and Bylaws are in place but do not address WDM issues	2
	There are no Bylaws in place but WSA is intending to introduce such measures	1
	There are no Bylaws in place and WSA has no plans to introduce then·	0
20. Tariffs	WSA has rising block tariffs in place that encourage water use efficiency	4
	WSA has rising block tariffs in place but they do not encourage water use efficiency sufficiently	3
	WSA has single water tariff in place	2
	WSA has a declining block tariff in place	1
	WSA does not know what tariff structure is in place	0
21. Technical Support to Customers	The WSA actively engages with customers and offers technical support on WDM to both domestic as well as commercia	4
	The WSA offers technical support on WDM to large consumers on a pro-active basis	3
	The WSA only offers technical support on WDM on a reactive basis	2
	The WSA currently offers no technical support but plans to introduce a support mechanism	1
	The WSA has no plans to offer technical support on WDM measures to any customers	0
22. Removal of Unlawful Connections	The WSA actively monitors and removes all unlawful connections	4
	The WSA selectively monitors and removes unlawful connections	3
	The WSA monitors unlawful connections but has no policy for removal	2
	The WSA plans to introduce measures to tackle unlawful connections	1
	The WSA has no plans to deal with illegal connections	0
23. Community Awareness and Education Programmes	WSA is actively involved in conducting workshops on water conservation within the communities with a dedicated team	4
	WSA is involved in conducting workshops on water conservation within the communities however no dedicated team exis	3
	WSA has very little involvement with workshops on water conservation within the communities	2
	WSA currently does not conduct workshops on water conservation within the communities, however these interventions a	1
	WSA currently does not conduct workshops on water conservation within the communities	0
24. Schools Awareness and Education Programmes	WSA is actively involved in conducting workshops on water conservation within the schools with a dedicated team	4
	WSA is involved in conducting workshops on water conservation within the schools however no dedicated team exists	3
	WSA has very little involvement with workshops on water conservation within the schools	2
	WSA currently does not conduct workshops on water conservation within the schools, however these interventions are pr	1
	WSA currently does not conduct workshops on water conservation within the schools	0
25. Newspaper radio articles plus posters and leaflets for distribution	WSA runs regular adds in newspapers and/or radio and has library of posters and leaflets for public distribution	4
	WSA runs occasional adds in newspapers and/or radio and has library of posters and leaflets for public distribution	3
	WSA has library of posters and leaflets for public distribution but does not advertise in newspapers or radio	2
	WSA has some leaflets and/or posters and intends to strengthen its capacity to promote WC/WDM in the community	1
	WSA does not advertise in newspapers or radio and has no posters or leaflets on WC/WDM	0
TOTAL		**85**

ANNEXURE F

(Refer to electronic version)

Overstrand Municipality's Organogram