National Water Resources Infrastructure (NWRI)

Immovable Asset Management Plan

Northern Operations Cluster

March 2017

WATER IS LIFE - SANITATION IS DIGNITY

water & sanitation

Department:
Water and Sanitation
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EXECUTIVE SUMMARY

1. Introduction and Service Description

This document is an infrastructure Asset Management Plan (AMP) for the Northern Operations Cluster, hereinafter referred to as the Cluster, of the National Water Resources Infrastructure (NWRI) branch of the Department of Water and Sanitation (DWS). It outlines a ten-year plan for the acquisition, operation and maintenance (O&M), renewal, upgrading, new capital investments, and disposal of the Cluster's immovable assets, aiming at maximising the assets' service delivery potential and benefits, and minimising their related risks and costs over the assets' life cycle.

This AMP was produced in accordance and compliance with the provisions of the Government Immovable Asset Management Act (GIAMA), Act No. 19 of 2007. In addition, the DWS is required to annually update this AMP, as contemplated in Section 12 of the GIAMA. This AMP is also aligned to other relevant South African legislation, DWS's strategic plan, and international standards such as ISO 55000.

1.1 Key Data Sources Used to Develop this AMP

The key sources of data used to develop this AMP are: NWRI Immovable Asset Register for the financial year 2015/16; NWRI Infrastructure Asset Hierarchy (latest version updated in the financial year 2013/14); Condition Assessment Audit of Irrigation Scheme Infrastructure – Schemes Reports for the Cluster, dated September 2016; financial information (obtained mainly from DWS Head Office and the Cluster Office); and face-to-face scheme visit interviews conducted with the relevant DWS personnel at cluster and national level. The overall confidence rating for the data used in the development of this AMP is four (4) on a rating scale of 1 to 5, which means some of the data used was derived.

1.2 Cluster Description and Location

The Cluster encompasses the Limpopo Province and some parts of Gauteng, Mpumalanga and North West Provinces. It constitutes three area offices (Groblersdal, Hartebeesport and Tzaneen), and has 90 government water schemes.

1.3 Service Description

The primary service offered by the Cluster is the delivery of bulk raw water to its domestic and industrial (D&I), and irrigation water users (customers). Total raw water registered volume for the Cluster is about 1 756.162 Mm^3 per annum, of which 31.96% is for domestic and industrial and 68.04% is for irrigation use.

2. Levels of Service

There are three key desired levels of service applicable to the Cluster's raw water supply service, namely: volume of raw water supplied; assurance level of raw water supply; and quality of raw water supplied. The first two fall under the direct responsibility of the Cluster's Operations unit; whilst 'quality of raw water supplied' falls under the responsibility of the Catchment Management Agency (CMA). The Cluster is expected to supply an annual total of about: 561.339 Mm^3 of raw water to D&I water users for which it assures 97% non-interruption; and 1 194.823 Mm^3 to irrigation water users for which it assures 91%.

3. Future Raw Water Demand

Insight of the Cluster's future raw water demand helps in optimised planning for future upgrade and new capital needs (capital acquisitions), as contemplated in Sections 5 and 6 of the GIAMA. Figure 0.1 shows projected raw water demand for the Cluster, based on the Cluster's registered volumes for both domestic and industrial (D&I), and irrigation (IRR) water use. Ideally, the Cluster's future raw water demand determined by the DWS's Planning Office needs to take precedence; this will be addressed in the next update of this AMP.

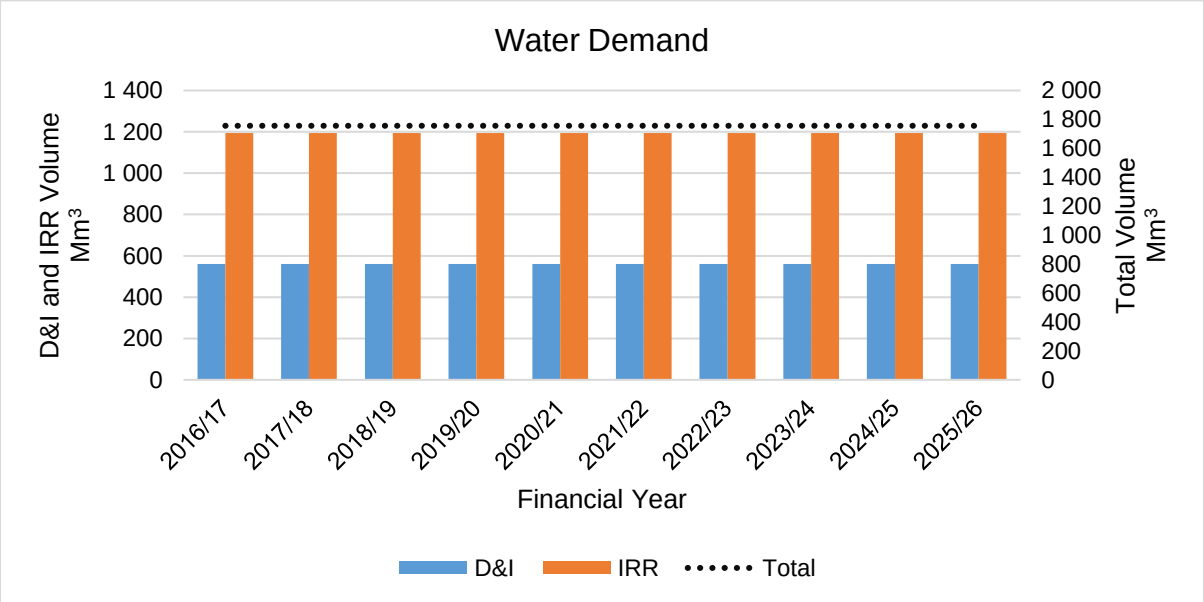

Figure 0.1: Projected raw water demand

4. Asset Details, Risk Management and Life Cycle Works

4.1 Asset Information

Table 0.1 shows the extent (number of asset components), acquisition cost, CRC, DRC and asset carrying values for the Cluster's assets per asset facility category. The Cluster's immovable asset components have a total DRC and CRC of about R36.656 billion and about R39.549 billion, respectively. They can be grouped into two: infrastructure assets with a total DRC and CRC of about R34.360 billion and about R37.252 billion, respectively; and land with

a total of about R2.297 billion for both DRC and CRC. The DRC/CRC ratio for infrastructure assets is about 92%, indicating that about 8% of the infrastructure asset base has been consumed so far.

For infrastructure assets, dams-related asset components have the highest CRC of about R28.197 billion, followed by canals, measuring facilities, pipelines and buildings related asset components with CRCs of about: R3.768 billion, R2.723 billion, R1.368 billion, and R0.979 billion, respectively. A similar pattern is evident for DRC.

Table 0.1: Asset extent, acquisition costs, CRC and values

Asset Facility Category	No. of Asset Components	Acquisition Cost (R Million)	Asset Carrying Value (R Million)	CRC (R Million)	DRC (R Million)	DRC / CRC (%)
Borehole	41	18.41	10.76	50.79	43.14	84.94
Buildings	1 084	380.04	211.84	978.55	810.34	82.81
Canals	6 244	1 370.95	731.94	3 767.76	3 128.75	83.04
Dams	2 524	10 232.46	8 698.46	28 197.10	26 663.10	94.56
Measuring facilities	885	984.79	648.71	2 723.32	2 387.24	87.66
Pipelines	199	496.89	313.04	1 368.16	1 184.31	86.56
Power supply	25	7.42	3.38	20.16	16.11	79.93
Pump stations	144	21.16	15.20	47.14	41.18	87.35
Reservoirs	33	14.89	10.22	41.20	36.50	88.67
Roads	10	2.67	2.11	5.33	4.77	89.61
Telemetry	12	3.95	0.65	9.97	6.66	66.87
Tunnels	1	2.29	1.32	6.34	5.37	84.75
Water Treatment	21	13.17	8.85	36.42	32.11	88.15
Sub-total Infrastructure	**11 223**	**13 549.10**	**10 656.48**	**37 252.20**	**34 359.59**	**92.24**
Land - owned land	102	695.72	682.06	1 781.25	1 781.25	100.00
Land - servitudes	1 559	189.29	189.18	515.27	515.17	100.00
Sub-total Land	**1 661**	**885.01**	**871.25**	**2 296.51**	**2 296.51**	**100.00**
TOTAL	**12 884**	**14 434.11**	**11 527.73**	**39 548.72**	**36 656.11**	**92.69**

4.2 Risk Management and Asset Life Cycle Works

Key asset-related risks for the Cluster include: *condition risk* (failure by the asset to deliver the required service due to deteriorated physical condition); *capacity risk* (failure by the asset to deliver the required service as a result of it exceeding its design capacity/stressed); and *not in use / under-utilisation risk* (resulting in misallocation of resources, e.g. financial, human resources, material, etc.).

To minimise the abovementioned risks, and in order for the Cluster to meet its set levels of service and the projected future raw water demand, the following asset life cycle management activities and works are recommended for the Cluster in this AMP: appropriate and adequate operation, maintenance and renewals (condition risk); upgrades and new capital investments (capacity risk); and disposals (not in use / under-utilisation risk).

- *Maintenance and Renewal Works:*

  The Cluster has about 81% of its infrastructure asset components (with a total CRC of about R34.095 billion) in fair, good and very good conditions. Appropriate maintenance strategies, recommended and prioritised based on criticality and condition for each of these asset components in the individual scheme AMPs, have been summarised per asset facility category in this AMP.

  The Cluster also has about 19% of its infrastructure asset components (with a total CRC of about R3.156 billion) in poor and very poor conditions. Appropriate renewal strategies, recommended and prioritised based on criticality and condition for each of these asset components in the individual scheme AMPs, have been summarised per asset facility category in this AMP. In addition, a prioritised list of the asset components, per scheme and per facility category, has been included in this AMP.

  For those schemes that are not being operated and maintained by the DWS, it is crucial that the DWS makes regular inspections to be sure that the Cluster's assets are adequately maintained and renewed.

- *Upgrades and New Capital Works:*

  Upgrade works are recommended for the Cluster's infrastructure asset components, about 3.48% and with a total CRC of about R4.96 billion, that are stressed (exceeding design capacity on utilisation, based on the Asset Register used in the development of this AMP). These are mainly: dams; buildings; and canals related asset components. Such upgrade works are aimed at avoiding stress related failures, and to ensure the Cluster meets the required level of service. However, before such upgrade works are executed, it is imperative that the utilisation gradings (captured in the Asset Register) of the affected asset components are first verified to confirm the necessity of the upgrades.

  Furthermore, 2016 reports on the Condition Assessment Audit for the Cluster's irrigation infrastructure (for 16 schemes) identified some canal-related upgrade works with a total acquisition cost of about R303 million; these have been considered in this AMP.

- *Impairments and Disposals:*

  There are some impaired asset components for the Cluster: mainly canals, buildings, dams and measuring facilities related, and with a total CRC of about R485 million. The DWS needs to take further steps on these asset components to determine appropriate disposal plans for them.

Furthermore, about 8.8% of the Cluster's infrastructure asset components (with a total CRC of about R5.5 billion), mainly buildings and measuring facilities related, are under-utilised. These asset components could be candidates for disposal. The reasons for the under-utilisation need to be assessed and consideration made for decommissioning and disposal, where necessary.

Based on previous assessments and the Asset Register, the Cluster does not have any assets that are not in use and/or identified for disposal in the foreseeable future.

Noteworthy is that the quality and usefulness of an AMP is highly dependent on the completeness and accuracy of the asset register used in the development of the AMP. Accordingly, the abovementioned asset life cycle management activities and works recommended for the Cluster in this AMP are highly dependent on the asset component condition, criticality and utilisation gradings captured in the asset register used in the development of this AMP. As such, execution of the asset life cycle management activities and works need to be adapted in line with the prevailing situation on the ground. Refer to Section 6 of this Executive Summary regarding some recommendations on how to improve on the current NWRI immovable asset register.

5. Asset Life Cycle Financial Plan

Figure 0.2 present the Cluster's modelled identified optimal total cost requirement over the next 10 years.

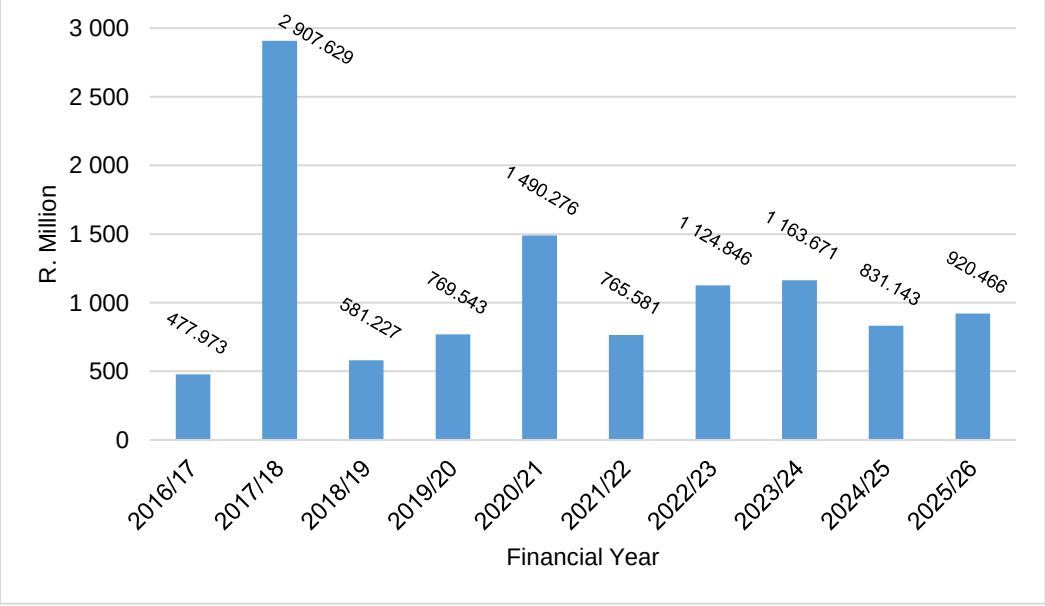

Figure 0.2: Modelled identified optimal total cost requirement per asset facility category

The Cluster's projected modelled identified optimal total cost requirement for the first three years (2016/17, 2017/18 and 2018/19) are about: R477.973 million; R 2.908 billion; and R581.227 million, respectively, as shown in Figure 0.2. The projected spike in 2017/18 is

attributed to significant renewal, and upgrade and new capital cost requirements. Such spike, compounded by the current economic and financial constraints facing the country, present some implementation challenges for the Cluster's modelled identified optimal total cost requirement. As such, for practical implementation purposes, the identified optimal cost requirements for the Cluster are adjusted as presented in Tables 0.2 and 0.3, and Figure 0.3.

Table 0.2: Modelled adjusted optimal total cost requirement per cost component

Cost Component	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
O&M	477.973	507.002	537.918	568.879	604.700	641.320	680.130	721.210	765.284	811.696
Renewal	-	135.768	157.079	176.833	298.478	351.629	380.730	425.022	477.725	492.672
Upgrade & New	-	224.327	263.526	249.965	220.643	215.628	207.228	166.311	158.234	131.751
Disposal	-	-	-	-	-	-	-	-	-	-
Total	**477.973**	**867.097**	**958.523**	**995.676**	**1 123.821**	**1 208.577**	**1 268.089**	**1 312.543**	**1 401.243**	**1 436.119**

Table 0.3: Modelled adjusted optimal total cost requirement per asset facility category

Asset Facility Category	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	54.799	81.238	88.248	90.317	105.766	114.190	115.335	110.935	113.839	114.247
WR: Canals	73.914	90.229	102.333	122.652	206.304	269.642	318.382	325.258	352.720	354.920
WR: Dams	244.310	553.951	613.975	613.632	600.394	588.439	570.703	528.301	534.830	541.762
WR: Power Supply	1.351	2.190	2.392	2.723	2.799	2.833	2.766	2.625	3.199	3.491
WR: Pump stations	1.332	1.891	2.049	2.117	2.197	2.264	2.423	2.497	3.752	4.596
WR: Reservoirs	0.329	0.407	0.437	0.455	0.472	0.490	0.508	0.523	3.889	5.697
WR: Roads and bridge	0.159	0.248	0.271	0.275	0.277	0.279	0.322	0.332	0.348	0.353
WR: Steel Pipelines	15.050	24.985	27.312	28.195	63.595	81.024	79.186	104.725	118.175	115.587
WR: Telemetry	0.546	0.579	0.615	0.650	0.691	0.733	1.009	1.126	1.214	1.246
WR: Tunnels	0.202	0.214	0.227	0.240	0.255	0.270	0.287	0.304	0.323	0.342
WR: Water Treatment	1.248	2.193	2.404	2.424	2.495	2.706	3.123	3.119	3.243	3.205
WS: borehole	3.556	5.455	5.937	6.049	6.093	6.167	6.801	7.112	7.511	7.662
WS: Measuring facility	81.177	103.516	112.324	125.946	132.486	139.540	167.244	225.685	258.200	283.011
Total	**477.973**	**867.097**	**958.523**	**995.676**	**1 123.821**	**1 208.577**	**1 268.089**	**1 312.543**	**1 401.243**	**1 436.119**

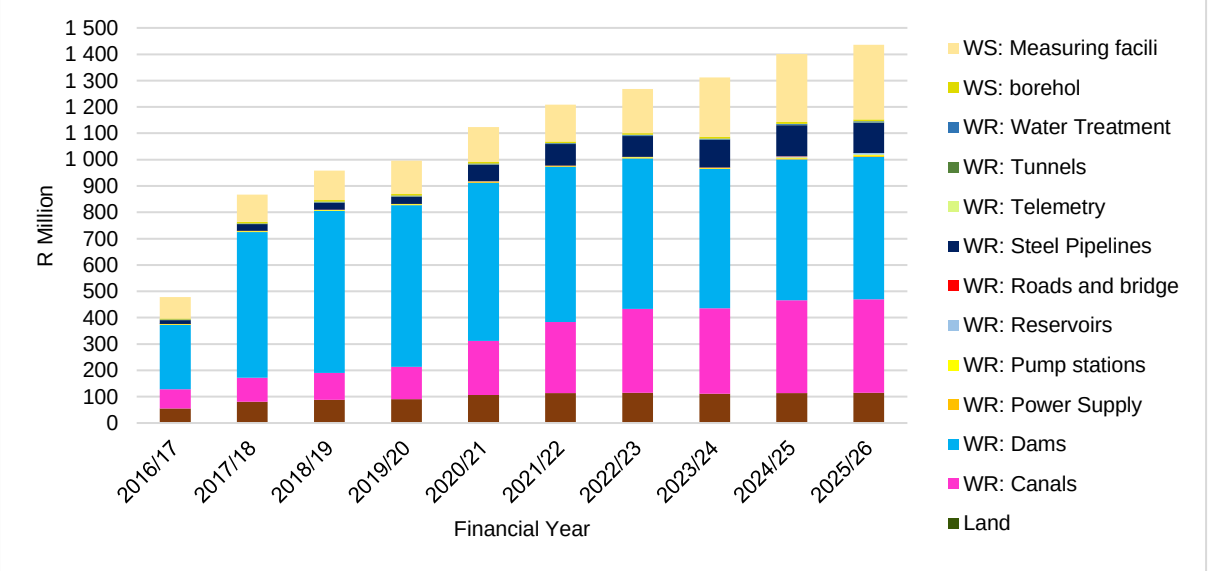

Figure 0.3: Modelled adjusted optimal total cost requirement per asset facility category

The Cluster's projected modelled adjusted optimal total cost requirement for the first three years (2016/17, 2017/18 and 2018/19) are about: R477.973 million; R867.097 million; and R958.523 million, respectively. The projected total cost breakdown for the Cluster is as follows:

- Optimal annual O&M cost requirements for the first three years (2016/17, 2017/18 and 2018/19) are projected to be about: R477.97 million; R507 million; and R537.92 million, respectively. Dams, canals, measuring facilities, buildings and pipelines related asset components are the main cost drivers.
- Optimal annual renewal cost requirement for the first three years (2016/17, 2017/18 and 2018/19) amounts to: R0, R135.768 million and R157.079 million, respectively. Dams, buildings, measuring facilities and canals related asset components are the main cost drivers.
- Optimal annual upgrades and new capital cost requirement for the first three years (2016/17, 2017/18 and 2018/19) are projected to be about: R0, R224.327 million and R263.526 million, respectively. Dams related asset components are the main cost drivers.

The Cluster's projected optimal annual revenue requirements for the first three years (2016/17, 2017/18 and 2018/19) amount to about: R478 million, R867 million and R959 million, respectively. Over the projected 10-year period, the revenue which needs to be generated by the Cluster to fund the required immovable asset life cycle works varies between about R478 million and about R1.436 billion. In the event that such revenue cannot be generated through user charges (an indication that the Cluster is not financially self-sustainable), external funding would need to be considered. Such funding can be in the form of fiscal support, cross subsidisation or debt raised through such institutions as TCTA.

6. Recommendations

Some of the key areas of improvement, identified for this Cluster, and recommended improvement actions thereof are presented in Table 0.4.

Table 0.4: Recommended areas for improvement

No.	Area for Improvement	Issue Description	Recommended Action
1	**Asset Information Management**		
1.1	Asset Register as the indispensable key data source for AMP development	The quality and usefulness of an AMP is highly dependent on the completeness and accuracy of the asset register used in the development of the AMP. Accordingly, the asset life cycle management activities and works (such as maintenance, renewals, upgrades and new capital, and disposals) recommended for the Cluster in this AMP are highly dependent on the asset component condition, criticality and utilisation gradings captured in the asset register used in the development of this AMP. However, during the AMPs review workshops conducted during the development of this AMP, the Cluster and scheme personnel did not fully concur with some of the asset component counts, condition as well as utilisation gradings; indicating the possibility of misalignment between the asset register and the prevailing situation on the ground.	The NWRI needs to urgently conduct physical asset verification and assessments (extent, condition, criticality, utilisation, etc.) for all its immovable assets and develop a comprehensive asset register, inclusive of all crucial asset component details, such as asset component sizes, material of construction, condition, criticality, utilisation, etc. Thereafter, the NWRI needs to conduct similar assessments at least every five years as contemplated in Section 13 of the GIAMA. The abovementioned asset assessments need to be conducted by adequately experienced professionals.
1.2	Current Replacement Cost (CRC)	Each and every asset component in the asset register needs to have a corresponding CRC. The CRCs are useful in the determination and projection of optimal asset life cycle management works, such as O&M, renewals, upgrades and new capital, etc., in line with international best practices. Ideally, the CRC of an asset component needs to be determined by multiplying the unit cost rate (cost per unit size, ideally obtained from suppliers) by the size of the asset component. Thus, the asset register needs to adequately capture such details as asset component sizes, material of construction, etc. However, such asset component details are not fully captured in the asset register used in the development of this AMP. As a result, the CRCs presented in this AMP were determined by adjusting the provided acquisition costs with PPI and an uncertainty factor; hence the projected optimal asset life cycle management costs may be on the conservative side.	The above-recommended assessments for the NWRI immovable assets need to adequately capture such asset component details as sizes and material of construction. This will enable the determination of more accurate CRCs, and consequently projection of more accurate optimal asset life cycle management costs.

No.	Area for Improvement	Issue Description	Recommended Action
2	**Financial Management**		
2.1	O&M Costs reporting	The DWS is not fully aware of O&M costs currently being incurred by some of the schemes being operated and maintained by other institutions, such as irrigation boards, water boards and water user associations, and no financial reports are being sent to DWS.	The DWS needs to liaise with the respective institutions and agree on frequent O&M reports, preferably on a quarterly basis.
2.2	O&M Costs splitting	O&M costs in the individual schemes are currently not being budgeted and recorded separately per asset facility category.	Budget for and record O&M costs: separately (separate operations from maintenance). Budget for and record O&M costs per asset facility category.
3	**Risk Management**		
3.1	Risk Management	Risk (expected loss) is calculated by determining the product of the likelihood of the risk and the total amount of loss (impact) when the risk occurs: *Expected Loss (Risk) = Risk Likelihood x Total Loss (Impact)* For this Scheme, however, risk likelihood per asset component was not captured in the Asset Register used in the development of this AMP. Hence, an in-depth risk analysis could not be conducted.	Capture risk likelihood per asset component in the infrastructure asset register, so that the next update of this AMP can incorporate an in-depth risk analysis.

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GLOSSARY

Activity	An activity is the work undertaken on an asset or group of assets to achieve a desired outcome.
Asset	A resource controlled by the DWS as a result of past events and from which future economic benefits are expected to flow to DWS.
Asset Hierarchy	A framework for segmenting an asset base into appropriate classifications.
Asset Management	A process of decision making, planning and control over acquisition, use, safeguarding and disposal of assets to maximise their service delivery potential and benefits, and to minimize their related risks and costs over their entire life.
Asset Management System	A system (usually computerised) for collecting, analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Asset Management Plan	Documented information that specifies the activities, resources and timescales required for an individual asset, or a grouping of assets, to achieve the organization's asset management objectives.
Asset Management Policy	The overall intentions and direction of an organisation related to the assets and the framework for the control of asset related processes and activities.
Asset Management Strategy	A strategy for asset management covering, the development and implementation of plans and programmes for asset creation, operation, maintenance, renewal, disposal and performance monitoring to ensure that the desired levels of service and other operational objectives are achieved at optimum cost.
Asset Management Team	The team appointed by an organisation to review and monitor the corporate asset management improvement programme and ensure the development of integrated asset management systems and plans consistent with organisational goals and objectives.
An active market	a market in which all of the following conditions exist: • The items traded in the market are homogeneous • Willing buyers and sellers can normally be found at any time • Prices ae available to the public
Asset carrying amount/value	The amount at which an asset is included in the statement of financial position after deducting any accumulated depreciation and any impairment losses thereon.
Asset Register	A record of asset information considered worthy of separate identification including inventory, historical, financial, condition, and construction, technical and financial information about each.
Condition Monitoring	Continuous or periodic inspection, assessment, measurement and interpretation of resulting data, to indicate the condition of a specific component so as to determine the need for some preventive or remedial action
Critical Assets	Assets or assets components, that are identified as being critical in achieving the organisation's strategic objectives (note that assets can be safety critical, environmental critical or performance critical).
Current Replacement Cost	A measure of replacement value – the cost of replacing an existing asset with a modern asset of equivalent capacity.
Deferred Maintenance	Planned maintenance that has been deferred (backlog in maintenance).
Demand Management	The active intervention in the market to influence demand for services and assets with forecast consequences, usually to avoid or defer CAPEX expenditure. Demand management is based on the notion that as needs are satisfied expectations rise automatically and almost every action taken to satisfy demand will stimulate further demand.
Depreciated Replacement Cost	A measure of current value of an asset, based on its current replacement cost less an allowance for deterioration of condition to date (based on the fraction of remaining useful life/expected useful life).
Depreciation	The systematic allocation of the depreciable amount of a physical asset over its useful life.
Disposal	Activities necessary to dispose of decommissioned assets.

Economic life	The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest cost alternative to satisfy a particular level of service. The economic life is at the maximum when equal to the physical life however obsolescence will often ensure that the economic life is less than the physical life.
Expenditure-based cost	Projected cost based on historical actual expenditures.
EUL	Expected Useful Life of an asset
Facility	A complex asset comprising many assets (e.g. a hospital, water treatment plant, recreation complex, etc.) which represents a single management unit for financial, operational, maintenance or other purposes.
Geographic Information System	Software which provides a means of spatially viewing, searching, manipulating, and analysing an electronic database.
Impairment	The loss of future economic benefits or service potential of an asset over and above the systematic recognition of the loss of the asset's future economic benefits or service potential through depreciation.
Infrastructure Assets	Stationary systems forming a network and serving whole communities, where the system as a whole is intended to be maintained indefinitely at a particular level of service potential by the continuing replacement and refurbishment of its components. The network may include normally recognized 'ordinary' assets as components.
Key Performance Indicator	A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Key performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.
Level of service	The defined service quality for a particular activity or service area against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental acceptability and cost.
Life	A measure of the anticipated life of an asset or component; such as time, number of cycles, distance intervals etc.
Life cycle	The cycle of activities that an asset (or facility) goes through while it retains an identity as a particular asset i.e. from planning and design to decommissioning or disposal.
Lifecycle Cost	The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, and rehabilitation and disposal costs.
Maintenance	All actions necessary for an asset to achieve its expected useful life as near as practicable to its original condition, but excluding rehabilitation or renewal.
Maintenance Plan	Collated information, policies and procedures for the optimum maintenance of an asset, or group of assets.
Maintenance Standards	The standards set for the maintenance service, usually contained in preventive maintenance schedules, operation and maintenance manuals, codes of practice, estimating criteria, statutory regulations and mandatory requirements, in accordance with maintenance quality objectives.
Objective	An objective is a general statement of intention relating to a specific output or activity. They are generally longer term aims and are not necessarily outcomes that managers can control.
Operating Expenditure	Expenditure necessary to provide services such as water catchment or water distribution. Examples of OPEX include staff costs, administration costs, consumables, maintenance and repairs and feasibility studies.
Operation	The active process of utilising an asset which will consume resources such as manpower, energy, chemicals and materials. Operation costs are part of the lifecycle costs of an asset.
Optimal cost	Cost determined based on established ratios of CRCs, and is deemed sufficient to cover all the expenditure requirements of an entity.
Performance Monitoring	Continuous or periodic quantitative and qualitative assessments of the actual performance compared with specific objectives, targets or standards.
Planned Maintenance	Planned maintenance activities fall into 3 categories:

	▪ Periodic – necessary to ensure the reliability or sustain the design life of an asset. ▪ Predictive – condition monitoring activities used to predict failure. ▪ Preventive – maintenance that can be initiated without routine or continuous checking (e.g. using information contained in maintenance manuals or manufacturers' recommendations) and is not condition-based.
Rehabilitation	Works to rebuild or replace parts or components of an asset, to restore it to a required functional condition and extend its life, which may incorporate some modification. Generally, involves repairing the asset using available techniques and standards to deliver its original level of service (e.g. relining bulk raw water pipelines) without resorting to significant upgrading or replacement.
Renewal	Works to refurbish, rehabilitate or replace existing facilities with facilities of equivalent capacity or performance capability.
Repair	Action to restore an item to its previous condition after failure or damage.
Replacement	The complete replacement of an asset that has reached the end of its life, so as to provide a similar, or agreed alternative, level of service.
Remaining Useful Life	The time remaining over which an asset is expected to be used.
Residual Value	The net amount which the entity expects to obtain for an asset at the end of its useful life after deducting the expected costs of disposal.
Risk Management	The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.
Routine Maintenance	Day to day operational activities to keep the asset operating (e.g. repairing leaks) and which form part of the annual operating budget, including preventative maintenance.
Strategic Plan	Strategic planning involves making decisions about the long-term goals and strategies of an organisation. Strategic plans have a strong external focus, cover major portions of the organisation and identify major targets, actions and resource allocations relating to the long-term survival, value and growth of the organisation.
Unplanned Maintenance	Corrective work required in the short term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.
Upgrading	The replacement of an asset or addition/ replacement of an asset component which materially improves the original service potential of the asset.
Useful life	The period over which a depreciable asset is expected to be used. (GAMAP: Either (i) the period of time over which an asset is expected to be used by the entity, or (ii) the number of production or similar units expected to be detained from the asset by the entity).
Valuation	Estimated asset value, which may depend on the purpose for which the valuation is required, i.e. replacement value for determining maintenance levels or market value for lifecycle costing.
Yield	Water which can reliably be withdrawn from a water source at a relatively constant rate.

ABBREVIATIONS

AM	Asset Management
AMP	Asset Management Plan
AMIP	Asset Management Improvement Plan
AMS	Asset Management System
CAPEX	Capital Expenditure
CBM	Condition Based Maintenance
CPI	Consumer Price Index
CRC	Current Replacement Cost
DRC	Depreciated Replacement Cost
D&I	Domestic and Industrial
DWS	Department of Water and Sanitation
EUL	Expected Useful Life
GIAMA	Government Immovable Asset Management Act
GIS	Geographic Information System
GFMAM	Global Framework for Maintenance and Asset Management
GPS	Global Positioning System
GRAP	Generally Recognized Accounting Practices
GWS	Government Water Scheme
ISO	International Standards Organization
IAS	International Accounting Standards
IFMS	Integrated Financial Management System
IRR	Irrigation
KPI	Key Performance Indicator
LCC	Life Cycle Costing/Cost
MTEF	Medium Term Expenditure Framework
NWRI	National Water Resources Infrastructure
NWRIB	National Water Resources Infrastructure Branch
NWA	National Water Act
OPEX	Operating Expenditure
O&M	Operation and Maintenance
OSH	Occupational Health and Safety
PFMA	Public Finance Management Act
PPE	Property, Plant and Equipment
PPI	Producer Price Index
PM	Preventive Maintenance
PdM	Predictive Maintenance
RAMS	Reliability, Availability, Maintainability and Safety
RUL	Remaining Useful Life
RTF	Run to Failure
RCM	Reliability Centred Maintenance
WARMS	Water-Use Authorization and Registration Management System
WDCS	Waste Discharge Charging System
WMA	Water Management Area
WTE	Water Trading Entity

1. INTRODUCTION AND SERVICE DESCRIPTION

1.1 Overview

This document is a 10-year infrastructure Asset Management Plan (AMP) for the Northern Operations Cluster, hereinafter referred to as the Cluster, of the National Water Resources Infrastructure (NWRI) branch of the Department of Water and Sanitation (DWS). This section begins with a brief background as well as the key sources of data used in the development of this AMP. It proceeds with outlining: the purpose of this AMP; and alignment of this AMP with the South African legislative framework, international standards, and the DWS's strategic plan. Finally, it: indicates the physical location of the Cluster; highlights the service provided by the Cluster; and also, provides an overview of the Cluster's immovable assets.

1.2 Background

The NWRI is responsible for operating, maintaining and managing a number of raw water schemes spread throughout South Africa. The NWRI divided the country into four operational clusters: Northern; Eastern; Southern; and Central. Each cluster is responsible for a number of raw water schemes.

In 2010, the NWRI prepared the second set of infrastructure AMPs: one AMP for each of its four operational clusters, and one National AMP; hereinafter all referred to as the 2010 AMPs. However, the 2010 AMPs needed some updating and improvements, in view of the following:

- the 2010 AMPs were produced at a relatively high level of detail and ultimately needed to be improved in accordance and compliance with the provisions of the Government Immovable Asset Management Act (GIAMA), Act No. 19 of 2007.
- no AMP was prepared at the GWS level (the 2010 AMPs were only prepared at the Cluster and National levels).
- no analysis was done, and no life cycle works and strategies were prescribed at asset component level; and hence
- the 2010 AMPs only partially complied with the provisions of the GIAMA.

In addition, the DWS is required to annually update its AMPs, as contemplated in Section 12 of the GIAMA. It is against this background that this AMP has been prepared for the Northern Operations Cluster as an update and improvement to the 2010 AMP.

1.3 Data Sources and Overall Data Confidence

1.3.1 Key Data Sources Used to Develop this AMP

The key sources of data used to develop this AMP are:

- *NWRI Immovable Asset Register* for the financial year 2015/16 (refer to Appendix A).
- *NWRI Infrastructure Asset Hierarchy* (latest version updated in the financial year 2013/14).
- *Condition Assessment Audit of Irrigation Scheme Infrastructure – Scheme Reports for the Northern Operations Cluster,* dated the 30th of September 2016.
- *financial (revenue and expenditure) information* (obtained from: the DWS Head Office; and the Northern Cluster Office).
- *face-to-face scheme visit interviews* conducted with the relevant DWS Northern Cluster operations personnel.
- *Other relevant NWRI documentation*, such as water use registrations records.

1.3.2 Data Confidence Rating

Table 1.1 shows the confidence grading criteria used for rating the data used in this AMP.

Table 1.1: Data confidence grading scale

Data Confidence Grade	Description	Margin of Error
5	**Highly accurate** Data based on sound records, procedure, investigations and analysis which is properly documented and recognised as the best method of assessment.	1 – 20 %
4	**Minor inaccuracies** Data based on sound records, procedures, investigations and analysis which is properly documented but has minor shortcomings; for example, the data is old, some documentation is missing and reliance is placed on unconfirmed reports or some extrapolation.	21 – 30%
3	**50% estimated** Data based on sound records, procedures, investigations, and analysis which is incomplete or unsupported, or extrapolation from a limited sample for which grade 1 or 2 data is available.	31 – 40%
2	**Significant data estimated** Data based on incomplete or outdated data, or conflicting data sets exists requiring the assessor to apply judgement as to which portions of data would be most appropriate.	41- 50%
1	**All data estimated** No written records, procedures or other supporting documentation available. Data based on unconfirmed verbal reports and/or cursory inspection and analysis	> 51%

Source: Adapted from DWS Valuation Guide (2008)

Table 1.2 summarizes the confidence rating for the data used to develop this AMP.

Table 1.2: Overall data confidence rating

Section of this AMP	Data Description	Data Confidence Rating	Reason for rating
1	Cluster location and service description	5	Data gathered during interviews and also obtained from other relevant NWRI documentation, such as the WARMS registrations (DW760).
2	Levels of service, performance measures, targets	4	Data obtained from DWS Raw Water Pricing Strategy; raw water supply agreements; and some data verified/provided by the DWS Northern Cluster Team.
3	Future raw water demand	3	Future raw water demand based on registered volumes for irrigation and domestic and industrial water users. Actual raw water volumes could not be obtained.
4	Asset details	4	Required asset information that was not in the Asset Register was derived (see Section 4.2).
5	Financial information	4	Required financial information that could not be found was derived (refer to Sections 5 and 6).
Average Data Confidence		**4**	**Minor inaccuracies, with 21 – 30% margin of error.**

1.4 Purpose of this Asset Management Plan

The main purpose of this 10-year AMP is to enable the Cluster to effectively and efficiently manage its immovable assets, thereby enabling it to maximise its service delivery potential and benefits (delivering the desired levels of service to its clients), and to minimise related risks and costs over its immovable assets' entire life cycle. To this end, this AMP aims at achieving the following:

- Describing the service offered by the Cluster.
- Articulating the intended 'levels of service' relevant to this Cluster, and the performance measures and targets against which actual performance needs to be assessed.
- Analysing the Cluster's immovable assets and proposing appropriate asset life cycle activities/works aimed at making sure the Cluster's immovable assets meet: the levels of service (for supply of raw water) agreed with its clients; as well as the projected future raw water demand for the Cluster.
- Proposing a financial plan for the Cluster for the next 10 years.
- Identifying areas of improvement with regards to the DWS Asset Management practices, and providing appropriate recommendations thereof.
- Enabling the Cluster to make optimized asset creation, operation, maintenance, renewal, upgrade and disposal decisions; and
- Complying with the provisions of the GIAMA.

1.5 Legislative Framework, Policies, Strategies and Standards

This AMP has been developed in line with the laws of the Republic of South Africa, relevant DWS policies, strategies and guides, as well as relevant international standards. The legislative framework includes, but is not limited to:

- Constitution of the Republic of South Africa (Act No. 108 of 1997).
- National Water Act (No. 36 of 1998).
- Government Immovable Asset Management Act (GIAMA) (No. 19 of 2007).
- Public Finance Management Act (PFMA) (No. 1 of 1999).

The relevant DWS policies and strategies include:

- Immovable Asset Management Policy (2015).
- Disposal Policy for Immovable Assets (2015).
- Valuation Guide (2008).

The relevant international standards include:

- Generally Recognized Accounting Practice for Property, Plant and Equipment (GRAP 17).
- International Standard for Asset Management Systems (ISO 55000).
- International Infrastructure Management Manual.

1.6 Strategic Context

This AMP is aligned with the DWS's Strategic Plan, ensuring that the NWRI's immovable assets are managed in a manner that fully supports the DWS's vision of delivering "equitable and sustainable water and sanitation that support socio-economic growth and development of the well-being of current and future generations". This AMP flows from and supports the DWS's Asset Management Policy, High-level Strategic Goals, Mission and Vision (refer to Appendix B).

1.7 Cluster Description and Location

The Northern Operations Cluster encompasses the Limpopo Province and some parts of Gauteng, Mpumalanga and North West Provinces, as shown in Figure 1.1. It constitutes three area offices (Groblersdal, Hartebeesport and Tzaneen), and has 90 government water schemes, as shown in Table 1.3.

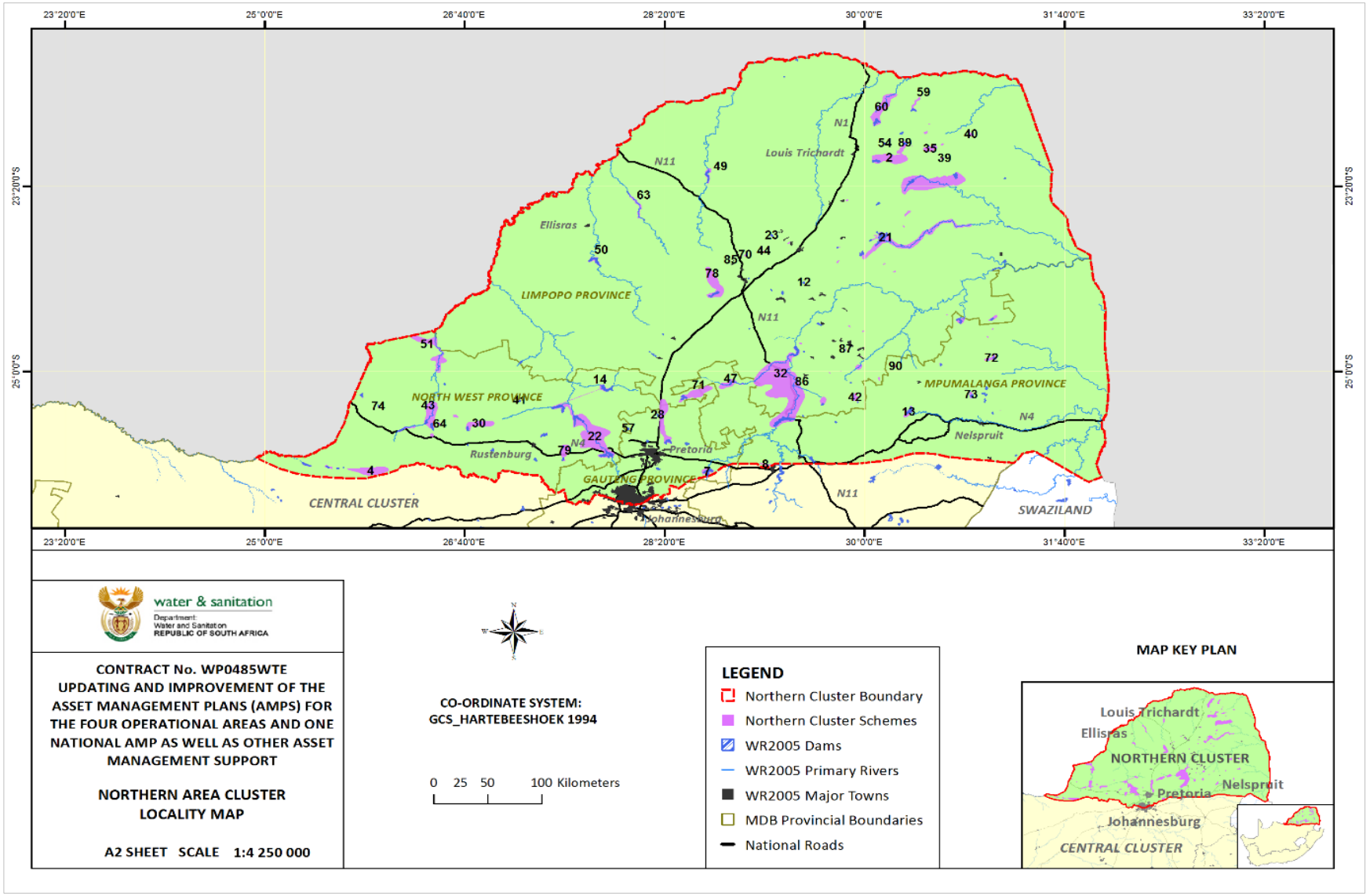


Figure 1.1: Locality map for the Northern Operations Cluster

Table 1.3: Northern Cluster Schemes List

No.	Scheme Name	No.	Scheme Name	No.	Scheme Name
1	Acornhoek Dam	31	Lole Montes Dam	62	Olifants River GWS (Flag Boshielo)
2	Albasini GWS	32	Loskop GWS	63	Palala River GWS (Susandale and Visgat Weirs)
3	Blyderivierpoort Dam	33	Lotlamoreng Dam	64	Pella Dam
4	Bo-Molopo GWS	34	Luvuvhu River GWS (Malamulele Weir)	65	Phiphidi Dam
5	Bospoort Dam	35	Luvuvhu River GWS (Nandoni Dam)	66	Phiring Dam
6	Botlokwa Dam	36	Luvuvhu River GWS (Xikundu weir)	67	Pienaars River GWS (Roodeplaat Dam)
7	Bronkhorstspruit Dam	37	Madikwe Dam	68	Piet Gouws Dam
8	Brugspruit Pollution Control Works	38	Mahlangu Dam	69	Politsi GWS
9	Buffelsdoorn GWS (Mokotswane Dam)	39	Mahonisi Dam	70	Rietfontein Dam I and II
10	Capes Thorne Dam	40	Makuleke Dam	71	Rust De Winter GWS
11	Casteel Dam	41	Mankwe Dam	72	Sabie River GWS (Inyaka Dam)
12	Chuniespoort Dam	42	Mapochsgronden GWS	73	Sand River GWS (Witklip Dam)
13	Crocodile River GWS (Kwena Dam)	43	Marico-Bosveld GWS (Kromellenboog Dam)	74	Sehuwjane Dam
14	Crocodile River West GWS	44	Mashashane Dam	75	Seshego Dam
15	Damani Dam	45	Middelkraal Dam	76	Setumo Dam
16	De Hoop Dam	46	Middle Letaba System GWS	77	Spitskop Dam
17	Der Brochen Dam	47	Mkhombo Dam	78	Sterk River GWS (Doorndraai Dam)
18	Disaneng Dam	48	Modjadji Dam	79	Sterkstroom GWS (Buffelspoort Dam)
19	Dr. Eiselen Dam	49	Mogalakwena River GWS (Glen Alpine Dam)	80	Thabina Dam
20	Duthuni Dam	50	Mogol River GWS (Mokolo Dam)	81	Thapani Dam
21	Groot Letaba River GWS	51	Molatedi Dam	82	Tours Dam
22	Hartbeespoort GWS	52	Molepo Dam	83	Tshakhuma Dam
23	Houtrivier Dam	53	Mutale Weir	84	Turfloop Dam
24	Kabokweni Dam	54	Mutshedzi Dam	85	Vaalkop No 2 Dam
25	Klaserie Dam	55	Ngotoane Dam	86	Varswater Dam
26	Klein Maricopoort GWS	56	Nkadimeng Dam	87	Vergelegen Dam
27	Koster Dam	57	Nooitgedacht Dam	88	Vlakbult Dam
28	Leeukraal Dam	59	Nwanedi/Luphephe GWS	89	Vondo Dam
29	Lepellane Dam	60	Nzhelele River GWS (Nzhelele Dam)	90	Watersvals River GWS
30	Lindleyspoort GWS	61	Ohrigstad GWS	91	Rooikraal GWS

1.8 Service Description and Assets Summary

The primary service offered by the Cluster is the delivery of bulk raw water to its domestic and industrial (D&I), and irrigation water users (customers). Total registered raw water volume for the Cluster is about 1 756.162 Mm^3 per annum, of which 31.96% is for domestic and industrial and 68.04% is for irrigation use as shown in Table 1.4.

Table 1.4: Raw water allocations per water user category

Water User Category	Total Registered Volume (Mm^3 pa)	% of Total Registered Volume
Domestic & Industrial	561.339	31.96
Irrigation	1 194.823	68.04
Total	**1 756.162**	**100.00**

The key stakeholders for the Cluster are shown in Appendix C. Table 1.5 shows the principal customers (in terms of registered raw water volumes) for the Cluster. Appendix D, Table D.1 shows registered raw water volumes per water use category.

Table 1.5: Principal water users

Principal Customer Name	Water User Category	Registered Water Volume (Mm^3 pa)
Crocodile River Major Irrigation Board	Irrigation	310.704
Komati River Irrigation Board	Irrigation	153.374
Loskop Irrigation Board	Irrigation	124.245
Letaba Water User Association	Irrigation	116.549
Magalies Water	Domestic & Industrial	102.230
Total		**807.102**
% of Total Cluster Registered Volume		*46%*

Table 1.6 summarizes the immovable assets for Cluster as they appear in the Asset Register (refer to Appendix A) used in the development of this AMP. The Cluster's immovable asset components have a total DRC and CRC of about R36.656 billion and about R39.549 billion, respectively. They can be grouped into two: They can be grouped into two:

- infrastructure assets (with total DRC and CRC of about R34.360 billion and about R37.252 billion, respectively), and
- land (with a total of R2.297 billion for both DRC and CRC).

For infrastructure assets, dams-related asset components have the highest CRC of about R28.197 billion, followed by canals, measuring facilities, pipelines and buildings related asset components with CRC of about: R3.768 billion, R2.723 billion, R1.368 billion, and R0.979

billion, respectively. A similar pattern is evident for DRC.

Table 1.6: Summary of the Cluster's immovable assets

Asset Facility Category	No. of Asset Components	CRC (R Million)	DRC (R Million)
Borehole	41	50.79	43.14
Buildings	1 084	978.55	810.34
Canals	6 244	3 767.76	3 128.75
Dams	2 524	28 197.10	26 663.10
Measuring facilities	885	2 723.32	2 387.24
Pipelines	199	1 368.16	1 184.31
Power supply	25	20.16	16.11
Pump stations	144	47.14	41.18
Reservoirs	33	41.20	36.50
Roads	10	5.33	4.77
Telemetry	12	9.97	6.66
Tunnels	1	6.34	5.37
Water Treatment	21	36.42	32.11
Sub-total Infrastructure	**11 223**	**37 252.20**	**34 359.59**
Land - owned land	102	1 781.25	1 781.25
Land - servitudes	1 559	515.27	515.17
Sub-total Land	**1 661**	**2 296.51**	**2 296.51**
TOTAL	**12 884**	**39 548.72**	**36 656.11**

To be noted is that the Asset Register (see Appendix A) used in the development of this AMP did not have sizes (e.g. lengths of canals, roads, etc.) on most of the asset components. Hence, asset sizes are not shown in Table 1.6.

1.9 Summary

This AMP is for the Northern Operations Cluster which is part of the DWS's NWRI operations. Key data sources used in the development of this AMP include: the NWRI's immovable asset register; asset hierarchy; the 2016 Condition Assessment Audit of Irrigation Scheme Infrastructure – Scheme Reports for Northern Operations Cluster; the Cluster's financial information (costs and revenue); face-to-face interviews conducted with the relevant Cluster personnel; as well as other relevant NWRI documentation.

The main purpose of this AMP is to enable the Cluster to effectively and efficiently manage its infrastructure assets, thereby enabling it to maximise its service delivery potential and benefits (delivering the desired level of service to its clients), and to minimise related risks and costs over its infrastructure assets' entire life cycle. This AMP is prepared in accordance with the provisions of the GIAMA, and is also aligned to: other relevant South African legislation; international standards; as well as the DWS's strategic plan.

The primary service offered by the Cluster is the delivery of bulk raw water to its domestic and industrial (D&I), and irrigation water users (customers). Total registered raw water volume for the Cluster is about 1 756.162 Mm^3 per annum, of which 31.96% is for domestic and industrial and 68.04% is for irrigation use.

The Cluster's immovable assets can be grouped into two: infrastructure assets (with total DRC and CRC of about R34.359 billion and about R37.252 billion, respectively), and land (with a total of about R2.297 billion for both DRC and CRC).

The next section highlights the levels of service expected from the Cluster, as well as the associated performance measures and targets for the Scheme.

2. LEVELS OF SERVICE, PERFORMANCE MEASURES & TARGETS

2.1 Overview

This section presents the levels of service, as well as the associated performance measures and targets, for the Northern Operations Cluster. Understanding the levels of service for the Cluster assists in monitoring and managing the Cluster's infrastructure assets so as to ensure effective service delivery to its water users and, thus, leading to customer satisfaction.

2.2 Levels of Service, and Associated Performance Measures and Targets

In this AMP, 'levels of service' refers to the quality and quantity of the Cluster's service delivery, against which the Cluster's performance may be measured. As indicated in the preceding section, the key service delivered by the Cluster is the supply of raw water to its customers (irrigation, and domestic and industrial water users). The total raw water registered volume for this Cluster is about 1 756.162 Mm^3 per annum. Appendix D, Table D.1, shows the registered raw water volumes per water use category.

There are three key levels of service applicable to the Cluster's raw water supply service, namely:

- Volume of raw water supplied;
- Quality of raw water supplied; and
- Assurance level of raw water supply.

The above-listed levels of service are evident in the: raw water supply agreements with water users; and the DWS's Raw Water Pricing Strategy. The DWS's Catchment Management Area (CMA) is responsible for raw water registration/licensing. Two of the levels of service (volume of raw water supplied; and assurance level of raw water supply) fall under the direct responsibility of the Cluster (which is part of NWRI Operations); whilst the 'quality of raw water supplied' level of service falls under the direct responsibility of the CMA. As this AMP focuses on NWRI, the 'quality of raw water supplied' level of service is not covered in subsequent text.

Table 2.1 presents the performance measures and targets (associated with each of the two levels of service for which the Cluster, as part of NWRI, is responsible), current performance, as well as the desired future performance targets.

Table 2.1: Levels of service, and associated performance measures and targets

Level of Service	Performance Measure	Performance Target (2015/16)	Current Performance (2015/16)	Desired Performance Targets (2016/17 – 2025/26)
Volume of raw water supplied	Number of agreements with water users in place	All water users have valid agreements in place (100%).	Could not be ascertained for some of the schemes.	All water users have valid agreements in place (100%).
	Volume of raw water supplied	Registered raw water volumes per annum: ▪ 561.339 Mm^3 for domestic and industrial water users; ▪ 1 194.823 Mm^3 for irrigation water users; ▪ 1 756.162 Mm^3 Total.	Actual raw water volumes supplied to D&I and irrigation water users could not be obtained.	Be able to meet the growth in demand (refer to Section 3).
	Asset Maintenance	No deferred maintenance.	There is some deferred maintenance (refer to Section 5.5).	No deferred maintenance.
	Water conveyance efficiency	Percentage of unaccounted for raw water during delivery: < 3% for pipes; <20% for canals.	Could not be ascertained for some of the schemes.	Percentage of unaccounted for raw water during delivery: < 3% for pipes; <20% for canals.
Assurance level of raw water supply	Water supply assurance	▪ 97% for domestic and industrial water users; ▪ 91% for irrigation water users.	Could not be ascertained.	▪ 97% for domestic and industrial water users; ▪ 91% for irrigation water users.

2.3 Summary

There are three key desired levels of service applicable to the Cluster's raw water supply service: volume of raw water supplied; quality of raw water supplied; and assurance level of raw water supply. Volume of raw water supplied and assurance level of raw water supply fall under the direct responsibility of the Cluster operations; whilst quality of raw water supplied falls under the direct responsibility of the CMA. The Cluster is expected to supply an annual total of: 561.339 Mm^3 of raw water to D&I water users for which it assures 97% non-interruption; and 1 194.823 Mm^3 to irrigation water users for which it assures 91%.

In order to ensure that the Cluster provides the levels of service agreed with the water users, a number of asset life cycle management activities need to be executed, as outlined in Sections 4 and 5 of this AMP. The following section indicates the future raw water demand projections for this Cluster.

3. FUTURE RAW WATER DEMAND

3.1 Overview

This section highlights the Northern Operations Cluster's projected raw water demand levels based on the past trend.

3.2 Raw Water Demand Projection

Insight of the Cluster's future raw water demand helps in optimised planning for future new and upgrade capital needs (capital acquisitions), as contemplated in Sections 5 and 6 of the GIAMA. Figure 3.1 shows projected raw water demand for the Cluster, based on the registered volumes for both domestic and industrial (D&I) and irrigation (IRR). Refer to Appendix D, Table D.2, for the data used to generate the graph in Figure 3.1. Ideally, the Cluster's future raw water demand determined by the DWS's Planning Office needs to take precedence; this will be addressed in the next update of this AMP.

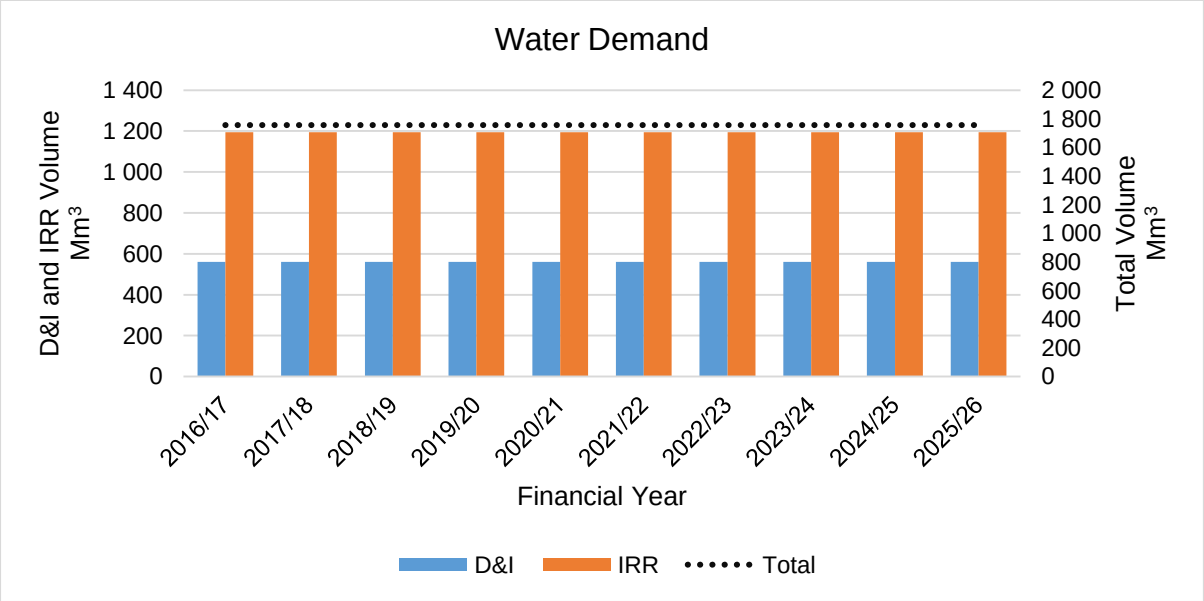


Figure 3.1: Projected raw water demand

3.3 Assumptions Made in Projecting Water Demand.

The main assumption made here is that there will be no major changes on the economic, political, demographic, settlement, irrigation, and domestic and industrial fronts affecting the Cluster. It is however important to note that in the event that there is a significant unforeseen change in any of these fronts, the projected raw water demand is bound to change. This calls for forward-looking planning where the Cluster needs to always keep track of changes unfolding in these fronts, watching for changes that could significantly shift the current raw

water demand, and consequently requiring upgrades or new capital or disposals of the Cluster's assets.

3.4 Sensitivity Analysis

Figure 3.2 shows possible scenarios from a sensitivity analysis; refer to Appendix D, Table D.3, for the data used to generate the graph.

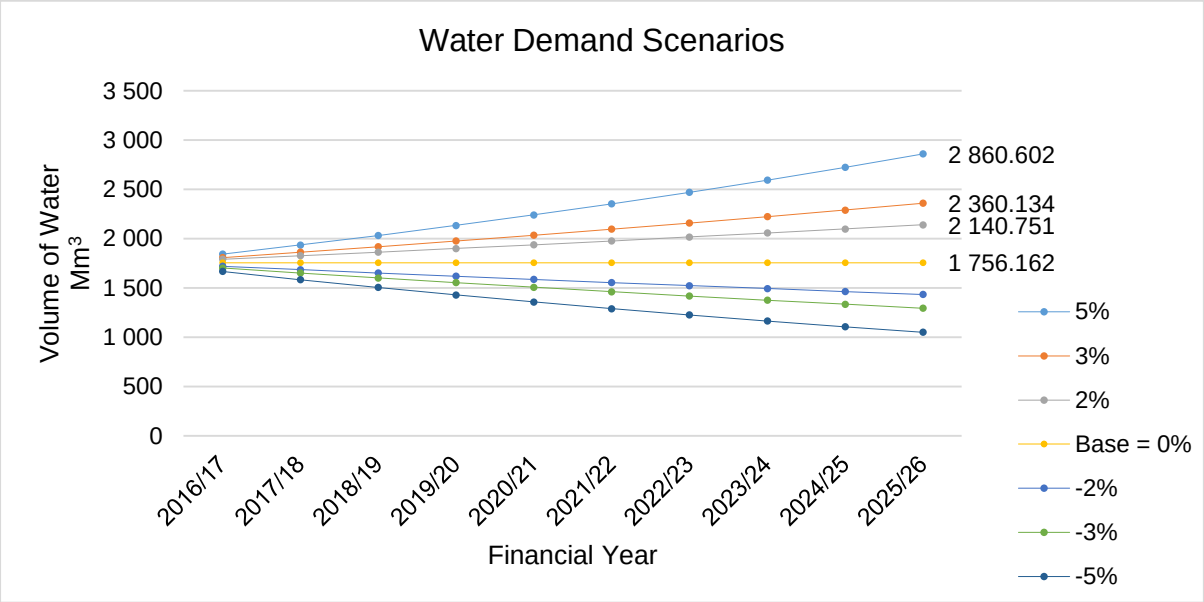


Figure 3.2: Future raw water demand sensitivity analysis

Ideally, the sensitivity graph in Figure 3.2 needs to be compared to the yields of the dams in the Cluster to ascertain whether or not the Cluster will be able to meet its projected raw water demand without the need for additional assets (new and/or upgrades). The next update of this AMP is expected to incorporate the dam yields.

3.5 Summary

The Northern Operations Cluster's future raw water demand for the next 10 years is projected to be around 1 756.162 Mm^3 per annum. The main assumption made here is that there will be no major changes on the economic, political, demographic, settlement, irrigation, and domestic and industrial fronts affecting the Cluster. Ideally, the Cluster's future raw water demand determined by the DWS's Planning Office takes precedence. The next update of this AMP is expected to make use of such data.

In order for the Cluster to meet the future raw water demand projected in this section, the following Sections 4 and 5 highlight the accordingly required asset life cycle works and associated financial plan, respectively.

4. ASSET DETAILS, RISK AND LIFE CYCLE WORKS

4.1 Overview

This section begins with an analysis of the immovable asset details (e.g. extent, value, condition, criticality, utilisation, etc.) for the Northern Operations Cluster. It then proceeds to discuss the associated risks, the works and strategies recommended for the Cluster to effectively and efficiently manage its assets throughout their life cycles in order to meet the levels of service agreed with its water users (see Section 2) and the projected future raw water demand (see Section 3).

4.2 Asset Information

The following subsections highlight the details (extent, value, condition, criticality and utilization) of the Cluster's immovable assets, based on the DWS's Immovable Asset Register for the 2015/16 financial year (refer to Appendix A).

The DWS Immovable Asset Management Policy (Section 6) and GRAP 17 (Section 11) prescribe the minimum asset register information, including: detail asset description (e.g. sizes, material of construction, etc.), EUL, RUL, impairments, and disposal (date, proceeds, and depreciation up to date of disposal). Where such information was incomplete in the asset register used in this AMP, the DWS Infrastructure Asset Hierarchy (latest version updated in 2013/14), the DWS's Immovable Asset Management Policy, Valuation Guide and the 2010 AMPs formed the basis for addressing the shortcoming. For instance:

- EULs were assigned based on the DWS Infrastructure Asset Hierarchy.
- RULs were determined using the age-based approach (and moderated by the condition-based approach).
- CRCs were determined by adjusting the provided acquisition costs with PPI and an uncertainty factor, and moderated using the CRCs reported in the 2010 AMPs, owing to the insufficient data on asset component sizes and material of construction.

4.2.1 Asset Extent and Values

Table 4.1 shows the extent (number of asset components), acquisition cost, CRC, DRC and asset carrying values for the Cluster's assets, split between scheme-specific and non-scheme specific.

Table 4.1: Asset extent, acquisition costs, CRC and values (scheme- and non-scheme-specific)

Description	No. of Asset Components	Acquisition Cost (R Million)	Asset Carrying Value (R Million)	CRC (R Million)	DRC (R Million)	DRC / CRC (%)
Scheme-Specific Infrastructure	1 0281	12 716.05	10 112.26	34 963.11	32 359.33	92.55
Scheme-Specific Land	1464	850.43	836.67	2 200.88	2 200.88	100.00
Sub-Total Scheme-Specific	**11 745**	**13 566.48**	**10 948.93**	**37 163.99**	**34 560.21**	**92.96**
Non-Scheme-Specific Infrastructure	942	833.05	544.22	2 289.09	2 000.26	87.38
Non-Scheme-Specific Land	197	34.58	34.58	95.64	95.64	100.00
Sub-Total Non-Scheme-Specific	**1139**	**867.63**	**578.80**	**2 384.73**	**2 095.90**	**87.89**
Total	**12 884**	**14 434.11**	**11 527.73**	**39 548.72**	**36 656.11**	**92.69**

Table 4.2 shows the extent (number of asset components), acquisition cost, CRC, DRC and asset carrying values for the Cluster's assets per asset facility category.

Table 4.2: Asset extent, acquisition costs, CRC and values (per facility category)

Asset Facility Category	No. of Asset Components	Acquisition Cost (R Million)	Asset Carrying Value (R Million)	CRC (R Million)	DRC (R Million)	DRC / CRC (%)
Borehole	41	18.41	10.76	50.79	43.14	84.94
Buildings	1 084	380.04	211.84	978.55	810.34	82.81
Canals	6 244	1 370.95	731.94	3 767.76	3 128.75	83.04
Dams	2 524	10 232.46	8 698.46	28 197.10	26 663.10	94.56
Measuring facilities	885	984.79	648.71	2 723.32	2 387.24	87.66
Pipelines	199	496.89	313.04	1 368.16	1 184.31	86.56
Power supply	25	7.42	3.38	20.16	16.11	79.93
Pump stations	144	21.16	15.20	47.14	41.18	87.35
Reservoirs	33	14.89	10.22	41.20	36.50	88.67
Roads	10	2.67	2.11	5.33	4.77	89.61
Telemetry	12	3.95	0.65	9.97	6.66	66.87
Tunnels	1	2.29	1.32	6.34	5.37	84.75
Water Treatment	21	13.17	8.85	36.42	32.11	88.15
Sub-total Infrastructure	**11 223**	**13 549.10**	**10 656.48**	**37 252.20**	**34 359.59**	**92.24**
Land - owned land	102	695.72	682.06	1 781.25	1 781.25	100.00
Land - servitudes	1 559	189.29	189.18	515.27	515.17	100.00
Sub-total Land	**1 661**	**885.01**	**871.25**	**2 296.51**	**2 296.51**	**100.00**
TOTAL	**12 884**	**14 434.11**	**11 527.73**	**39 548.72**	**36 656.11**	**92.69**

As shown in Table 4.1, the Cluster has an immovable asset base consisting of: *infrastructure assets* (with a total of 11 223 asset components) and *land* (with a total of 1 661 asset

components). The Cluster's immovable asset components have a total DRC and CRC of about R36.656 billion and about R39.549 billion, respectively. They can be grouped into two: infrastructure assets with a total DRC and CRC of about R34.360 billion and about R37.252 billion, respectively; and land with a total of about R2.297 billion for both DRC and CRC. The DRC/CRC ratio for infrastructure assets is about 92%, indicating that about 8% of the infrastructure asset base has been consumed so far.

For infrastructure assets, dams-related asset components have the highest CRC of about R28.197 billion, followed by canals, measuring facilities, pipelines and buildings related asset components with CRC of about: R3.768 billion, R2.723 billion, R1.368 billion, and R0.979 billion, respectively. A similar pattern is evident for DRC.

Figure 4.1 shows the proportional distribution of the Cluster's asset components per asset facility category. The majority of the Cluster's asset components are canals, dams, land and buildings related asset components (about 48%, 20%, 13%, and 8%, respectively).

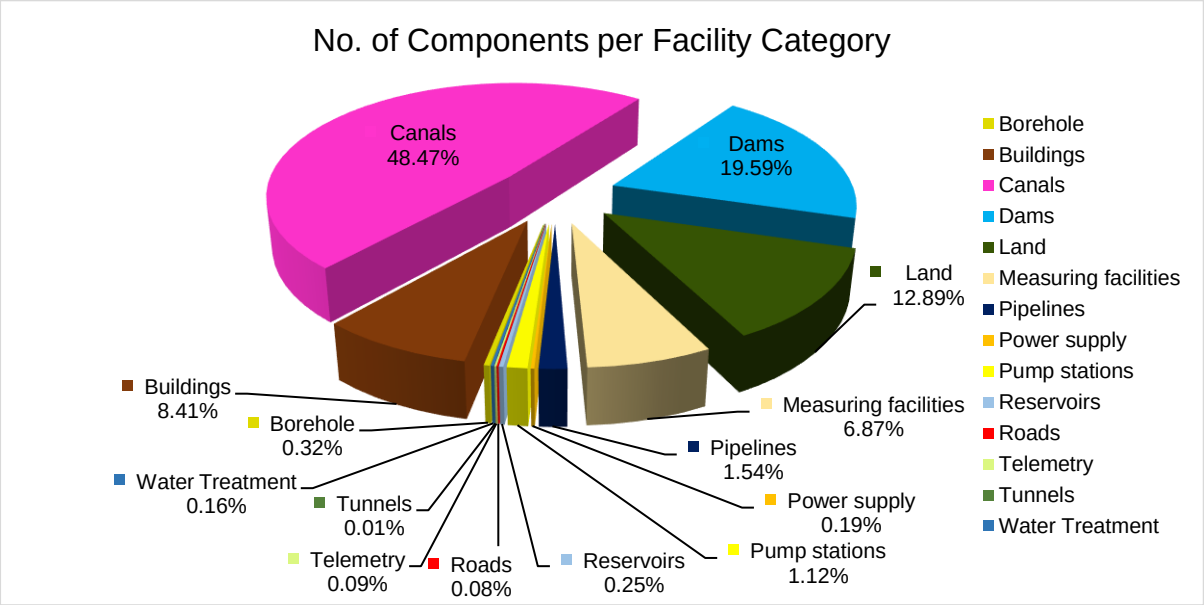


Figure 4.1: Proportion of asset components per asset facility category

Figures 4.2 and 4.3 show the associated proportions of the DRC and CRC per asset facility category, respectively.

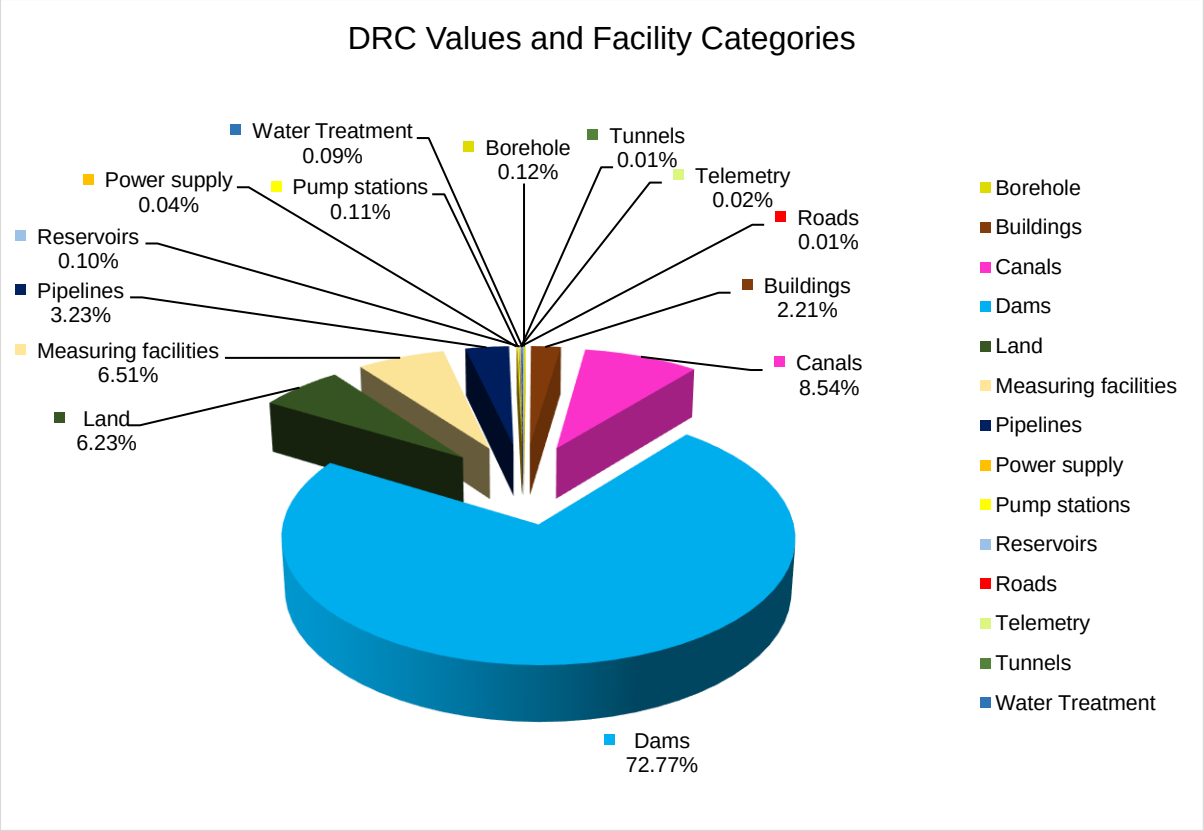


Figure 4.2: DRC per asset facility category

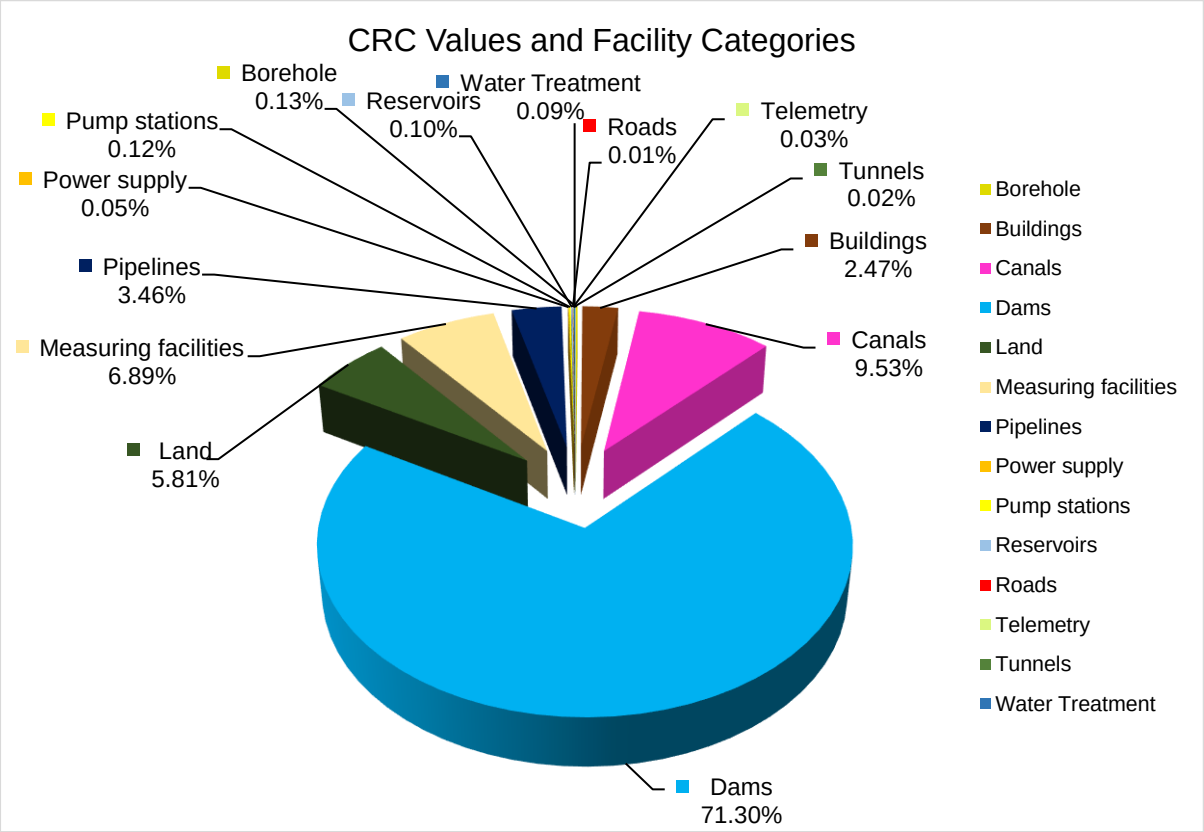


Figure 4.3: CRC per asset facility category

4.2.2 Asset Condition and RUL/EUL Ratio

Table 4.2 shows the asset condition grading criteria as well as the link between the condition grading and the RUL/EUL ratio range.

Table 4.3: Linking asset condition grades to RUL/EUL ratio range

Condition Grade	Description	Detailed Description	Indicative RUL/EUL
5	Very good	Sound structure, well maintained. Only normal maintenance required.	71 - 100%
4	Good	Serves needs but minor deterioration (< 5%). Minor maintenance required.	46 - 70%
3	Fair	Marginal, clearly evident deterioration (10-20%). Significant maintenance required.	26 - 45%
2	Poor	Significant deterioration of structure and/or appearance. Significant impairment of functionality (20-40%). Significant renewal/upgrade required.	11 - 25%
1	Very poor	Unsound, failed, needs reconstruction/ replacement (> 50% needs replacement).	0 - 10%
0	Not Working	Unsound, failed, needs reconstruction/ replacement (100% needs replacement).	0%

Source: Adapted from DWS Immovable Asset Management Policy (2015)

Asset Condition

Table 4.4 and Figure 4.4 show the proportions of the Cluster's infrastructure asset components per condition grading and per asset facility category. Appendix E, Table E.1, an expanded version of Table 4.4, shows the number of asset components in each condition grading.

- About 81% of the Cluster's infrastructure asset components are in fair, good and good conditions. These include all: telemetry; and tunnels related asset components. Also, the majority of pipelines (about 96%), canals (about 94%), reservoirs (about 84%), power supply (about 80%), roads (about 80%), pump stations (about 78%), measuring facilities (69%), dams (65%), water treatment (57%), buildings (54%) and borehole (about 74%) related asset components fall under the same condition gradings. All these asset components require appropriate maintenance to prevent them from deteriorating to poor and very poor condition.
- On the other hand, about 19% of the Cluster's infrastructure asset components have deteriorated to poor and very poor conditions. These are the minority of pipeline (about 4%), canals (about 6%), reservoirs (about 16%), power supply (about 20%), roads (about 20%), pump station (about 22%) related asset components, as well as 31%, 35%, 43%, 46% and 66% of measuring facilities, dams, water treatment, buildings, and borehole related asset components, respectively. These asset components need to be renewed to ensure they continue delivering the required service.

Table 4.4: Asset component condition grading proportions per asset facility category

Asset Facility Category	Condition Grading					Total
	1-Very Poor	2-Poor	3-Fair	4-Good	5-Very Good	
Borehole	-	65.85%	17.07%	17.07%	-	**100.00%**
Buildings	20.85%	24.72%	26.20%	20.94%	7.29%	**100.00%**
Canals	1.14%	4.48%	91.05%	3.20%	0.13%	**100.00%**
Dams	6.66%	27.89%	32.88%	27.30%	5.27%	**100.00%**
Measuring facilities	1.92%	29.38%	12.43%	54.46%	1.81%	**100.00%**
Pipelines	0.50%	3.02%	95.48%	1.01%	-	**100.00%**
Power supply	4.00%	16.00%	64.00%	12.00%	4.00%	**100.00%**
Pump stations	6.94%	14.58%	9.03%	19.44%	50.00%	**100.00%**
Reservoirs	9.38%	6.25%	65.63%	12.50%	6.25%	**100.00%**
Roads	-	20.00%	10.00%	20.00%	50.00%	**100.00%**
Telemetry	-	-	100.00%	-	-	**100.00%**
Tunnels	-	-	-	100.00%	-	**100.00%**
Water Treatment	14.29%	28.57%	28.57%	14.29%	14.29%	**100.00%**
All Cluster asset components	*4.46%*	*14.08%*	*63.94%*	*14.69%*	*2.84%*	*100.00%*

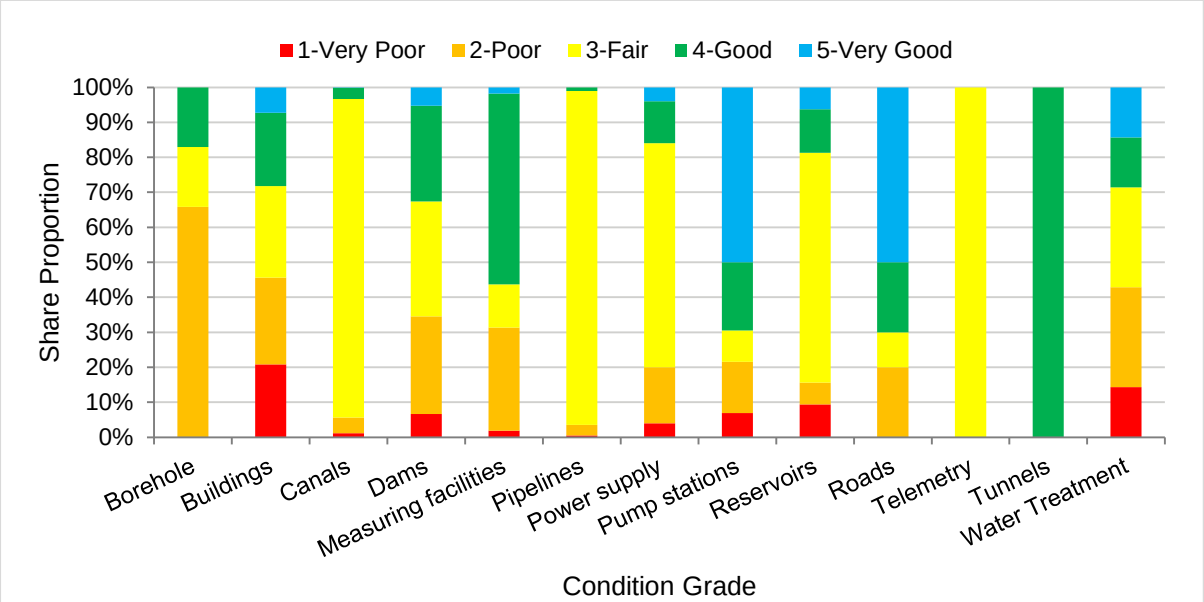
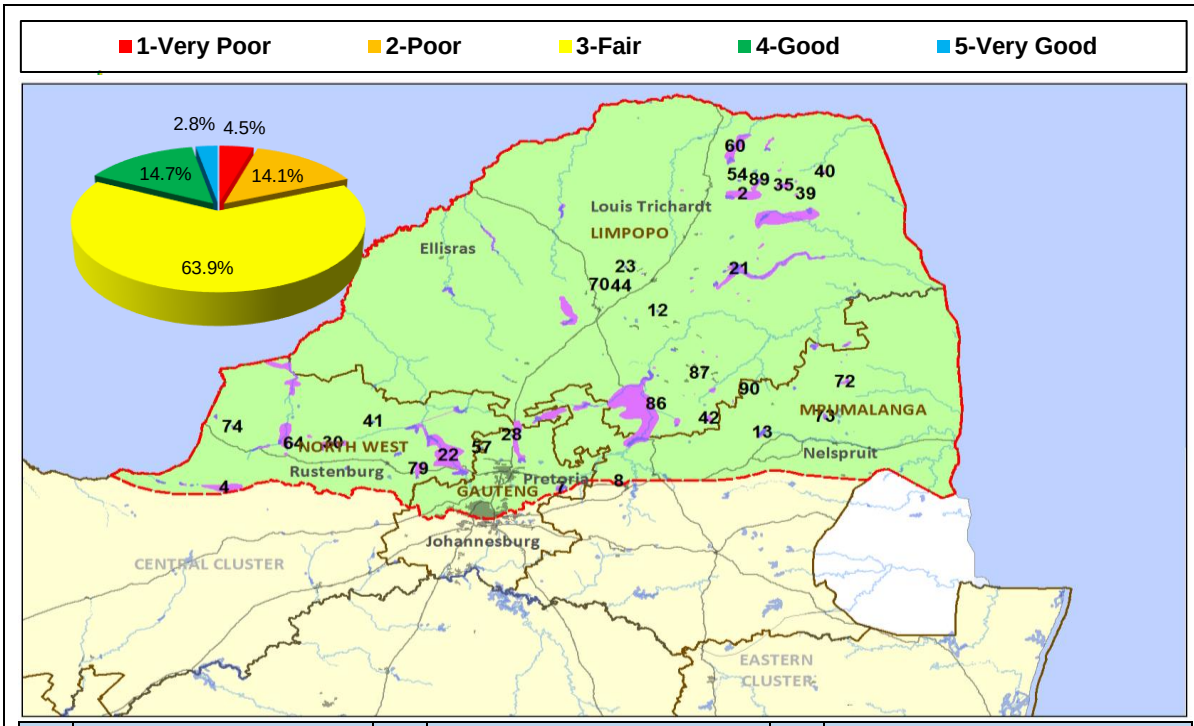


Figure 4.4: Asset component condition grading proportions per asset facility category

Figure 4.5 presents the overall condition gradings of the Cluster's asset components indicating that, as also shown in Table 4.4: about 81% of the Cluster's infrastructure asset components are in fair, good and good conditions; while about 19% are in poor and very poor conditions.



No.	Scheme Name	No.	Scheme Name	No.	Scheme Name
1	Acornhoek Dam	31	Lole Montes Dam	62	Olifants River GWS (Flag Boshielo)
2	Albasini GWS	32	Loskop GWS	63	Palala River GWS (Susandale and Visgat Weirs)
3	Blyderivierpoort Dam	33	Lotlamoreng Dam	64	Pella Dam
4	Bo-Molopo GWS	34	Luvuvhu River GWS (Malamulele Weir)	65	Phiphidi Dam
5	Bospoort Dam	35	Luvuvhu River GWS (Nandoni Dam)	66	Phiring Dam
6	Botlokwa Dam	36	Luvuvhu River GWS (Xikundu weir)	67	Pienaars River GWS (Roodeplaat Dam)
7	Bronkhorstspruit Dam	37	Madikwe Dam	68	Piet Gouws Dam
8	Brugspruit Pollution Control Works	38	Mahlangu Dam	69	Politsi GWS
9	Buffelsdoorn GWS (Mokotswane Dam)	39	Mahonisi Dam	70	Rietfontein Dam I and II
10	Capes Thorne Dam	40	Makuleke Dam	71	Rust De Winter GWS
11	Casteel Dam	41	Mankwe Dam	72	Sabie River GWS (Inyaka Dam)
12	Chuniespoort Dam	42	Mapochsgronden GWS	73	Sand River GWS (Witklip Dam)
13	Crocodile River GWS (Kwena Dam)	43	Marico-Bosveld GWS (Kromellenboog Dam)	74	Sehuwjane Dam
14	Crocodile River West GWS	44	Mashashane Dam	75	Seshego Dam
15	Damani Dam	45	Middelkraal Dam	76	Setumo Dam
16	De Hoop Dam	46	Middle Letaba System GWS	77	Spitskop Dam
17	Der Brochen Dam	47	Mkhombo Dam	78	Sterk River GWS (Doorndraai Dam)
18	Disaneng Dam	48	Modjadji Dam	79	Sterkstroom GWS (Buffelspoort Dam)
19	Dr. Eiselen Dam	49	Mogalakwena River GWS (Glen Alpine Dam)	80	Thabina Dam
20	Duthuni Dam	50	Mogol River GWS (Mokolo Dam)	81	Thapani Dam
21	Groot Letaba River GWS	51	Molatedi Dam	82	Tours Dam
22	Hartbeespoort GWS	52	Molepo Dam	83	Tshakhuma Dam
23	Houtrivier Dam	53	Mutale Weir	84	Turfloop Dam
24	Kabokweni Dam	54	Mutshedzi Dam	85	Vaalkop No 2 Dam
25	Klaserie Dam	55	Ngotoane Dam	86	Varswater Dam
26	Klein Maricopoort GWS	56	Nkadimeng Dam	87	Vergelegen Dam
27	Koster Dam	57	Nooitgedacht Dam	88	Vlakbult Dam
28	Leeukraal Dam	59	Nwanedi/Luphephe GWS	89	Vondo Dam
29	Lepellane Dam	60	Nzhelele River GWS (Nzhelele Dam)	90	Watersvals River GWS
30	Lindleyspoort GWS	61	Ohrigstad GWS	91	Rooikraal GWS

Figure 4.5: Asset component proportions per condition grading map

Table 4.5 and Figure 4.6 present the CRCs of the Cluster's infrastructure asset components per condition grading and per asset facility category. Asset components that are in fair, good and very good conditions (representing about 81% of all the Cluster's infrastructure asset components, as shown in Table 4.4 and Figures 4.4 and 4.5) have a total CRC of about R34.095 billion; the main contributions coming from:

- dams-related asset components (representing about 65% of all dams-related asset components, as shown in Table 4.4 and Figure 4.4) with a total CRC of about R24.477 billion;
- canals-related asset components (representing about 94% of all canals-related asset components, as shown in Table 4.4 and Figure 4.4) with a total CRC of about R3.511 billion; and
- pipelines-related asset components (representing about 96% of all pipelines-related asset components, as shown in Table 4.4 and Figure 4.4) with a total CRC of about R1.207 billion.

On the other hand, asset components that are in poor and very poor condition (representing about 19% of all the Cluster's infrastructure asset components, as shown in Table 4.3 and Figure 4.4) have a total CRC of about R3.156 billion; the main contributions coming from:

- dams-related asset components (representing about 35% of all dams-related asset components, as shown in Table 4.4 and Figure 4.4) with a total CRC of about R1 719illion;
- measuring facilities-related asset components (representing about 31% of all measuring facilities-related asset components, as shown in Table 4.4 and Figure 4.4) with a total CRC of about R615 million; and
- buildings-related asset components (representing about 46% of all buildings -related asset components, as shown in Table 4.4 and Figure 4.4) with a total CRC of about R334 million.

Table 4.5: CRC per condition grading and per asset facility category

Asset Facility Category	Condition Grading vs CRC (R Million)					Total	*% of Total CRC*
	1-Very Poor	**2-Poor**	**3-Fair**	**4-Good**	**5-Very Good**		
Borehole		29.43	9.12	12.24		**50.79**	*0.14*
Buildings	167.38	167.23	290.86	217.23	135.85	**978.55**	*2.63*
Canals	23.89	231.97	3 216.86	269.92	25.13	**3 767.76**	*10.11*
Dams	244.23	1 475.00	4 372.92	16 657.10	5 447.85	**28 197.10**	*75.69*
Measuring facilities	59.16	555.88	459.43	1 577.26	71.59	**2 723.32**	*7.31*
Pipelines	1.35	159.69	1 205.57	1.55		**1 368.16**	*3.67*
Power supply	0.23	12.04	4.88	2.67	0.35	**20.16**	*0.05*
Pump stations	0.71	6.03	13.02	7.13	20.24	**47.14**	*0.13*
Reservoirs	0.56	0.39	38.83	0.80	0.36	**40.95**	*0.11*
Roads		1.75	0.46	0.43	2.70	**5.33**	*0.01*
Telemetry			9.97			**9.97**	*0.03*
Tunnels				6.34		**6.34**	*0.02*
Water Treatment	14.04	5.27	11.68	3.75	1.67	**36.42**	*0.10*
Total	**511.56**	**2 644.68**	**9 633.59**	**18 756.42**	**5 705.73**	**37 251.97**	***100.00***
% of Total CRC	*1.37*	*7.10*	*25.86*	*50.35*	*15.32*	***100.00***	

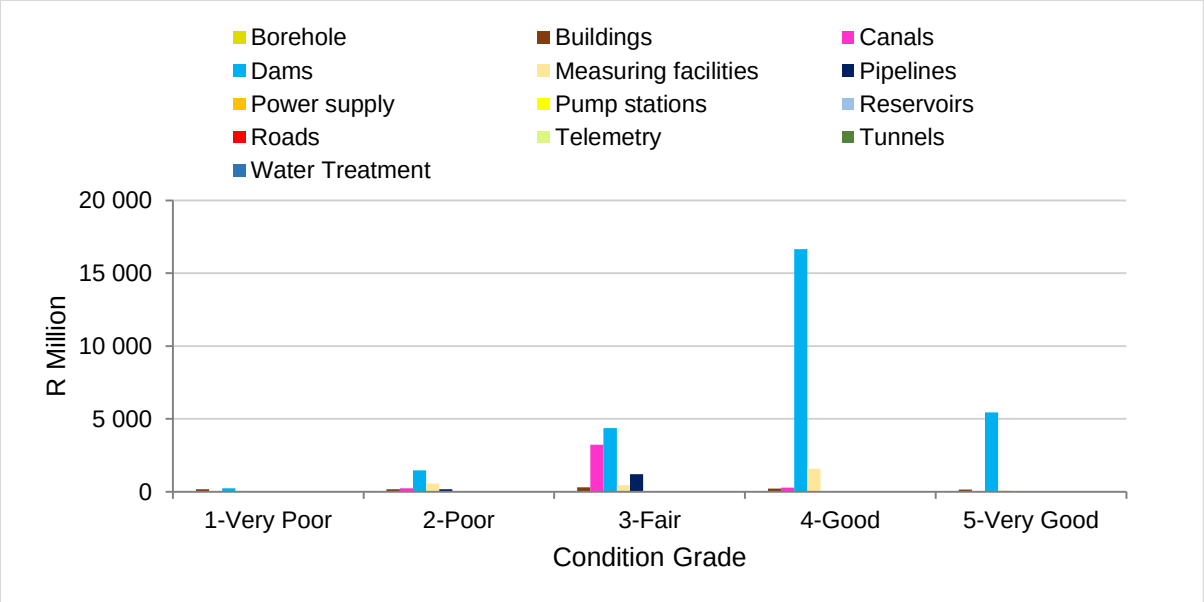


Figure 4.6: CRC per condition grading and per asset facility category

Asset RUL/EUL ratio

Table 4.6 and Figure 4.7 show the proportions of the Cluster's infrastructure asset components per RUL/EUL ratio and per asset facility category. Appendix E, Table E.2, an expanded version of Table 4.6, shows the number of asset components in each RUL/EUL ratio range.

- About 81% of the Cluster's infrastructure asset components have RUL/EUL ratios in the 26% to 100% range. These include all: telemetry; and tunnels related asset components. Also, the majority of pipelines (about 96%), canals (about 94%),

reservoirs (about 84%), power supply (about 80%), roads (about 80%), pump stations (about 78%), measuring facilities (69%), dams (65%), water treatment (57%), buildings (54%) and borehole (about 74%) related asset components fall under the same RUL/EUL ratio ranges. These asset components require appropriate maintenance to ensure they continue to meet the required service.

- On the other hand, about 19% of the Cluster's infrastructure asset components have RUL/EUL ratios of 25% and below. These are the minority of pipeline (about 4%), canals (about 6%), reservoirs (about 16%), power supply (about 20%), roads (about 20%), pump station (about 22%) related asset components, as well as 31%, 35%, 43%, 46% and 66% of measuring facilities, dams, water treatment, buildings, and borehole related asset components. The RUL/EUL ratios of 25% and below mean that these asset components are nearing the end of their EULs; calling for immediate asset renewal to extend their useful lives.

Table 4.6: Asset component RUL/EUL ratio proportions per asset facility category

Asset Facility Category	RUL/EUL Ratio					Total
	0-10%	**11-25%**	**26-45%**	**46-70%**	**71-100%**	
Borehole	-	65.85%	17.07%	17.07%	-	**100.00%**
Buildings	20.85%	24.72%	26.20%	20.94%	7.29%	**100.00%**
Canals	1.14%	4.48%	91.05%	3.20%	0.13%	**100.00%**
Dams	6.66%	27.89%	32.88%	27.30%	5.27%	**100.00%**
Measuring facilities	1.92%	29.38%	12.43%	54.46%	1.81%	**100.00%**
Pipelines	0.50%	3.02%	95.48%	1.01%	-	**100.00%**
Power supply	4.00%	16.00%	64.00%	12.00%	4.00%	**100.00%**
Pump stations	6.94%	14.58%	9.03%	19.44%	50.00%	**100.00%**
Reservoirs	9.38%	6.25%	65.63%	12.50%	6.25%	**100.00%**
Roads	-	20.00%	10.00%	20.00%	50.00%	**100.00%**
Telemetry	-	-	100.00%	-	-	**100.00%**
Tunnels	-	-	-	100.00%	-	**100.00%**
Water Treatment	14.29%	28.57%	28.57%	14.29%	14.29%	**100.00%**
All Cluster asset components	*4.46%*	*14.08%*	*63.94%*	*14.69%*	*2.84%*	***100.00%***

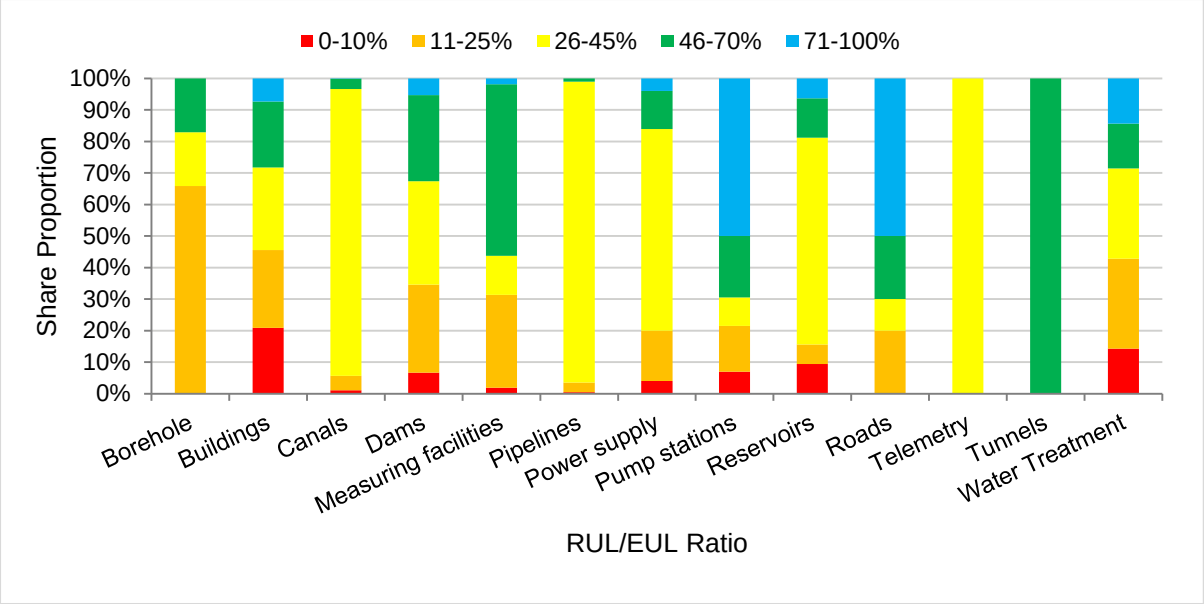


Figure 4.7: Asset component RUL/EUL ratio proportions per asset facility category

Table 4.7 and Figure 4.8 present the CRCs of the Cluster's asset components per RUL/EUL ratio range and per asset facility category. Asset components with RUL/EUL ratios in the ranges 26% to 100% (representing about 81% of all the Cluster's asset components, as shown in Table 4.6 and Figure 4.7) have a total CRC of about R34.095 billion; the main contributions coming from:

- dams-related asset components (representing about 65% of all dams-related asset components, as shown in Table 4.6 and Figure 4.7) with a total CRC of about R24.477 billion;
- canals-related asset components (representing about 94% of all canals-related asset components, as shown in Table 4.6 and Figure 4.7) with a total CRC of about R3.511 billion; and
- pipelines-related asset components (representing about 96% of all pipelines-related asset components, as shown in Table 4.6 and Figure 4.7) with a total CRC of about R1.207 billion.

On the other hand, asset components with RUL/EUL ratios of 25% and below (representing about 19% of all the Cluster's asset components, as shown in Table 4.6 and Figure 4.7) have a total CRC of about R3.156 billion; the main contribution coming from:

- dams-related asset components (representing about 35% of all dams-related asset components, as shown in Table 4.6 and Figure 4.7) with a total CRC of about R1 719illion;
- measuring facilities-related asset components (representing about 31% of all

measuring facilities-related asset components, as shown in Table 4.6 and Figure 4.7) with a total CRC of about R615 million; and

- buildings-related asset components (representing about 46% of all buildings -related asset components, as shown in Table 4.6 and Figure 4.7) with a total CRC of about R334 million.

Table 4.7: CRC per RUL/EUL ratio and per asset facility category

Asset Facility Category	RUL/EUL ratio vs CRC (R Million)					Total	% of Total CRC
	0-10%	11-25%	26-45%	46-70%	71-100%		
Borehole		29.43	9.12	12.24		**50.79**	*0.14*
Buildings	167.38	167.23	290.86	217.23	135.85	**978.55**	*2.63*
Canals	23.89	231.97	3 216.86	269.92	25.13	**3 767.76**	*10.11*
Dams	244.23	1 475.00	4 372.92	16 657.10	5 447.85	**28 197.10**	*75.69*
Measuring facilities	59.16	555.88	459.43	1 577.26	71.59	**2 723.32**	*7.31*
Pipelines	1.35	159.69	1 205.57	1.55		**1 368.16**	*3.67*
Power supply	0.23	12.04	4.88	2.67	0.35	**20.16**	*0.05*
Pump stations	0.71	6.03	13.02	7.13	20.24	**47.14**	*0.13*
Reservoirs	0.56	0.39	38.83	0.80	0.36	**40.95**	*0.11*
Roads		1.75	0.46	0.43	2.70	**5.33**	*0.01*
Telemetry			9.97			**9.97**	*0.03*
Tunnels				6.34		**6.34**	*0.02*
Water Treatment	14.04	5.27	11.68	3.75	1.67	**36.42**	*0.10*
Total	**511.56**	**2 644.68**	**9 633.59**	**18 756.42**	**5 705.73**	**37 251.97**	***100.00***
% of Total CRC	*1.37*	*7.10*	*25.86*	*50.35*	*15.32*	***100.00***	

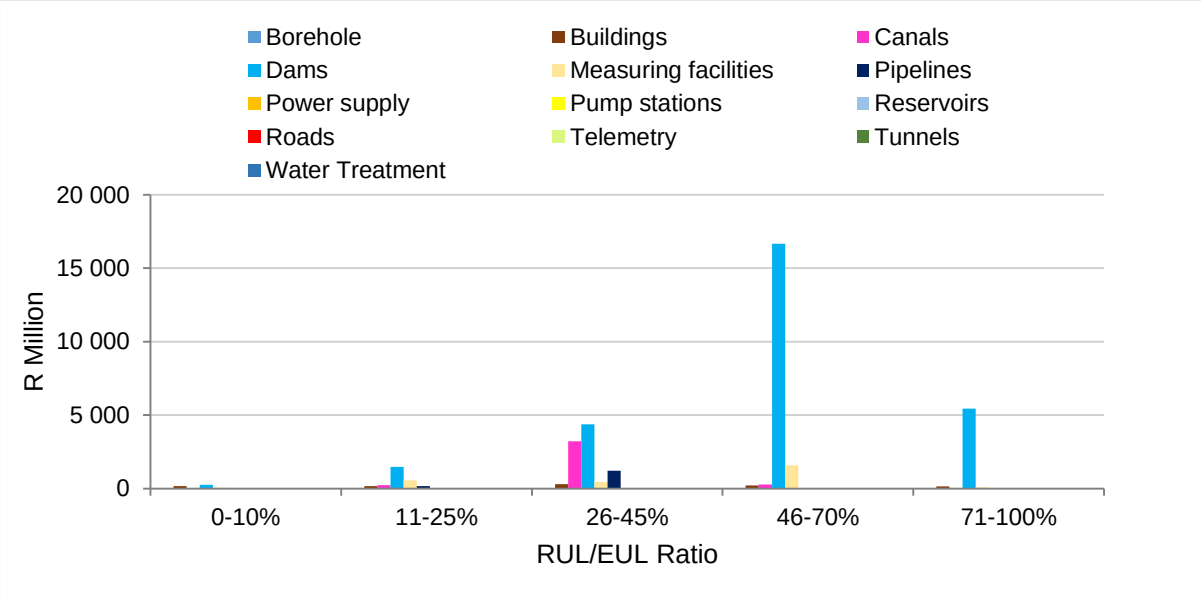


Figure 4.8: CRC per RUL/EUL ratio and per asset facility category

4.2.3 Asset Criticality

In this AMP, asset components are graded in terms of criticality according to the criteria listed

in Table 4.8.

Table 4.8: Asset criticality grading criteria

Grade	Criticality Description	Consequence of Failure (Impact)	Qualitative Description
1	Very Low	Insignificant	Is readily absorbed under normal operating conditions.
2	Low	Minor	Can be managed under normal operating conditions.
3	Moderate	Moderate	Can be managed but requires additional resources and management effort.
4	High	Major	Will have a prolonged impact and extensive consequences.
5	Very High	Catastrophic	Irreversible and extensive impacts, or will significantly undermine business objectives.

Table 4.9 and Figure 4.9 show the proportions of the Cluster's infrastructure asset components per criticality grade and per asset facility category. Appendix E, Table E.3, an expanded version of Table 4.9, shows the number of asset components in each criticality grade. For this Cluster:

- About 78% of the Cluster's infrastructure asset components are in the moderate, high and very high criticality grades. These include: all telemetry and tunnels related asset components; as well as: canals (about 98%); pipelines (about 88%); reservoirs (about 69%); buildings (about 65%); borehole (about 56%); dams (about 54%); water treatment (about 38%); pump stations (about 36%); measuring facilities (about 32%); power supply (about 28%); and roads (about 20%) related asset components. In the event of failure, these asset components will cause a moderate to catastrophic impact on the Cluster's ability to meet the required levels of service. Thus, these assets require appropriate maintenance and renewal to ensure they continue delivering the required service.
- On the other hand, about 22% of the Cluster's infrastructure asset components are in the low and very low criticality grades. These include: roads (about 80%), power supply (about 72%), measuring facilities (about 68%), pump stations (about 64%), water treatment (about 62%), dams (about 46%), borehole (44%), buildings (35%), reservoirs (31%), pipelines (12%) and canals (about 2%). In the event of failure, these asset components will cause a minor to insignificant impact on the Cluster's ability to meet the required levels of service.

Table 4.9: Asset component Criticality grading proportions per asset facility category

Asset Facility Category	Criticality Grading					Total
	1-Very Low	2-Low	3-Moderate	4-High	5-Very High	
Borehole	4.88%	39.02%	56.10%	-	-	**100.00%**
Buildings	8.96%	26.32%	62.05%	2.40%	0.28%	**100.00%**
Canals	0.77%	1.68%	96.62%	0.93%	-	**100.00%**
Dams	1.11%	44.77%	18.15%	32.96%	3.01%	**100.00%**
Measuring facilities	26.55%	41.13%	30.06%	2.15%	0.11%	**100.00%**
Pipelines	2.51%	9.55%	71.86%	7.54%	8.54%	**100.00%**
Power supply	4.00%	68.00%	28.00%	-	-	**100.00%**
Pump stations	2.08%	61.81%	18.75%	16.67%	0.69%	**100.00%**
Reservoirs	-	31.25%	65.63%	3.13%	-	**100.00%**
Roads	50.00%	30.00%	20.00%	-	-	**100.00%**
Telemetry	-	-	100.00%	-	-	**100.00%**
Tunnels	-	-	100.00%	-	-	**100.00%**
Water Treatment	-	61.90%	28.57%	9.52%	-	**100.00%**
All Cluster asset components	*3.78%*	*18.28%*	*68.36%*	*8.71%*	*0.87%*	***100.00%***

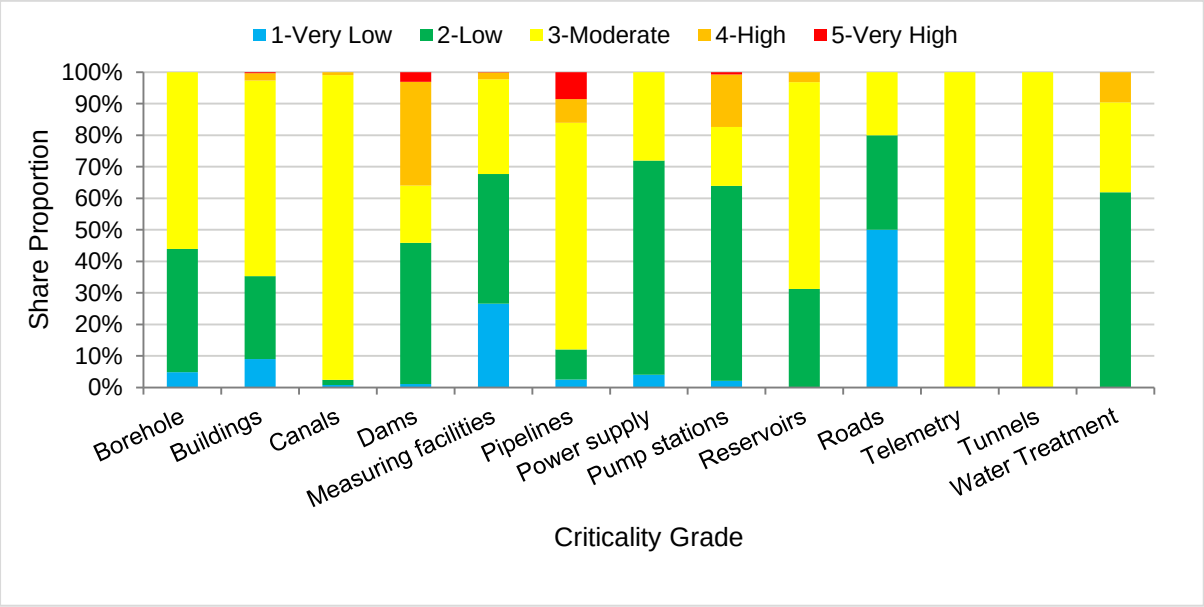
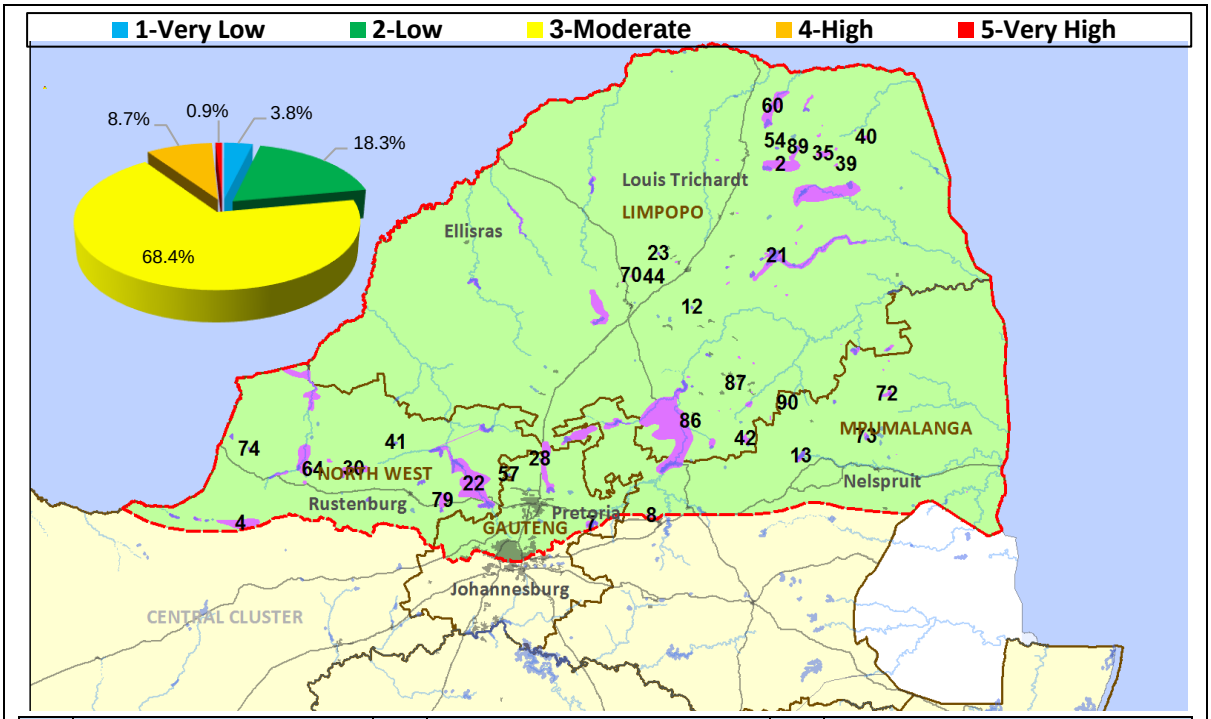


Figure 4.9: Asset component Criticality grading proportions per asset facility category

Figure 4.10 presents the overall criticality gradings of the Cluster's infrastructure asset components indicating that, as also shown in Table 4.9: about 78% of the Cluster's infrastructure asset components are in moderate, high and very high criticality grades; while about 22% are in the low and very low criticality grades.



No.	Scheme Name	No.	Scheme Name	No.	Scheme Name
1	Acornhoek Dam	31	Lole Montes Dam	62	Olifants River GWS (Flag Boshielo)
2	Albasini GWS	32	Loskop GWS	63	Palala River GWS (Susandale and Visgat Weirs)
3	Blyderivierpoort Dam	33	Lotlamoreng Dam	64	Pella Dam
4	Bo-Molopo GWS	34	Luvuvhu River GWS (Malamulele Weir)	65	Phiphidi Dam
5	Bospoort Dam	35	Luvuvhu River GWS (Nandoni Dam)	66	Phiring Dam
6	Botlokwa Dam	36	Luvuvhu River GWS (Xikundu weir)	67	Pienaars River GWS (Roodeplaat Dam)
7	Bronkhorstspruit Dam	37	Madikwe Dam	68	Piet Gouws Dam
8	Brugspruit Pollution Control Works	38	Mahlangu Dam	69	Politsi GWS
9	Buffelsdoorn GWS (Mokotswane Dam)	39	Mahonisi Dam	70	Rietfontein Dam I and II
10	Capes Thorne Dam	40	Makuleke Dam	71	Rust De Winter GWS
11	Casteel Dam	41	Mankwe Dam	72	Sabie River GWS (Inyaka Dam)
12	Chuniespoort Dam	42	Mapochsgronden GWS	73	Sand River GWS (Witklip Dam)
13	Crocodile River GWS (Kwena Dam)	43	Marico-Bosveld GWS (Kromellenboog Dam)	74	Sehuwjane Dam
14	Crocodile River West GWS	44	Mashashane Dam	75	Seshego Dam
15	Damani Dam	45	Middelkraal Dam	76	Setumo Dam
16	De Hoop Dam	46	Middle Letaba System GWS	77	Spitskop Dam
17	Der Brochen Dam	47	Mkhombo Dam	78	Sterk River GWS (Doorndraai Dam)
18	Disaneng Dam	48	Modjadji Dam	79	Sterkstroom GWS (Buffelspoort Dam)
19	Dr. Eiselen Dam	49	Mogalakwena River GWS (Glen Alpine Dam)	80	Thabina Dam
20	Duthuni Dam	50	Mogol River GWS (Mokolo Dam)	81	Thapani Dam
21	Groot Letaba River GWS	51	Molatedi Dam	82	Tours Dam
22	Hartbeespoort GWS	52	Molepo Dam	83	Tshakhuma Dam
23	Houtrivier Dam	53	Mutale Weir	84	Turfloop Dam
24	Kabokweni Dam	54	Mutshedzi Dam	85	Vaalkop No 2 Dam
25	Klaserie Dam	55	Ngotoane Dam	86	Varswater Dam
26	Klein Maricopoort GWS	56	Nkadimeng Dam	87	Vergelegen Dam
27	Koster Dam	57	Nooitgedacht Dam	88	Vlakbult Dam
28	Leeukraal Dam	59	Nwanedi/Luphephe GWS	89	Vondo Dam
29	Lepellane Dam	60	Nzhelele River GWS (Nzhelele Dam)	90	Watersvals River GWS
30	Lindleyspoort GWS	61	Ohrigstad GWS	91	Rooikraal GWS

Figure 4.10: Asset component proportions per criticality grading map

Table 4.10 and Figure 4.11 show the CRCs of the Cluster's infrastructure asset components per criticality grading and per asset facility category. Asset components that are of moderate, high and very high criticality (representing about 78% of all the Cluster's infrastructure asset components, as shown in Table 4.9 and Figures 4.9 and 4.10) have a total CRC of about R20.822 billion, with main contributions coming from:

- dams related assets components (representing about 54% of all dams related asset components, as shown in Table 4.9 and Figure 4.9) with a total CRC of R14.334 billion;
- canals related assets components (representing about 98% of all pipelines related asset components, as shown in Table 4.9 and Figure 4.9) with a total CRC of R3.487 billion; and
- pipeline related asset components (representing about 88% of all pipeline related asset components, as shown in Table 4.9 and Figure 4.9), with a total CRC of R1.287 billion.

On the other hand, asset components that are of low and very low criticality (representing about 22% of all the Cluster's infrastructure asset components, as shown in Table 4.9 and Figure 4.9) have a total CRC of about R16.43 billion, with the main contributions coming from:

- buldings asset components (representing about 35% of all canals related asset components, as shown in Table 4.9 and Figure 4.9) with a total CRC of R550.20 million;
- measuring facilities related asset components (representing about 68% of all dams related asset components, as shown in Table 4.9 and Figure 4.9) with a total CRC of R101 million; and
- dams related asset components (representing about 46% of all canals related asset components, as shown in Table 4.9 and Figure 4.9) with a total CRC of R90 million.

Table 4.10: CRC per Criticality grading and per asset facility category

Asset Facility Category	Criticality Grading vs CRC (R Million)					Total	*% of Total CRC*
	1-Very Low	2-Low	3-Moderate	4-High	5-Very High		
Borehole	1.98	17.45	31.37			**50.79**	*0.14*
Buildings	129.50	249.58	566.18	32.29	0.55	**978.10**	*2.63*
Canals	30.25	250.44	3 328.93	158.13		**3 767.76**	*10.11*
Dams	90.07	13 772.49	2 324.43	10 940.96	1 069.15	**28 197.10**	*75.69*
Measuring facilities	101.26	1 617.12	925.49	38.19	41.26	**2 723.32**	*7.31*
Pipelines	1.98	78.55	822.59	249.55	215.49	**1 368.16**	*3.67*
Power supply	0.48	5.65	14.03			**20.16**	*0.05*
Pump stations	0.38	29.36	14.44	2.60	0.36	**47.14**	*0.13*
Reservoirs		22.83	17.91	0.21		**40.95**	*0.11*
Roads	0.81	2.33	2.19			**5.33**	*0.01*

Asset Facility Category	Criticality Grading vs CRC (R Million)					Total	*% of Total CRC*
	1-Very Low	2-Low	3-Moderate	4-High	5-Very High		
Telemetry			9.97			**9.97**	*0.03*
Tunnels			6.34			**6.34**	*0.02*
Water Treatment		26.97	5.02	4.43		**36.42**	*0.10*
Total	**356.72**	**16 072.78**	**8 068.87**	**11 426.35**	**1 326.81**	**37 251.53**	***100.00***
% of Total CRC	*0.96*	*43.15*	*21.66*	*30.67*	*3.56*	***100.00***	

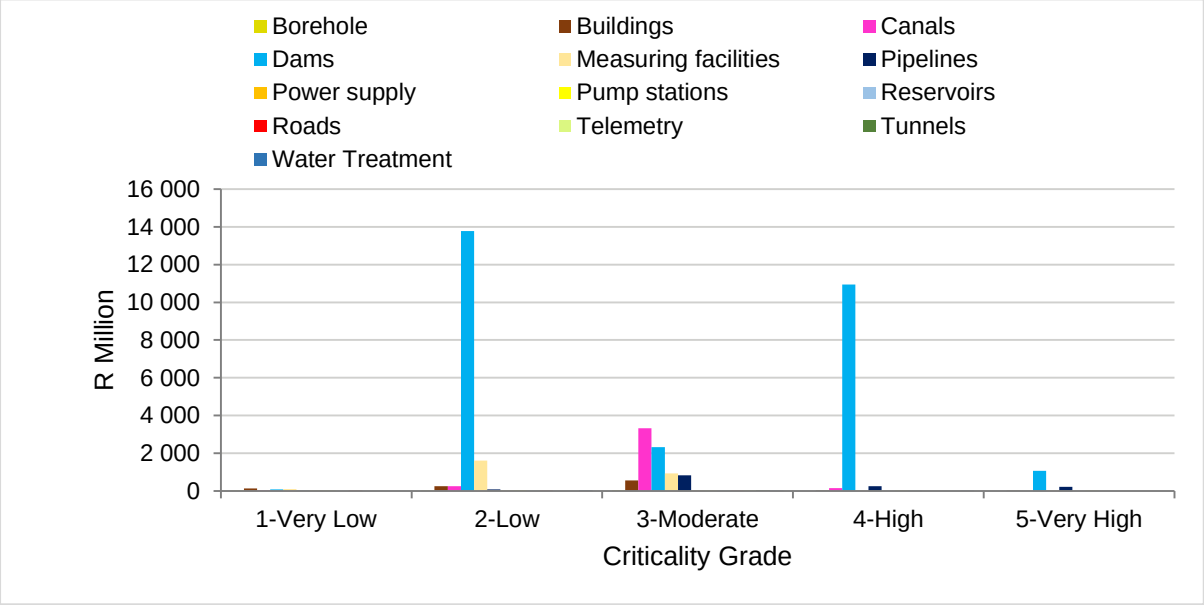


Figure 4.11: CRC per Criticality grading and per asset facility category

4.2.4 Asset Utilization

Assets are graded in terms of utilisation according to the criteria listed in Table 4.11.

Table 4.11: Asset utilisation grading criteria

Grade	Utilisation Description
0	Not in use
1	Strategic redundancy
2	Under-utilised
3	Moderate use
4	Approaching design capacity
5	Exceeding capacity/stressed

Table 4.12 and Figure 4.12 show the proportions of the Cluster's infrastructure asset components per utilisation grade and per asset facility category. Appendix E, Table E.4, an expanded version of Table 4.12, shows the number of asset components in each utilisation

grade. For this Cluster:

- About 9% of the Cluster's infrastructure asset components are under-utilised. These include all telemetry related asset components, as well as: reservoirs (about 91%), roads (about (40%), dams (about 18%), power supply (about 16%), canals (about 7%) related asset components, respectively; and the minority of: water treatment (5%), pipelines (4%), borehole (2%), buildings (2%), pump station (1%), measuring facilities (1%) related asset components, respectively. The reasons for the under-utilisation need to be assessed and consideration made for decommissioning and disposal, where necessary.
- About 79% of the Cluster's infrastructure asset components are 'approaching design capacity' in utilisation; which means that these asset components require continual monitoring and planning to avoid exceeding design capacity.
- About 3% of the Cluster's infrastructure asset components are exceeding design capacity. These include about: 14% of dams; 2% of borehole, 1% of pump stations and 1% of buildings related asset components. These asset components need to be upgraded immediately to avoid stress related failures, and to ensure the Cluster meets the required level of service.

Table 4.12: Asset component Utilisation grading proportions per asset facility category

Asset Facility Category	Utilization Grading					Total
	1-Strategic redundancy	2-Under-utilised	3-Moderate use	4-Approaching design capacity	5-Exceeding capacity/ stressed	
Borehole	-	2.44%	14.63%	80.49%	2.44%	**100.00%**
Buildings	0.28%	2.03%	10.06%	86.25%	1.38%	**100.00%**
Canals	0.22%	7.34%	1.23%	91.08%	0.13%	**100.00%**
Dams	0.04%	17.55%	10.06%	58.08%	14.26%	**100.00%**
Measuring facilities	-	0.56%	50.96%	48.14%	0.34%	**100.00%**
Pipelines	0.50%	3.52%	15.08%	80.40%	0.50%	**100.00%**
Power supply	-	16.00%	16.00%	68.00%	-	**100.00%**
Pump stations	-	0.69%	25.69%	72.22%	1.39%	**100.00%**
Reservoirs	-	90.63%	-	9.38%	-	**100.00%**
Roads	-	40.00%	30.00%	30.00%	-	**100.00%**
Telemetry	-	100.00%	-	-	-	**100.00%**
Tunnels	-	-	-	100.00%	-	**100.00%**
Water Treatment	-	4.76%	4.76%	90.48%	-	**100.00%**
All Cluster asset components	*0.17%*	*8.80%*	*8.66%*	*78.90%*	*3.48%*	***100.00%***

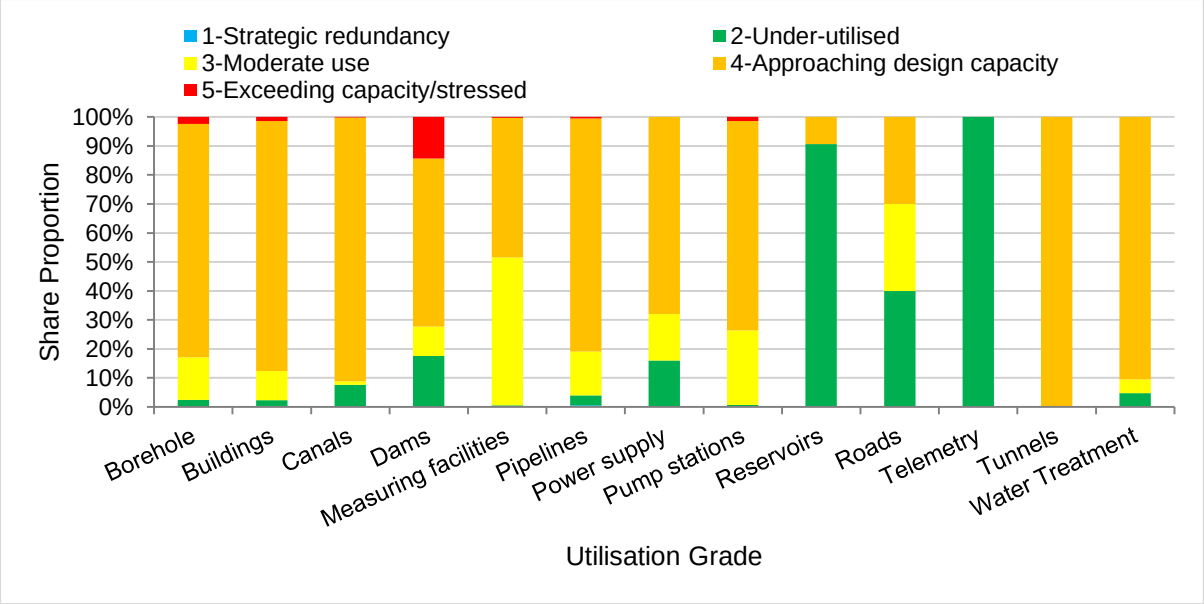
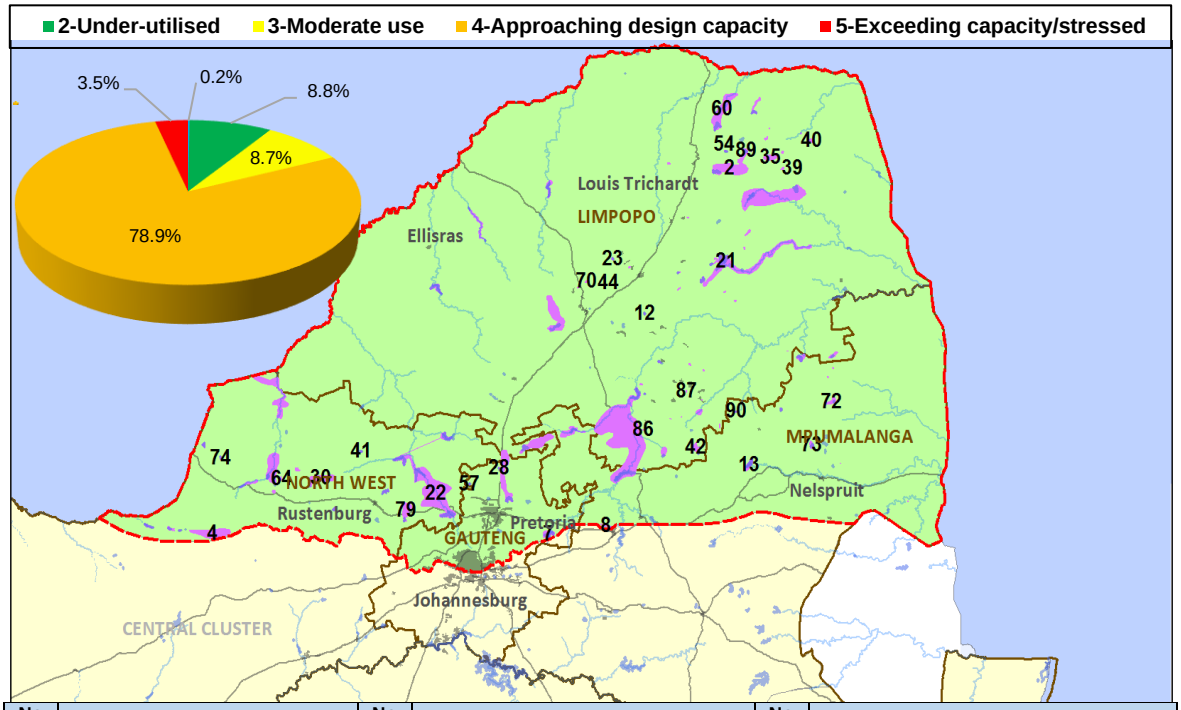


Figure 4.12: Asset component Utilisation grading proportions per asset facility category

Figure 4.10 presents the overall utilisation gradings of the Cluster's infrastructure asset components, in line with Table 4.9.



No.	Scheme Name	No.	Scheme Name	No.	Scheme Name
1	Acornhoek Dam	31	Lole Montes Dam	62	Olifants River GWS (Flag Boshielo)
2	Albasini GWS	32	Loskop GWS	63	Palala River GWS (Susandale and Visgat Weirs)
3	Blyderivierpoort Dam	33	Lotlamoreng Dam	64	Pella Dam
4	Bo-Molopo GWS	34	Luvuvhu River GWS (Malamulele Weir)	65	Phiphidi Dam
5	Bospoort Dam	35	Luvuvhu River GWS (Nandoni Dam)	66	Phiring Dam
6	Botlokwa Dam	36	Luvuvhu River GWS (Xikundu weir)	67	Pienaars River GWS (Roodeplaat Dam)
7	Bronkhorstspruit Dam	37	Madikwe Dam	68	Piet Gouws Dam
8	Brugspruit Pollution Control Works	38	Mahlangu Dam	69	Politsi GWS
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13	Crocodile River GWS (Kwena Dam)	43	Marico-Bosveld GWS (Kromellenboog Dam)	74	Sehuwjane Dam
14	Crocodile River West GWS	44	Mashashane Dam	75	Seshego Dam
15	Damani Dam	45	Middelkraal Dam	76	Setumo Dam
16	De Hoop Dam	46	Middle Letaba System GWS	77	Spitskop Dam
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18	Disaneng Dam	48	Modjadji Dam	79	Sterkstroom GWS (Buffelspoort Dam)
19	Dr. Eiselen Dam	49	Mogalakwena River GWS (Glen Alpine Dam)	80	Thabina Dam
20	Duthuni Dam	50	Mogol River GWS (Mokolo Dam)	81	Thapani Dam
21	Groot Letaba River GWS	51	Molatedi Dam	82	Tours Dam
22	Hartbeespoort GWS	52	Molepo Dam	83	Tshakhuma Dam
23	Houtrivier Dam	53	Mutale Weir	84	Turfloop Dam
24	Kabokweni Dam	54	Mutshedzi Dam	85	Vaalkop No 2 Dam
25	Klaserie Dam	55	Ngotoane Dam	86	Varswater Dam
26	Klein Maricopoort GWS	56	Nkadimeng Dam	87	Vergelegen Dam
27	Koster Dam	57	Nooitgedacht Dam	88	Vlakbult Dam
28	Leeukraal Dam	59	Nwanedi/Luphephe GWS	89	Vondo Dam
29	Lepellane Dam	60	Nzhelele River GWS (Nzhelele Dam)	90	Watersvals River GWS
30	Lindleyspoort GWS	61	Ohrigstad GWS	91	Rooikraal GWS

Figure 4.13: Asset component proportions per utilisation grading map

Table 4.13 and Figure 4.14 show the CRCs of the Cluster's infrastructure asset components per utilisation grading and per asset facility category.

Under-utilised asset components (representing about 8.8% of all the Cluster's infrastructure asset components, as shown in Table 4.12 and Figure 4.12) have a total CRC of about R5.5 billion, with the main contribution coming from:

- dams related assets (representing about 18% of all measuring facilities-related asset components, as shown in Table 4.12 and Figure 4.12), with a total CRC of R5.222 billion; and

Asset components that are approaching design capacity (representing about 79% of all the Cluster's infrastructure asset components) have a total CRC of about R22.307 billion, with the main contributions coming from:

- dams related assets (representing about 58% of all dams-related asset components, as shown in Table 4.12 and Figure 4.12), with a total CRC of R15.594 billion;
- canals related assets (representing about 91% of all canals-related asset components, as shown in Table 4.12 and Figure 4.12), with a total CRC of R3.433 billion;
- pipelines related assets (representing about 80% of all pipelines-related asset components, as shown in Table 4.12 and Figure 4.12), with a total CRC of R1.249 billion; and
- measuring facilities related assets (representing about 48% of all measuring facilities-related asset components, as shown in Table 4.12 and Figure 4.12), with a total CRC of R1.053 billion.

Asset components that are stressed (exceeding design capacity on utilisation) (representing 3.48% of all the Cluster's infrastructure asset components, as shown in Table 4.12 and Figure 4.12) have a total CRC of about R4.96 billion, with the main contributions coming from:

- dams related assets (representing about 14% of all dams-related asset components, as shown in Table 4.12 and Figure 4.12), with a total CRC of R4.932 billion.

Table 4.13: CRC per Utilization grading and per asset facility category

Asset Facility Category	Utilisation Grading vs CRC (R Million)					Total	*% of Total CRC*
	1-Strategic redundancy	2-Under-utilised	3-Moderate use	4-Approaching design capacity	5-Exceeding capacity/ stressed		
Borehole		1.13	7.73	40.19	1.75	**50.79**	*0.14*
Buildings	0.31	14.59	107.41	842.81	13.43	**978.55**	*2.63*
Canals	69.67	201.09	61.31	3 433.34	2.35	**3 767.76**	*10.11*
Dams	3.43	5 220.64	2 446.32	15 594.61	4 932.10	**28 197.10**	*75.69*
Measuring facilities		2.69	1 665.59	1 053.47	1.58	**2 723.32**	*7.31*

Asset Facility Category	Utilisation Grading vs CRC (R Million)					Total	% of Total CRC
	1-Strategic redundancy	2-Under-utilised	3-Moderate use	4-Approaching design capacity	5-Exceeding capacity/ stressed		
Pipelines	61.57	17.18	32.58	1 248.68	8.16	**1 368.16**	*3.67*
Power supply		0.87	2.60	16.68		**20.16**	*0.05*
Pump stations		5.88	5.91	35.08	0.26	**47.14**	*0.13*
Reservoirs		40.34		0.60		**40.95**	*0.11*
Roads		0.36	3.10	1.87		**5.33**	*0.01*
Telemetry		9.97				**9.97**	*0.03*
Tunnels				6.34		**6.34**	*0.02*
Water Treatment		2.06	0.51	33.86		**36.42**	*0.10*
Total	**134.98**	**5 516.79**	**4 333.06**	**22 307.52**	**4 959.62**	**37 251.97**	***100***
% of Total CRC	*0.36*	*14.81*	*11.63*	*59.88*	*13.31*	***100***	

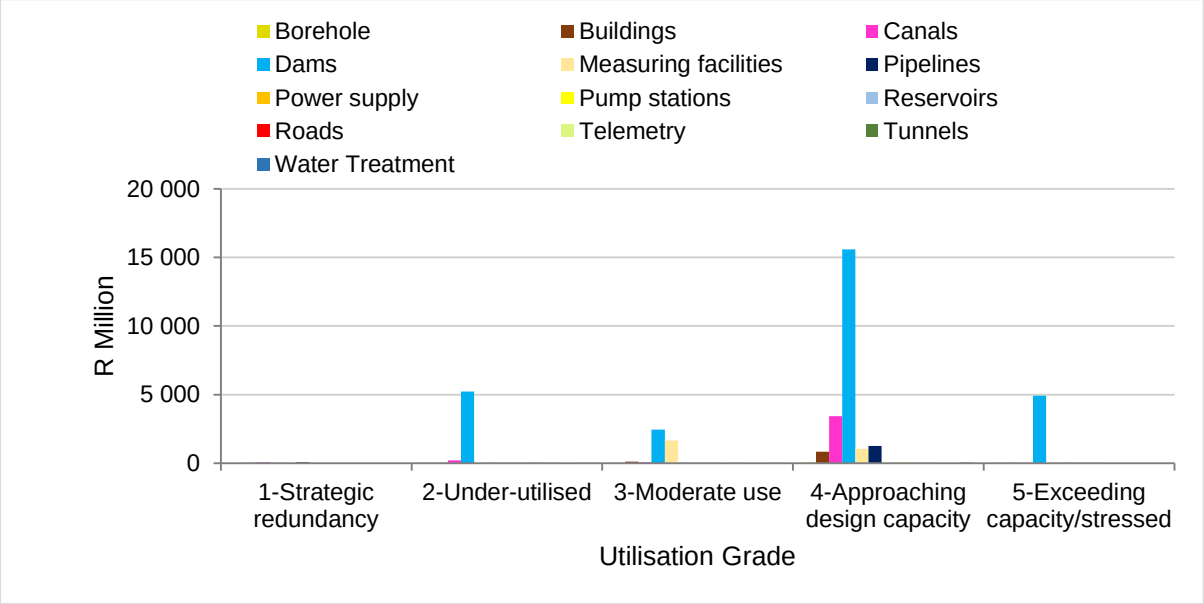

Figure 4.14: CRC per Utilization grading and per asset facility category

4.3 Risk Management

4.3.1 Risk Management Process

In this AMP, 'risk' refers to the possibility that an undesired outcome disrupts the service offered by the Cluster, resulting in the Cluster failing to meet its set levels of service. Risk management is, thus, an indispensable part of infrastructure Asset Management Planning and Implementation. Typically, the risk management process includes the following key steps:

- Identification of risk events and their impacts;
- Analysing the risks (identification of the risk drivers; determining their likelihoods; and calculating their expected losses);
- Prioritizing the risks, so that one can take appropriate action starting with the most devastating risks;

- Resolving the risks through taking some actions, e.g. avoiding, transferring or mitigating the risk; or redundancy measures; and
- Continual monitoring of risk resolution action plans, termination of successful action plans, identification of new risks that, and initiation of new risk resolution action plans.

Risk (expected loss) is calculated by determining the product of the likelihood of the risk and the total amount of loss (impact) when the risk occurs:

Expected Loss (Risk) = Risk Likelihood x Total Loss (Impact)

As indicated in Section 4.2.3 of this AMP, impact is related to criticality. For this Cluster, however, risk likelihood was not captured in the Asset Register (see Appendix A) used in the development of this AMP. Hence, an in-depth risk analysis could not be conducted. It is, thus, recommended that the DWS captures risk likelihood in its infrastructure asset register so that the next update of this AMP can address this short-coming.

4.3.2 The Cluster's Risks and Resolution Actions

Whilst cognisant of the presence of non-asset related risks (such as understaffing, vandalism, theft, etc.), this Cluster AMP focuses mainly on infrastructure asset-related risks. Table 4.13 shows some of the Cluster's key asset-related risks and associated risk resolution actions (aimed at reducing the risk likelihood) recommended in this AMP:

Table 4.14: The Cluster's asset risks and recommended resolution actions

No.	Asset Risk	Status for the Cluster	Recommended Risk Resolution Action
1	*Condition risk:* Failure by the asset to deliver the required service due to deteriorated physical condition.	About 19% of the Cluster's infrastructure asset components (with a total CRC of about R3.1566 billion) have deteriorated to poor and very poor conditions. Refer to Section 4.2.2.	Implement immediate renewal of the asset components to ensure they continue delivering the required service. Refer to Section 4.4.2 for the recommended renewal strategies per asset component.
		About 81% of the Cluster's infrastructure asset components (with a total CRC of about R34.095 billion) are in fair, good and very good conditions. Refer to Section 4.2.2.	Conduct appropriate maintenance to prevent the asset components from deteriorating to poor and very poor condition. Refer to Section 4.4.1 for the recommended maintenance strategies per asset component.

No.	Asset Risk	Status for the Cluster	Recommended Risk Resolution Action
2	*Capacity risk:* Failure by the asset to deliver the required service as a result of it exceeding its design capacity/stressed.	About 3.48% of the Cluster's infrastructure asset components (with a total CRC of about R4.96 billion) are stressed (exceeding design capacity on utilisation). About 79% of the Cluster's infrastructure asset components (with a total CRC of about R22.307 billion) are approaching design capacity in utilisation. Refer to Section 4.2.4.	Consider and implement appropriate upgrades and/or new capital investments, immediately, to avoid stress related failures, and to ensure the Cluster meets the required levels of service. Refer to Section 4.4.3.
3	*Not in use / under-utilisation risk:* Misallocation of resources (e.g. financial, human resources, material, etc.).	About 8.8% of the Cluster's infrastructure asset components (with a total CRC of R5.222 billion) are under-utilised. Refer to Section 4.2.4.	Assess the reasons for non/under-utilisation and consider asset decommissioning and disposal of.

For generic risks typically associated with the different asset facility categories, refer to Appendix F.

4.4 Asset Life Cycle Works and Strategies

The key stages of an asset life cycle include: planning, design, procurement, construction, commissioning, operation, maintenance, renewal, upgrading and disposal. Thus, asset life cycle management involves decision making, planning and control over acquisition, operation, maintenance, renewal, upgrading, safeguarding and disposal of an asset to maximise its service delivery potential and benefits, and to minimise its related risks and costs over its entire life cycle (i.e. "cradle to the grave").

In order for the Cluster to meet the levels of service agreed with its water users (see Section 2) and the projected future raw water demand (see Sections 3), the Cluster needs to accordingly carry out the following asset life cycle management activities and works:

- Operations and Maintenance;
- Renewals;
- Upgrades and new capital investments; and
- Disposals.

The associated expenditure requirements for each of the abovementioned activities are outlined in the Section 5 of this AMP.

Noteworthy is that the quality and usefulness of an AMP is highly dependent on the completeness and accuracy of the asset register used in the development of the AMP. Accordingly, the abovementioned asset life cycle management activities and works recommended for the Cluster in this AMP are highly dependent on the asset component condition, criticality and utilisation gradings captured in the asset register used in the development of this AMP. As such, execution of the abovementioned asset life cycle management activities and works recommended for the Cluster (as detailed in the following subsections) need to be adapted in line with the realities on the ground. Refer to Section 6 regarding some recommendations on how to improve on the current NWRI immovable asset register.

Asset component maintenance and renewals works in this AMP have been prioritised using the criteria shown in Table 4.15. For example, renewal works priorities were set as follows: VH-NW (top priority); VH-VP; VH-P; H-NW; H-VP; H-P; M-NW; M-VP; and M-P, making sure that the asset components have not been marked for disposal.

Table 4.15: Asset criticality versus condition grading

Criticality Grade	Condition Grade					
	For Maintenance			For Renewals		
	5 Very Good (VG)	4 Good (G)	3 Fair (F)	2 Poor (P)	1 Very Poor (VP)	0 Not Working (NW)
1 Very Low (VL)	VL-VG	VL-G	VL-F	VL-P	VL-VP	VL-NW
2 Low (L)	L-VG	L-G	L-F	L-P	L-VP	L-NW
3 Moderate (M)	M-VG	M-G	M-F	M-P	M-VP	M-NW
4 High (H)	H-VG	H-G	H-F	H-P	H-VP	H-NW
5 Very High (VH)	VH-VG	VH-G	VH-F	VH-P	VH-VP	VH-NW

4.4.1 Operations and Maintenance (O&M)

Operations

Operations includes activities associated with the delivery of service (raw water supply) to the customers (water users) through the utilisation of the Cluster's immovable assets, which consume resources such as manpower, energy, chemicals and materials. Operations require two key resources: direct and indirect manpower and utilities (e.g. electricity, fuel and chemicals).

Operation of the Cluster's immovable assets needs to be done in line with the relevant O&M Manuals and Operating Rules.

Maintenance

Maintenance entails all actions necessary for retaining an asset as near as possible to its desired functional condition with normal wear and tear (achieving its expected useful life), but excluding renewal. Maintenance requires three key resources: direct and indirect labour/manpower; plant (movable assets, such as vehicles) and materials.

For those schemes that are not being operated and maintained by the DWS, it is crucial that the DWS makes regular inspections to be sure that the Scheme's assets are adequately maintained and renewed.

Asset maintenance works for Cluster's infrastructure assets are prioritized in the scheme AMPs according to asset component criticality and condition grading, as indicated in Table 4.15. The Cluster has about 81% of its infrastructure asset components in fair, good and very good conditions, as shown in Table 4.4 and Figures 4.5. These asset components require appropriate significant/improved maintenance to preventative and normal maintenance to prevent them from deteriorating to poor and very poor condition.

Figure 4.15 shows the proportions of these infrastructure asset components (in fair, good and very good conditions) per criticality-condition grading for the Cluster. Appendix E, Table E.5A shows the data table used to generate Figure 4.15.

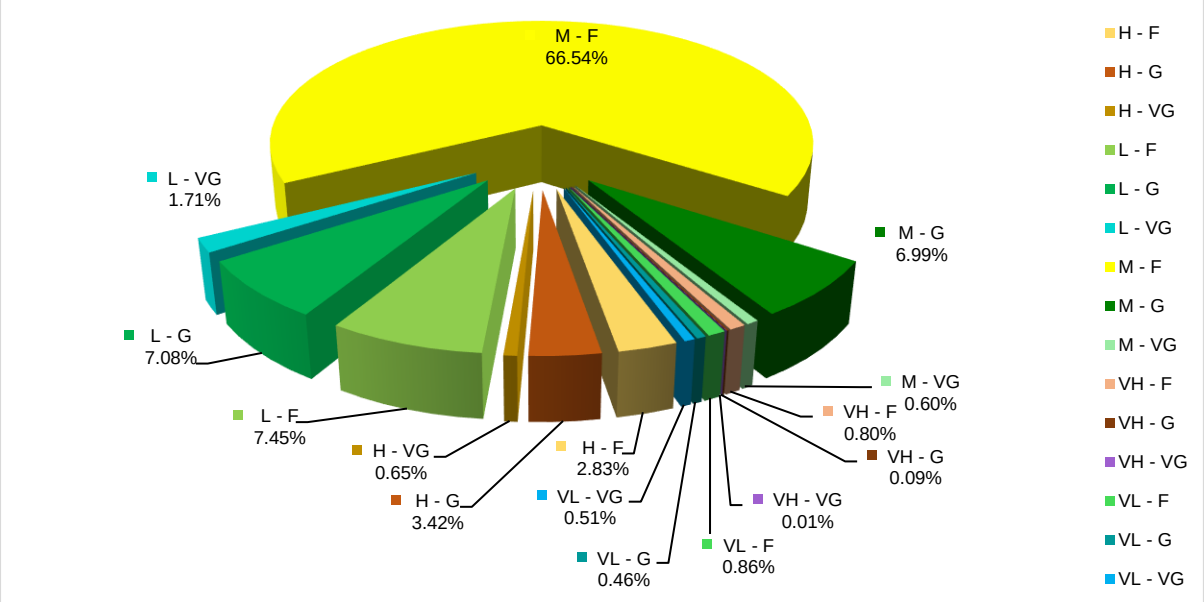

Figure 4.15: Asset component proportions per Criticality-Condition grading (maintenance)

The approximately 81% of the Cluster's infrastructure asset components (see Table 4.4 and Figures 4.5 and 4.15) that are in fair, good and very good conditions have a total CRC of about R34.095 billion, as shown in Table 4.5 and Figure 4.16 (which shows the split of the total CRC per criticality-condition grading). Appendix E, Table E.5B shows the data table used to generate Figure 4.16.

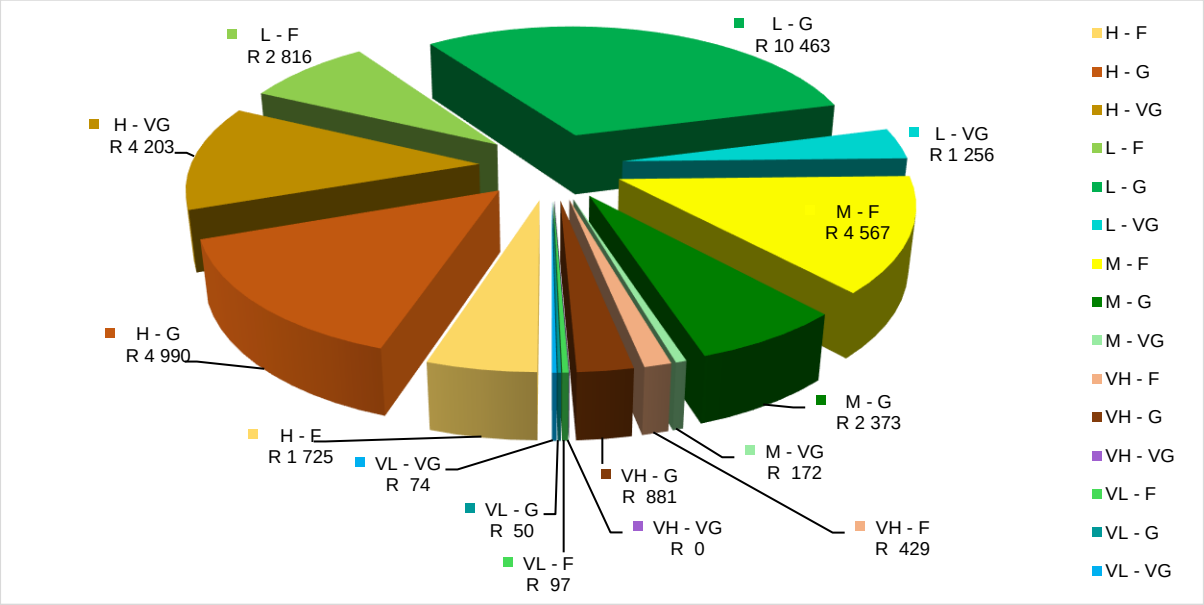

Figure 4.16: CRC (R million) per asset component criticality-condition grading (maintenance)

Appendix I, Table I.1 shows the maintenance strategies per asset component condition grading used in this AMP as well as in the individual scheme AMPs. For instance, asset components that are in very good condition require preventative and normal maintenance, whilst those that are in fair condition require significant/improved maintenance.

Table 4.16 summarises the Cluster's required maintenance works (number of infrastructure asset components per maintenance strategy and per asset facility category) for the first projected financial year.

Table 4.16: Maintenance works (asset components per maintenance strategy per asset facility category)

Asset Facility Category	Maintenance Strategy (No. of Asset Components)			Total
	Significant / improved	Target condition	Preventative and Normal	
Borehole	7	7		**14**
Buildings	284	227	79	**590**
Canals	5 685	200	8	**5 893**
Dams	830	689	133	**1 652**
Measuring facilities	110	482	16	**608**

Asset Facility Category	Maintenance Strategy (No. of Asset Components)			Total
	Significant / improved	Target condition	Preventative and Normal	
Pipelines	190	2		**192**
Power supply	16	3	1	**20**
Pump stations	13	28	72	**113**
Reservoirs	21	4	2	**27**
Roads	1	2	5	**8**
Telemetry	12			**12**
Tunnels		1		**1**
Water Treatment	6	3	3	**12**
Total	**7 175**	**1 648**	**319**	**9 142**

Appendix I, Tables I.2 and I.3 show a split of the required maintenance works for the Cluster (shown in Table 4.16) between scheme specific and non-scheme specific asset components, respectively.

Appendix I, Table I.2 of the individual scheme AMPs present a prioritised list of all the infrastructure asset components requiring maintenance (the order of which would need to be followed when executing the works) and maintenance strategies assigned to them. The identified maintenance strategies for the Cluster's infrastructure asset components need to be implemented in line with the DWS Maintenance Policy, the DWS Maintenance Strategy, as well as the Operating and Maintenance Manual for the individual schemes.

Section 5.4.1 of this AMP shows the associated projected O&M costs for this Cluster.

4.4.2 Renewals

Asset renewals entails works to refurbish (electrical or mechanical), rehabilitate (civil) or replace an existing asset with another asset of equivalent capacity or performance capability.

The Cluster has about 19% of its infrastructure asset components in poor and very poor conditions, as shown in Table 4.4 and Figures 4.5. These asset components need to be renewed, failure of which poses a high risk to the delivery of services to its customers as well as its environment.

Figure 4.17 shows the proportions of these infrastructure asset components (in poor and very poor conditions) per criticality-condition grading for the Cluster. Appendix E, Table E.6A shows the data table used to generate Figure 4.17.

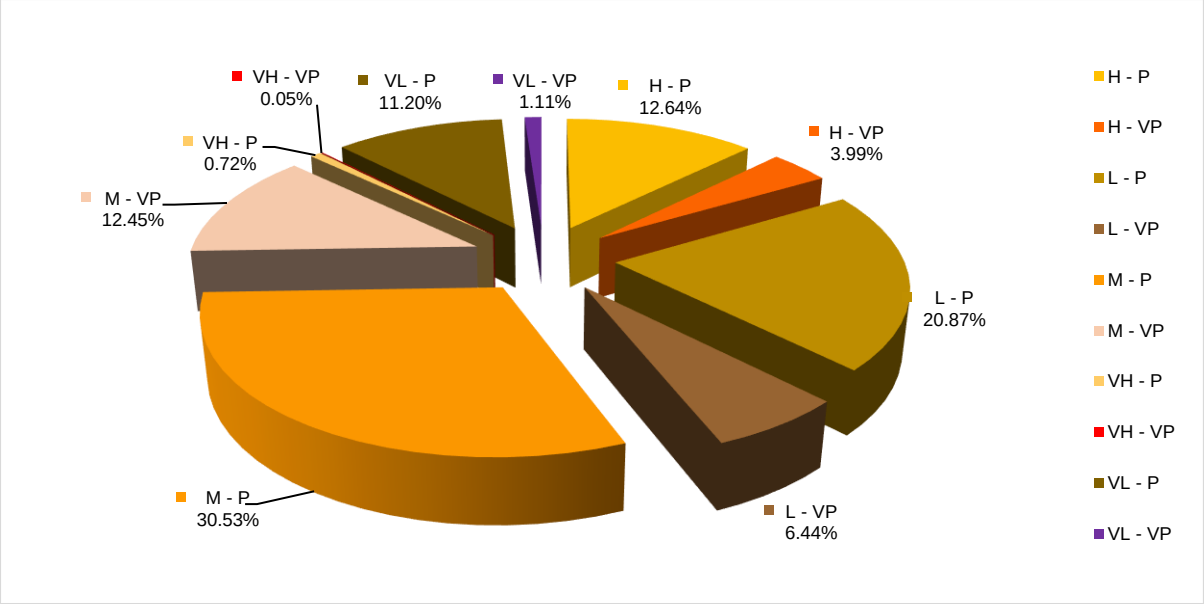

Figure 4.17: Asset component proportions per Criticality-Condition grading (renewals)

The approximately 19% of the Cluster's infrastructure asset components (see Table 4.4 and Figures 4.5 and 4.17) that are in poor and very poor conditions have a total CRC of about R3.156 billion, as shown in Table 4.5 and Figure 4.18 (which shows the split of the total CRC per criticality-condition grading). Appendix E, Table E.6B shows the data table used to generate Figure 4.18.

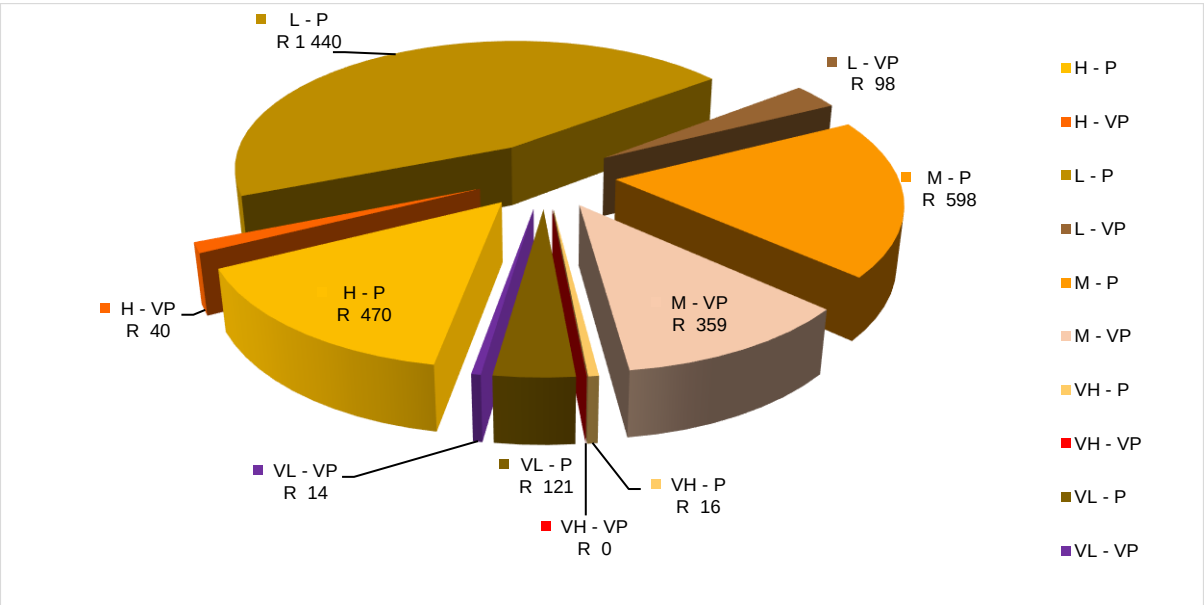

Figure 4.18: CRC (R million) per asset component criticality-condition grading (renewals)

Appendix J, Table J.1 summarises the renewal strategies per asset condition grading used in this AMP as well as in the individual scheme AMPs. Table 4.17 summarises the Cluster's required asset renewals works for the first projected financial year; it shows the number of

asset components per renewals strategy per asset facility category.

Table 4.17: Renewals works (asset components per renewals strategy per asset facility category)

Asset Facility Category	Renewal strategy (No. of Asset Components)		Total
	Stop operating immediately and renew the asset component	Significantly renew the asset component	
Borehole		27	27
Buildings	194	266	460
Canals	54	236	290
Dams	159	702	861
Measuring facilities	6	255	261
Pipelines	1	6	7
Power supply	1	4	5
Pump stations	10	20	30
Reservoirs	2	2	4
Roads		2	2
Telemetry			
Tunnels			
Water Treatment	2	5	7
Total	**429**	**1 525**	**1 954**

Appendix J, Tables J.2 and J.3 show the required renewals works for the Cluster for the first projected year (shown in Table 4.17) split between scheme-specific and non-scheme-specific asset components, respectively.

Appendix J, Table J.4 present a prioritised list (the order of which would need to be followed when executing the works) of all the Cluster's asset components that are in poor and very poor conditions, per scheme and per asset facility category, and the associated renewal strategies assigned to them. To be noted is that such renewal works priorities are based solely on criticality and condition grading (as indicated in the Asset Register – see Appendix A) of the asset components. Before any renewal work can commence, it is imperative that a further analysis is conducted to ascertain the feasibility of the renewal work and any impact the renewal work might have on other asset components. For example, renewal work on canal excavation is likely to affect the associated canal lining.

Table 4.18 summarises the Cluster's required asset renewals works (total number of asset components requiring renewal per asset facility category) for each of the projected ten years.

Table 4.18: Renewals works (asset components per asset facility category)

Asset Facility Category	Renewals (No. of Asset Components) per Projected Financial Year									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Borehole	27	-	-	-	-	7	1	-	-	-
Buildings	460	-	4	247	-	18	1	-	-	-
Canals	290	-	1 157	2 342	-	857	139	529	123	21
Dams	861	-	57	244	19	299	-	5	142	128
Measuring facilities	261	29	86	3	26	68	91	27	49	87
Pipelines	7	-	19	127	6	2	31	1	2	-
Power Supply	5	-	15	-	-	-	-	5	-	-
Pump stations	30	-	2	1	-	7	1	12	5	2
Reservoirs	4	-	1	-	-	-	-	20	-	-
Roads and bridge	2	-	0	-	-	1	-	-	-	-
Telemetry	-	-	-	-	-	6	-	-	-	-
Tunnels	-	-	-	-	-	-	-	-	-	-
Water Treatment	7	-	-	1	1	4	-	-	-	1
Total	**1 954**	**29**	**1 341**	**2 965**	**52**	**1 269**	**264**	**599**	**321**	**239**

Section 5.4.2 of this AMP shows the associated projected asset renewal costs for this Cluster.

4.4.3 Upgrades and New Capital

The Cluster's future raw water demand projection as well as asset utilisation grading determine the need for either increasing or decreasing the Cluster's asset extent, functional performance or capacity (done through asset upgrades or new capital developments).

An analysis of the asset utilisation grading (obtained from the Asset Register – see Appendix A and Section 4.2.4) per asset component revealed that about 3.48% of the Cluster's infrastructure asset components (with a total CRC of about R4.96 billion) are stressed (exceeding design capacity on utilisation). These are mainly: dams; buildings; and canals related asset components, as shown in Table 4.19. These asset components need to be upgraded to avoid stress related failures, and to ensure the Cluster meets the required level of service. However, before such upgrade works are executed, it is imperative that the utilisation gradings (captured in the Asset Register) of the affected asset components are first verified to confirm the necessity of the upgrades.

Table 4.19: Utilisation-based upgrade works (asset components exceeding capacity in utilisation)

Asset Facility Category	No. of Assets Exceeding capacity / stressed	CRC (Million)
Borehole	1	1.75
Buildings	15	13.43
Canals	8	2.35
Dams	360	4 932.10
Measuring facilities	3	1.58
Pipelines	1	8.16

Asset Facility Category	No. of Assets Exceeding capacity / stressed	CRC (Million)
Power Supply	0	-
Pump stations	2	0.26
Reservoirs	0	-
Roads and bridge	0	-
Telemetry	0	-
Tunnels	0	-
Water Treatment	0	-
Total	**390**	**4 959.62**

Appendix K, Table K.2 shows the required utilisation-based upgrade works for the Cluster (shown in Table 4.19) split between scheme-specific and non-scheme-specific infrastructure asset components.

Appendix K, Table K.3 shows a list of all the Cluster's infrastructure asset components per scheme and per asset facility category that are exceeding their design capacities (stressed), and, thus, require upgrading.

The 2016 reports on the Condition Assessment Audit for the irrigation infrastructure of 16 schemes [Albasini GWS, Crocodile River West GWS, Hartbeespoort GWS, Klein Maricopoort GWS, Lindleyspoort GWS, Loskop GWS, Mapochsgronden GWS, Marico Bosveld GWS, Middelkraal Dam, Middle Letaba System GWS, Nzhelele River GWS, Pienaars River GWS, Rooikraal GWS, Rust de Winter GWS, Sterk Rivier GWS and Sterkstroom GWS] in the Cluster identified some canal-related upgrade works with a total acquisition cost of about R303 million; these have been considered in this AMP. For a summary of the required upgrades and new capitals works for the Cluster, refer to Appendix K, Table K.4.

Section 5.4.3 of this AMP shows the associated upgrades and new capital costs for the Cluster.

4.4.4 Impairments and Disposals

Impairments

Asset impairment is the loss of future economic benefits or service potential of an asset over and above the systematic recognition of the loss of the asset's future economic benefits or service potential through depreciation. As a result, the carrying value of assets needs to be reduced where there is evidence that the value has become over-stated due to unexpected events or circumstances (depreciation caters for normal consumption of the assets, through normal wear and tear).

Impairment causes an acceleration of one or more of the following failure modes: condition, functional performance, utilisation, or obsolescence. As such, an asset may be impaired based on: condition (e.g. vandalism, theft, poor maintenance, etc.), functional performance (e.g. siltation of dams), utilisation (under-utilisation), or obsolescence (e.g. spare parts no longer available).

For the Cluster, some asset components (mainly buildings, dams and measuring facilities related) were impaired as per the DWS Annual Review of Impairment and Useful Life - NWRIB Immoveable Assets 31 March 2016 report. Furthermore, the Cluster has some infrastructure asset components with zero asset carrying values (according to the Asset Register), which implies that they are either fully depreciated or fully impaired. In this AMP, these infrastructure asset components with zero asset carrying values are being treated as impairments. Altogether, the Cluster's impaired asset components (mainly canals, buildings, dams and measuring facilities related) have a total CRC of about R485 million, and are summarised per asset facility category in Table 4.20. The DWS needs to take further steps on these asset components to determine appropriate disposal plans for them.

Table 4.20: Impaired asset components per asset facility category

Asset Facility Category	No. of impaired asset components	CRC (R million)
Borehole	-	-
Buildings	40	23.914
Canals	134	99.333
Dams	16	116.098
Measuring facilities	57	243.684
Pipelines	1	0.356
Power supply	-	-
Pump stations	1	0.091
Reservoirs	1	0.105
Roads	-	-
Telemetry	-	-
Tunnels	-	-
Water Treatment	2	1.211
Total	**252**	**484.792**

Appendix L, Table L.1 shows a split of the impaired asset components for the Cluster (shown in Table 4.20) between scheme-specific and non-scheme-specific infrastructure asset components.

Appendix L, Table L.2 presents a list of all the Cluster's infrastructure asset components, per scheme and per asset facility category, that have zero asset carrying values, and are here considered to be impaired.

Disposals

Asset disposal entails termination of the DWS's control over the asset; and needs to be done in line with the DWS Disposal Strategy for Immovable Assets.

An analysis of the asset utilisation grading (obtained from the Asset Register – see Appendix A and Section 4.2.4) per asset component revealed that about 8.8% of the Cluster's infrastructure asset components (with a total CRC of about R5.5 billion) are under-utilised. These are mainly canals and dams related asset components, as shown in Table 4.21. These asset components could be candidates for disposal. The reasons for the under-utilisation need to be assessed and consideration made for decommissioning and disposal, where necessary.

Table 4.21: Asset components that are under-utilised

Asset Facility Category	No. of Asset Components Under-Utilised	CRC (R million)
Borehole	1	1.128
Buildings	22	14.594
Canals	458	201.087
Dams	443	5 220.644
Measuring facilities	5	2.689
Pipelines	7	17.177
Power supply	4	0.874
Pump stations	1	5.876
Reservoirs	29	40.342
Roads	4	0.358
Telemetry	12	9.967
Tunnels	-	-
Water Treatment	1	2.058
Total	**987**	**5 516.794**

Appendix L, Table L.3 shows the under-utilised infrastructure asset components for the Cluster (shown in Table 4.21) split between scheme-specific and non-scheme-specific infrastructure asset components.

Appendix L, Table L.4 presents a list of all the Cluster's the under-utilised infrastructure asset components, per scheme and per asset facility category.

The Kabokweni Dam was recently decommissioned, making its associated asset components candidates for disposal. The DWS needs to take further steps on these asset components to determine appropriate disposal plans for them.

Based on previous assessments and the Asset Register (refer to Appendix A) used in the development of this AMP, the Cluster does not have any other infrastructure asset

components that are not in use and/or identified for disposal in the foreseeable future.

4.5 Summary

The Northern Operations Cluster has an immovable asset base consisting of: infrastructure assets (with a total of 11 223 asset components) and land (with a total of 1 661 asset components). The majority of the Cluster's asset components are canals, dams, land and buildings related asset components (about 48%, 20%, 13%, and 8%, respectively).

The Cluster's immovable asset components have a total DRC and CRC of about R36.656 billion and about R39.549 billion, respectively. They can be grouped into two: infrastructure assets with a total DRC and CRC of about R34.360 billion and about R37.252 billion, respectively; and land with a total of about R2.297 billion for both DRC and CRC. The DRC/CRC ratio for infrastructure assets is about 92%, indicating that about 8% of the infrastructure asset base has been consumed so far.

For infrastructure assets, dams-related asset components have the highest CRC of about R28.197 billion, followed by canals, measuring facilities, pipelines and buildings related asset components with CRC of about: R3.768 billion, R2.723 billion, R1.368 billion, and R0.979 billion, respectively. A similar pattern is evident for DRC.

Key asset-related risks for the Cluster include: condition risk (failure by the asset to deliver the required service due to deteriorated physical condition); capacity risk (failure by the asset to deliver the required service as a result of it exceeding its design capacity/stressed); and not in use / under-utilisation risk (resulting in misallocation of resources, e.g. financial, human resources, material, etc.). To minimise these risks, and in order for the Cluster to meet its set levels of service and the projected future raw water demand, the following asset life cycle management activities are recommended for the Cluster in this AMP: appropriate and adequate maintenance and renewals (condition risk); upgrades and new capital investments (capacity risk); and disposals (not in use / under-utilisation risk).

The Cluster has about 81% of its infrastructure asset components (with a total CRC of about R34.095 billion) in fair, good and very good conditions; and about 19% (with a total CRC of about R3.156 billion) in poor and very poor conditions. Appropriate maintenance and renewal strategies, respectively, recommended and prioritised based on criticality and condition for these asset components in the individual scheme AMPs, have been summarised per asset facility category in this AMP.

Upgrade works are recommended for the Cluster's infrastructure asset components, about

3.48% and with a total CRC of about R4.96 billion, that are stressed (exceeding design capacity on utilisation, based on the Asset Register used in the development of this AMP). These are mainly: dams; buildings; and canals related asset components. Such upgrade works are aimed at avoiding stress related failures, and to ensure the Cluster meets the required level of service. However, before such upgrade works are executed, it is imperative that the utilisation gradings (captured in the Asset Register) of the affected asset components are first verified to confirm the necessity of the upgrades.

Furthermore, 2016 reports on the Condition Assessment Audit for the Cluster's irrigation infrastructure (for 16 schemes) identified some canal-related upgrade works with a total acquisition cost of about R303 million; these have been considered in this AMP.

T The Cluster has some impaired asset components: mainly canals, buildings, dams and measuring facilities related, with a total CRC of about R485 million. The NWRI needs to take further steps to determine appropriate disposal plans for them.

Furthermore, about 8.8% of the Cluster's infrastructure asset components (with a total CRC of about R5.5 billion), mainly buildings and measuring facilities related are under-utilised. These asset components could be candidates for disposal. The reasons for the under-utilisation need to be assessed and consideration made for decommissioning and disposal, where necessary.

Based on previous assessments and the Asset Register (refer to Appendix A) used in the development of this AMP, the Cluster does not have any assets that are not in use and/or identified for disposal in the foreseeable future.

Noteworthy is that the quality and usefulness of an AMP is highly dependent on the completeness and accuracy of the asset register used in the development of the AMP. Accordingly, the abovementioned asset life cycle management activities recommended for the Cluster in this AMP are highly dependent on the asset component condition, criticality and utilisation gradings captured in the asset register used in the development of this AMP. As such, execution of the abovementioned asset life cycle management activities and works recommended for the Cluster need to be adapted in line with the realities on the ground. Refer to Section 6 regarding some recommendations on how to improve on the current NWRI immovable asset register.

The next section presents a ten-year financial plan associated with the asset life cycle management activities discussed above.

5. ASSET LIFE CYCLE FINANCIAL PLAN

5.1 Overview

This section presents the Northern Operations Cluster's ten-year projected optimal costs requirements that are necessary to fund the asset life cycle works identified in the preceding section; it answers the questions of 'when' and 'for how much' of the identified works. Asset life cycle costs are discussed per asset facility category, all in alignment to Section 4.4; a further zoom in is made on optimal revenue requirement, past and future potential renewal and maintenance backlog, as well as infrastructure asset movement over the ten-year period.

5.2 Financial Projection Assumptions

Key assumptions underpinning financial projections in this AMP are:

- Growth Factors: Expenditure and/or Revenue were grown by:
  - *Inflation rate* of 6.8% in 2016/17, 6.2% in 2017/18, 5.9% in 2018/19, and 5.6% in 2019/20 as provided for in the South African National Treasury 2016/17 MTEF Technical Guidelines on budgeting. Thereafter, a four-year moving average rate was used; and
  - A *progressive factor* averaging 0.9% in 2016/17, 1.7% in 2017/18 and 2.4% in 2018/19 as projected in the 2016/17 South African National Treasury Budget Review. Thereafter, a three-year moving average rate was used.
- Growth Factor for PPE related values.
  - Average PPI of about 7.1% was used to adjust for PPE related monetary values.
- New capital costs are a function of growth in water demand beyond the existing raw water yield of the Cluster.
- Upgrade costs are a function of either growth in water demand beyond the existing raw water yield of the Cluster or of asset utilisation, or both.
- Renewal Capital Expenditure are a function of accumulated depreciation from the last date of renewal and a price adjustment equivalent to: the engineering professional fees; construction preliminary and generals (P&Gs); construction contingency reserves as well as the projected PPI in the particular year renewal work will be carried out.
- Once renewal work is determined, there will be at least one-year provision for planning and resource mobilization.
- Straight line depreciation method was used for the projections.
- The modelled optimal O&M costs per asset facility category, in this AMP, are proportions of the CRCs derived for the year 2015/16; where the following sources formed the basis for the splitting ratios:
  - Guidelines for Infrastructure Asset Management in Local Government 2006– 2009

(Department of Provincial and Local Government, 2006).

- Maintenance Accounting Framework for immovable assets under the custodianship of National and Provincial Department of Works (Department of Public Works, 2015).
- Monitoring and Evaluation Protocol for immovable assets under the custodianship of National and Provincial Department of Works (Department of Public Works, 2015).
- Operations and maintenance costs of rural water supply schemes in South Africa (Gibson, 2010).

5.3 Optimal Total Cost Requirement

5.3.1 Identified Optimal Total Cost Requirement

Table 5.1 presents the Cluster's modelled identified optimal total cost requirement, in light of asset life cycle works discussed in Section 4.4, per cost component (i.e., O&M (inclusive of direct and indirect labour costs); renewal works; upgrades and new capital; as well as asset disposal) for the 10-year period, where incurred. These costs are made up from scheme and non-scheme specific asset components. Non-scheme specific asset components are found under these categories: Area Manager Office Groblersdal, Hartbeespoort and Tzaneen Offices; Hydrometry Limpopo and Mpumalanga Provinces; and Maintenance Groblersdal.

- The Cluster's projected modelled identified optimal total cost requirements for the first three years (2016/17, 2017/18 and 2018/19) are about: R477.973 million; R 2.908 billion; and R581.227 million, respectively.

  The projected spike in 2017/18 is attributed to high renewal, and upgrade and new capital cost requirements (about R905 million and R1.496 billion, respectively).
- Table 5.2 and Figure 5.1 show the optimal annual total cost requirement per asset facility category; where dams, canals, measuring facilities, buildings and pipelines related asset components are the main cost drivers.
- The cost requirement, per cost component, and per facility category (shown in Tables 5.1 and 5.2) are separated between scheme and non-scheme specific, and are also given per scheme, as shown in Appendix H, Tables H.1 to H.5.

Table 5.1: Modelled identified optimal total cost requirement per cost component

Cost Components	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
O&M	477.973	507.002	537.918	568.879	604.700	641.320	680.130	721.210	765.284	811.696
Renewal	-	905.115	6.310	193.784	882.766	15.985	316.217	423.546	65.860	108.770
Upgrade & New	-	1 495.511	36.999	6.880	2.810	108.275	128.498	18.915	-	-
Disposal	-	-	-	-	-	-	-	-	-	-
Total	**477.973**	**2 907.629**	**581.227**	**769.543**	**1 490.276**	**765.581**	**1 124.846**	**1 163.671**	**831.143**	**920.466**

Table 5.2: Modelled identified optimal total cost requirement per asset facility category

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	54.799	212.198	61.671	66.131	165.123	73.526	84.552	82.745	87.738	93.059
WR: Canals	73.914	157.238	120.183	189.631	601.137	207.450	345.790	198.709	158.041	156.793
WR: Dams	244.310	2 224.507	274.950	320.567	351.728	331.392	408.929	368.637	392.627	447.462
WR: Power Supply	1.351	6.482	1.521	3.588	1.710	1.813	1.923	2.039	3.890	2.295
WR: Pump stations	1.332	4.600	1.499	1.683	1.958	1.787	2.567	2.173	5.888	2.703
WR: Reservoirs	0.329	0.734	0.371	0.395	0.417	0.442	0.469	0.497	11.658	0.559
WR: Roads and bridge	0.159	0.700	0.179	0.189	0.201	0.213	0.441	0.240	0.254	0.270
WR: Steel Pipelines	15.050	76.107	16.937	21.512	254.587	21.321	23.257	172.024	24.275	26.688
WR: Telemetry	0.546	0.579	0.615	0.650	0.691	0.733	1.938	0.824	0.875	0.928
WR: Tunnels	0.202	0.214	0.227	0.240	0.255	0.270	0.287	0.304	0.323	0.342
WR: Water Treatment	1.248	7.115	1.405	1.486	2.200	2.533	3.931	1.883	1.998	2.120
WS: borehole	3.556	14.990	4.002	4.232	4.498	4.771	8.186	6.084	5.693	6.038
WS: Measuring facilities	81.177	202.164	97.668	159.239	105.770	119.328	242.577	327.511	137.882	181.208
Total	**477.973**	**2 907.629**	**581.227**	**769.543**	**1490.276**	**765.581**	**1124.846**	**1 163.671**	**831.143**	**920.466**

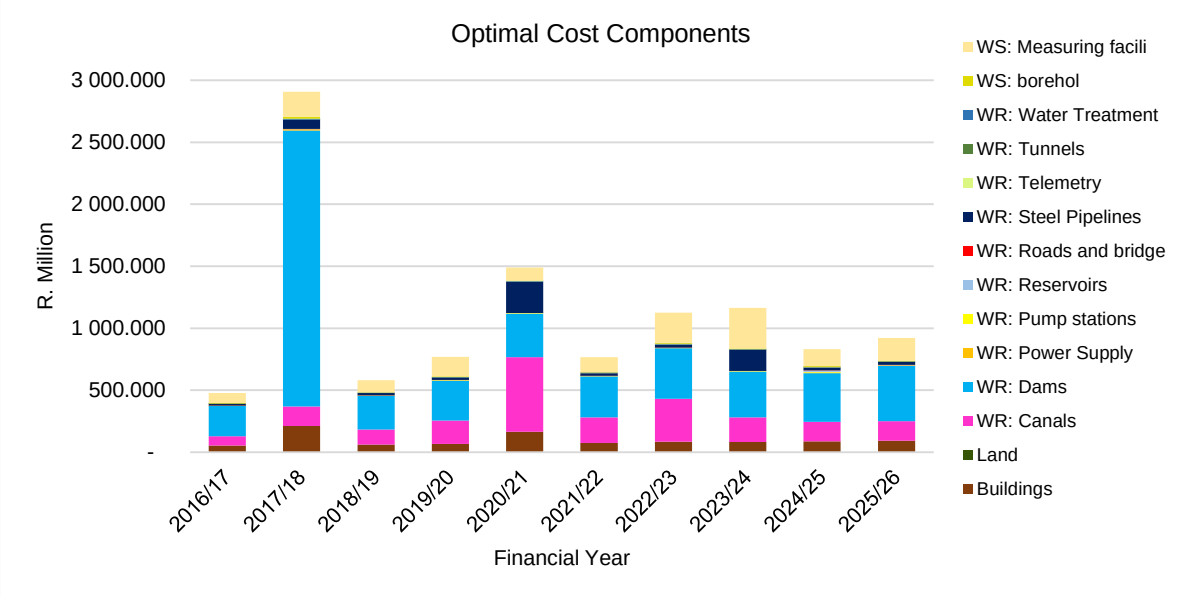

Figure 5.1: Modelled identified optimal total cost requirement per asset facility category

The spike and significant increase in the modelled identified optimal total cost requirement for the financial years 2017/18 and 2020/21, evident in Figure 5.1, (emanating mainly from the modelled identified optimal renewal and upgrades and new capital cost requirements),

compounded by the current economic and financial constraints facing the country, present some implementation challenges for the Cluster's modelled identified optimal total cost requirement. As such, for practical implementation purposes, the identified optimal cost requirements for the Cluster are adjusted as indicated in the following subsection.

5.3.2 Implementation Plan for Identified Optimal Cost requirements

Table 5.3 presents the Cluster's modelled adjusted optimal total cost requirement per cost component (i.e., O&M (inclusive of direct and indirect labour costs); renewal works; upgrades and new capital; as well as asset disposal) for the projected 10-year period, where incurred.

- The Cluster's projected modelled adjusted optimal total cost requirements for the first three years (2016/17, 2017/18 and 2018/19) are about: R477.973 million; R867.097 million; and R958.523 million, respectively, as presented in Table 5.3.
- Table 5.4 and Figure 5.2 show the projected modelled adjusted optimal total cost requirement per asset facility category; where dams, canals, measuring facilities, buildings and pipelines related asset components are the main cost drivers.
- The cost requirement, per cost component, and per facility category (shown in Tables 5.3 and 5.4) are separated between scheme and non-scheme specific, and are also given per scheme, as shown in Appendix H, Tables H.1 to H.5.

Table 5.3: Modelled adjusted optimal total cost requirement per cost component

Cost Component	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
O&M	477.973	507.002	537.918	568.879	604.700	641.320	680.130	721.210	765.284	811.696
Renewal	-	135.768	157.079	176.833	298.478	351.629	380.730	425.022	477.725	492.672
Upgrade & New	-	224.327	263.526	249.965	220.643	215.628	207.228	166.311	158.234	131.751
Disposal	-	-	-	-	-	-	-	-	-	-
Total	**477.973**	**867.097**	**958.523**	**995.676**	**1 123.821**	**1 208.577**	**1 268.089**	**1 312.543**	**1 401.243**	**1 436.119**

Table 5.4: Modelled adjusted optimal total cost requirement per asset facility category

Asset Facility Category	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	54.799	81.238	88.248	90.317	105.766	114.190	115.335	110.935	113.839	114.247
WR: Canals	73.914	90.229	102.333	122.652	206.304	269.642	318.382	325.258	352.720	354.920
WR: Dams	244.310	553.951	613.975	613.632	600.394	588.439	570.703	528.301	534.830	541.762
WR: Power Supply	1.351	2.190	2.392	2.723	2.799	2.833	2.766	2.625	3.199	3.491
WR: Pump stations	1.332	1.891	2.049	2.117	2.197	2.264	2.423	2.497	3.752	4.596
WR: Reservoirs	0.329	0.407	0.437	0.455	0.472	0.490	0.508	0.523	3.889	5.697
WR: Roads and bridge	0.159	0.248	0.271	0.275	0.277	0.279	0.322	0.332	0.348	0.353
WR: Steel Pipelines	15.050	24.985	27.312	28.195	63.595	81.024	79.186	104.725	118.175	115.587
WR: Telemetry	0.546	0.579	0.615	0.650	0.691	0.733	1.009	1.126	1.214	1.246

Asset Facility Category	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
WR: Tunnels	0.202	0.214	0.227	0.240	0.255	0.270	0.287	0.304	0.323	0.342
WR: Water Treatment	1.248	2.193	2.404	2.424	2.495	2.706	3.123	3.119	3.243	3.205
WS: borehole	3.556	5.455	5.937	6.049	6.093	6.167	6.801	7.112	7.511	7.662
WS: Measuring facility	81.177	103.516	112.324	125.946	132.486	139.540	167.244	225.685	258.200	283.011
Total	**477.973**	**867.097**	**958.523**	**995.676**	**1 123.821**	**1 208.577**	**1 268.089**	**1 312.543**	**1 401.243**	**1 436.119**

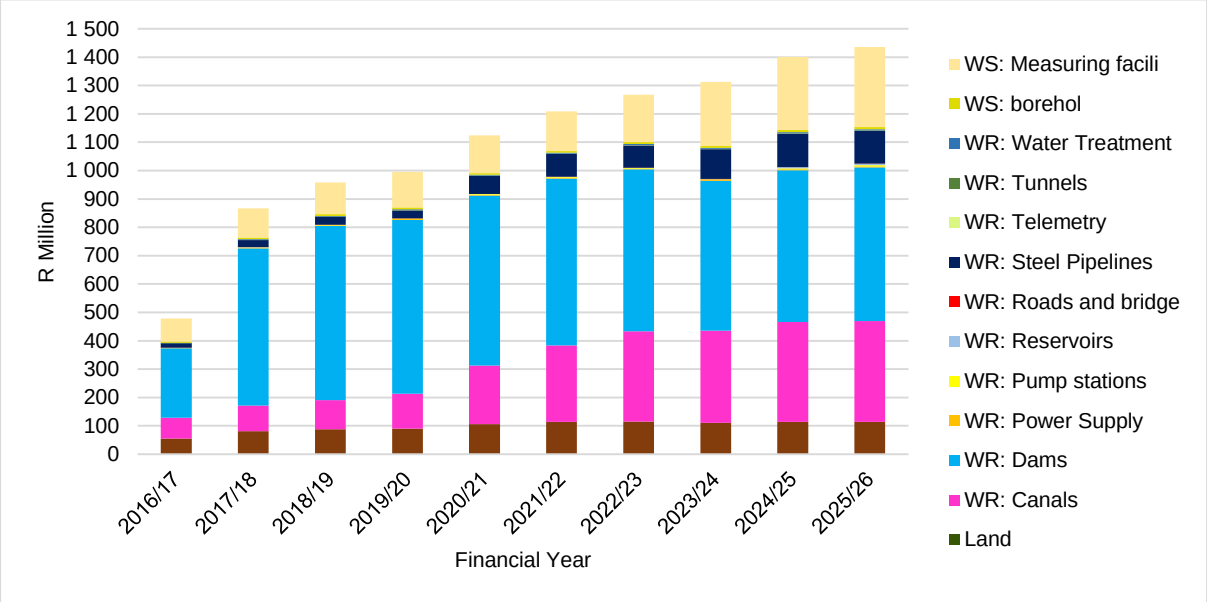

Figure 5.2: Modelled adjusted optimal total cost requirement per asset facility category

5.4 Costs Breakdown

5.4.1 Operations and Maintenance (O&M)

Optimally funding asset maintenance ensures that an asset will retain, or be restored to, a state in which it can perform its function. Table 5.5 and Figure 5.3 show the Cluster's optimal O&M cost requirements, in light of works discussed in Section 4.4.1, per asset facility category:

- The Cluster's projected optimal annual O&M cost requirements for the first three years (2016/17, 2017/18 and 2018/19) are about: R477.97 million; R507 million; and R 537.92 million, respectively. Dams, canals, measuring facilities, buildings and pipelines related asset components are the main cost drivers in this Cluster.
- O&M costs were further modelled to stand separately between operations (O) and maintenance (M) costs (per asset facility category), and were further separated between scheme and non-scheme specific, and are also given per scheme, refer to Appendix I, Table I.4 to I.6.

Table 5.5: Optimal O&M cost per asset facility category

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	54.799	58.127	61.671	65.221	69.328	73.526	77.976	82.685	87.738	93.059
WR: Canals	73.914	78.404	83.184	87.972	93.512	99.175	105.176	111.529	118.345	125.522
WR: Dams	244.310	259.147	274.950	290.775	309.085	327.803	347.640	368.637	391.165	414.888
WR: Power Supply	1.351	1.433	1.521	1.608	1.710	1.813	1.923	2.039	2.164	2.295
WR: Pump stations	1.332	1.413	1.499	1.586	1.685	1.787	1.896	2.010	2.133	2.262
WR: Reservoirs	0.329	0.349	0.371	0.392	0.417	0.442	0.469	0.497	0.527	0.559
WR: Roads and bridge	0.159	0.168	0.179	0.189	0.201	0.213	0.226	0.240	0.254	0.270
WR: Steel Pipelines	15.050	15.964	16.937	17.912	19.040	20.193	21.415	22.709	24.096	25.558
WR: Telemetry	0.546	0.579	0.615	0.650	0.691	0.733	0.777	0.824	0.875	0.928
WR: Tunnels	0.202	0.214	0.227	0.240	0.255	0.270	0.287	0.304	0.323	0.342
WR: Water Treatment	1.248	1.324	1.405	1.486	1.579	1.675	1.776	1.883	1.998	2.120
WS: borehole	3.556	3.772	4.002	4.232	4.498	4.771	5.059	5.365	5.693	6.038
WS: Measuring facility	81.177	86.107	91.358	96.616	102.700	108.919	115.511	122.487	129.973	137.855
Total	**477.973**	**507.002**	**537.918**	**568.879**	**604.700**	**641.320**	**680.130**	**721.210**	**765.284**	**811.696**

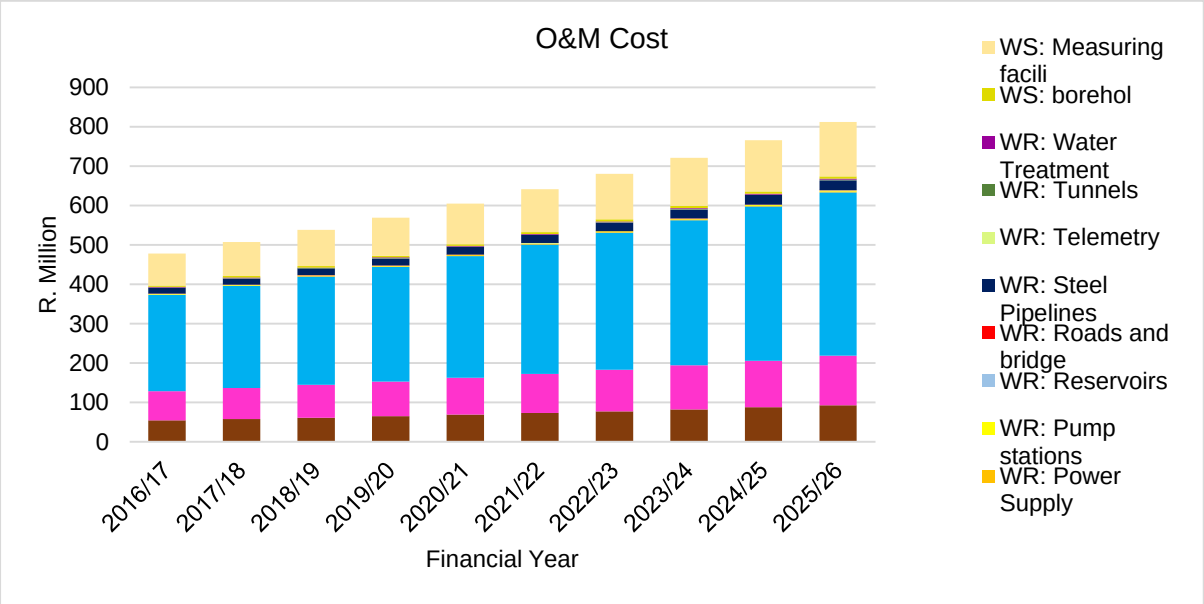

Figure 5.3: Modelled optimal O&M cost per asset facility category

5.4.2 Renewals

Renewal works on existing assets are meant to enable the Cluster to retain the service potential or the life of the asset to that which it had originally. Hence, the necessity of optimally funding such renewals, where identified.

Table 5.6 and Figure 5.4 show the Cluster's modelled optimal annual renewal cost requirements, in light of the works discussed in Section 4.4.2:

- Optimal annual renewal cost requirements for the Cluster for the first three years (2016/17, 2017/18 and 2018/19) amount to about: R0, R135.768 million and R157.079 million, respectively. Dams, buildings, measuring facilities and canals related asset

components are the main cost drivers.

- The projected renewals cost for 2017/18 is attributed to condition backlog from the past years. It is crucial that these renewals be given high priority in the year indicated.

A provision of at least one year for planning and resources mobilization is made from the time renewal work is identified and associated cost budgets determined to the time the renewals are done (as shown in Table 5.6 and Figure 5.4). For example, renewals for 2017/18 were actually identified in 2016/17. For the list of asset component identified for renewal and associated component renewal budgets, refer to relevant Scheme AMPs.

The cost requirements per facility category (shown in Table 5.6) are separated between scheme and non-scheme specific, and are also given per scheme, refer to Appendix J, Tables J.6 to J.8.

Table 5.6: Optimal renewal cost per asset facility category

Asset Facility Category	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	-	22.411	25.773	24.340	35.774	40.084	36.895	27.936	25.829	20.980
WR: Canals	-	11.720	13.477	26.874	104.598	140.820	154.798	147.894	163.233	164.203
WR: Dams	-	72.860	83.789	83.157	81.017	76.543	75.753	60.208	57.458	60.994
WR: Power Supply	-	0.757	0.871	1.115	1.089	1.020	0.843	0.586	1.035	1.196
WR: Pump stations	-	0.458	0.527	0.510	0.494	0.460	0.514	0.479	1.612	2.328
WR: Reservoirs	-	0.058	0.066	0.063	0.055	0.048	0.039	0.026	3.362	5.138
WR: Roads and bridge	-	0.080	0.092	0.086	0.076	0.066	0.096	0.092	0.094	0.083
WR: Steel Pipelines	-	7.798	8.967	8.962	43.395	59.816	56.959	81.468	93.604	89.666
WR: Telemetry	-	-	-	-	-	-	0.232	0.302	0.339	0.318
WR: Tunnels	-	-	-	-	-	-	-	-	-	-
WR: Water Treatment	-	0.869	0.999	0.938	0.916	1.031	1.347	1.236	1.245	1.085
WS: borehole	-	1.421	1.634	1.534	1.346	1.178	1.568	1.629	1.716	1.546
WS: Measuring facility	-	17.338	20.885	29.254	29.718	30.562	51.686	103.167	128.199	145.135
Total	**-**	**135.768**	**157.079**	**176.833**	**298.478**	**351.629**	**380.730**	**425.022**	**477.725**	**492.672**

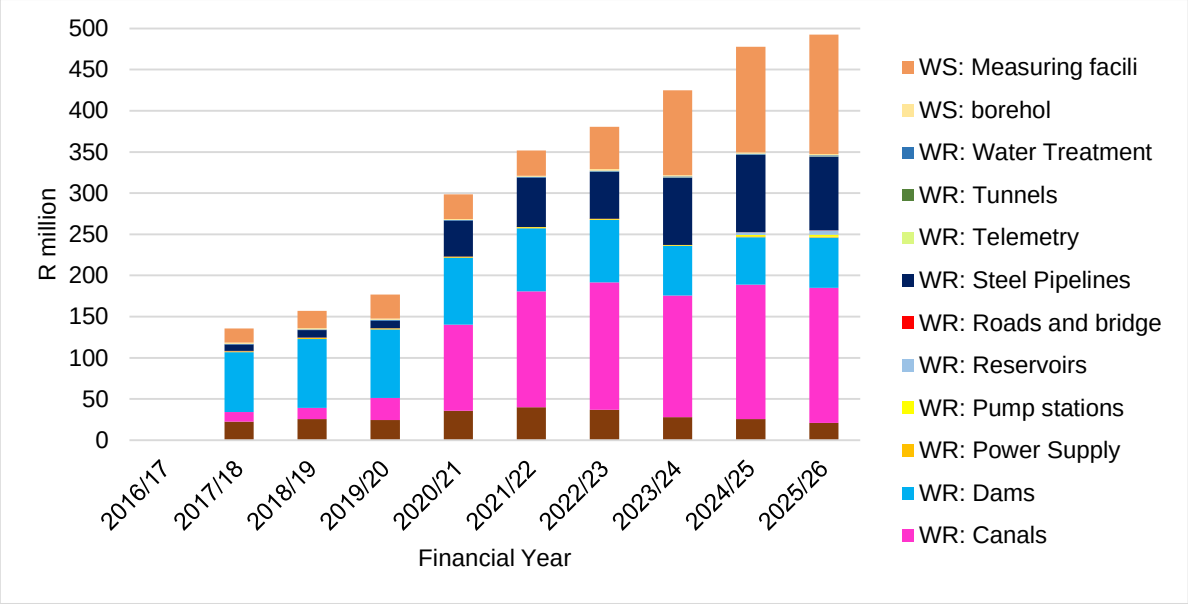

Figure 5.4: Modelled optimal renewal cost per asset facility category

5.4.3 Upgrades and New Capital

As indicated in section 4.4.3, Table 5.7 and Figure 5.5 show the upgrade and/or new capital projects costs requirements for the Cluster.

- Optimal annual upgrades and new capital cost requirement for the Cluster for the first three years (2016/17, 2017/18 and 2018/19) are projected to be about: R0, R224.327 million and R263.526 million, respectively. Dams related asset components are the main cost drivers.

The cost requirement per facility category (shown in Table 5.7) are separated between scheme and non-scheme specific asset components, and are also given per scheme, as shown in Appendix K, Tables K.4 to K.6.

Table 5.7: Modelled optimal upgrades and new capital cost per asset facility category

Asset Facility Category	Financial Year (Million Rands)									
	2016/17	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**
Buildings	-	0.700	0.805	0.756	0.663	0.581	0.465	0.314	0.272	0.208
WR: Canals	-	0.106	5.671	7.806	8.194	29.646	58.407	65.835	71.142	65.195
WR: Dams	-	221.944	255.236	239.700	210.292	184.094	147.310	99.456	86.207	65.880
WR: Pump stations	-	0.020	0.023	0.021	0.019	0.016	0.013	0.009	0.008	0.006
WR: Steel Pipelines	-	1.224	1.407	1.322	1.159	1.015	0.812	0.548	0.475	0.363
WS: borehole	-	0.262	0.302	0.283	0.249	0.218	0.174	0.118	0.102	0.078
WS: Measuring facility	-	0.071	0.082	0.077	0.067	0.059	0.047	0.032	0.028	0.021
Total	**-**	**224.327**	**263.526**	**249.965**	**220.643**	**215.628**	**207.228**	**166.311**	**158.234**	**131.751**

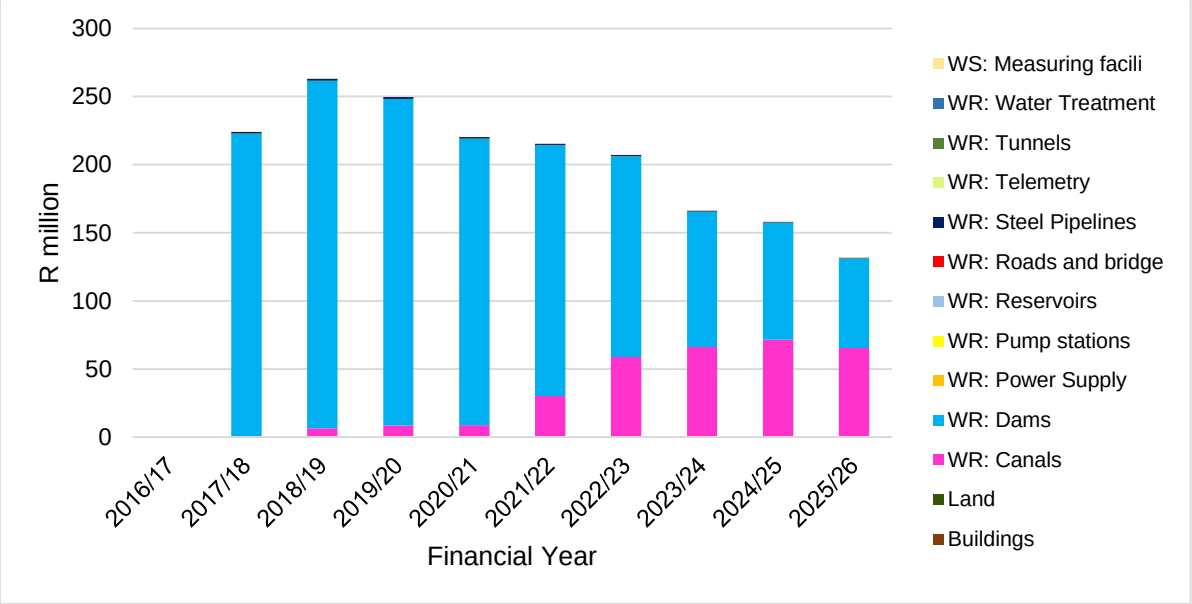

Figure 5.5: Modelled optimal upgrade and new capital cost per asset facility category

5.4.4 Impairments and Disposals

As indicated in Section 4.4.4, the Cluster has some asset components classified as:

- impaired (those with zero asset carrying values), with a total CRC of about R484.792, which could be candidates for disposal. For a summary of these asset components, per facility category and the respective CRCs, and also a list of them, refer to Appendix L, Tables L.1 and L.2, respectively.
- under-utilised', with a total CRC of about R5.5 billion, which could also be candidates for disposal. For a summary of these asset components, per facility category and the respective CRCs, and also a list of them, refer to Appendix L, Tables L.3 and L.4, respectively.

5.5 Backlog (Deferred Maintenance and Deferred Renewals)

'Backlog' (or Deferred Maintenance and Deferred Renewals) is "The value of maintenance and renewal work that has not been done when it should have been – in order to meet the prescribed levels of service". If maintenance and renewal work is not carried out at the optimum time in the asset lifecycle:

- the assets will deteriorate further;
- the maintenance or renewal work that will have to be done later may be more extensive and expensive (in real terms) than it would have been if it had been carried out at the optimum time;
- the asset may not be able to continue to perform to its original design capacity or performance standard, or to deliver the specified levels of service, and, if the work

continues not being done, may ultimately be unable to provide the required service altogether.

Figure 5.6 depicts the projected potential renewal backlog for the Cluster. This backlog is a direct mirror image of the identified renewals because a delay or part spending of the renewal budget would lead to renewal backlog on those particular assets.

- The backlog amount (about R905.115 million) recorded for 2016/17 in Figure 5.6 is backlog on maintenance and/or renewals that were supposed to have been done in the previous year(s), because if maintenance and renewals were optimally done, no asset component in the current year could be in poor or very poor condition.

The backlog per facility category (shown in Figure 5.4) are separated between scheme and non-scheme specific, and are also given per scheme, refer to Appendix J, Tables J.4 to J.8.

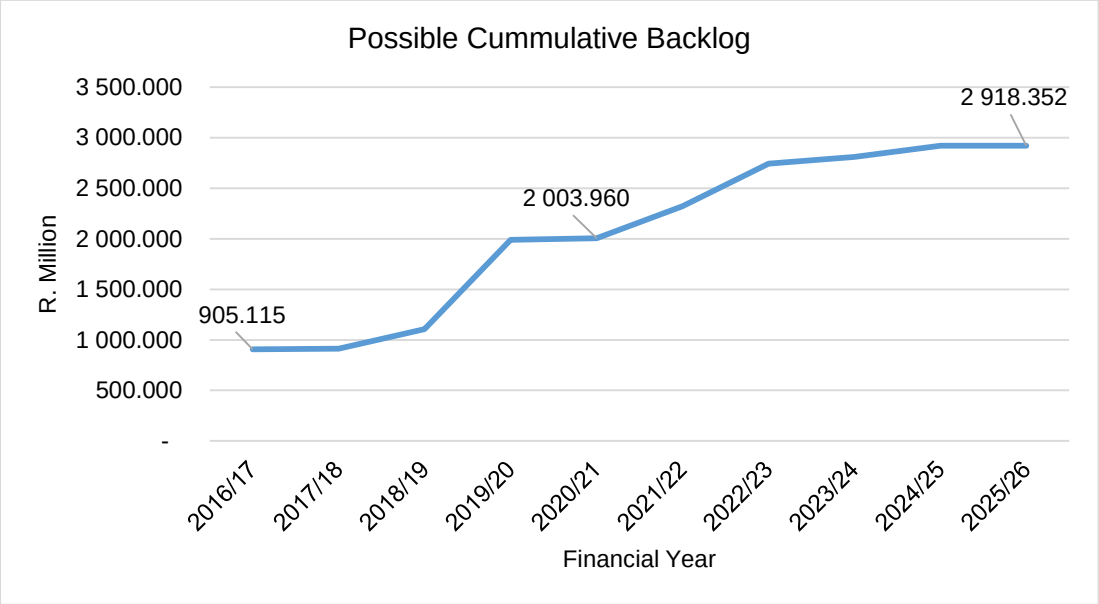

Figure 5.6: Possible cumulative backlog

5.6 Funding Requirements

Table 5.8 and Figure 5.7 present the modelled optimal revenue requirements necessary to sustain the Cluster. For the Cluster to be able to cover all its cost requirements, its revenue needs to be at least equivalent to the modelled revenue.

The Cluster's projected optimal annual revenue requirements for the first three years (2016/17, 2017/18 and 2018/19) amount to about: R478 million, R867 million and R959 million, respectively. Over the projected 10-year period, the revenue which needs to be generated by the Cluster to fund the required immovable asset life cycle works varies between about R478

million and about R1.436 billion. In the event that such revenue cannot be generated through user charges (an indication that the Cluster is not financially self-sustainable), external funding would need to be considered. Such funding can be in the form of fiscal support, cross subsidisation or debt raised through such institutions as TCTA.

Table 5.8: Modelled optimal revenue requirement

	Financial Year (Amounts in Million Rands)									
	2016/17	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**
Modelled Ideal Revenue Requirement	477.973	867.097	958.523	995.676	1 123.821	1 208.577	1 268.089	1 312.543	1 401.243	1 436.119

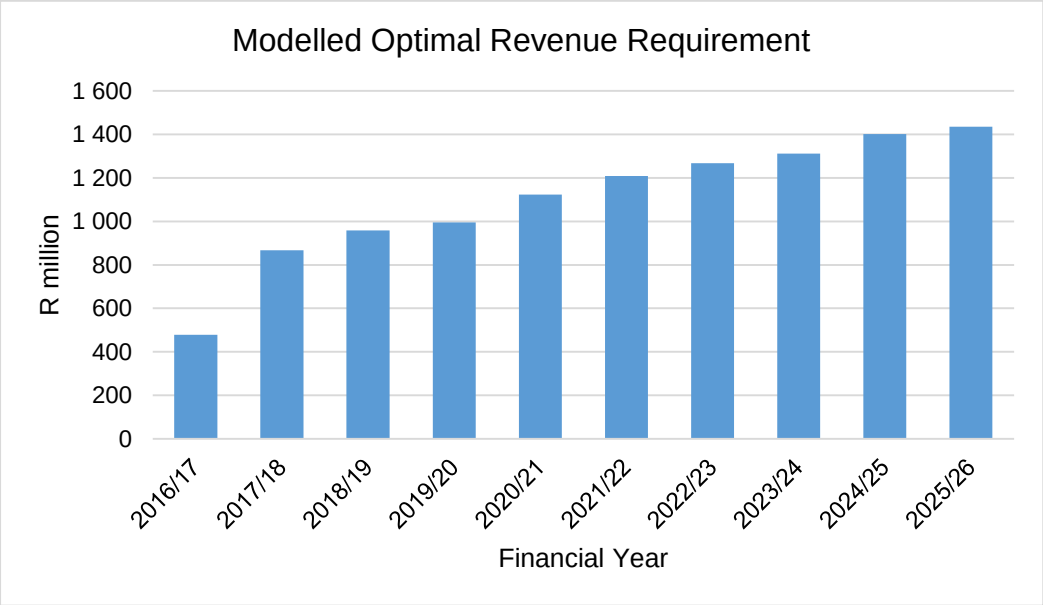

Figure 5.7: Modelled optimal revenue requirement

5.7 Infrastructure Assets Movement

Tables 5.9 to 5.11 and Figures 5.8 to 5.10 present the Cluster's projected annual infrastructure asset movement, but excluding land. The asset carrying value for land at this Cluster is about R871.25 million. The asset movement position per facility category (shown in Tables 5.9 to 5.11) are separated between scheme and non-scheme specific, and are also given per scheme, refer to Appendix M, Tables M.1 to M.6.

Table 5.9: Accumulated acquisition cost per asset facility category

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**
Buildings	380.044	534.115	534.115	535.025	630.821	630.821	637.397	637.457	637.457	637.457
Land	-	-	-	-	-	-	-	-	-	-
WR: Canals	1 370.948	1 449.783	1 486.782	1 588.441	2 096.067	2 204.342	2 444.956	2 532.136	2 571.832	2 603.104
WR: Dams	10 232.464	12 197.824	12 197.824	12 227.615	12 270.258	12 273.848	12 335.137	12 335.137	12 336.599	12 369.173
WR: Power Supply	7.424	12.473	12.473	14.452	14.452	14.452	14.452	14.452	16.178	16.178
WR: Pump stations	21.157	24.343	24.343	24.441	24.714	24.714	25.385	25.548	29.304	29.744
WR: Reservoirs	14.886	15.271	15.271	15.274	15.274	15.274	15.274	15.274	26.404	26.404
WR: Roads and bridge	2.667	3.199	3.199	3.199	3.199	3.199	3.414	3.414	3.414	3.414
WR: Steel Pipelines	496.892	557.035	557.035	560.636	796.182	797.310	799.152	948.468	948.647	949.778
WR: Telemetry	3.953	3.953	3.953	3.953	3.953	3.953	5.113	5.113	5.113	5.113
WR: Tunnels	2.291	2.291	2.291	2.291	2.291	2.291	2.291	2.291	2.291	2.291
WR: Water Treatment	13.168	18.959	18.959	18.959	19.580	20.439	22.594	22.594	22.594	22.594
WS: borehole	18.410	29.629	29.629	29.629	29.629	29.629	32.756	33.475	33.475	33.475
WS: Measuring facilities	984.793	1 100.849	1 107.159	1 169.782	1 172.852	1 183.261	1 310.327	1 515.351	1 523.260	1 566.613
Total	**13 549.097**	**15 949.724**	**15 993.033**	**16 193.697**	**17 079.272**	**17 203.533**	**17 648.248**	**18 090.71**	**18 156.568**	**18 265.338**

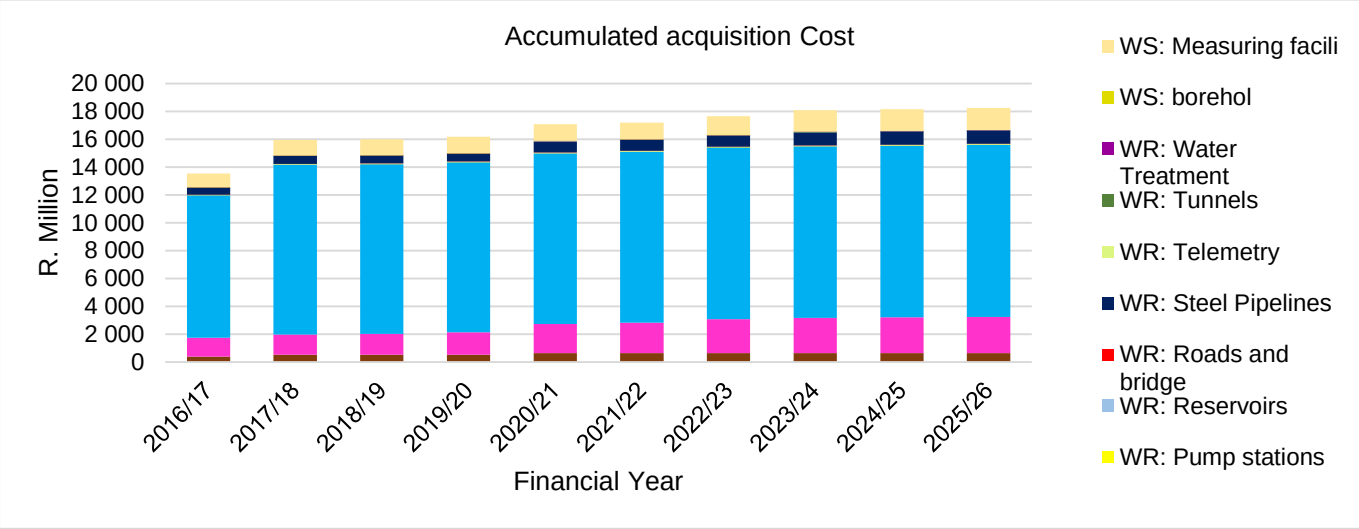

Figure 5.8: Accumulated acquisition cost per asset facility category

Table 5.10: Accumulated depreciation cost per asset facility category

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**
Buildings	192.722	212.777	229.564	246.368	266.330	287.567	308.483	329.400	350.317	371.234
Land	-	-	-	-	-	-	-	-	-	-
WR: Canals	675.854	712.384	741.772	774.022	825.327	878.898	934.753	993.499	1 052.415	1 113.033
WR: Dams	1 677.106	1 809.925	1 913.523	2 018.759	2 125.739	2 262.413	2 399.018	2 535.622	2 672.267	2 810.064
WR: Power Supply	4.555	5.034	5.489	6.022	6.581	7.123	7.666	8.208	8.818	9.427
WR: Pump stations	6.709	7.393	7.992	8.570	9.129	9.866	10.622	11.383	12.042	12.728
WR: Reservoirs	5.031	5.391	5.581	5.772	5.963	6.344	6.725	7.107	7.427	7.747
WR: Roads and bridge	0.636	0.703	0.766	0.828	0.891	0.959	1.030	1.102	1.173	1.245
WR: Steel Pipelines	209.542	232.916	247.964	263.197	285.937	311.976	337.891	362.485	387.085	411.752
WR: Telemetry	3.346	3.389	3.501	3.522	3.543	3.575	3.616	3.657	3.698	3.738
WR: Tunnels	1.043	1.119	1.195	1.271	1.348	1.424	1.500	1.576	1.652	1.728
WR: Water Treatment	6.094	6.633	7.028	7.422	7.841	8.409	8.956	9.503	10.049	10.596
WS: borehole	8.530	9.235	9.864	10.494	11.123	11.840	12.556	13.341	14.125	14.910
WS: Measuring facilities	377.498	408.372	432.349	454.202	495.792	557.419	618.510	649.869	776.791	902.434
Total	**3 168.664**	**3 415.271**	**3 606.588**	**3 800.450**	**4 045.543**	**4 347.813**	**4 651.327**	**4 926.752**	**5 297.858**	**5 670.635**

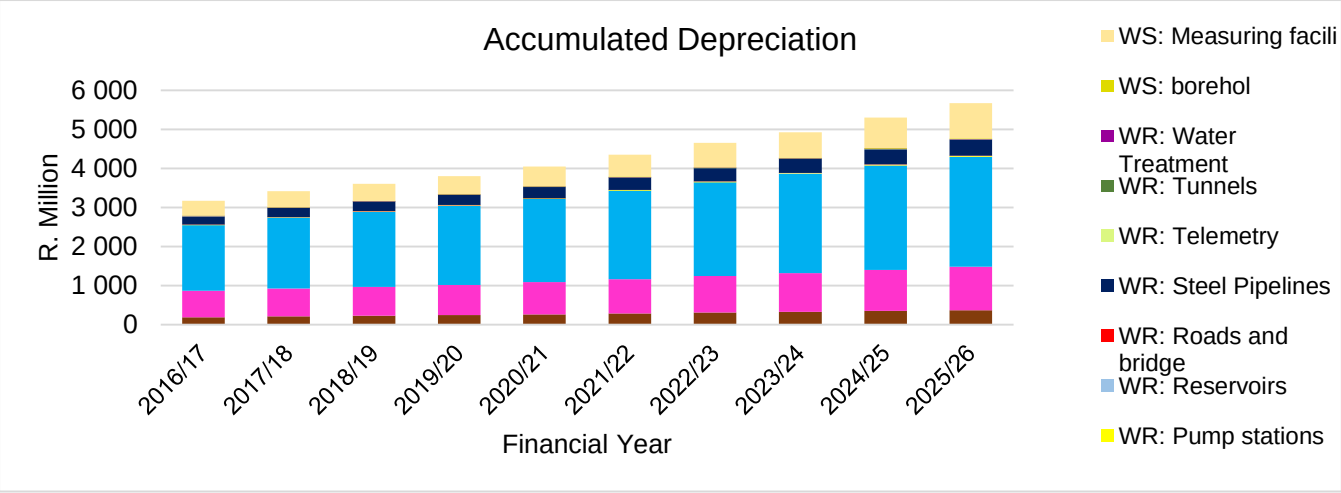

Figure 5.9: Accumulated depreciation cost per asset facility category

Table 5.11: Asset carrying value per asset facility category

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**
Buildings	187.323	321.292	304.551	288.657	364.491	343.254	328.914	308.057	287.140	266.224
Land	-	-	-	-	-	-	-	-	-	-
WR: Canals	695.191	737.399	745.010	814.420	1 270.740	1 325.445	1 510.203	1 538.637	1 519.417	1 490.071
WR: Dams	8 555.358	10 387.898	10 284.301	10 208.856	10 144.519	10 011.435	9 936.119	9 799.514	9 664.331	9 559.109
WR: Power Supply	2.869	7.439	6.983	8.430	7.871	7.329	6.786	6.244	7.361	6.751
WR: Pump stations	14.451	16.950	16.351	15.871	15.585	14.848	14.764	14.165	17.262	17.017
WR: Reservoirs	9.855	9.880	9.690	9.502	9.311	8.930	8.548	8.167	18.978	18.658
WR: Roads and bridge	2.032	2.496	2.433	2.371	2.308	2.240	2.384	2.312	2.241	2.169
WR: Steel Pipelines	287.350	324.119	309.071	297.438	510.245	485.334	461.260	585.983	561.562	538.026
WR: Telemetry	0.607	0.564	0.452	0.431	0.410	0.377	1.497	1.456	1.416	1.375
WR: Tunnels	1.249	1.173	1.096	1.020	0.944	0.867	0.791	0.715	0.639	0.563
WR: Water Treatment	7.073	12.326	11.931	11.537	11.739	12.029	13.638	13.092	12.545	11.998
WS: borehole	9.880	20.394	19.765	19.135	18.506	17.789	20.200	20.134	19.350	18.565
WS: Measuring facilities	607.623	692.543	674.810	715.580	677.060	625.843	710.091	865.482	746.935	673.667
Total	**10 380.862**	**12 534.473**	**12 386.445**	**12 393.247**	**13 033.729**	**12 855.720**	**13 015.196**	**13 163.958**	**12 859.176**	**12 604.193**

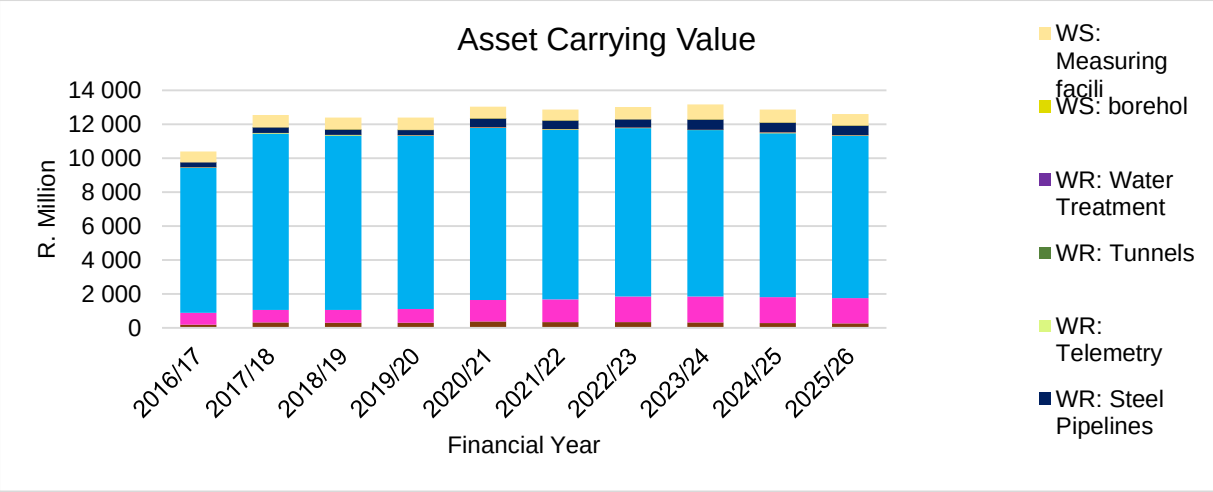

Figure 5.10: Asset carrying value per asset facility category

5.8 Summary

Modelled ten-year optimal cost requirements, per cost component (i.e. O&M (inclusive of direct and indirect labour costs); renewal works; upgrades and new capital; and asset disposal) and per asset facility category, necessary to fund the asset life cycle works identified in Section 4 were presented in this section for the Cluster.

The Cluster's projected modelled identified optimal total cost requirement for the first three years (2016/17, 2017/18 and 2018/19) are about: R477.973 million; R2.908 billion; and R581.227 million, respectively. The projected spike in 2017/18 is attributed to high renewal, and upgrade and new capital cost requirements (about R905 million and R1.496 billion, respectively). Such spike, compounded by the current economic and financial constraints facing the country, present some implementation challenges for the Cluster's modelled identified optimal total cost requirement. As such, for practical implementation purposes, the identified optimal cost requirements for the Cluster are adjusted as indicated below.

The Cluster's projected modelled adjusted optimal total cost requirement for the first three years (2016/17, 2017/18 and 2018/19) are about: R477.973 million; R867.097 million; and R958.523 million, respectively. The projected total cost breakdown for the Cluster is as follows:

- Optimal annual O&M cost requirements for the first three years (2016/17, 2017/18 and 2018/19) are projected to be about: R477.97 million; R507 million; and R537.92 million, respectively.
- Optimal annual renewal cost requirement for the first three years (2016/17, 2017/18 and 2018/19) amounts to: R0, R135.768 million and R157.079 million, respectively. Dams, buildings, measuring facilities and canals related asset components are the main cost drivers.
- Optimal annual upgrades and new capital cost requirement for the first three years (2016/17, 2017/18 and 2018/19) are projected to be about: R0, R224.327 million and R263.526 million, respectively. Dams related asset components are the main cost drivers.

The Cluster's projected optimal annual revenue requirements for the first three years (2016/17, 2017/18 and 2018/19) amount to about: R478 million, R867 million and R959 million, respectively. Over the projected 10-year period, the revenue which needs to be generated by the Cluster to fund the required immovable asset life cycle works varies between about R478 million and about R1.436 billion. In the event that such revenue cannot be generated through user charges (an indication that the Cluster is not financially self-sustainable), external funding would need to be considered. Such funding can be in the form of fiscal support, cross subsidisation or debt raised through such institutions as TCTA.

6. RECOMMENDATIONS

6.1 Overview

This section provides recommendations for improvement on challenges identified throughout the preceding sections of this AMP, with a particular focus on best practices and AMP monitoring and control.

6.2 Practices Improvement

Key areas of concern, and recommended improvement actions thereof, identified in the preceding sections of this AMP are summarized in Table 6.1.

Table 6.1: Recommended areas for improvement

No.	Area for Improvement	Issue Description	Recommended Action
1	**Asset Information Management**		
1.1	Asset Register as the indispensable key data source for AMP development	The quality and usefulness of an AMP is highly dependent on the completeness and accuracy of the asset register used in the development of the AMP. Accordingly, the asset life cycle management activities and works (such as maintenance, renewals, upgrades and new capital, and disposals) recommended for the Cluster in this AMP are highly dependent on the asset component condition, criticality and utilisation gradings captured in the asset register used in the development of this AMP. However, during the AMPs review workshops conducted during the development of this AMP, the Cluster and scheme personnel did not fully concur with some of the asset component counts, condition as well as utilisation gradings; indicating the possibility of misalignment between the asset register and the prevailing situation on the ground.	The NWRI needs to urgently conduct physical asset verification and assessments (extent, condition, criticality, utilisation, etc.) for all its immovable assets and develop a comprehensive asset register, inclusive of all crucial asset component details, such as asset component sizes, material of construction, condition, criticality, utilisation, etc. Thereafter, the NWRI needs to conduct similar assessments at least every five years as contemplated in Section 13 of the GIAMA. The abovementioned asset assessments need to be conducted by adequately experienced professionals.

No.	Area for Improvement	Issue Description	Recommended Action
1.2	Current Replacement Cost (CRC)	Each and every asset component in the asset register needs to have a corresponding CRC. The CRCs are useful in the determination and projection of optimal asset life cycle management works, such as O&M, renewals, upgrades and new capital, etc., in line with international best practices. Ideally, the CRC of an asset component needs to be determined by multiplying the unit cost rate (cost per unit size, ideally obtained from suppliers) by the size of the asset component. Thus, the asset register needs to adequately capture such details as asset component sizes, material of construction, etc. However, such asset component details are not fully captured in the asset register used in the development of this AMP. As a result, the CRCs presented in this AMP were determined by adjusting the provided acquisition costs with PPI and an uncertainty factor; hence the projected optimal asset life cycle management costs may be on the conservative side.	The above-recommended assessments for the NWRI immovable assets need to adequately capture such asset component details as sizes and material of construction. This will enable the determination of more accurate CRCs, and consequently projection of more accurate optimal asset life cycle management costs.
2	**Financial Management**		
2.1	O&M Costs reporting	The DWS is unaware of O&M costs currently being incurred by some of the schemes being operated and maintained by other institutions, such as irrigation boards, water boards and water user associations, and no financial reports are being sent to DWS.	The DWS needs to liaise with the respective institutions and agree on frequent O&M reports, preferably on a quarterly basis.
2.2	O&M Costs splitting	O&M costs in the individual schemes are currently not being budgeted for and recorded separately per asset facility category.	Budget for and record O&M costs: separately (separate operations from maintenance). Budget for and record O&M costs per asset facility category.
3	**Human Resources**		
3.1	O&M Human Resources Requirements	The DWS is unaware of the optimum number of personnel required for effective operation and maintenance of some of the schemes being operated and maintained by other institutions, such as irrigation boards, water boards and water user associations, and no related reports are being sent to DWS.	The DWS needs to liaise with the respective institutions and agree on frequent O&M reports (including human resources), preferably on a quarterly basis.

No.	Area for Improvement	Issue Description	Recommended Action
4	**Risk Management**		
4.1	Risk Management	Risk (expected loss) is calculated by determining the product of the likelihood of the risk and the total amount of loss (impact) when the risk occurs: *Expected Loss (Risk) = Risk Likelihood x Total Loss (Impact)* For this Scheme, however, risk likelihood per asset component was not captured in the Asset Register used in the development of this AMP. Hence, an in-depth risk analysis could not be conducted.	Capture risk likelihood per asset component in the infrastructure asset register, so that the next update of this AMP can incorporate an in-depth risk analysis.
5	**Contracts Management**		
5.1	Immovable Asset Maintenance Contract	The Cluster does not have an immovable asset maintenance contract in place. The one that was there was terminated in October 2016. This poses a high risk of service delivery failure as a result of deteriorating asset condition.	Appoint an immovable asset maintenance contractor, and work towards clearing the maintenance backlog.

6.3 Asset Management Planning, Monitoring and Evaluation

The AMP development, monitoring and evaluation recommendations are consistent with the GIAMA and DWS Asset Management Policy:

- The Director for the Cluster is the *controller* for the Cluster's infrastructure assets and is required to: "safeguard and maintain" the assets; "maintain a system of internal control" over the assets; "maintain an asset register" for the assets; and appoint an Asset Manager at the Cluster level, as contemplated in Section 5 of the DWS Asset Management Policy. It is recommended that:
  - The Asset Manager (instead of working alone) sets up a dedicated Asset Management team (Asset Management Specialists) at the Cluster level to effectively plan, and effectively monitor the implementation of the AMPs for all the schemes in the cluster.
  - The NWRIB appoints a dedicated in charge AMPs planning, monitoring and evaluation team (at Head Office).
- The AMPs need to be updated annually to inform the budget and after budget allocations have been finalised by the National Treasury, and incorporated into the DWS Strategic Plan, as contemplated in Section 12 of the GIAMA.

6.4 Summary

In order to effectively and efficiently deliver its service (supply of raw water) to its irrigation, and domestic and industrial water users (Section 1), meeting the required levels of service (Section 2), and meeting the projected future raw water demand (Section 3), the Cluster needs to execute the recommended asset life cycle management activities (Section 4) in line with the planned budgets and timeframes (Section 5). Furthermore, a number of recommendations made for process improvement, particularly with regards to the DWS immovable asset register, Asset Management Information System, financial management (in particular the recording of O&M costs), human resources, contract management, as well as risk management, need to be implemented. Pro-activeness and forward-looking, taking care of any changes in the assumptions made in this AMP are also of vital importance.

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APPENDICES

APPENDIX A – Asset Register for the Northern Operations Cluster

<Refer to soft-copy file>

APPENDIX B – Strategic Context

1. DWS's Vision, Mission, and Organisational Goals & Objectives

Figure B.1 shows the link between this AMP and the DWS's Vision.

Figure B.1: AMP Alignment with DWS's Vision, Mission, and Organisational Goals & Objectives

Vision

Equitable and sustainable water and sanitation that support socio-economic growth and development of the well-being of current and future generations.

Mission

To ensure the universal access of all South Africans to equitable water resources and sustainable water and sanitation services, by:

- Protecting, developing, conserving, managing and regulating water resources;
- Managing, regulating and providing efficient and effective water and sanitation

services;

- Providing strategic leadership and evidence based policy direction to a coordinated water and sanitation sector for improved sector performance and service delivery;
- Building the skills and capabilities of the sector and enhancing information management to inform decision making; and
- Enhancing communication and stakeholder partnerships with communities and sector constituencies to advance the national development agenda.

Values

- Promoting and maintaining high standards of professional ethics.
- Utilising resources efficiently and effectively.
- Providing services impartially, fairly, equitably and without bias.
- Responding to people's needs; citizens are encouraged to participate in policy-making.
- Rendering an accountable, transparent, and development-oriented public administration.

Organisational Goals and Objectives

- Enhanced and protected water as a resource across the value chain.
- Equitable access to reliable, sustainable and acceptable water resources and water and sanitation services.
- An enhanced contribution to socio-economic development and transformation by the sector.
- An efficient, effective and development oriented water and sanitation sector.
- Sound cooperative governance and an active and engaged citizenry.

APPENDIX C – Stakeholders

1. Key Stakeholders

The key stakeholders are listed in Table C.1.

Table C.1: Key Stakeholders

Stakeholder
The Catchment Management Agencies (CMAs)
Water Service Authorities (WSAs)
Water Service Providers (WSPs)
The customers served by assets in the Cluster: ▪ 1 577 water users (irrigation, and D&I water users).
Internal Stakeholders ▪ DWS Head Office; ▪ The Northern Cluster Office; ▪ Area Offices.

APPENDIX D – Raw Water Volumes and Future Demand

Table D.1: Registered Raw Water Volumes Specific to Each Customer

No.	Question	Answer			
1	Why does this Cluster exist?	To supply domestic and industrial water and water for irrigation.			
2	How much water was registered to the customers for the past 3 financial years?	***Water User Category***	**Cubic Metres (Million)**		
			2013/14	**2014/15**	**2015/16**
		Domestic & Industrial			561.339
		Irrigation			1 194.823
		Total			**1 756.162**

Table D.2 – The Likely Future Demand for Raw Water

Water Use Category	10 year Projections (Mm^3)									
	2016/17	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**
D&I	561.339	561.339	561.339	561.339	561.339	561.339	561.339	561.339	561.339	561.339
IRR	1 194.823	1 194.823	1 194.823	1 194.823	1 194.823	1 194.823	1 194.823	1 194.823	1 194.823	1 194.823
Total	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**

Table. D.3: Sensitivity Analysis

What if Scenario demand changes by	10 year Projections (Mm^3)									
	2016/17	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**
5%	1 843.970	1 936.168	2 032.977	2 134.626	2 241.357	2 353.425	2 471.096	2 594.651	2 724.383	2 860.602
3%	1 808.847	1 863.112	1 919.005	1 976.575	2 035.873	2 096.949	2 159.857	2 224.653	2 291.393	2 360.134
2%	1 791.285	1 827.111	1 863.653	1 900.926	1 938.944	1 977.723	2 017.278	2 057.623	2 098.776	2 140.751
Base = 0%	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**	**1 756.162**
-2%	1 721.038	1 686.618	1 652.885	1 619.828	1 587.431	1 555.682	1 524.569	1 494.077	1 464.196	1 434.912
-3%	1 703.477	1 652.373	1 602.801	1 554.717	1 508.076	1 462.834	1 418.949	1 376.380	1 335.089	1 295.036
-5%	1 668.354	1 584.936	1 505.689	1 430.405	1 358.884	1 290.940	1 226.393	1 165.074	1 106.820	1 051.479

APPENDIX E – Asset Details

Table E.1: Asset Condition - Asset component proportions per condition grading and per asset facility category

Asset Facility Category	Condition Grading										Total No. of Asset Components	Total Row N %
	1-Very Poor		2-Poor		3-Fair		4-Good		5-Very Good			
	No. of Asset Components	Row N %	No. of Asset Components	Row N %	No. of Asset Components	Row N %	No. of Asset Components	Row N %	No. of Asset Components	Row N %		
Borehole	-	-	27	65.85%	7	17.07%	7	17.07%	-	-	**41**	**100.00%**
Buildings	226	20.85%	268	24.72%	284	26.20%	227	20.94%	79	7.29%	**1 084**	**100.00%**
Canals	71	1.14%	280	4.48%	5685	91.05%	200	3.20%	8	0.13%	**6 244**	**100.00%**
Dams	168	6.66%	704	27.89%	830	32.88%	689	27.30%	133	5.27%	**2 524**	**100.00%**
Measuring facilities	17	1.92%	260	29.38%	110	12.43%	482	54.46%	16	1.81%	**885**	**100.00%**
Pipelines	1	0.50%	6	3.02%	190	95.48%	2	1.01%	-	-	**199**	**100.00%**
Power supply	1	4.00%	4	16.00%	16	64.00%	3	12.00%	1	4.00%	**25**	**100.00%**
Pump stations	10	6.94%	21	14.58%	13	9.03%	28	19.44%	72	50.00%	**144**	**100.00%**
Reservoirs	3	9.09%	2	6.06%	21	63.64%	5	15.15%	2	6.06%	**33**	**100.00%**
Roads	-	0.00%	2	20.00%	1	10.00%	2	20.00%	5	50.00%	**10**	**100.00%**
Telemetry	-	0.00%	-	-	12	100.00%		0.00%	-	-	**12**	**100.00%**
Tunnels	-	0.00%	-	-	-	-	1	100.00%	-	-	**1**	**100.00%**
Water Treatment	3	14.29%	6	28.57%	6	28.57%	3	14.29%	3	14.29%	**21**	**100.00%**
All Cluster asset components	*500*	*4.46%*	*1580*	*14.08%*	*7175*	*63.93%*	*1649*	*14.69%*	*319*	*2.84%*	***11 223***	***100.00%***

Table E.2: Asset RUL/EUL Ratio - Asset component proportions per RUL/EUL Ratio range and per asset facility category

Asset Facility Category	Condition Grading										Total No. of Asset Components	Total Row N %
	0-10%		11-25%		26-45%		46-70%		71-100%			
	No. of Asset Components	Row N %	No. of Asset Components	Row N %	No. of Asset Components	Row N %	No. of Asset Components	Row N %	No. of Asset Components	Row N %		
Borehole	-	-	27	65.85%	7	17.07%	7	17.07%	-	-	**41**	**100.00%**
Buildings	226	20.85%	268	24.72%	284	26.20%	227	20.94%	79	7.29%	**1 084**	**100.00%**
Canals	71	1.14%	280	4.48%	5685	91.05%	200	3.20%	8	0.13%	**6 244**	**100.00%**
Dams	168	6.66%	704	27.89%	830	32.88%	689	27.30%	133	5.27%	**2 524**	**100.00%**
Measuring facilities	17	1.92%	260	29.38%	110	12.43%	482	54.46%	16	1.81%	**885**	**100.00%**
Pipelines	1	0.50%	6	3.02%	190	95.48%	2	1.01%	-	-	**199**	**100.00%**
Power supply	1	4.00%	4	16.00%	16	64.00%	3	12.00%	1	4.00%	**25**	**100.00%**
Pump stations	10	6.94%	21	14.58%	13	9.03%	28	19.44%	72	50.00%	**144**	**100.00%**
Reservoirs	3	9.09%	2	6.06%	21	63.64%	5	15.15%	2	6.06%	**33**	**100.00%**
Roads	-	0.00%	2	20.00%	1	10.00%	2	20.00%	5	50.00%	**10**	**100.00%**
Telemetry	-	0.00%	-	-	12	100.00%		0.00%	-	-	**12**	**100.00%**
Tunnels	-	0.00%	-	-	-	-	1	100.00%	-	-	**1**	**100.00%**
Water Treatment	3	14.29%	6	28.57%	6	28.57%	3	14.29%	3	14.29%	**21**	**100.00%**
All Cluster asset components	*500*	*4.46%*	*1580*	*14.08%*	*7175*	*63.93%*	*1649*	*14.69%*	*319*	*2.84%*	***11 223***	***100.00%***

Table E.3: Asset Criticality - Asset component proportions per Criticality grading and per asset facility category

Asset Facility Category	Criticality Grading										Total No. of Asset Components	Total Row N %
	1-Very Low		2-Low		3-Moderate		4-High		5-Very High			
	No. of Asset Components	Row N %	No. of Asset Components	Row N %	No. of Asset Components	Row N %	No. of Asset Components	Row N %	No. of Asset Components	Row N %		
Borehole	2	4.88%	16	39.02%	23	56.10%	-	-	-	-	**41**	**100.00%**
Buildings	97	8.96%	285	26.32%	672	62.05%	26	2.40%	3	0.28%	**1083**	**100.00%**
Canals	48	0.77%	105	1.68%	6033	96.62%	58	0.93%	-	-	**6244**	**100.00%**
Dams	28	1.11%	1130	44.77%	458	18.15%	832	32.96%	76	3.01%	**2524**	**100.00%**
Measuring facilities	235	26.55%	364	41.13%	266	30.06%	19	2.15%	1	0.11%	**885**	**100.00%**
Pipelines	5	2.51%	19	9.55%	143	71.86%	15	7.54%	17	8.54%	**199**	**100.00%**
Power supply	1	4.00%	17	68.00%	7	28.00%	-	-	-	-	**25**	**100.00%**
Pump stations	3	2.08%	89	61.81%	27	18.75%	24	16.67%	1	0.69%	**144**	**100.00%**
Reservoirs		0.00%	11	33.33%	21	63.64%	1	3.03%	-	-	**33**	**100.00%**
Roads	5	50.00%	3	30.00%	2	20.00%	-	-	-	-	**10**	**100.00%**
Telemetry	-	-	-	-	12	100.00%	-	-	-	-	**12**	**100.00%**
Tunnels	-	-	-	-	1	100.00%	-	-	-	-	**1**	**100.00%**
Water Treatment	-	-	13	61.90%	6	28.57%	2	9.52%		0.00%	**21**	**100.00%**
All Cluster asset components	*424*	*3.78%*	*2052*	*18.29%*	*7671*	*68.36%*	*977*	*8.71%*	*98*	*0.87%*	***11223***	***100.00%***

Table E.4: Asset Utilisation - Asset component proportions per Utilisation grading and per asset facility category

Asset Facility Category	Utilisation Grading										Total No. of Asset Components	Total Row N %
	1-Strategic redundancy		2-Under-utilised		3-Moderate use		4-Approaching design capacity		5-Exceeding capacity/stressed			
	No. of Asset Components	Row N %	No. of Asset Components	Row N %	No. of Asset Components	Row N %	No. of Asset Components	Row N %	No. of Asset Components	Row N %		
Borehole	-	-	1	2.44%	6	14.63%	33	80.49%	1	2.44%	**41**	**100.00%**
Buildings	3	0.28%	22	2.03%	109	10.06%	935	86.25%	15	1.38%	**1 084**	**100.00%**
Canals	14	0.22%	458	7.34%	77	1.23%	5 687	91.08%	8	0.13%	**6 244**	**100.00%**
Dams	1	0.04%	443	17.55%	254	10.06%	1 466	58.08%	360	14.26%	**2 524**	**100.00%**
Measuring facilities		0.00%	5	0.56%	451	50.96%	426	48.14%	3	0.34%	**885**	**100.00%**
Pipelines	1	0.50%	7	3.52%	30	15.08%	160	80.40%	1	0.50%	**199**	**100.00%**
Power supply	-	-	4	16.00%	4	16.00%	17	68.00%	-	-	**25**	**100.00%**
Pump stations	-	-	1	0.69%	37	25.69%	104	72.22%	2	1.39%	**144**	**100.00%**
Reservoirs	-	-	29	87.88%	-	-	4	12.12%	-	-	**33**	**100.00%**
Roads	-	-	4	40.00%	3	30.00%	3	30.00%	-	-	**10**	**100.00%**
Telemetry	-	-	12	100.00%	-	-	-	-	-	-	**12**	**100.00%**
Tunnels	-	-	-	-	-	-	1	100.00%	-	-	**1**	**100.00%**
Water Treatment	-	-	1	4.76%	1	4.76%	19	90.48%	-	-	**21**	**100.00%**
All Cluster asset components	*19*	*0.17%*	*987*	*8.79%*	*972*	*8.66%*	*8 855*	*78.90%*	*390*	*3.48%*	***11 223***	***100.00%***

Table E.5A: Asset component proportions per Criticality - Condition grading and per asset facility category (Maintenance)

Asset Facility Category	Criticality-Condition Grading (Proportion, %)															Total
	H - F	H - G	H - VG	L - F	L - G	L - VG	M - F	M - G	M - VG	VH - F	VH - G	VH - VG	VL - F	VL - G	VL - VG	
Borehole	-	-	-	14.29%	-	-	28.57%	42.86%	-	-	-	-	7.14%	7.14%	-	**100.00%**
Buildings	1.53%	1.53%	0.34%	17.49%	12.90%	0.34%	25.98%	22.24%	5.60%	-	0.17%	0.17%	3.23%	1.70%	6.79%	**100.00%**
Canals	0.37%	0.08%	-	0.80%	0.41%	0.05%	94.94%	2.88%	0.08%	-	-	-	0.36%	0.02%	-	**100.00%**
Dams	12.05%	16.83%	3.45%	26.09%	15.98%	4.18%	8.47%	8.11%	0.42%	3.33%	0.42%	-	0.30%	0.36%	-	**100.00%**
Measuring facilities	1.97%	-	-	10.20%	45.07%	1.32%	1.32%	30.59%	0.66%	0.16%	-	-	4.44%	3.62%	0.66%	**100.00%**
Pipelines	6.77%	0.52%	-	6.77%	-	-	73.96%	0.52%	-	8.85%	-	-	2.60%	-	-	**100.00%**
Power supply	-	-	-	65.00%	5.00%	5.00%	15.00%	5.00%	-	-	-	-	-	5.00%	-	**100.00%**
Pump stations	0.88%	17.70%	-	3.54%	0.88%	61.95%	7.08%	6.19%	1.77%	-	-	-	-	-	-	**100.00%**
Reservoirs	3.57%	-	-	10.71%	10.71%	7.14%	60.71%	7.14%	-	-	-	-	-	-	-	**100.00%**
Roads	-	-	-	-	12.50%	12.50%	-	-	12.50%	-	-	-	12.50%	12.50%	37.50%	**100.00%**
Telemetry	-	-	-	-	-	-	100.00%	-	-	-	-	-	-	-	-	**100.00%**
Tunnels	-	-	-	-	-	-	-	100.00%	-	-	-	-	-	-	-	**100.00%**
Water Treatment	16.67%	-	-	25.00%	25.00%	-	8.33%	-	25.00%	-	-	-	-	-	-	**100.00%**
All Cluster asset components (in fair, good and very good conditions)	*2.83%*	*3.42%*	*0.65%*	*7.45%*	*7.08%*	*1.71%*	*66.54%*	*6.99%*	*0.60%*	*0.80%*	*0.09%*	*0.01%*	*0.86%*	*0.46%*	*0.51%*	***100.00%***

Table E.5B: CRC per asset Criticality - Condition grading and per asset facility category (Maintenance)

Asset Facility Category	Criticality-Condition Grading (CRC, R Million)																*% of Total CRC*
	H - F	H - G	H - VG	L - F	L - G	L - VG	M - F	M - G	M - VG	VH - F	VH - G	VH - VG	VL - F	VL - G	VL - VG	Total	
Borehole				2.69			6.21	10.49					0.23	1.75		**21.36**	*0.06*
Buildings	8.14	15.19	6.20	105.42	86.55	0.95	154.92	108.72	54.94		0.17	0.17	22.39	6.60	73.15	**643.49**	*1.89*
Canals	77.27	50.90		83.99	106.51	3.45	3,051.05	99.22	21.68				4.55	13.28		**3 511.90**	*10.30*
Dams	1 507.19	4 921.34	4 196.58	2 170.56	9 496.50	1 177.63	461.42	1,337.46	73.65	172.59	881.03		61.16	20.77		**26 477.87**	*77.66*
Measuring facilities	35.81			342.37	767.02	52.49	34.01	802.94	18.16	41.26			5.97	7.31	0.94	**2,108.28**	*6.18*
Pipelines	91.09	0.37		75.59			821.42	1.17		215.49			1.98			**1 207.12**	*3.54*
Power supply				4.46	0.39	0.35	0.42	1.80						0.48		**7.89**	*0.02*

Asset Facility Category	Criticality-Condition Grading (CRC, R Million)																% of Total CRC
	H - F	H - G	H - VG	L - F	L - G	L - VG	M - F	M - G	M - VG	VH - F	VH - G	VH - VG	VL - F	VL - G	VL - VG	Total	
Pump stations	0.46	1.82		3.58	1.13	19.97	8.99	4.18	0.26							**40.39**	*0.12*
Reservoirs	0.21			21.61	0.52	0.36	17.01	0.51								**40.22**	*0.12*
Roads					0.38	0.81			1.58				0.46	0.05	0.31	**3.58**	*0.01*
Telemetry							9.97									**9.97**	*0.03*
Tunnels								6.34								**6.34**	*0.02*
Water Treatment	4.43			5.84	3.75		1.41		1.67							**17.11**	*0.05*
Total	**1 724.58**	**4 989.63**	**4 202.78**	**2 816.12**	**10 462.74**	**1 256.00**	**4 566.81**	**2 372.84**	**171.94**	**429.34**	**881.20**	**0.17**	**96.73**	**50.23**	**74.40**	**34 095.52**	***100.00***
% of Total CRC	*5.06*	*14.63*	*12.33*	*8.26*	*30.69*	*3.68*	*13.39*	*6.96*	*0.50*	*1.26*	*2.58*	*0.00*	*0.28*	*0.15*	*0.22*	***100.00***	

Table E.6A: Asset component proportions per Criticality - Condition grading and per asset facility category (Renewals)

Asset Facility Category	Criticality-Condition Grading (Proportion, %)										Total
	H - P	H - VP	L - P	L - VP	M - P	M - VP	VH - P	VH - VP	VL - P	VL - VP	
Borehole	-	-	51.85%	-	48.15%	-	-	-	-	-	**100.00%**
Buildings	0.40%	0.81%	13.16%	7.89%	37.25%	34.62%	-	0.20%	3.44%	2.23%	**100.00%**
Canals	7.41%	1.42%	6.27%	2.56%	60.11%	14.81%	-	-	5.98%	1.42%	**100.00%**
Dams	25.69%	8.49%	34.98%	7.00%	17.09%	3.21%	1.61%	-	1.38%	0.57%	**100.00%**
Measuring facilities	2.53%	-	3.61%	3.61%	22.38%	2.17%	-	-	65.34%	0.36%	**100.00%**
Pipelines	14.29%	-	71.43%	14.29%	-	-	-	-	-	-	**100.00%**
Power supply	-	-	20.00%	20.00%	60.00%	-	-	-	-	-	**100.00%**
Pump stations	9.68%	-	19.35%	25.81%	29.03%	3.23%	3.23%	-	6.45%	3.23%	**100.00%**
Reservoirs	-	-	-	60.00%	40.00%	-	-	-	-	-	**100.00%**
Roads	-	-	50.00%	-	50.00%	-	-	-	-	-	**100.00%**
Water Treatment	-	-	55.56%	22.22%	11.11%	11.11%	-	-	-	-	**100.00%**
All Cluster asset components (in poor and very poor conditions)	*12.64%*	*3.99%*	*20.87%*	*6.44%*	*30.53%*	*12.45%*	*0.72%*	*0.05%*	*11.20%*	*1.11%*	***100.00%***

Table E.6B: CRC per asset Criticality - Condition grading and per asset facility category (Renewals)

Asset Facility Category	Criticality-Condition Grading (CRC, R Million)										Total	*% of Total CRC*
	H - P	**H - VP**	**L - P**	**L - VP**	**M - P**	**M - VP**	**VH - P**	**VH - VP**	**VL - P**	**VL - VP**		
Borehole			14.77		14.67						**29.43**	*0.93*
Buildings	1.35	1.41	33.71	22.96	114.70	132.91		0.21	17.47	9.90	**334.61**	*10.60*
Canals	29.48	0.49	53.06	3.44	140.41	16.57			9.03	3.39	**255.85**	*8.11*
Dams	278.20	37.66	910.40	17.41	263.33	188.57	15.52		7.55	0.59	**1 719.23**	*54.47*
Measuring facilities	2.38		416.17	39.07	50.50	19.88			86.83	0.22	**615.04**	*19.49*
Pipelines	158.08		1.61	1.35							**161.04**	*5.10*
Power supply			0.23	0.23	11.81						**12.26**	*0.39*
Pump stations	0.32		4.24	0.44	0.86	0.15	0.36		0.26	0.12	**6.75**	*0.21*
Reservoirs				0.56	0.39						**0.95**	*0.03*
Roads			1.14		0.61						**1.75**	*0.06*
Water Treatment			4.41	12.96	0.86	1.08					**19.31**	*0.61*
Total	**469.81**	**39.55**	**1 439.72**	**98.42**	**598.13**	**359.16**	**15.89**	**0.21**	**121.13**	**14.22**	**3 156.23**	***100.00***
% of Total CRC	*14.89*	*1.25*	*45.62*	*3.12*	*18.95*	*11.38*	*0.50*	*0.01*	*3.84*	*0.45*	***100.00***	

APPENDIX F – Risk Management

Table F.1 shows generic risks typically associated with the different asset facility categories.

Table F.1: Generic risks per asset facility category

Asset Facility Category	Generic Risks
Water Sources (i.e. Dams. Ground Water, etc.)	▪ Structural failure of embankment, valve tower and cut-off wall ▪ Failure of control valves, pipework and power supply ▪ Contamination of ground water sources ▪ Land instability ▪ Electrical systems within the dam (control system)
Raw Water Conveyance (Canals, tunnels, pipelines)	▪ Structural failure of aqueducts, canals, tunnels, portals and raw water mains ▪ Land instability
Water Pump Stations	▪ Structural failure and land instability ▪ Failure of pumps, valves, pipework, power supply, motors, drives and controls
Water Reservoirs	▪ Structural failure and land instability ▪ Failure of pumps, valves, pipework, power supply, motors, drives and controls ▪ Structural failure of walls due to design and construction deficiencies. ▪ Leaks and excessive overflow.
Telemetry and SCADA	▪ Signals from all types valves, computer systems programming ▪ Ventilation on control room

APPENDIX G – (Blank)

APPENDIX H – Optimal total cost requirement

Table H.1A: Identified optimal total cost requirement per cost component (scheme-specific)

Cost Component	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
O&M	402.207	426.634	452.650	478.703	508.846	539.661	572.319	606.888	643.975	683.030
Renewal	-	752.870	2.366	142.544	848.598	9.866	219.826	255.774	61.758	73.136
Upgrade & New	-	1 495.511	36.999	6.880	2.810	108.275	128.498	18.915	-	-
Disposal	-	-	-	-	-	-	-	-	-	-
Total	**402.207**	**2 675.016**	**492.015**	**628.127**	**1 360.254**	**657.803**	**920.644**	**881.576**	**705.733**	**756.166**

Table H.1B: Adjusted optimal total cost requirement per cost component (scheme-specific)

Cost Component	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
O&M	402.209	426.634	452.653	478.701	508.843	539.661	572.317	606.887	643.977	683.029
Renewal	-	112.931	130.225	143.772	261.427	313.078	328.159	334.011	368.006	370.856
Upgrade & New	-	224.327	263.526	249.965	220.643	215.628	207.228	166.311	158.234	131.751
Disposal	-	-	-	-	-	-	-	-	-	-
Total	**402.209**	**763.891**	**846.404**	**872.438**	**990.913**	**1 068.367**	**1 107.704**	**1 107.210**	**1 170.217**	**1 185.636**

Table H.2A: Identified optimal total cost requirement per cost component (non-scheme-specific)

Cost Component	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
O&M	75.766	80.367	85.268	90.176	95.854	101.659	107.811	114.323	121.309	128.666
Renewal	-	152.246	3.944	51.240	34.168	6.119	96.390	167.772	4.101	35.634
Upgrade & New	-	2.047	-	-	-	-	-	-	-	-
Disposal	-	-	-	-	-	-	-	-	-	-
Total	**75.766**	**234.660**	**89.212**	**141.416**	**130.022**	**107.778**	**204.201**	**282.095**	**125.410**	**164.300**

Table H.2B: Adjusted optimal total cost requirement per cost component (non-scheme-specific)

Cost Component	Financial Year (Million Rands)									
	2016/17	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**
O&M	,	80.365	85.268	90.177	95.853	101.661	107.812	114.321	121.309	128.666
Renewal	-	22.837	26.854	33.060	37.051	38.551	52.571	91.010	109.719	121.816
Upgrade & New	-	0.307	0.353	0.332	0.291	0.255	0.204	0.138	0.119	0.091
Disposal	-	-	-	-	-	-	-	-	-	-
Total	**75.766**	**103.509**	**112.475**	**123.568**	**133.195**	**140.466**	**160.587**	**205.469**	**231.147**	**250.573**

Table H.3A: Identified optimal total cost requirement per asset facility category (scheme-specific)

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**
Buildings	38.956	149.113	43.842	47.275	114.210	52.269	59.385	58.841	62.373	66.155
Land	-	-	-	-	-	-	-	-	-	-
WR: Canals	73.914	157.238	120.183	189.631	601.137	207.450	345.790	198.709	158.041	156.793
WR: Dams	244.308	2 224.505	274.948	320.565	351.694	331.390	408.926	368.635	392.624	447.459
WR: Power Supply	1.311	6.439	1.475	3.345	1.658	1.759	1.865	1.978	3.825	2.226
WR: Pump stations	1.331	4.589	1.498	1.682	1.957	1.786	2.566	2.172	5.887	2.701
WR: Reservoirs	0.312	0.716	0.351	0.374	0.394	0.418	0.444	0.470	11.002	0.530
WR: Roads and bridge	0.110	0.649	0.124	0.131	0.139	0.148	0.372	0.166	0.177	0.187
WR: Steel Pipelines	15.050	76.107	16.937	21.512	254.587	21.321	23.257	172.024	24.275	26.688
WR: Telemetry	0.546	0.579	0.615	0.650	0.691	0.733	1.938	0.824	0.875	0.928
WR: Tunnels	0.202	0.214	0.227	0.240	0.255	0.270	0.287	0.304	0.323	0.342
WR: Water Treatment	0.948	6.163	1.066	1.128	1.199	1.271	3.503	1.430	1.517	1.609
WS: borehole	3.366	14.789	3.788	4.006	4.258	4.516	7.001	5.798	5.389	5.716
WS: Measuring facilities	21.853	33.915	26.960	37.586	28.073	34.470	65.310	70.225	39.426	44.830
Total	**402.207**	**2 675.016**	**492.015**	**628.127**	**1 360.254**	**657.803**	**920.644**	**881.576**	**705.733**	**756.166**

Table H.3B: Adjusted optimal total cost requirement per asset facility category (scheme-specific)

Cost Component	Financial Year (Million Rands)									
	2016/17	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**
Buildings	38.956	57.491	62.435	63.964	74.513	80.306	81.037	78.063	80.151	80.561
Land	-	-	-	-	-	-	-	-	-	-
WR: Canals	73.914	90.229	102.334	122.652	206.303	269.641	318.383	325.258	352.720	354.920
WR: Dams	244.308	553.949	613.973	613.630	600.388	588.430	570.693	528.294	534.822	541.755
WR: Power Supply	1.311	2.147	2.346	2.646	2.710	2.740	2.675	2.539	3.111	3.405
WR: Pump stations	1.332	1.889	2.047	2.113	2.195	2.261	2.420	2.496	3.751	4.595
WR: Reservoirs	0.312	0.388	0.417	0.434	0.449	0.466	0.482	0.497	3.672	5.377
WR: Roads and bridge	0.110	0.197	0.216	0.217	0.215	0.214	0.253	0.258	0.271	0.270
WR: Steel Pipelines	15.050	24.985	27.313	28.195	63.595	81.024	79.186	104.724	118.176	115.586
WR: Telemetry	0.547	0.580	0.615	0.650	0.691	0.733	1.009	1.127	1.214	1.246
WR: Tunnels	0.201	0.214	0.227	0.240	0.255	0.271	0.286	0.304	0.323	0.342
WR: Water Treatment	0.948	1.780	1.957	1.964	1.932	1.913	2.293	2.337	2.447	2.430
WS: borehole	3.366	5.253	5.724	5.823	5.853	5.913	6.349	6.588	6.941	7.089
WS: Measuring facility	21.854	24.790	26.801	29.910	31.815	34.454	42.638	54.726	62.617	68.061
Total	**402.209**	**763.891**	**846.404**	**872.438**	**990.913**	**1 068.367**	**1 107.704**	**1 107.210**	**1 170.217**	**1 185.636**

Table H.4A: Identified optimal total cost requirement per asset facility category (non-scheme-specific)

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**
Buildings	15.843	65.133	17.829	18.856	50.914	21.257	25.167	23.905	25.366	26.904
WR: Dams	0.002	0.002	0.002	0.002	0.033	0.002	0.002	0.003	0.003	0.003
WR: Power Supply	0.041	0.043	0.046	0.242	0.052	0.055	0.058	0.061	0.065	0.069
WR: Pump stations	0.001	0.010	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002
WR: Reservoirs	0.018	0.019	0.020	0.021	0.022	0.024	0.025	0.027	0.657	0.030
WR: Roads and bridge	0.049	0.051	0.055	0.058	0.061	0.065	0.069	0.073	0.078	0.082
WR: Water Treatment	0.301	0.952	0.338	0.358	1.001	1.262	0.428	0.453	0.481	0.510
WS: borehole	0.190	0.201	0.213	0.226	0.240	0.254	1.185	0.286	0.304	0.322

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
WS: Measuring facility	59.324	168.249	70.708	121.653	77.698	84.858	177.266	257.286	98.456	136.378
Total	**75.766**	**234.660**	**89.212**	**141.416**	**130.022**	**107.778**	**204.201**	**282.095**	**125.410**	**164.300**

Table H.4B: Adjusted optimal total cost requirement per asset facility category (non-scheme-specific)

Cost Component	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	15.843	24.053	26.166	26.685	31.542	34.139	34.501	33.009	33.808	33.778
WR: Dams	0.002	0.002	0.002	0.002	0.007	0.010	0.010	0.008	0.008	0.007
WR: Power Supply	0.040	0.043	0.046	0.078	0.088	0.093	0.091	0.085	0.087	0.086
WR: Pump stations	0.001	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.001
WR: Reservoirs	0.017	0.018	0.019	0.021	0.022	0.024	0.025	0.026	0.217	0.319
WR: Roads and bridge	0.049	0.051	0.055	0.058	0.061	0.065	0.069	0.073	0.078	0.082
WR: Water Treatment	0.301	0.414	0.447	0.461	0.563	0.793	0.830	0.782	0.796	0.775
WS: borehole	0.189	0.201	0.213	0.226	0.240	0.254	0.453	0.524	0.570	0.573
WS: Measuring facility	59.324	78.724	85.524	96.035	100.669	105.087	124.606	170.961	195.582	214.951
Total	**75.766**	**103.509**	**112.475**	**123.568**	**133.195**	**140.466**	**160.587**	**205.469**	**231.147**	**250.573**

Table H.5: Adjusted optimal total cost requirement per scheme

SCHEME NAME	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Acornhoek Dam GWS	0.112	0.119	0.126	0.134	0.142	0.151	0.160	0.169	0.180	0.191
Albasini (Albasini Dam) GWS	9.739	27.188	33.458	33.667	33.692	33.029	31.374	29.776	30.704	29.654
Apies River (Leeukraal Dam) GWS	0.336	2.220	2.520	2.412	2.194	2.002	1.838	1.500	1.439	1.290
Blyderivierpoort Dam GWS	3.951	65.267	74.683	70.664	62.880	56.018	46.223	33.386	30.103	24.885
Bo-MolopoGWS	9.052	12.379	13.381	13.829	30.043	38.093	38.257	46.363	51.163	50.249
Bospoort Dam GWS	2.444	4.013	4.385	4.505	4.591	4.653	4.769	4.680	4.836	5.255

SCHEME NAME	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Botlokwa Dam	0.353	0.531	0.577	0.589	0.595	0.603	0.606	0.603	0.626	0.646
Bronkhorstspruit Dam	1.562	7.377	8.336	8.146	7.597	7.079	6.236	5.672	5.765	5.447
Brugspruit Pollution Control Works GWS	0.058	0.062	0.065	0.102	0.116	0.122	0.121	0.116	0.118	0.119
Buffelsdoorn GWS (Makotswane Dam)	0.210	0.258	0.277	0.288	0.337	0.367	0.473	0.501	0.531	0.533
Capes Thorne Dam GWS	0.096	0.720	0.818	0.782	0.707	0.641	0.547	0.422	0.394	0.346
Casteel Dam	0.147	0.271	0.299	0.300	0.295	0.294	0.286	0.274	0.281	0.284
Chuniespoort Dam	4.387	4.654	4.938	5.222	5.551	5.887	6.243	6.620	7.025	7.451
Crocodile River (Kwena Dam) GWS	5.615	7.837	8.483	9.239	10.178	10.770	11.600	11.547	12.014	12.123
Crocodile River West (Roodekopjes Dam, Vaalkop Dam and Klipvoor Dam) GWS	8.588	17.330	19.250	20.052	22.396	23.450	24.222	22.693	23.059	23.064
Damani Dam GWS	1.604	2.096	2.260	2.336	2.403	2.480	2.545	2.597	2.722	2.845
De Hoop Dam GWS	5.366	5.692	6.039	6.387	6.789	7.200	7.636	8.097	8.592	9.113
Disaneng Dam GWS	4.604	4.884	5.205	5.508	5.866	6.224	6.885	7.357	7.936	8.411
Dr. Eiselen Dam	0.192	0.226	0.242	0.252	0.264	0.276	0.288	0.300	0.316	0.333
Duthuni Dam GWS	0.128	0.185	0.200	0.205	0.250	0.275	0.372	0.389	0.411	0.402
Elands River (Rust De Winter Dam) GWS	6.272	9.994	11.039	12.309	16.742	18.896	18.489	18.341	19.582	20.130
Groot Dwars (Der Brochen Dam) GWS	4.535	4.818	5.112	5.405	5.749	6.098	6.479	6.870	7.289	7.726
Groot Letaba River GWS	16.888	93.403	105.818	101.641	92.991	85.556	77.363	63.367	60.932	55.397
Hartbeespoort GWS	33.975	47.069	50.920	56.706	94.012	112.634	124.359	116.655	121.097	122.386
Houtrivier Dam GWS	0.479	0.589	0.632	0.673	0.717	0.751	0.857	0.896	0.946	0.973
Kabokweni Dam GWS	0.034	0.036	0.038	0.041	0.043	0.046	0.049	0.052	0.055	0.058
Klaserie River (Klaserie Dam) GWS	4.078	4.345	4.611	4.883	5.188	5.539	5.883	6.225	6.600	6.986
Klein Marico River (Klein Maricopoort Dam) GWS	7.970	9.094	9.706	10.379	11.870	12.895	13.462	13.875	14.639	15.184
Koster Dam GWS	1.212	1.990	2.174	2.382	2.844	3.109	3.305	3.142	3.209	3.138
Lepellane Dam	0.223	6.240	7.155	6.749	5.971	5.279	4.302	3.027	2.690	2.161
Lindleyspoort Dam GWS	1.695	2.999	3.288	3.466	3.888	4.137	4.263	5.944	6.829	7.212

SCHEME NAME	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Lole Montes Dam GWS	0.183	0.319	0.350	0.353	0.349	0.349	0.343	0.332	0.341	0.348
Loskop GWS	28.632	34.388	36.974	46.153	88.344	113.688	139.470	137.140	144.075	138.728
Lotlamoreng Dam GWS	0.115	3.840	4.406	4.153	3.669	3.239	2.632	1.840	1.628	1.300
Luvhuvhu River GWS (Malamulele Weir)	0.010	0.087	0.100	0.094	0.085	0.077	0.065	0.049	0.045	0.039
Luvuvhu River (Nandoni Dam) GWS	7.427	7.893	8.375	9.051	9.653	10.274	11.537	12.820	14.058	16.641
Luvuvhu River (Xikundu Weir) GWS	0.198	0.210	0.223	0.247	0.265	0.281	0.322	0.343	0.365	0.500
Madikwe Dam	0.464	0.492	0.522	0.553	0.587	0.623	0.942	1.066	1.154	1.174
Mahlangu Dam GWS	0.986	1.098	1.170	1.229	1.296	1.366	1.477	1.562	1.656	1.743
MAHONISI DAM GWS	0.093	0.336	0.378	0.367	0.343	0.322	0.290	0.246	0.241	0.228
Makuleke Dam GWS	0.541	3.670	4.169	3.988	3.618	3.294	2.827	2.208	2.072	1.841
Mankwe Dam	1.223	5.542	6.258	6.040	5.569	5.161	4.558	3.747	3.607	3.336
Mapochsgronden GWS	0.881	0.934	0.991	1.157	1.250	1.325	1.378	1.993	2.294	2.613
Marico-Bosveld (Kromellenboog Dam) GWS	33.676	38.846	41.856	44.576	49.372	52.853	54.934	59.672	63.935	66.901
Mashashane Dam GWS	0.194	0.243	0.262	0.271	0.281	0.292	0.301	0.310	0.326	0.341
Middelkraal Dam	0.087	0.269	0.302	0.300	0.314	0.315	0.290	0.265	0.267	0.314
Middle Letaba Systems (Middle Letaba & Nsami Dams) GWS	22.164	62.525	69.811	73.899	72.986	71.064	67.021	64.218	65.884	67.642
Mkhombo Dam GWS	3.317	32.327	36.863	35.170	31.631	28.493	23.969	18.580	19.141	17.787
Modjadji (Modjadji Dam)	1.515	1.607	1.705	1.803	1.970	2.111	2.394	2.556	2.718	2.854
Mogalakwena River (Glen Alpine Dam) GWS	2.756	3.685	3.978	4.429	4.649	5.137	5.315	6.397	7.106	7.897
Mogol River (Mokolo Dam) GWS	13.260	14.453	15.418	16.476	18.686	20.333	23.213	24.384	26.048	28.794
Molatedi Dam GWS	5.361	6.838	7.356	7.750	9.191	10.225	11.963	22.699	29.018	30.697
Molepo Dam	32.547	34.524	36.629	38.785	41.236	43.734	46.742	49.638	53.307	56.753
Mutale Weir GWS	1.405	1.636	1.749	1.939	2.051	2.150	2.231	2.862	3.205	3.408
Mutshedzi River (Mutshedzi River Dam) GWS	0.453	0.683	0.754	0.772	0.912	0.986	1.493	1.598	1.757	1.742
Ngotoane Dam (Lehurutse / Skuins) GWS	3.947	4.187	4.442	4.698	5.042	5.368	5.878	6.259	6.651	7.008
Nkadimeng Dam GWS	0.752	1.754	1.946	1.927	1.858	1.803	1.707	1.566	1.578	1.564

SCHEME NAME	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Nooitgedacht (North West) Dam GWS	0.054	0.681	0.777	0.737	0.670	0.605	0.505	0.373	0.340	0.309
Nwanedzi Luphephe (Nwanedzi Dam) GWS	2.543	4.408	4.840	5.261	5.419	5.489	6.043	7.096	7.833	8.321
Nzhelele River (Nzhelele Dam) GWS	5.565	10.838	12.710	13.791	14.202	20.549	21.702	19.810	20.085	22.918
Ohrigstad River (Ohrigstad Dam) GWS	1.707	8.051	9.097	8.880	8.326	7.824	6.912	6.210	6.207	6.006
Olifants River (Flag Boshielo Dam) GWS	2.909	3.431	3.698	4.179	5.064	5.574	5.974	6.960	7.724	7.977
Palala River (SUSANDALE AND VISGAT WEIR) GWS	0.221	0.270	0.289	0.300	0.313	0.326	0.338	0.350	0.367	0.404
Pella (Pella Dam) GWS	0.492	0.541	0.576	0.606	0.641	0.677	0.714	0.751	0.795	0.842
Phiphidi (Phiphidi Dam) GWS	0.168	1.014	1.151	1.103	1.005	0.920	0.904	0.771	0.754	0.685
Phiring Dam	0.082	0.147	0.162	0.162	0.167	0.170	0.183	0.181	0.187	0.187
Pienaars River (Roodeplaat Dam) GWS	15.814	21.697	27.707	29.980	39.922	44.917	50.801	48.916	56.644	58.375
Piet Gouws Dam GWS	0.562	0.713	0.767	0.795	0.822	0.851	0.878	0.900	0.945	1.158
Politsi GWS	2.280	2.764	2.964	3.215	3.717	4.028	4.203	4.222	4.475	4.794
Rietfontein Dam 1 & 3	0.168	2.399	2.743	2.598	2.317	2.068	1.760	1.311	1.201	1.010
Rooikraal GWS	0.531	0.741	0.803	0.833	0.852	0.872	0.884	0.888	0.926	1.418
Sabie River (Inyaka Dam) GWS	28.398	30.397	32.275	34.258	36.404	38.606	41.417	43.909	46.587	49.707
Sand River (Witklip Dam) GWS	2.403	2.944	3.159	3.500	3.706	3.910	5.391	5.845	6.259	6.298
Sehujwane (Sehujwane Dam) GWS	1.020	1.865	2.048	2.060	2.032	2.018	2.021	1.955	2.010	2.033
Seshego Dam	0.462	0.625	0.675	0.696	0.713	0.732	0.748	0.758	0.792	0.825
Setumo Dam GWS	7.223	7.836	8.329	8.785	10.006	10.878	11.519	11.997	12.655	13.206
Spitskop Dam-GWS	0.664	1.315	1.450	1.531	1.521	1.505	1.482	1.394	1.418	1.508
Sterk River GWS (Doorndraai Dam)	8.951	16.057	17.632	18.794	20.644	21.492	21.325	23.942	26.071	28.098
Sterkstroom (Buffelspoort Dam) GWS	1.533	2.358	3.255	3.543	5.850	6.980	6.870	5.979	5.928	5.486
Thabina Dam GWS	0.961	1.051	1.118	1.178	1.319	1.610	1.889	1.968	2.076	2.110
Thapani Dam GWS	1.784	6.660	7.491	7.272	6.773	6.348	5.720	4.851	4.734	4.469
Tours Dam GWS	1.360	1.809	1.952	2.014	2.082	2.190	2.593	2.725	2.883	2.943

SCHEME NAME	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Tshakhuma (Tshakhuma Dam) GWS	1.629	1.888	2.017	2.128	2.232	2.340	2.452	7.779	10.010	10.568
Turfloop Dam GWS	1.461	3.658	4.068	4.016	3.846	3.709	3.478	3.150	3.159	3.107
Valkop No 2 Dam GWS	0.785	0.833	0.883	0.934	0.993	1.053	1.117	1.184	1.257	1.381
Varswater Dam GWS	0.068	0.182	0.203	0.200	0.190	0.183	0.170	0.152	0.152	0.149
Vergelegen Dam	3.453	3.870	4.125	4.333	6.306	7.388	7.540	12.649	14.996	15.730
Vlakbult Dam GWS	0.045	0.699	0.799	0.756	0.674	0.600	0.496	0.360	0.325	0.269
Vondo Dam GWS	4.798	10.743	11.901	11.817	11.586	11.364	11.382	10.697	10.882	10.750
Watervals River GWS	1.508	1.946	2.115	2.354	2.691	2.888	2.965	2.908	3.203	3.347
Subtotal	**402.207**	**763.585**	**846.048**	**872.109**	**990.624**	**1 068.111**	**1 107.502**	**1 107.072**	**1 170.096**	**1 185.545**
Non-scheme specific	75.766	103.511	112.475	123.568	133.197	140.464	160.586	205.470	231.147	250.573
Total	**477.973**	**867.095**	**958.523**	**995.677**	**1 123.821**	**1 208.575**	**1 268.088**	**1 312.542**	**1 401.243**	**1 436.118**

APPENDIX I – Maintenance Strategy, Works and Cost Forecast

1. INTRODUCTION

'Maintenance' is *"The actions required to enable an asset to achieve its expected life – recurrent work necessary to preserve or maintain an asset so it can be used for its designated purpose. In other words, recurrent work necessary to prevent deterioration. Maintenance work can be planned or unplanned. Planned maintenance is work to prevent known failure modes and can be time or condition-based. Maintenance includes all of the actions necessary for retaining an asset as near as practicable to its original condition, but excludes renewals.*

2. MAINTENANCE STRATEGY

Refer to the DWS Infrastructure Maintenance Strategy. Table I.1 summarises the Maintenance Strategy applied per Asset Condition Grading in this AMP.

Table I.1: Maintenance Strategy per Asset Condition Grading

Condition Grade	Description	Maintenance Strategy
3	Fair	Significant/improved maintenance required.
4	Good	Target condition maintenance. Preventive maintenance.
5	Very Good	Preventative and Normal Maintenance

3. MAINTENANCE WORKS

Table I.2: Maintenance Works (scheme specific)

Asset Facility Category	Maintenance Strategy (No. of Asset Components)			Total
	Significant / improved	Target condition	Preventative and Normal	
Borehole	5	7		**12**
Buildings	214	166	65	**445**
Canals	5 685	200	8	**5 893**
Dams	829	689	133	**1 651**
Measuring facilities	35	127	6	**168**
Pipelines	190	2		**192**
Power supply	15	3	1	**19**
Pump stations	13	28	72	**113**
Reservoirs	17	4	2	**23**
Roads	1	1	4	**6**
Telemetry	12			**12**
Tunnels		1		**1**
Water Treatment	4	2		**6**
Total	**7 020**	**1 230**	**291**	**8 541**

Table I.3: Maintenance Works (non-scheme specific)

Asset Facility Category	Maintenance Strategy (No. of Asset Components)			Total
	Significant / improved	Target condition	Preventative and Normal	
Borehole	2			**2**
Buildings	70	61	14	**145**
Canals	-	-	-	**-**
Dams	1			**1**
Measuring facilities	75	355	10	**440**
Pipelines				
Power supply	1			**1**
Pump stations				**0**
Reservoirs	4			**4**
Roads		1	1	**2**
Telemetry				
Tunnels				
Water Treatment	2	1	3	**6**
Total	**155**	**418**	**28**	**601**

For scheme specific maintenance work, and its prioritisation, refer to the relevant Scheme AMP.

4. FINANCIAL FORECAST – OPERATIONS AND MAINTENANCE

The forecasted maintenance financial requirements for the next 10 years are in Table I.4.

Table I.4: Operations and Maintenance Costs per Asset Facility Category Forecast (scheme specific)

Asset Facility Category	Expenditure Type		Financial Year (Amounts in Million Rands)									
			2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	O&M	O	3.478	3.689	3.914	4.140	4.400	4.667	4.949	5.248	5.569	5.907
		M	35.478	37.633	39.927	42.225	44.884	47.602	50.483	53.532	56.804	60.249
Land	O&M	O	-	-	-	-	-	-	-	-	-	-
		M	-	-	-	-	-	-	-	-	-	-
WR: Canals	O&M	O	17.282	18.332	19.450	20.569	21.864	23.188	24.592	26.077	27.671	29.349
		M	56.632	60.072	63.735	67.403	71.647	75.986	80.585	85.452	90.674	96.173
WR: Dams	O&M	O	80.387	85.269	90.469	95.676	101.701	107.860	114.387	121.296	128.708	136.514
		M	163.921	173.876	184.479	195.097	207.382	219.941	233.250	247.339	262.454	278.371
WR: Power Supply	O&M	O	0.431	0.457	0.485	0.513	0.545	0.578	0.613	0.650	0.690	0.732
		M	0.880	0.933	0.990	1.047	1.113	1.180	1.252	1.327	1.408	1.494
WR: Pump stations	O&M	O	0.392	0.415	0.441	0.466	0.495	0.525	0.557	0.591	0.627	0.665
		M	0.940	0.997	1.058	1.118	1.189	1.261	1.337	1.418	1.505	1.596
WR: Reservoirs	O&M	O	0.039	0.041	0.044	0.046	0.049	0.052	0.055	0.059	0.062	0.066
		M	0.273	0.289	0.307	0.325	0.345	0.366	0.388	0.412	0.437	0.463
WR: Roads and bridge	O&M	O	-	-	-	-	-	-	-	-	-	-
		M	0.110	0.117	0.124	0.131	0.139	0.148	0.157	0.166	0.177	0.187
WR: Steel Pipelines	O&M	O	1.368	1.451	1.540	1.628	1.731	1.836	1.947	2.064	2.191	2.323
		M	13.682	14.513	15.398	16.284	17.309	18.357	19.468	20.644	21.906	23.234
WR: Telemetry	O&M	O	0.098	0.104	0.110	0.116	0.124	0.131	0.139	0.148	0.157	0.166
		M	0.449	0.476	0.505	0.534	0.567	0.602	0.638	0.677	0.718	0.762
WR: Tunnels	O&M	O	0.043	0.046	0.049	0.051	0.055	0.058	0.061	0.065	0.069	0.073
		M	0.158	0.168	0.178	0.189	0.200	0.213	0.225	0.239	0.254	0.269
WR: Water Treatment	O&M	O	0.312	0.331	0.351	0.371	0.394	0.418	0.443	0.470	0.499	0.529

Asset Facility Category	Expenditure Type		Financial Year (Amounts in Million Rands)									
			2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
		M	0.636	0.675	0.716	0.757	0.805	0.853	0.905	0.960	1.018	1.080
WS: borehole	O&M	O	1.443	1.530	1.624	1.717	1.825	1.936	2.053	2.177	2.310	2.450
		M	1.923	2.040	2.165	2.289	2.433	2.581	2.737	2.902	3.080	3.266
WS: Measuring facility	O&M	O	7.191	7.627	8.092	8.558	9.097	9.648	10.232	10.850	11.513	12.211
		M	14.663	15.553	16.502	17.451	18.550	19.674	20.864	22.124	23.476	24.900
Total	**O&M**	**O**	**112.463**	**119.293**	**126.568**	**133.853**	**142.281**	**150.897**	**160.029**	**169.695**	**180.065**	**190.985**
		M	**289.744**	**307.341**	**326.082**	**344.851**	**366.565**	**388.764**	**412.290**	**437.193**	**463.910**	**492.044**

Table I.5: Operations and Maintenance Costs per Asset Facility Category Forecast (non-scheme specific)

Asset Facility Category	Expenditure Type		Financial Year (Amounts in Million Rands)									
			2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	O&M	O	1.415	1.500	1.592	1.684	1.790	1.898	2.013	2.134	2.265	2.402
		M	14.428	15.304	16.238	17.172	18.253	19.359	20.530	21.770	23.101	24.502
WR: Dams	O&M	O	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		M	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002
WR: Power Supply	O&M	O	0.013	0.014	0.015	0.016	0.017	0.018	0.019	0.020	0.021	0.023
		M	0.027	0.029	0.031	0.033	0.035	0.037	0.039	0.041	0.044	0.046
WR: Pump stations	O&M	O	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		M	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
WR: Reservoirs	O&M	O	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004	0.004
		M	0.015	0.016	0.017	0.018	0.019	0.021	0.022	0.023	0.025	0.026
WR: Roads and bridge	O&M	O	-	-	-	-	-	-	-	-	-	-
		M	0.049	0.051	0.055	0.058	0.061	0.065	0.069	0.073	0.078	0.082
WR: Water Treatment	O&M	O	0.099	0.105	0.111	0.118	0.125	0.133	0.141	0.149	0.158	0.168
		M	0.202	0.214	0.227	0.240	0.255	0.271	0.287	0.304	0.323	0.343
WS: borehole	O&M	O	0.081	0.086	0.091	0.097	0.103	0.109	0.116	0.123	0.130	0.138

Asset Facility Category	Expenditure Type		Financial Year (Amounts in Million Rands)									
			2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
		M	0.108	0.115	0.122	0.129	0.137	0.145	0.154	0.163	0.173	0.184
WS: Measuring facility	O&M	O	19.520	20.705	21.968	23.232	24.695	26.191	27.776	29.454	31.253	33.149
		M	39.804	42.221	44.796	47.374	50.357	53.407	56.639	60.060	63.730	67.595
Total	**O&M**	**O**	**21.131**	**22.414**	**23.781**	**25.150**	**26.734**	**28.352**	**30.068**	**31.884**	**33.833**	**35.885**
		M	**54.635**	**57.953**	**61.487**	**65.026**	**69.121**	**73.306**	**77.743**	**82.438**	**87.476**	**92.781**

Table I.6: Operation and Maintenance Cost Requirements Forecasts (scheme and non-scheme specific)

SCHEME NAME	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Acornhoek Dam GWS	0.112	0.119	0.126	0.134	0.142	0.151	0.16	0.169	0.18	0.191
Albasini (Albasini Dam) GWS	9.739	10.33	10.96	11.591	12.321	13.067	13.858	14.695	15.593	16.538
Apies River (Leeukraal Dam) GWS	0.336	0.357	0.378	0.4	0.425	0.451	0.478	0.507	0.538	0.571
Blyderivierpoort Dam GWS	3.951	4.191	4.446	4.702	4.998	5.301	5.621	5.961	6.325	6.709
Bo-Molopo GWS	9.052	9.602	10.188	10.774	11.452	12.146	12.881	13.659	14.494	15.373
Bospoort Dam GWS	2.444	2.592	2.75	2.908	3.091	3.279	3.477	3.687	3.912	4.15
Botlokwa Dam	0.353	0.375	0.398	0.421	0.447	0.474	0.503	0.533	0.566	0.6
Bronkhorstspruit Dam	1.562	1.657	1.758	1.86	1.977	2.096	2.223	2.358	2.502	2.653
Brugspruit Pollution Control Works GWS	0.058	0.062	0.065	0.069	0.074	0.078	0.083	0.088	0.093	0.099
Buffelsdoorn GWS (Makotswane Dam)	0.21	0.223	0.236	0.25	0.266	0.282	0.299	0.317	0.336	0.357
Capes Thorne Dam GWS	0.096	0.102	0.108	0.115	0.122	0.129	0.137	0.145	0.154	0.163
Casteel Dam	0.147	0.156	0.166	0.175	0.186	0.198	0.209	0.222	0.236	0.25
Chuniespoort Dam	4.387	4.654	4.938	5.222	5.551	5.887	6.243	6.62	7.025	7.451
Crocodile River (Kwena Dam) GWS	5.615	5.955	6.319	6.682	7.103	7.533	7.989	8.472	8.989	9.535
Crocodile River West (Roodekopjes Dam. Vaalkop Dam and Klipvoor Dam) GWS	8.588	9.11	9.665	10.222	10.865	11.523	12.221	12.959	13.751	14.585
Damani Dam GWS	1.604	1.701	1.805	1.909	2.029	2.152	2.283	2.42	2.568	2.724
De Hoop Dam GWS	5.366	5.692	6.039	6.387	6.789	7.2	7.636	8.097	8.592	9.113

SCHEME NAME	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Disaneng Dam GWS	4.604	4.884	5.182	5.48	5.825	6.178	6.552	6.947	7.372	7.819
Dr. Eiselen Dam	0.192	0.204	0.216	0.228	0.243	0.257	0.273	0.29	0.307	0.326
Duthuni Dam GWS	0.128	0.136	0.144	0.152	0.162	0.172	0.182	0.193	0.205	0.217
Elands River (Rust De Winter Dam) GWS	6.272	6.653	7.058	7.465	7.935	8.415	8.924	9.463	10.042	10.651
Groot Dwars (Der Brochen Dam) GWS	4.535	4.811	5.104	5.398	5.738	6.085	6.454	6.844	7.262	7.702
Groot Letaba River GWS	16.888	17.914	19.006	20.1	21.366	22.66	24.031	25.483	27.04	28.68
Hartbeespoort GWS	33.975	36.039	38.236	40.437	42.983	45.586	48.345	51.265	54.398	57.697
Houtrivier Dam GWS	0.479	0.508	0.539	0.57	0.606	0.642	0.681	0.722	0.766	0.813
Kabokweni Dam GWS	0.034	0.036	0.038	0.041	0.043	0.046	0.049	0.052	0.055	0.058
Klaserie River (Klaserie Dam) GWS	4.078	4.326	4.59	4.854	5.16	5.472	5.803	6.154	6.53	6.926
Klein Marico River (Klein Maricopoort Dam) GWS	7.97	8.454	8.97	9.486	10.083	10.694	11.341	12.026	12.761	13.535
Koster Dam GWS	1.212	1.286	1.364	1.442	1.533	1.626	1.725	1.829	1.94	2.058
Lepellane Dam	0.223	0.237	0.251	0.266	0.283	0.3	0.318	0.337	0.358	0.379
Lindleyspoort Dam GWS	1.695	1.798	1.907	2.017	2.144	2.274	2.411	2.557	2.713	2.878
Lole Montes Dam GWS	0.183	0.194	0.206	0.218	0.231	0.245	0.26	0.276	0.293	0.311
Loskop GWS	28.632	30.371	32.223	34.078	36.224	38.418	40.742	43.203	45.844	48.624
Lotlamoreng Dam GWS	0.115	0.122	0.13	0.137	0.146	0.155	0.164	0.174	0.184	0.196
Luvhuvhu River GWS (Malamulele Weir)	0.01	0.01	0.011	0.011	0.012	0.013	0.014	0.014	0.015	0.016
Luvuvhu River (Nandoni Dam) GWS	7.427	7.878	8.358	8.84	9.396	9.965	10.568	11.207	11.891	12.613
Luvuvhu River (Xikundu Weir) GWS	0.198	0.21	0.223	0.236	0.251	0.266	0.282	0.299	0.317	0.336
Madikwe Dam	0.464	0.492	0.522	0.553	0.587	0.623	0.661	0.7	0.743	0.788
Mahlangu Dam GWS	0.986	1.046	1.11	1.173	1.247	1.323	1.403	1.488	1.578	1.674
MAHONISI DAM GWS	0.093	0.099	0.105	0.111	0.118	0.125	0.132	0.14	0.149	0.158
Makuleke Dam GWS	0.541	0.573	0.608	0.643	0.684	0.725	0.769	0.816	0.865	0.918
Mankwe Dam	1.223	1.297	1.376	1.455	1.547	1.64	1.74	1.845	1.958	2.076
Mapochsgronden GWS	0.881	0.934	0.991	1.048	1.114	1.182	1.253	1.329	1.41	1.496
Marico-Bosveld (Kromellenboog Dam) GWS	33.676	35.721	37.9	40.081	42.605	45.185	47.919	50.814	53.919	57.189

SCHEME NAME	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Mashashane Dam GWS	0.194	0.206	0.219	0.231	0.246	0.261	0.276	0.293	0.311	0.33
Middelkraal Dam	0.087	0.092	0.098	0.104	0.11	0.117	0.124	0.131	0.139	0.148
Middle Letaba Systems (Middle Letaba & Nsami Dams) GWS	22.164	23.51	24.944	26.379	28.04	29.738	31.538	33.443	35.487	37.639
Mkhombo Dam GWS	3.317	3.519	3.733	3.948	4.197	4.451	4.72	5.005	5.311	5.633
Modjadji (Modjadji Dam)	1.515	1.607	1.705	1.803	1.917	2.033	2.156	2.286	2.426	2.573
Mogalakwena River (Glen Alpine Dam) GWS	2.756	2.923	3.101	3.28	3.486	3.697	3.921	4.158	4.412	4.68
Mogol River (Mokolo Dam) GWS	13.26	14.066	14.923	15.782	16.776	17.792	18.869	20.008	21.231	22.519
Molatedi Dam GWS	5.361	5.687	6.033	6.381	6.782	7.193	7.628	8.089	8.584	9.104
Molepo Dam	32.547	34.524	36.629	38.738	41.177	43.671	46.313	49.111	52.112	55.272
Mutale Weir GWS	1.405	1.491	1.582	1.673	1.778	1.886	2	2.12	2.25	2.386
Mutshedzi River (Mutshedzi River Dam) GWS	0.453	0.481	0.51	0.54	0.574	0.608	0.645	0.684	0.726	0.77
Ngotoane Dam (Lehurutse / Skuins) GWS	3.947	4.187	4.442	4.698	4.994	5.296	5.617	5.956	6.32	6.703
Nkadimeng Dam GWS	0.752	0.798	0.847	0.895	0.952	1.009	1.07	1.135	1.204	1.277
Nooitgedacht (North West) Dam GWS	0.054	0.058	0.061	0.065	0.069	0.073	0.077	0.082	0.087	0.092
Nwanedzi Luphephe (Nwanedzi Dam) GWS	2.543	2.698	2.862	3.027	3.217	3.412	3.619	3.837	4.072	4.319
Nzhelele River (Nzhelele Dam) GWS	5.565	5.903	6.263	6.623	7.04	7.467	7.918	8.397	8.91	9.45
Ohrigstad River (Ohrigstad Dam) GWS	1.707	1.811	1.921	2.032	2.16	2.29	2.429	2.576	2.733	2.899
Olifants River (Flag Boshielo Dam) GWS	2.909	3.085	3.273	3.462	3.68	3.903	4.139	4.389	4.657	4.939
Palala River (SUSANDALE AND VISGAT WEIR) GWS	0.221	0.235	0.249	0.263	0.28	0.297	0.315	0.334	0.354	0.375
Pella (Pella Dam) GWS	0.492	0.522	0.554	0.586	0.623	0.661	0.701	0.743	0.788	0.836
Phiphidi (Phiphidi Dam) GWS	0.168	0.178	0.189	0.2	0.213	0.226	0.239	0.254	0.269	0.286
Phiring Dam	0.082	0.087	0.092	0.097	0.103	0.11	0.116	0.123	0.131	0.139
Pienaars River (Roodeplaat Dam) GWS	15.814	16.775	17.797	18.822	20.007	21.219	22.503	23.862	25.32	26.856
Piet Gouws Dam GWS	0.562	0.596	0.632	0.669	0.711	0.754	0.8	0.848	0.9	0.954
Politsi GWS	2.28	2.418	2.566	2.714	2.884	3.059	3.244	3.44	3.65	3.872
Rietfontein Dam 1 & 2	0.168	0.179	0.189	0.2	0.213	0.226	0.239	0.254	0.269	0.286
Rooikraal GWS	0.531	0.563	0.598	0.632	0.672	0.713	0.756	0.801	0.85	0.902

SCHEME NAME	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Sabie River (Inyaka Dam) GWS	28.398	30.123	31.96	33.799	35.927	38.103	40.409	42.85	45.468	48.226
Sand River (Witklip Dam) GWS	2.403	2.549	2.705	2.86	3.04	3.224	3.42	3.626	3.848	4.081
Sehujwane (Sehujwane Dam) GWS	1.02	1.082	1.148	1.215	1.291	1.369	1.452	1.54	1.634	1.733
Seshego Dam	0.462	0.49	0.52	0.55	0.585	0.62	0.658	0.698	0.74	0.785
Setumo Dam GWS	7.223	7.662	8.129	8.597	9.138	9.691	10.278	10.899	11.565	12.266
Spitskop Dam-GWS	0.664	0.705	0.748	0.791	0.841	0.891	0.945	1.003	1.064	1.128
Sterk River GWS (Doorndraai Dam)	8.951	9.495	10.074	10.654	11.325	12.01	12.737	13.506	14.332	15.201
Sterkstroom (Buffelspoort Dam) GWS	1.533	1.627	1.726	1.825	1.94	2.057	2.182	2.314	2.455	2.604
Thabina Dam GWS	0.961	1.02	1.082	1.144	1.216	1.29	1.368	1.45	1.539	1.632
Thapani Dam GWS	1.784	1.892	2.007	2.123	2.256	2.393	2.538	2.691	2.856	3.029
Tours Dam GWS	1.36	1.443	1.531	1.619	1.721	1.825	1.935	2.052	2.178	2.31
Tshakhuma (Tshakhuma Dam) GWS	1.629	1.728	1.833	1.939	2.061	2.186	2.318	2.458	2.608	2.766
Turfloop Dam GWS	1.461	1.55	1.644	1.739	1.849	1.961	2.079	2.205	2.34	2.481
Valkop No 2 Dam GWS	0.785	0.833	0.883	0.934	0.993	1.053	1.117	1.184	1.257	1.333
Varswater Dam GWS	0.068	0.072	0.077	0.081	0.086	0.092	0.097	0.103	0.109	0.116
Vergelegen Dam	3.453	3.662	3.886	4.109	4.368	4.633	4.913	5.21	5.528	5.863
Vlakbult Dam GWS	0.045	0.048	0.05	0.053	0.057	0.06	0.064	0.068	0.072	0.076
Vondo Dam GWS	4.798	5.089	5.399	5.71	6.069	6.437	6.827	7.239	7.681	8.147
Watervals River GWS	1.508	1.599	1.697	1.794	1.907	2.023	2.145	2.275	2.414	2.56
Subtotal	**402.207**	**426.634**	**452.65**	**478.704**	**508.846**	**539.661**	**572.319**	**606.888**	**643.975**	**683.029**
Non-scheme specific	75.766	80.367	85.268	90.176	95.855	101.658	107.811	114.322	121.309	128.666
Total	**477.973**	**507.001**	**537.918**	**568.88**	**604.701**	**641.319**	**680.13**	**721.21**	**765.284**	**811.695**

APPENDIX J – Renewals Strategy, Works and Expenditure Forecast

1 INTRODUCTION

'**Renewals Expenditure**' is: *"Expenditure on the replacement or rehabilitation of an asset." It is expenditure on an existing asset which returns the service potential or the life of the asset to that which it had originally. It is periodically required expenditure, and relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. Renewals may reduce operating and maintenance expenditure if completed at the optimum time."*

It is very important that the NWRIB always clearly distinguishes between New Capital/Upgrade Capital expenditure and Renewals Capital expenditure. The rate at which renewal work is being carried out *over time* compared with the annual provision for depreciation (the cost of consumption – the rate at which the assets are being used) is a good indicator of the extent to which the assets are being maintained, are improving, or are deteriorating.

2. RENEWALS STRATEGY

Table J.1 summarises the Renewal Strategy applied per Asset Condition Grading in this AMP.

Table J.1 Renewal Strategy per Asset Condition Grading

Condition Grade	Description	Renewal Strategy
0	Not Working	Complete replacement of the asset before operations can be revived
1	Very Poor	Stop operating immediately and renew the asset. Replacement needed (>50%)
2	Poor	Significant renewal required.

3. RENEWAL WORKS

Table J.2: Renewals works (asset components per renewals strategy and per asset facility category) for the first projected year (scheme specific)

Asset Facility Category	Renewal strategy (No. of Asset Components)		Total
	Stop operating immediately and renew the asset component	Significantly renew the asset component	
Borehole		27	27
Buildings	160	189	349
Canals	54	236	290
Dams	159	702	861
Measuring facilities	2	52	54
Pipelines	1	6	7
Power supply	1	4	5
Pump stations	10	19	29
Reservoirs	2	2	4
Roads		2	2
Telemetry			
Tunnels			
Water Treatment	1	5	6
Total	**390**	**1 244**	**1 634**

Table J.3: Renewals works (asset components per renewals strategy and per asset facility category) for the first projected year (non-scheme specific)

Asset Facility Category	Renewal strategy (No. of Asset Components)		Total
	Stop operating immediately and renew the asset component	Significantly renew the asset component	
Borehole			
Buildings	34	77	**111**
Dams			
Measuring facilities	4	203	**207**
Power supply			
Pump stations		1	**1**
Reservoirs			
Roads			
Water Treatment	1		**1**
Total	**39**	**281**	**320**

Table J.4: Renewal Works (asset components per facility category requiring renewal works)

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4. FINANCIAL FORECAST

The forecasted renewals requirements for the next 10 years are shown in Tables J.6 to J.8.

Table J.6A: Identified Renewals Expenditure Forecasts (scheme specific)

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings		103.125	-	0.910	64.925	-	3.953	0.060	-	-
WR: Canals		78.130	-	94.779	504.816	-	112.115	68.265	39.696	31.272
WR: Dams		485.731	-	29.792	42.612	3.590	61.289	-	1.462	32.574
WR: Power Supply		5.048	-	1.785	-	-	-	-	1.726	-
WR: Pump stations		3.045	-	0.098	0.273	-	0.671	0.163	3.756	0.440
WR: Reservoirs		0.385	-	0.003	-	-	-	-	10.502	-
WR: Roads and bridge		0.532	-	-	-	-	0.215	-	-	-
WR: Steel Pipelines		51.985	-	3.600	235.547	1.128	1.842	149.316	0.179	1.131
WR: Telemetry		-	-	-	-	-	1.160	-	-	-
WR: Water Treatment		5.158	-	-	-	-	2.155	-	-	-
WS: borehole		9.470	-	-	-	-	2.212	0.719	-	-
WS: Measuring facility		10.261	2.366	11.577	0.426	5.149	34.214	37.251	4.437	7.719
Total		**752.870**	**2.366**	**142.544**	**848.598**	**9.866**	**219.826**	**255.774**	**61.758**	**73.136**

Table J.6 B: Adjusted: Renewals Expenditure Forecasts (scheme specific)

Asset Facility Category	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	-	15.469	17.789	16.843	24.566	27.457	25.141	18.969	17.507	14.197
WR: Canals	-	11.720	13.477	26.874	104.598	140.820	154.798	147.894	163.233	164.203
WR: Dams	-	72.860	83.789	83.157	81.012	76.536	75.746	60.202	57.453	60.990
WR: Power Supply	-	0.757	0.871	1.086	1.052	0.982	0.810	0.562	1.013	1.179
WR: Pump stations	-	0.457	0.525	0.508	0.492	0.459	0.513	0.478	1.611	2.328
WR: Reservoirs	-	0.058	0.066	0.063	0.055	0.048	0.039	0.026	3.173	4.848

Asset Facility Category	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
WR: Roads and bridge	-	0.080	0.092	0.086	0.076	0.066	0.096	0.092	0.094	0.083
WR: Steel Pipelines	-	7.798	8.967	8.962	43.395	59.816	56.959	81.468	93.604	89.666
WR: Telemetry	-	-	-	-	-	-	0.232	0.302	0.339	0.318
WR: Water Treatment	-	0.774	0.890	0.836	0.733	0.642	0.945	0.907	0.930	0.821
WS: borehole	-	1.421	1.634	1.534	1.346	1.178	1.385	1.391	1.449	1.295
WS: Measuring facility	-	1.539	2.125	3.825	4.101	5.073	11.495	21.720	27.601	30.929
Total	**-**	**112.931**	**130.225**	**143.772**	**261.427**	**313.078**	**328.159**	**334.011**	**368.006**	**370.856**

Table J.7A: Identified Renewals Expenditure Forecasts (non-scheme specific)

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings		46.280	-	-	30.871	-	2.624	-	-	-
WR: Dams		-	-	-	0.031	-	-	-	-	-
WR: Power Supply		-	-	0.194	-	-	-	-	-	-
WR: Pump stations		0.010	-	-	-	-	-	-	-	-
WR: Reservoirs		-	-	-	-	-	-	-	0.628	-
WR: Water Treatment		0.633	-	-	0.621	0.859	-	-	-	-
WS: borehole		-	-	-	-	-	0.915	-	-	-
WS: Measuring facility		105.322	3.944	51.046	2.645	5.260	92.852	167.772	3.473	35.634
Total		**152.246**	**3.944**	**51.240**	**34.168**	**6.119**	**96.390**	**167.772**	**4.101**	**35.634**

Table J.7B: Adjusted Renewals Expenditure Forecasts (non-scheme specific)

Asset Facility Category	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	-	6.942	7.983	7.497	11.208	12.627	11.754	8.967	8.322	6.783
WR: Dams	-	-	-	-	0.005	0.007	0.007	0.005	0.005	0.004
WR: Power Supply	-	-	-	0.029	0.036	0.038	0.033	0.024	0.022	0.017

Asset Facility Category	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
WR: Pump stations	-	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.000
WR: Water Treatment	-	0.095	0.109	0.103	0.183	0.389	0.402	0.329	0.315	0.264
WS: borehole	-	-	-	-	-	-	0.183	0.238	0.267	0.251
WS: Measuring facility	-	15.798	18.760	25.429	25.617	25.489	40.191	81.447	100.599	114.207
Total	**-**	**22.837**	**26.854**	**33.060**	**37.051**	**38.551**	**52.571**	**91.010**	**109.719**	**121.816**

Table J.8: Optimal renewal cost requirements forecasts per scheme (scheme and non-scheme specific)

SCHEME NAME	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Acornhoek Dam GWS	-	-	-	-	-	-	-	-	-	-
Albasini (Albasini Dam) GWS	-	5.880	6.780	6.508	7.412	7.559	7.518	8.285	9.196	8.577
Apies River (Leeukraal Dam) GWS	-	1.863	2.142	2.012	1.769	1.551	1.360	0.993	0.901	0.719
Blyderivierpoort Dam GWS	-	0.619	0.712	0.669	0.599	0.571	0.475	0.333	0.295	0.230
Bo-MolopoGWS	-	2.777	3.193	3.055	18.591	25.947	25.376	32.704	36.669	34.876
Bospoort Dam GWS	-	1.421	1.635	1.597	1.500	1.374	1.292	0.993	0.924	1.105
Botlokwa Dam	-	0.156	0.179	0.168	0.148	0.129	0.103	0.070	0.060	0.046
Bronkhorstspruit Dam	-	0.040	0.046	0.152	0.238	0.272	0.243	0.769	1.057	1.108
Brugspruit Pollution Control Works GWS	-	-	-	0.033	0.042	0.044	0.038	0.028	0.025	0.020
Buffelsdoorn GWS (Makotswane Dam)	-	0.035	0.041	0.038	0.071	0.085	0.174	0.184	0.195	0.176
Capes Thorne Dam GWS	-	0.618	0.710	0.667	0.585	0.512	0.410	0.277	0.240	0.183
Casteel Dam	-	0.115	0.133	0.125	0.109	0.096	0.077	0.052	0.045	0.034
Chuniespoort Dam	-	-	-	-	-	-	-	-	-	-
Crocodile River (Kwena Dam) GWS	-	1.882	2.164	2.557	3.075	3.237	3.611	3.075	3.025	2.588
Crocodile River West (Roodekopjes Dam, Vaalkop Dam and Klipvoor Dam) GWS	-	8.220	9.454	9.673	11.380	11.787	11.886	9.655	9.238	8.425
Damani Dam GWS	-	0.395	0.455	0.427	0.374	0.328	0.262	0.177	0.154	0.121
De Hoop Dam GWS	-	-	-	-	-	-	-	-	-	-
Disaneng Dam GWS	-	-	0.023	0.028	0.041	0.046	0.333	0.410	0.564	0.592
Dr. Eiselen Dam	-	0.022	0.026	0.024	0.021	0.019	0.015	0.010	0.009	0.007

SCHEME NAME	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Duthuni Dam GWS	-	0.049	0.056	0.053	0.088	0.103	0.190	0.196	0.206	0.185
Elands River (Rust De Winter Dam) GWS	-	3.341	3.860	4.699	8.668	10.352	9.459	8.804	9.475	9.429
Groot Dwars (Der Brochen Dam) GWS	-	0.007	0.008	0.007	0.011	0.013	0.025	0.026	0.027	0.024
Groot Letaba River GWS	-	2.353	2.706	2.554	2.329	2.233	4.790	5.111	5.485	5.008
Hartbeespoort GWS	-	11.030	12.684	16.269	51.029	67.048	76.014	65.390	66.699	64.689
Houtrivier Dam GWS	-	0.081	0.093	0.103	0.111	0.109	0.176	0.174	0.180	0.160
Kabokweni Dam GWS	-	-	-	-	-	-	-	-	-	-
Klaserie River (Klaserie Dam) GWS	-	0.019	0.021	0.029	0.028	0.067	0.080	0.071	0.070	0.060
Klein Marico River (Klein Maricopoort Dam) GWS	-	0.640	0.736	0.893	1.787	2.201	2.121	1.849	1.878	1.649
Koster Dam GWS	-	0.704	0.810	0.940	1.311	1.483	1.580	1.313	1.269	1.080
Lepellane Dam	-	6.003	6.904	6.483	5.688	4.979	3.984	2.690	2.332	1.782
Lindleyspoort Dam GWS	-	1.201	1.381	1.449	1.744	1.863	1.852	3.387	4.116	4.334
Lole Montes Dam GWS	-	0.125	0.144	0.135	0.118	0.104	0.083	0.056	0.048	0.037
Loskop GWS	-	4.017	4.751	12.075	52.120	71.180	68.461	56.635	56.904	51.604
Lotlamoreng Dam GWS	-	3.718	4.276	4.016	3.523	3.084	2.468	1.666	1.444	1.104
Luvhuvhu River GWS (Malamulele Weir)	-	0.077	0.089	0.083	0.073	0.064	0.051	0.035	0.030	0.023
Luvuvhu River (Nandoni Dam) GWS	-	0.015	0.017	0.211	0.257	0.309	0.969	1.613	2.167	4.028
Luvuvhu River (Xikundu Weir) GWS	-	-	-	0.011	0.014	0.015	0.040	0.044	0.048	0.164
Madikwe Dam	-	-	-	-	-	-	0.281	0.366	0.411	0.386
Mahlangu Dam GWS	-	0.052	0.060	0.056	0.049	0.043	0.074	0.074	0.078	0.069
MAHONISI DAM GWS	-	0.237	0.273	0.256	0.225	0.197	0.158	0.106	0.092	0.070
Makuleke Dam GWS	-	3.097	3.561	3.345	2.934	2.569	2.058	1.392	1.207	0.923
Mankwe Dam	-	4.245	4.882	4.585	4.022	3.521	2.818	1.902	1.649	1.260
Mapochsgronden GWS	-	-	-	0.109	0.136	0.143	0.125	0.664	0.884	1.117
Marico-Bosveld (Kromellenboog Dam) GWS	-	3.125	3.594	4.061	6.351	7.282	6.698	8.638	9.823	9.562
Mashashane Dam GWS	-	0.037	0.043	0.040	0.035	0.031	0.025	0.017	0.015	0.011
Middelkraal Dam	-	0.177	0.204	0.196	0.204	0.198	0.166	0.134	0.128	0.166
Middle Letaba Systems (Middle Letaba & Nsami Dams) GWS	-	3.292	3.786	3.956	4.330	4.313	5.283	10.022	12.214	15.958

SCHEME NAME	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Mkhombo Dam GWS	-	0.353	0.406	0.490	0.472	0.439	0.362	0.824	2.777	3.708
Modjadji (Modjadji Dam)	-	-	-	-	0.053	0.078	0.238	0.270	0.292	0.281
Mogalakwena River (Glen Alpine Dam) GWS	-	0.762	0.877	1.149	1.163	1.440	1.394	2.239	2.694	3.217
Mogol River (Mokolo Dam) GWS	-	0.387	0.495	0.694	1.910	2.541	4.344	4.376	4.817	6.275
Molatedi Dam GWS	-	1.131	1.300	1.348	2.390	3.016	4.322	14.601	20.426	21.587
Molepo Dam	-	-	-	0.047	0.059	0.063	0.429	0.527	1.195	1.481
Mutale Weir GWS	-	0.145	0.167	0.266	0.273	0.264	0.231	0.742	0.955	1.022
Mutshedzi River (Mutshedzi River Dam) GWS	-	0.202	0.244	0.232	0.338	0.378	0.848	0.914	1.031	0.972
Ngotoane Dam (Lehurutse / Skuins) GWS	-	-	-	-	0.048	0.072	0.261	0.303	0.331	0.305
Nkadimeng Dam GWS	-	0.956	1.099	1.032	0.906	0.794	0.637	0.431	0.374	0.287
Nooitgedacht (North West) Dam GWS	-	0.623	0.716	0.672	0.601	0.532	0.428	0.291	0.253	0.217
Nwanedzi Luphephe (Nwanedzi Dam) GWS	-	1.710	1.978	2.234	2.202	2.077	2.424	3.259	3.761	4.002
Nzhelele River (Nzhelele Dam) GWS	-	4.935	5.694	5.460	5.181	4.773	4.507	3.507	3.446	6.888
Ohrigstad River (Ohrigstad Dam) GWS	-	1.095	1.259	1.291	1.291	1.266	1.068	1.328	1.475	1.580
Olifants River (Flag Boshielo Dam) GWS	-	0.346	0.425	0.717	1.384	1.671	1.835	2.571	3.067	3.038
Palala River (SUSANDALE AND VISGAT WEIR) GWS	-	0.035	0.040	0.037	0.033	0.029	0.023	0.016	0.013	0.029
Pella (Pella Dam) GWS	-	0.019	0.022	0.020	0.018	0.016	0.013	0.008	0.007	0.006
Phiphidi (Phiphidi Dam) GWS	-	0.836	0.962	0.903	0.792	0.694	0.665	0.517	0.485	0.399
Phiring Dam	-	0.060	0.070	0.065	0.064	0.060	0.067	0.058	0.056	0.048
Pienaars River (Roodeplaat Dam) GWS	-	4.922	5.661	6.059	15.029	19.170	24.574	22.477	29.057	29.761
Piet Gouws Dam GWS	-	0.117	0.135	0.126	0.111	0.097	0.078	0.052	0.045	0.204
Politsi GWS	-	0.346	0.398	0.501	0.833	0.969	0.959	0.782	0.825	0.922
Rietfontein Dam 1 & 3	-	2.220	2.554	2.398	2.104	1.842	1.521	1.057	0.932	0.724
Rooikraal GWS	-	0.178	0.205	0.201	0.180	0.159	0.128	0.087	0.076	0.516
Sabie River (Inyaka Dam) GWS	-	0.274	0.315	0.459	0.477	0.503	1.008	1.059	1.119	1.481
Sand River (Witklip Dam) GWS	-	0.395	0.454	0.640	0.666	0.686	1.971	2.219	2.411	2.217
Sehujwane (Sehujwane Dam) GWS	-	0.783	0.900	0.845	0.741	0.649	0.569	0.415	0.376	0.300
Seshego Dam	-	0.135	0.155	0.146	0.128	0.112	0.090	0.060	0.052	0.040

SCHEME NAME	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Setumo Dam GWS	-	0.174	0.200	0.188	0.868	1.187	1.241	1.098	1.090	0.940
Spitskop Dam-GWS	-	0.610	0.702	0.740	0.680	0.614	0.537	0.391	0.354	0.380
Sterk River GWS (Doorndraai Dam)	-	6.562	7.558	8.140	9.319	9.482	8.588	10.436	11.739	12.897
Sterkstroom (Buffelspoort Dam) GWS	-	0.731	0.840	0.891	3.117	4.188	4.084	3.247	3.105	2.597
Thabina Dam GWS	-	0.031	0.036	0.034	0.103	0.320	0.521	0.518	0.537	0.478
Thapani Dam GWS	-	0.035	0.041	0.038	0.033	0.029	0.041	0.039	0.040	0.035
Tours Dam GWS	-	0.366	0.421	0.395	0.361	0.365	0.658	0.673	0.705	0.633
Tshakhuma (Tshakhuma Dam) GWS	-	0.160	0.184	0.189	0.171	0.154	0.134	5.321	7.402	7.802
Turfloop Dam GWS	-	2.108	2.424	2.277	1.997	1.748	1.399	0.945	0.819	0.626
Valkop No 2 Dam GWS	-	-	-	-	-	-	-	-	-	0.048
Varswater Dam GWS	-	0.110	0.126	0.119	0.104	0.091	0.073	0.049	0.043	0.033
Vergelegen Dam	-	0.208	0.239	0.224	1.938	2.755	2.627	7.439	9.468	9.867
Vlakbult Dam GWS	-	0.651	0.749	0.703	0.617	0.540	0.432	0.292	0.253	0.193
Vondo Dam GWS	-	5.654	6.502	6.107	5.517	4.927	4.555	3.458	3.201	2.603
Watervals River GWS	-	0.347	0.418	0.560	0.784	0.865	0.820	0.633	0.789	0.787
Subtotal	**-**	**112.931**	**130.225**	**143.772**	**261.426**	**313.077**	**328.159**	**334.011**	**368.006**	**370.856**
Non-scheme specific	-	22.837	26.854	33.060	37.051	38.551	52.571	91.010	109.719	121.816
Total	**-**	**135.767**	**157.079**	**176.832**	**298.477**	**351.628**	**380.730**	**425.021**	**477.725**	**492.672**

APPENDIX K – Upgrades and New Capital Strategy and Cost Forecast

1. INTRODUCTION

'**New and Upgrade Capital**' is:

'Expenditure that is used to create new assets, or to increase the capacity of existing assets beyond their original design capacity or service potential'.

2. NEW & UPGRADE CAPITAL STRATEGY

Table K.1 summarises the Renewal Strategy applied per Asset Condition Grading in this AMP.

Table K.1: New and Upgrade Capital Strategy per Asset Utilisation Grading

Utilisation Grade	Description	New and Upgrade Capital Strategy
5	Exceeding Capacity/Stressed	Consider upgrading the asset component

3. UPGRADE AND NEW CAPITAL WORKS

Table K.2 shows the numbers of asset components per asset facility category that are exceeding their design capacities (stressed), and require upgrading, further split into scheme-specific and non-scheme-specific.

Table K.2: Asset components requiring upgrades based on utilisation

Asset Facility Category	Asset Components Exceeding Capacity / Stressed (Require Upgrading)					
	Cluster Total		Scheme Specific		Non-Scheme Specific	
	No.	CRC (R million)	No.	CRC (R million)	No.	CRC (R million)
Borehole	1	1.75	1	1.75	-	-
Buildings	15	13.43	13	9.33	2	4.09
Canals	8	2.35	8	2.35	-	-
Dams	360	4 932.10	153	2 163.89	-	-
Measuring facilities	3	1.58	3	1.58	-	-
Pipelines	1	8.16	1	8.16	-	-
Power Supply	-	-	-	-	-	-
Pump stations	2	0.26	2	0.26	-	-
Reservoirs	-	-	-	-	-	-
Roads and bridge	-	-	-	-	-	-
Telemetry	-	-	-	-	-	-
Tunnels	-	-	-	-	-	-
Water Treatment	-	-	-	-	-	-
Total	**390**	**4 959.62**	**181**	**2 187.32**	**2**	**4.09**

Table K.3: Utilisation-based upgrade works (asset components exceeding capacity in utilisation)

Scheme (Cost Ctr Name)	Asset Facility Category	Facility Type	Facility Name (Asset description)	Component Type	Component Name	Component UID	Criticality	Condition	Utilisation	CRC 2016 (R Million)
ALBASINI GWS	WR: Dams	Main Damwall	Albasini Dam	Dam Intake Gates - Casing	Albasini Intake Gate 2 (914mm butterfly) - casing	500009173_32	2	1	5	1.132
ALBASINI GWS	WR: Dams	Main Damwall	Albasini Dam	Dam Intake Gates - Mechanism	Dam Intake Gate 2 (914mm butterfly) - mechanism	500009173_33	2	1	5	0.377
ALBASINI GWS	WR: Dams	Main Damwall	Albasini Dam	Dam Intake Gates - Casing	Albasini slab gate for scour - casing	500009173_35	2	1	5	1.245
ALBASINI GWS	WR: Dams	Main Damwall	Albasini Dam	Dam Intake Gates - Mechanism	Albasini slab gate for scour - mechanism	500009173_36	2	1	5	0.415
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Casing	Albasini Dam Crest Gate 5 - casing	500009173_4	2	2	5	2.875

Scheme (Cost Ctr Name)	Asset Facility Category	Facility Type	Facility Name (Asset description)	Component Type	Component Name	Component UID	Criticality	Condition	Utilisation	CRC 2016 (R Million)
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Mechanism	Albasini Dam Crest Gate 5 - mechanism	500009173_5	2	2	5	1.061
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Casing	Albasini Dam Crest Gate 6 - casing	500009173_6	2	2	5	2.875
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Mechanism	Albasini Dam Crest Gate 6 - mechanism	500009173_7	2	2	5	1.061
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Casing	Albasini Dam Crest Gate 7 - casing	500009173_8	2	2	5	2.875
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Mechanism	Albasini Dam Crest Gate 7 - mechanism	500009173_9	2	2	5	1.061
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Casing	Albasini Dam Crest Gate 8 - casing	500009173_10	2	2	5	2.875
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Mechanism	Albasini Dam Crest Gate 8 - mechanism	500009173_11	2	2	5	1.061
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Casing	Albasini Dam Crest Gate 9 - casing	500009173_12	2	2	5	2.875
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Mechanism	Albasini Dam Crest Gate 9 - mechanism	500009173_13	2	2	5	1.061
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Casing	Albasini Dam Crest Gate 10 - casing	500009173_14	2	2	5	2.875
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Mechanism	Albasini Dam Crest Gate 10 - mechanism	500009173_15	2	2	5	1.061
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Casing	Albasini Dam Crest Gate 11 - casing	500009173_16	2	2	5	2.875
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Mechanism	Albasini Dam Crest Gate 11 - mechanism	500009173_17	2	2	5	1.061
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Casing	Albasini Dam Crest Gate 12 - casing	500009173_18	2	2	5	2.875
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Mechanism	Albasini Dam Crest Gate 12 - mechanism	500009173_19	2	2	5	1.061
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Casing	Albasini Dam Crest Gate 13 - casing	500009173_20	2	2	5	2.875
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Mechanism	Albasini Dam Crest Gate 13 - mechanism	500009173_21	2	2	5	1.061
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Outlet - Pipework- Steel	Albasini outlet pipes	500009173_23	2	2	5	0.898
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Outlet Valves - Casing	Albasini - outlet valve 1 - casing	500009173_24	2	2	5	0.449
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Outlet Valves - Mechanism	Albasini - outlet valve 1 - mechanism	500009173_25	2	2	5	0.170
ALBASINI GWS	WR: Dams	Main Damwall	Albasini Dam	Auxilliary Equip. Main Damwall	Albasini Control Room	500009173_28	2	2	5	1.345
ALBASINI GWS	WR: Dams	Main Damwall	Albasini Dam	Auxilliary Equip. Main Damwall	Albasini Gantry Crane 2	500009173_30	2	2	5	2.242
ALBASINI GWS	WR: Dams	Main Damwall	Albasini Dam	Auxilliary Equip. Main Damwall	Albasini Hand Rails	500009173_31	2	2	5	3.362
ALBASINI GWS	WR: Dams	Main Damwall	Albasini Dam	Dam Intake Gates - Casing	Albasini Service Gate	500009173_34	2	2	5	1.383
ALBASINI GWS	WR: Dams	Main Damwall	Albasini Dam	Dam Intake Gates - Casing	Albasini Stopblock	500009173_37	2	2	5	1.383

Scheme (Cost Ctr Name)	Asset Facility Category	Facility Type	Facility Name (Asset description)	Component Type	Component Name	Component UID	Criticality	Condition	Utilisation	CRC 2016 (R Million)
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Meter & Instrumentation	Albasini Dam meter and instrumentation	500009173_41	2	2	5	0.889
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Casing	Albasini Dam Crest Gate 1 - casing	500009173_42	2	2	5	2.875
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Mechanism	Albasini Dam Crest Gate 1 - mechanism	500009173_43	2	2	5	1.061
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Casing	Albasini Dam Crest Gate 2 - casing	500009173_44	2	2	5	2.875
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Mechanism	Albasini Dam Crest Gate 2 - mechanism	500009173_45	2	2	5	1.061
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Casing	Albasini Dam Crest Gate 3 - casing	500009173_46	2	2	5	2.875
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Mechanism	Albasini Dam Crest Gate 3 - mechanism	500009173_47	2	2	5	1.061
ALBASINI GWS	WR: Dams	Residential Housing	Albasini Dam	Auxilliary Equip. Main Damwall	Albasini dam crawl beam	500009173_48	2	2	5	0.491
ALBASINI GWS	WR: Dams	Residential Housing	Albasini Dam	Dam Meter & Instrumentation	Albasini Billing Meter (Only a normal flow meter)	500009173_49	2	2	5	0.759
ALBASINI GWS	WR: Dams	Residential Housing	Albasini Dam	Dam Outlet - Pipework- Steel	Albasini Outlet Pipe 2 (914mm diam)	500009173_50	2	2	5	1.139
ALBASINI GWS	WR: Dams	Residential Housing	Albasini Dam	Dam Outlet - Gates & Valves	Albasini dam drainage	500009173_51	2	2	5	0.422
ALBASINI GWS	WR: Dams	Residential Housing	Albasini Dam	Electric Network	Albasini Electric Network	500009173_52	2	2	5	0.911
ALBASINI GWS	WR: Dams	Residential Housing	Albasini Dam	Auxilliary Equip. Main Damwall	Albasini dam lighting	500009173_53	2	2	5	0.502
ALBASINI GWS	WR: Dams	Residential Housing	Albasini Dam	Auxilliary Equip. Main Damwall	Albasini dam staircase	500009173_54	2	2	5	0.350
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Casing	Albasini Dam Crest Gate 4 - casing	500009173_2	2	3	5	2.875
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Crest Gates - Mechanism	Albasini Dam Crest Gate 4 - mechanism	500009173_3	2	3	5	1.061
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Wall - 30m<Height<60m	Albasini Earthfil Dam Section Right Bank	500009173_22	2	3	5	48.724
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Outlet Valves - Casing	Albasini - outlet valve 2 - casing	500009173_26	2	3	5	0.449
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Outlet Valves - Mechanism	Albasini - outlet valve 2 - mechanism	500009173_27	2	3	5	0.170
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Intake Gates - Casing	Albasini - intake gate - casing	500009173_38	2	3	5	0.673
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Intake Gates - Mechanism	Albasini - intake gate - mechanism	500009173_39	2	3	5	0.254
ALBASINI GWS	WR: Dams	Main Damwall	Albasini	Dam Wall - 30m<Height<60m	Albasini Earthfill Dam Section Left Bank	500009173_1	2	4	5	120.413
ALBASINI GWS	WR: Dams	Main Damwall	Albasini Dam	Auxilliary Equip. Main Damwall	Albasini Gantry Crane	500009173_29	2	4	5	2.242
AREA MANAGER TZANEEN OFFICE	Buildings	Hostels / Flats / Compounds	Blyderivierspoort Hostel 3	Main Building	Hostels / Flats / Compounds	500009956_0	4	4	5	2.185

Scheme (Cost Ctr Name)	Asset Facility Category	Facility Type	Facility Name (Asset description)	Component Type	Component Name	Component UID	Criticality	Condition	Utilisation	CRC 2016 (R Million)
AREA MANAGER TZANEEN OFFICE	Buildings	Hostels / Flats / Compounds	Blyderivierpoort Hostel 2	Main Building	Hostels / Flats / Compounds	500010005_0	4	4	5	1.910
BLYDERIVERS-POORT DAM (8)	Buildings	Residential Housing	Blyderivierspoort WCO House	Main Building	Residential housing	500010256_0	4	4	5	3.137
BLYDERIVERS-POORT DAM (8)	Buildings	Hostels / Flats / Compounds	Blyderivierpoort Dam Ablution Block	Main Building	Main building	500006350_0	3	4	5	0.158
BLYDERIVERS-POORT DAM (8)	Buildings	Guard Building	Blyderivierpoort Dam Guard House	Main Building	Main building	500009537_0	2	2	5	0.084
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet - Pipework- Steel	Blyderivierpoort outlet pipes	500009028_2	4	1	5	2.194
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet - Pipework- Steel	Blyderivierpoort outlet pipes	500009028_13	4	1	5	0.050
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Casing	Blyderivierpoort - RB scour valve - casing	500009028_22	4	1	5	0.921
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Mechanism	Blyderivierpoort - RB scour valve - mechanism	500009028_23	4	1	5	0.307
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Casing	outlet butterfly valve 1 - casing	500009028_31	4	1	5	0.610
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Casing	outlet butterfly valve 6 - casing	500009028_36	4	1	5	0.610
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Mechanism	outlet butterfly valve 1 - mechanism	500009028_37	4	1	5	0.203
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Mechanism	outlet butterfly valve 6 - mechanism	500009028_42	4	1	5	0.203
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Meter & Instrumentation	Blyderivierspoort dam flow meter	500009028_47	4	1	5	0.759
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet - Pipework- Steel	Blyderivierspoort dam left silt outlet pipe	500009028_48	4	1	5	0.050
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet - Pipework- Steel	Blyderivierspoort dam outlet pipe 3	500009028_49	4	1	5	2.063
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Intake Gates - Casing	Blyderivierpoort - RB scour sleeve valves - casing	500009028_17	4	2	5	0.270
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Intake Gates - Mechanism	Blyderivierpoort - scour sleeve valves - mechanism	500009028_18	4	2	5	0.090
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Meter & Instrumentation	Blyderivierspoort Dam Instrumentation	500009028_29	4	2	5	0.889
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Auxilliary Equip. Main Damwall	Blyderivierspoort dam crawl beam 1	500009028_45	4	2	5	0.531
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Auxilliary Equip. Main Damwall	Blyderivierspoort dam crawl beam 2	500009028_46	4	2	5	0.531
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	damwall drainage	Blyderivierspoort dam wall drainage	500009028_52	4	2	5	0.516
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Auxilliary Equip. Main Damwall	Blyderivierspoort dam handrails	500009028_54	4	2	5	0.531
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Auxilliary Equip. Main Damwall	Blyderivierspoort dam lighting	500009028_56	4	2	5	1.214

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BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Auxilliary Equip. Main Damwall	Blyderivierspoort dam staircase	500009028_58	4	2	5	1.708
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet Valves - Casing	Blyderivierpoort - outlet valve - casing	500009028_14	4	3	5	0.100
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet Valves - Mechanism	Blyderivierpoort - outlet valve - mechanism	500009028_15	4	3	5	0.035
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Intake Gates - Casing	Blyderivierpoort - LB scour sleeve valves - casing	500009028_19	4	3	5	0.270
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Intake Gates - Mechanism	Dam - LB scour sleeve valves - mechanism	500009028_20	4	3	5	0.090
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet - Intake Tower	Blyderivierspoort dam Intake structure	500009028_28	4	3	5	7.093
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Auxilliary Equip. Main Damwall	Blyderivierspoort Dam Standby Generator	500009028_30	4	3	5	3.596
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Auxilliary Equip. Main Damwall	left silt sleeve valve hydraulic power pack	500009028_43	4	3	5	1.366
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Auxilliary Equip. Main Damwall	right silt sleeve valve hydraulic power pack	500009028_44	4	3	5	1.366
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Auxilliary Equip. Main Damwall	Blyderivierspoort dam dewatering pump	500009028_53	4	3	5	0.759
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Auxilliary Equip. Main Damwall	Blyderivierspoort dam safety boom and buoys	500009028_57	4	3	5	1.708
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Wall-Height>60m	Blyderivierpoort dam Concrete	500009028_1	4	4	5	1,253.221
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet Valves - Casing	Blyderivierpoort - outlet valve 1 - casing	500009028_3	4	4	5	1.329
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet Valves - Mechanism	Blyderivierpoort - outlet valve 1 - mechanism	500009028_4	4	4	5	1.561
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet Valves - Casing	Blyderivierpoort - outlet valve 2 - casing	500009028_5	4	4	5	1.329
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet Valves - Mechanism	Blyderivierpoort - outlet valve 2 - mechanism	500009028_6	4	4	5	1.143
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet Valves - Casing	Blyderivierpoort - outlet valve 3 - casing	500009028_7	4	4	5	1.329
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet Valves - Mechanism	Blyderivierpoort - outlet valve 3 - mechanism	500009028_8	4	4	5	1.143
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet Valves - Casing	Blyderivierpoort - outlet valve 4 - casing	500009028_9	4	4	5	1.329
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet Valves - Mechanism	Blyderivierpoort - outlet valve 4 - mechanism	500009028_10	4	4	5	1.143
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Spillway	Dam spillway	500009028_21	4	4	5	4.149
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet Structure	Blyderivierspoort dam Left Silt Outlets	500009028_24	4	4	5	0.822
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort	Dam Outlet Structure	Blyderivierspoort dam Right Silt Outlets	500009028_25	4	4	5	1.564
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Casing	outlet butterfly valve 2 - casing	500009028_32	4	4	5	0.610
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Casing	outlet butterfly valve 3 - casing	500009028_33	4	4	5	0.610

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BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Casing	outlet butterfly valve 4 - casing	500009028_34	4	4	5	0.610
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Casing	outlet butterfly valve 5 - casing	500009028_35	4	4	5	0.610
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Mechanism	outlet butterfly valve 2 - mechanism	500009028_38	4	4	5	0.203
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Mechanism	outlet butterfly valve 3 - mechanism	500009028_39	4	4	5	0.203
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Mechanism	outlet butterfly valve 4 - mechanism	500009028_40	4	4	5	0.203
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet Valves - Mechanism	outlet butterfly valve 5 - mechanism	500009028_41	4	4	5	0.203
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet - Pipework- Steel	Blyderivierspoort dam outlet pipe 4	500009028_50	4	4	5	2.029
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Outlet - Pipework- Steel	Blyderivierspoort dam right silt outlet pipe	500009028_51	4	4	5	0.761
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Intake Gates	Blyderivierspoort dam thrashracks	500009028_55	4	4	5	1.037
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierpoort Dam	Dam Intake Gates	Blyderivierspoort dam stoplog service gate	500009028_59	4	4	5	1.312
BLYDERIVERS-POORT DAM (8)	WR: Dams	Main Damwall	Blyderivierspoort dam Right Silt Outlets	Dam Wall-Height>60m	Blyderivierpoort Dam	500009028_16	4	5	5	1.564
BLYDERIVERS-POORT DAM (8)	WR: Steel Pipelines	Pipeline Section	Blyderivierspoortdam to RMB	Pipeline- Steel	Pipeline	500000573_0	5	3	5	8.158
BRONKHORSTSPRUIT DAM (11)	Buildings	Residential Housing	Bronkhorspruit dam Old WCO House	Main Building	Main building	500003574_0	3	1	5	0.217
BRONKHORSTSPRUIT DAM (11)	Buildings	Residential Housing	Bronkhorspruit dam Old WCO House	Outbuildings	Bronkhorspruit dam Old WCO House Garage	500003574_1	3	1	5	0.060
BRONKHORSTSPRUIT DAM (11)	Buildings	Residential Housing	Bronkhorspruit dam Old WCO House	Outbuildings	Bronkhorspruit dam Old WCO House WC's	500003574_2	3	1	5	0.029
BRONKHORSTSPRUIT DAM (11)	Buildings	Residential Housing	Bronkhorspruit dam Old WCO House	Building Fencing	Old WCO House fencing	500007076_4	3	1	5	0.034
BRONKHORSTSPRUIT DAM (11)	Buildings	Hostels / Flats / Compounds	Bronkhorstpruit Dam Garage and Attached Quarters	Main Building	Main building	500004631_0	3	4	5	0.592
BRONKHORSTSPRUIT DAM (11)	Buildings	Stores	Bronkhorspruit dam Purification plant room	Main Building	Main building	500009533_0	2	4	5	3.537
BRONKHORSTSPRUIT DAM (11)	Buildings	Boat House	Bronkhorspruit Dam Boat House	Main Building	Main building	500003575_0	1	3	5	0.250
BRONKHORSTSPRUIT DAM (11)	WR: Canals	Canal Section	prim_canal1	Canal Excavation	Canal excavation	500000672_0	3	3	5	0.293
BRONKHORSTSPRUIT DAM (11)	WR: Canals	Canal Section	prim_canal1	Canal Lining - TA2	Canal Lining	500000672_1	3	3	5	0.168
BRONKHORSTSPRUIT DAM (11)	WR: Canals	Canal Section	prim_canal1	Canal Service Road	Canal service road	500000672_2	3	3	5	0.086
BRONKHORSTSPRUIT DAM (11)	WR: Canals	Canal Section	prim_canal1	Canal Berm	Canal berm	500000672_3	3	3	5	0.039

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BRONKHORSTSPRUIT DAM (11)	WR: Canals	Canal Section	Bronkhorspruit Canal River Release	Canal Excavation	Canal excavation	500007076_0	3	3	5	1.112
BRONKHORSTSPRUIT DAM (11)	WR: Canals	Canal Section	Bronkhorspruit Canal River Release	Canal Lining - TA2	Canal Lining	500007076_1	3	3	5	0.604
BRONKHORSTSPRUIT DAM (11)	WR: Canals	Canal Section	Bronkhorspruit Canal River Release	Canal Service Road	Canal service road	500007076_2	3	3	5	0.020
BRONKHORSTSPRUIT DAM (11)	WR: Canals	Canal Section	Bronkhorspruit Canal River Release	Canal Berm	Canal berm	500007076_3	3	3	5	0.028
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Dam Outlet Valves - Mechanism	Sleeve Valve 1 (Right side D/S) 600mm DIA-mech	500000594_16	3	2	5	0.001
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Auxilliary Equip. Main Damwall	Boat Slipway	500000594_17	3	2	5	0.010
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Dam Meter & Instrumentation	Bronkhortspruit dam meter and instrumentation	500000594_18	3	2	5	0.013
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Electric Network	Bronkhortspruit dam electric network	500000594_22	3	2	5	0.030
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Auxilliary Equip. Main Damwall	Bronkhortspruit handrails	500000594_23	3	2	5	0.012
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Auxilliary Equip. Main Damwall	Bronkhortspruit dam lighting	500000594_24	3	2	5	0.027
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Dam Outlet Valves - Casing	Sleeve Valve 1 (Right side D/S) 600mm DIA - casing	500000594_26	3	2	5	0.002
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Auxilliary Equip. Main Damwall	Bronkhortspruit staircase	500000594_27	3	2	5	0.037
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Auxilliary Equip. Main Damwall	Bronkhortspruit dam steel platform	500000594_28	3	2	5	0.022
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorspruit	Dam Outlet - Pipework- Steel	Bronkhorspruit outlet pipes	500000594_4	3	3	5	1.622
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorspruit	Dam Outlet Valves - Casing	Bronkhorspruit - outlet valve 1 - casing	500000594_5	3	3	5	1.135
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorspruit	Dam Outlet Valves - Mechanism	Bronkhorspruit - outlet valve 1 - mechanism	500000594_6	3	3	5	0.828
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorspruit	Dam Outlet Valves - Casing	Bronkhorspruit - outlet valve 2 - casing	500000594_7	3	3	5	1.135
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorspruit	Dam Outlet Valves - Mechanism	Bronkhorspruit - outlet valve 2 - mechanism	500000594_8	3	3	5	0.828
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Dam Outlet - Pipework- Steel	Bronkhorspruit Dam Outlet Pipe	500000594_11	3	3	5	2.074
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Dam Outlet - Pipework- Steel	Bronkhorspruit Dam Outlet Pipe	500000594_12	3	3	5	2.074
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Dam Outlet - Pipework- Steel	Eskom 500mm DIA outlet pipe	500000594_15	3	3	5	1.383
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Dam Outlet - Pipework- Steel	Bronkhorspruit Dam Outlet Pipe	500000594_19	3	3	5	0.007
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Dam Outlet - Pipework- Steel	Bronkhorspruit Dam Outlet Pipe	500000594_20	3	3	5	0.007
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Auxilliary Equip. Main Damwall	Bronkhortspruit dam dewatering pump	500000594_21	3	3	5	0.017

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BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Auxilliary Equip. Main Damwall	Safety Buoys	500000594_25	3	3	5	0.025
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorspruit	Dam Wall - 30m<Height<60m	Bronkhorspruit dam wall	500000594_1	3	4	5	97.256
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorspruit Dam Jib crane	Main Damwall	Dam (main asset)	500000594_9	3	4	5	0.147
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorspruit	Cranes	Jib crane	500000594_10	3	4	5	0.184
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Dam Outlet Structure	Dam Outlet Stucture	500000594_13	3	4	5	4.149
BRONKHORSTSPRUIT DAM (11)	WR: Dams	Main Damwall	Bronkhorstspruit Dam	Dam Spillway	Spillway	500000594_14	3	4	5	2.766
BRONKHORSTSPRUIT DAM (11)	WS: Measuring facility	Meteorological Station	Groenfontein	Meteorological Station	not componentised	500006201_0	1	3	5	0.218
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer	Dam Outlet - Pipework- Steel	Ebenezer outlet pipes	500000615_7	5	2	5	1.247
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Auxilliary Equip. Main Damwall	Doorndraai lightning in tunnel	500000615_15	5	2	5	1.106
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Auxilliary Equip. Main Damwall	Ebenezer electric network at inlet tower	500000615_16	5	2	5	0.553
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Auxilliary Equip. Main Damwall	Ebenezer Hand Rails at stilling basin	500000615_17	5	2	5	1.383
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Auxilliary Equip. Main Damwall	Ebenezer Handrails on walkway to tower	500000615_18	5	2	5	1.383
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Dam Outlet - Pipework- Steel	Ebenezer outlet pipes Left	500000615_21	5	2	5	1.383
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Cranes	Ebenezer Jib Crane 5t	500000615_24	5	2	5	0.611
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Auxilliary Equip. Main Damwall	Ebenezer dam crawl beam	500000615_25	5	2	5	0.452
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Dam Meter & Instrumentation	Ebenezer billing meter 1	500000615_28	5	2	5	0.455
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Dam Meter & Instrumentation	Ebenezer billing meter 2	500000615_29	5	2	5	0.455
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Dam Outlet - Gates & Valves	Ebenezer dam toe drain	500000615_30	5	2	5	0.427
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Auxilliary Equip. Main Damwall	Ebenezer dam staircase	500000615_31	5	2	5	0.565
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer	Dam Spillway	Ebenezer dam spillway	500000615_2	5	3	5	117.335
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer	Dam Intake Gates - Casing	Ebenezer - intake gate - casing	500000615_3	5	3	5	0.841
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer	Dam Intake Gates - Mechanism	Ebenezer - intake gate - mechanism	500000615_4	5	3	5	0.311
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer	Auxilliary Equip. Main Damwall	Ebenezer dam Standby Generator	500000615_6	5	3	5	3.596
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer	Dam Outlet Valves - Casing	Ebenezer - outlet valve 1 - casing	500000615_8	5	3	5	0.561

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GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer	Dam Outlet Valves - Mechanism	Ebenezer - outlet valve 1 - mechanism	500000615_9	5	3	5	0.615
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer	Dam Outlet Valves - Casing	Ebenezer - outlet valve 2 - casing	500000615_10	5	3	5	0.561
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer	Dam Outlet Valves - Mechanism	Ebenezer - outlet valve 2 - mechanism	500000615_11	5	3	5	1.221
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer dam spillway	Dam Spillway	Ebenezer Dam Spillway	500000615_13	5	3	5	13.037
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Auxilliary Equip. Main Damwall	Hydraulic power pack for valves at floating tower	500000615_19	5	3	5	0.830
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Auxilliary Equip. Main Damwall	Ebenezer safety boom	500000615_20	5	3	5	0.691
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Auxilliary Equip. Main Damwall	Ebenezer dam boat slipway	500000615_23	5	3	5	0.339
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Dam Intake Gates	Ebenezer dam intake gate 2 - gate	500000615_26	5	3	5	0.126
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Dam Intake Gates - Mechanism	Ebenezer dam intake gate 2 - mechanism	500000615_27	5	3	5	0.042
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer	Dam Wall - 30m<Height<60m	Ebenezer dam wall	500000615_1	5	4	5	244.021
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer dam wall	Dam Wall - 30m<Height<60m	Ebenezer Dam Wall	500000615_14	5	4	5	41.061
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Ebenezer Dam	Access Bridge	Ebenezer dam access bridge	500000615_22	5	4	5	4.682
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Casing	Tzaneen Small River Outlet Valve - casing	500000708_17	4	1	5	0.135
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Casing	Tzaneen Small River Outlet Valve - mechanism	500000708_18	4	1	5	0.045
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Intake Gates - Casing	Tzaneen Intake Gate 3 - casing	500000708_31	4	1	5	1.416
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Intake Gates - Mechanism	Tzaneen Intake Gate 3 - mechanism	500000708_32	4	1	5	0.669
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen Crawl Beam 2	500000708_2	4	2	5	0.968
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen Crawl Beam 3	500000708_3	4	2	5	0.968
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen Crawl Beam at Ventures	500000708_4	4	2	5	0.968
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen Hand Rail Top L	500000708_6	4	2	5	0.691
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen Hand Rails	500000708_7	4	2	5	0.691
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen Hand Rails Bottom L	500000708_8	4	2	5	0.691
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen Hand Rails Bottom R	500000708_9	4	2	5	0.691
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen Hand Rails Top	500000708_10	4	2	5	0.691

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GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen Outside Crawl Beam	500000708_11	4	2	5	0.968
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen Stair Case to V-notch	500000708_12	4	2	5	0.691
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen	Auxilliary Equip. Main Damwall	Tzaneen Dam Standby Generator	500000708_23	4	2	5	3.596
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tsaneen Intake Crawl Beam	500000708_35	4	2	5	0.968
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Casing	Tzaneen Isolating Valve 1 - casing	500000708_37	4	2	5	0.131
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Casing	Tzaneen Isolating Valve 2 - casing	500000708_38	4	2	5	0.131
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Casing	Tzaneen Isolating Valve 3 - casing	500000708_39	4	2	5	0.131
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Casing	Tzaneen Isolating Valve 4 - casing	500000708_40	4	2	5	0.131
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Casing	Tzaneen Isolating Valve 5 - casing	500000708_41	4	2	5	0.131
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Mechanism	Tzaneen Isolating Valve 1 - mechanism	500000708_42	4	2	5	0.044
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Mechanism	Tzaneen Isolating Valve 2 - mechanism	500000708_43	4	2	5	0.044
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Mechanism	Tzaneen Isolating Valve 3 - mechanism	500000708_44	4	2	5	0.044
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Mechanism	Tzaneen Isolating Valve 4 - mechanism	500000708_45	4	2	5	0.044
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Mechanism	Tzaneen Isolating Valve 5 - mechanism	500000708_46	4	2	5	0.044
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen dam control room	500000708_47	4	2	5	0.622
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Cranes	Tzaneen Crane on Rails 5t	500000708_48	4	2	5	0.611
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Intake Gates - Casing	Tzaneen Intake Valve L2 - casing	500000708_49	4	2	5	0.051
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Intake Gates - Casing	Tzaneen Intake Valve L3 - casing	500000708_50	4	2	5	0.051
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Intake Gates - Mechanism	Tzaneen Intake Valve L2 - mechanism	500000708_51	4	2	5	0.017
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Intake Gates - Mechanism	Tzaneen Intake Valve L3 - mechanism	500000708_52	4	2	5	0.017
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Meter & Instrumentation	Tzaneen Billing Meter	500000708_53	4	2	5	0.759
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Meter & Instrumentation	Tzaneen Hydro Instrumentation	500000708_54	4	2	5	0.759
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Meter & Instrumentation	Tzaneen Ultrasonic Water Meters(4)	500000708_55	4	2	5	0.759
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet - Gates & Valves	Tzaneen dam toe drains	500000708_58	4	2	5	0.507
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Electric Network	Tzaneen dam electric network	500000708_59	4	2	5	0.797

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GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen dam lighting	500000708_61	4	2	5	0.829
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen Dam safety boom & boys	500000708_5	4	3	5	2.074
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet - Pipework- Steel	Tzaneen Outlet Pipe 2	500000708_13	4	3	5	4.979
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet - Pipework- Steel	Tzaneen Outlet Pipe 3	500000708_14	4	3	5	4.979
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet - Pipework- Steel	Tzaneen River Outlet Pipe	500000708_15	4	3	5	1.383
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet - Pipework- Steel	Tzaneen WTP Outlet Pipe	500000708_16	4	3	5	1.383
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen	Dam Intake Gates - Casing	Tzaneen - intake gate - casing	500000708_19	4	3	5	0.165
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen	Dam Intake Gates - Mechanism	Tzaneen - intake gate - mechanism	500000708_20	4	3	5	2.510
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen	Dam Outlet - Pipework- Steel	Tzaneen outlet pipes	500000708_24	4	3	5	5.570
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen	Dam Outlet Valves - Casing	Tzaneen - outlet valve 2 - casing	500000708_27	4	3	5	2.785
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen	Dam Outlet Valves - Mechanism	Tzaneen - outlet valve 2 - mechanism	500000708_28	4	3	5	1.193
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen dam hydraulic power pack	500000708_60	4	3	5	0.829
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Intake Gates	Tzaneen Service Gate	500000708_62	4	3	5	1.139
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen	Dam Wall - 30m<Height<60m	Tzaneen Dam wall	500000708_1	4	4	5	1,119.238
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen	Dam Outlet Structure	Tzaneen Dam Outlet structure	500000708_22	4	4	5	7.954
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen	Dam Outlet Valves - Casing	Tzaneen - outlet valve 1 - casing	500000708_25	4	4	5	1.370
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen	Dam Outlet Valves - Mechanism	Tzaneen - outlet valve 1 - mechanism	500000708_26	4	4	5	0.518
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Intake Gates - Casing	Tzaneen Intake Gate 2 - casing	500000708_29	4	4	5	2.006
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Intake Gates - Mechanism	Tzaneen Intake Gate 2 - mechanism	500000708_30	4	4	5	2.006
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Casing	Tzaneen Outlet Valve 3 - casing	500000708_33	4	4	5	0.669
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Dam Outlet Valves - Mechanism	Tzaneen Outlet Valve 3 - mechanism	500000708_34	4	4	5	0.472
GROOT LETABA RIVER GWS	WR: Dams	Main Damwall	Tzaneen Dam	Auxilliary Equip. Main Damwall	Tzaneen dam boat slipway	500000708_36	4	4	5	0.622
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Auxilliary Equip. Main Damwall	Middle Letaba Dam lights in tunnel	500000515_40	4	2	5	2.213
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Auxilliary Equip. Main Damwall	Middle-Letaba Floodlights	500000515_41	4	2	5	2.213
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Auxilliary Equip. Main Damwall	Middle - Letaba dam control room	500000515_69	4	2	5	8.350

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MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba dam - Dam wall	Dam Spillway	Middle-Letaba Dam Spillway	500000515_32	4	3	5	337.446
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Auxilliary Equip. Main Damwall	Middle-Letaba Crawl Beam in inlet tower	500000515_35	4	3	5	0.968
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Auxilliary Equip. Main Damwall	Middle-Letaba Crawl Beam in outlet structure	500000515_36	4	3	5	0.968
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Auxilliary Equip. Main Damwall	Middle-Letaba Hand Rails	500000515_38	4	3	5	2.074
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Auxilliary Equip. Main Damwall	Middle-Letaba Hydraulic Pack	500000515_39	4	3	5	1.660
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Auxilliary Equip. Main Damwall	Middle-Letaba Stair Cases(5)	500000515_42	4	3	5	2.074
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba	Dam Intake Gates - Casing	Middle-Letaba - intake gate - casing	500000515_46	4	3	5	0.433
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba	Dam Intake Gates - Mechanism	Middle-Letaba - intake gate - mechanism	500000515_47	4	3	5	0.911
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba	Dam Outlet - Pipework- Steel	Middle-Letaba outlet pipes	500000515_50	4	3	5	1.740
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Outlet - Gates & Valves	Middle - Letaba dam toe drains	500000515_74	4	3	5	0.759
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates	Middle - Letaba dam intake grid 1	500000515_75	4	3	5	0.655
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates	Middle - Letaba dam intake grid 2	500000515_76	4	3	5	0.655
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Outlet Valves - Casing	Middle-Letaba - outlet sleeve valve 1 - casing	500000515_77	4	3	5	0.245
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Outlet Valves - Casing	Middle-Letaba - outlet sleeve valve 2 - casing	500000515_78	4	3	5	0.245
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba	Dam Wall - 30m<Height<60m	Middle-Letaba dam - Dam wall	500000515_1	4	4	5	373.361
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba	Dam Outlet Valves - Casing	Middle-Letaba - outlet valve 1 - casing	500000515_2	4	4	5	0.870
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba	Dam Outlet Valves - Mechanism	Middle-Letaba - outlet valve 1 - mechanism	500000515_3	4	4	5	1.534
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba	Dam Outlet Valves - Casing	Middle-Letaba - outlet valve 2 - casing	500000515_4	4	4	5	0.870
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba	Dam Outlet Valves - Mechanism	Middle-Letaba - outlet valve 2 - mechanism	500000515_5	4	4	5	0.312
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Casing	Middle-Letaba Intake Gate(R1 1050mm diam) - casing	500000515_6	4	4	5	1.037
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Mechanism	Middle Intake Gate(R1 1050mm diam) - mechanism	500000515_7	4	4	5	0.178
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Casing	Middle Intake Gate (L2 1050mm diam) - casing	500000515_8	4	4	5	1.037
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Mechanism	Middle Intake Gate (L2 1050mm diam) - mechanism	500000515_9	4	4	5	0.178
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Casing	Middle Intake Gate (R2 1050mm diam) - casing	500000515_10	4	4	5	0.583

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MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Mechanism	MiddleIntake Gate (R2 1050mm diam) - mechanism	500000515_11	4	4	5	0.583
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Casing	MiddleIntake Gate (R3 1050mm diam) - casing	500000515_12	4	4	5	1.319
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Mechanism	Middle Intake Gate (R3 1050mm diam) - mechanism	500000515_13	4	4	5	1.319
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Valves - Casing	Middle-Letaba Drainage Valve 1 - casing	500000515_14	4	4	5	1.319
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Valves - Mechanism	Middle-Letaba Drainage Valve 1 - mechanism	500000515_15	4	4	5	1.319
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Valves - Casing	Middle-Letaba Drainage Valve 2 - casing	500000515_16	4	4	5	1.319
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Valves - Mechanism	Middle-Letaba Drainage Valve 2 - mechanism	500000515_17	4	4	5	0.346
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Butterfly Valves - Casing	Middle-Letaba Butterfly Valve WTP Left1 - casing	500000515_18	4	4	5	0.059
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Butterfly Valves - Mechanism	Middle-Letaba ButterflyValve WTP Left1 - mechanism	500000515_19	4	4	5	0.346
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Butterfly Valves - Casing	Middle Butterfly Valve Left2 450mm diam - casing	500000515_20	4	4	5	0.059
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Butterfly Valves - Mechanism	Middle Butterfly Valve Left2 450mm diam - mechanism	500000515_21	4	4	5	0.194
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Butterfly Valves - Casing	Middle-Letaba Butterfly Valve WTP Right 1 - casing	500000515_22	4	4	5	0.194
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Butterfly Valves - Mechanism	Middle-Letaba Butterfly Valve Right 1 - mechanism	500000515_23	4	4	5	0.440
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Butterfly Valves - Casing	Middle Butterfly Valve Right 2 450mm diam - casing	500000515_24	4	4	5	0.440
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Butterfly Valves - Mechanism	Middle ButterflyValve Right2 450mm diam-mechanism	500000515_25	4	4	5	0.440
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Casing	Middle-Letaba Intake Gate (L3 1050mm diam) - casing	500000515_26	4	4	5	0.440
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Mechanism	Middle Intake Gate (L3 1050mm diam) - mechanism	500000515_27	4	4	5	0.440

Scheme (Cost Ctr Name)	Asset Facility Category	Facility Type	Facility Name (Asset description)	Component Type	Component Name	Component UID	Criticality	Condition	Utilisation	CRC 2016 (R Million)
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba dam - Dam wall	Dam Meter & Instrumentation	Middle Letaba Dam Hydro instrumentation	500000515_28	4	4	5	1.383
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba dam - Dam wall	Dam Meter & Instrumentation	Middle-Letaba Ultrasonic Meters	500000515_29	4	4	5	1.383
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba dam - Dam wall	Dam Outlet - Pipework- Steel	Middle-Letaba Outlet Pipe Right	500000515_30	4	4	5	2.074
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba dam - Dam wall	Dam Outlet - Pipework- Steel	Middle-Letaba Outlet to Purification Works	500000515_31	4	4	5	2.074
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba dam - Dam wall	Dam Tunnel	Middle Letaba Dam Tunnel	500000515_33	4	4	5	13.830
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba dam - Dam wall	Dam Crest Gates	Middle-Letaba Service Gate	500000515_34	4	4	5	2.766
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Auxilliary Equip. Main Damwall	Letaba Dam electrical network in spillway tunnel	500000515_37	4	4	5	1.660
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba	Dam Outlet - Intake Tower	Middle-Letaba dam - intake-outlet tower	500000515_44	4	4	5	4.959
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba	Dam Outlet Structure	Middle-Letaba dam - Dam outlet structure	500000515_45	4	4	5	2.727
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba	Electric Network	Middle-Letaba Electrical network	500000515_49	4	4	5	1.750
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Outlet Valves	Butterfly Valve WTP Left2 450mm diam - casing	500000515_51	4	4	5	0.082
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Outlet Valves	Butterfly Valve WTP Right 2 450mm diam - casing	500000515_52	4	4	5	0.082
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Casing	Intake Gate (L2 1050mm diam) - casing	500000515_53	4	4	5	0.330
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Casing	Intake Gate (L3 1050mm diam) - casing	500000515_54	4	4	5	0.330
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Casing	Intake Gate (R2 1050mm diam) - casing	500000515_55	4	4	5	0.330
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba Dam	Dam Intake Gates - Casing	Intake Gate (R3 1050mm diam) - casing	500000515_56	4	4	5	0.330
MIDDLE LETABA SYSTEM GWS	WR: Dams	Main Damwall	Middle-Letaba	Auxilliary Equip. Main Damwall	Middle Letaba Standby Generator	500000515_48	3	3	5	3.596
MKOMBO DAM	Buildings	Residential Housing	Mkombo Dam House No 22	Main Building	Main building	500006599_0	3	4	5	0.748
MKOMBO DAM	Buildings	Boat House	Mkhombo Dam Boat House	Main Building	Main building	500006600_0	1	1	5	0.291
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Electric Network	Mkombo dam electric network	500000704_39	5	2	5	1.366
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Auxilliary Equip. Main Damwall	Rhenosterkop Dam - lighting	500000704_42	5	2	5	4.136
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo (Rhenosterkop Dam)	Dam Intake Gates - Casing	Mkombo (Rhenosterkop Dam) - intake gate - casing	500000704_2	5	3	5	0.781

Scheme (Cost Ctr Name)	Asset Facility Category	Facility Type	Facility Name (Asset description)	Component Type	Component Name	Component UID	Criticality	Condition	Utilisation	CRC 2016 (R Million)
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo (Rhenosterkop Dam)	Dam Intake Gates - Mechanism	Mkombo (Rhenosterkop Dam) - intake gate - mechanis	500000704_3	5	3	5	0.280
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo (Rhenosterkop Dam)	Dam Outlet - Pipework- Steel	Mkombo (Rhenosterkop Dam) outlet pipes	500000704_6	5	3	5	0.331
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo (Rhenosterkop Dam)	Dam Outlet Valves - Casing	Mkombo (Rhenosterkop Dam) - outlet valve 1 - casin	500000704_7	5	3	5	0.681
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo (Rhenosterkop Dam)	Dam Outlet Valves - Mechanism	Mkombo (Rhenosterkop Dam) - outlet valve 1 - mecha	500000704_8	5	3	5	0.471
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo (Rhenosterkop Dam)	Dam Outlet Valves - Casing	Mkombo (Rhenosterkop Dam) - outlet valve 2 - casin	500000704_9	5	3	5	0.729
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo (Rhenosterkop Dam)	Dam Outlet Valves - Mechanism	Mkombo (Rhenosterkop Dam) - outlet valve 2 - mecha	500000704_10	5	3	5	0.139
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Casing	river outlet intake butterfly 1 (1000mm) - casing	500000704_11	5	3	5	0.304
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Casing	river outlet -intake butterfly 2 (1000mm) - casing	500000704_12	5	3	5	0.304
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Casing	scour outlet butterfly 2 (2000mm) - casing	500000704_13	5	3	5	0.955
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Mechanism	river outlet -intake butterfly 1 (1000mm) - mech	500000704_14	5	3	5	0.101
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Mechanism	river outlet -intake butterfly 2 (1000mm) - mech	500000704_15	5	3	5	0.101
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Mechanism	scour outlet butterfly 2 (2000mm) - mechanism	500000704_16	5	3	5	0.318
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Casing	river outlet sleeve 1 (600mm) - casing	500000704_17	5	3	5	0.104
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Casing	river outlet sleeve 4 (600mm) - casing	500000704_18	5	3	5	0.104
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Mechanism	river outlet sleeve 1 (600mm) - mechanism	500000704_19	5	3	5	0.035
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Mechanism	river outlet sleeve 4 (600mm) - mechanism	500000704_20	5	3	5	0.035
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Auxilliary Equip. Main Damwall	Mkombo dam boat slipway	500000704_21	5	3	5	1.551
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Casing	Mkombo dam butterfly valve 1 - casing	500000704_22	5	3	5	0.304
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Casing	Mkombo dam butterfly valve 1 - casing	500000704_23	5	3	5	0.304
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Casing	Mkombo dam butterfly valve 3 - casing	500000704_24	5	3	5	0.304

Scheme (Cost Ctr Name)	Asset Facility Category	Facility Type	Facility Name (Asset description)	Component Type	Component Name	Component UID	Criticality	Condition	Utilisation	CRC 2016 (R Million)
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Casing	Mkombo dam butterfly valve 4 - casing	500000704_25	5	3	5	0.304
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Mechanism	Mkombo dam butterfly valve 1 - mechanism	500000704_26	5	3	5	0.101
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Mechanism	Mkombo dam butterfly valve 1 - mechanism	500000704_27	5	3	5	0.101
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Mechanism	Mkombo dam butterfly valve 3 - mechanism	500000704_28	5	3	5	0.101
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Mechanism	Mkombo dam butterfly valve 4 - mechanism	500000704_29	5	3	5	0.101
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Cranes	Rhenosterkop Dam - crane	500000704_30	5	3	5	1.139
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet - Pipework- Steel	Rhenosterkop - river outlet pipe 1 (1000mm)	500000704_31	5	3	5	0.142
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet - Pipework- Steel	Rhenosterkop - river outlet pipe 1a (700mm)	500000704_32	5	3	5	0.092
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet - Pipework- Steel	Rhenosterkop - river outlet pipe 1b (300mm)	500000704_33	5	3	5	0.033
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet - Pipework- Steel	Rhenosterkop - river outlet pipe 2 (1000mm)	500000704_34	5	3	5	0.142
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet - Pipework- Steel	Rhenosterkop - river outlet pipe 2a (700mm)	500000704_35	5	3	5	0.092
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet - Pipework- Steel	Rhenosterkop - river outlet pipe 2b (300mm)	500000704_36	5	3	5	0.033
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet - Pipework- Steel	Rhenosterkop - scour outlet pipe 2	500000704_37	5	3	5	0.177
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Auxilliary Equip. Main Damwall	Rhenosterkop Dam - hand rails	500000704_40	5	3	5	1.810
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Auxilliary Equip. Main Damwall	Rhenosterkop Dam - HPP	500000704_41	5	3	5	4.653
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Auxilliary Equip. Main Damwall	Rhenosterkop Dam - safety buoy	500000704_43	5	3	5	5.817
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Casing	Rhenosterkop - river outlet sleeve 2 (200mm)	500000704_45	5	3	5	0.047
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Valves - Casing	Rhenosterkop - river outlet sleeve 3 (200mm)	500000704_46	5	3	5	0.047
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Auxilliary Equip. Main Damwall	Rhenosterkop Dam - staircase	500000704_48	5	3	5	5.817
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Auxilliary Equip. Main Damwall	Mkombo dam steel platform	500000704_49	5	3	5	3.490
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo (Rhenosterkop Dam)	Dam Wall - 30m<Height<60m	Mkombo dam wall	500000704_1	5	4	5	587.379
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo (Rhenosterkop Dam)	Dam Meter & Instrumentation	Mkhombo dam meter and instrumentation	500000704_4	5	4	5	1.338
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Outlet Structure	Rhenosterkop outlet structure	500000704_38	5	4	5	1.518
MKOMBO DAM	WR: Dams	Main Damwall	Mkombo Dam (Rhenosterkop Dam)	Dam Intake Gates	Rhenosterkop Dam - stoplog	500000704_50	5	4	5	1.034

Scheme (Cost Ctr Name)	Asset Facility Category	Facility Type	Facility Name (Asset description)	Component Type	Component Name	Component UID	Criticality	Condition	Utilisation	CRC 2016 (R Million)
MKOMBO DAM	WS: Measuring facility	Hydrological Station	Elands River @ Rhenosterkop	Auxilliary Equip Hydrological	Elands river at rhenosterkop - auxilliary equipmen	500001244_1	2	4	5	1.033
MKOMBO DAM	WS: Measuring facility	Meteorological Station	Rhenosterkop @ Rhenosterkop Dam	Meteorological Station	not componentised	500001075_0	1	3	5	0.325
MOLATEDI DAM (71)	WR: Pump stations	Pump Station	Tswasa Weir Pump Station	Pumpstation Pump - Casing	Tswasa Weir Pump Station PS- pump - casing	500007117_94	3	5	5	0.198
MOLATEDI DAM (71)	WR: Pump stations	Pump Station	Tswasa Weir Pump Station	Pumpstation Pump - Rotor	Tswasa Weir Pump Station pumpstation-pump - rotor	500007117_95	3	5	5	0.066
OHRIGSTAD DAM (87)	Buildings	Garage & Carports	Ohrigstad Town Garage	Main Building	Main building	500006549_0	2	3	5	0.195
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad	Dam Outlet - Intake Tower	Ohrigstad Dam Outlet - Intake Tower	500009103_2	2	2	5	16.236
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad	Auxilliary Equip. Main Damwall	Ohrigstad Dam Standby Generator	500009103_8	2	2	5	2.057
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Cranes	Ohrigstad dam Jib crane 5t	500009103_13	2	2	5	0.611
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Electric Network	Ohrigstad dam electric network	500009103_18	2	2	5	0.757
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Auxilliary Equip. Main Damwall	Ohrigstad dam handrails	500009103_21	2	2	5	0.304
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Auxilliary Equip. Main Damwall	Ohrigstad dam lighting	500009103_22	2	2	5	0.747
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Auxilliary Equip. Main Damwall	Ohrigstad dam staircase	500009103_24	2	2	5	0.467
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Auxilliary Equip. Main Damwall	Ohrigstad dam steel platform	500009103_25	2	2	5	1.261
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Auxilliary Equip. Main Damwall	Ohrigstad dam ventilation 1	500009103_27	2	2	5	0.093
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Auxilliary Equip. Main Damwall	Ohrigstad dam ventilation 2	500009103_28	2	2	5	0.093
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad	Dam Wall - 30m<Height<60m	Ohrigstad Rockfill Dam	500009103_1	2	3	5	78.807
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad	Dam Intake Gates - Casing	Ohrigstad - intake gate - casing	500009103_3	2	3	5	0.103
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad	Dam Intake Gates - Mechanism	Ohrigstad - intake gate - mechanism	500009103_4	2	3	5	0.087
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad	Dam Spillway	Ohrigstad Dam Spillway	500009103_5	2	3	5	0.775
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad	Dam Outlet Valves - Casing	Ohrigstad - outlet valve - casing	500009103_10	2	3	5	0.314
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad	Dam Outlet Valves - Mechanism	Ohrigstad - outlet valve - mechanism	500009103_11	2	3	5	0.116

Scheme (Cost Ctr Name)	Asset Facility Category	Facility Type	Facility Name (Asset description)	Component Type	Component Name	Component UID	Criticality	Condition	Utilisation	CRC 2016 (R Million)
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Dam Intake Gates	Ohrigstad dam intake gate 2 - gate	500009103_14	2	3	5	0.126
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Dam Intake Gates - Mechanism	Ohrigstad dam intake gate 2 - mechanism	500009103_15	2	3	5	0.042
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Dam Tunnel	Ohrigstad dam tunnel	500009103_17	2	3	5	1.684
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Dam Outlet Valves - Casing	Ohrigstad dam outlet gate valve 2 - casing	500009103_19	2	3	5	0.017
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Dam Outlet Valves - Mechanism	Ohrigstad dam outlet gate valve 2 - mechanism	500009103_20	2	3	5	0.006
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Auxilliary Equip. Main Damwall	Ohrigstad dam safety boom and buoys	500009103_23	2	3	5	0.934
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Dam Intake Gates	Ohrigstad dam service gate	500009103_26	2	3	5	0.133
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Access Bridge	Ohrigstad dam access bridge	500009103_12	2	4	5	2.106
OHRIGSTAD DAM (87)	WR: Dams	Main Damwall	Ohrigstad Dam	Dam Outlet - Pipework- Steel	Ohrigstad dam outlet pipe 2	500009103_16	2	4	5	0.314
OHRIGSTAD DAM (87)	WS: borehole	Borehole Pump Station	Ohrigstad Town Main Office building Borehole	Borehole Pump Station	not componentised	500006949_0	3	4	5	1.749
THAPANI DAM (302)	WR: Dams	Main Damwall	Thapani	Dam Spillway	Thapani Dam spillway	500009176_2	3	1	5	45.779
THAPANI DAM (302)	WR: Dams	Main Damwall	Thapani	Dam Outlet - Intake Tower	Thapani Dam outlet - intake tower	500009176_3	3	3	5	9.302
THAPANI DAM (302)	WR: Dams	Main Damwall	Thapani Dam	Dam Outlet - Pipework- Steel	Thapani Outlet Pipe	500009176_4	3	3	5	0.759
THAPANI DAM (302)	WR: Dams	Main Damwall	Thapani Dam	Dam Outlet Valves - Casing	Thapani Outlet Valve (River)	500009176_5	3	3	5	0.010
THAPANI DAM (302)	WR: Dams	Main Damwall	Thapani	Dam Wall - 12m<Height<30m	Thapani Dam wall	500009176_1	3	4	5	49.325

3. FINANCIAL FORECAST

Table K.4A: Identified upgrades and new capital expenditure forecast (scheme specific)

Asset Facility category	Financial Year (Amounts in Million Rands)									
	2017/18	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	-	4.666	-	-	-	-	-	-	-	-
Land	-	-	-	-	-	-	-	-	-	-
WR: Canals	-	0.705	36.999	6.880	2.810	108.275	128.498	18.915	-	-
WR: Dams	-	1 479.629	-	-	-	-	-	-	-	-

Asset Facility category	Financial Year (Amounts in Million Rands)									
	2017/18	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
WR: Power Supply	-	-	-	-	-	-	-	-	-	-
WR: Pump stations	-	0.132	-	-	-	-	-	-	-	-
WR: Steel Pipelines	-	8.158	-	-	-	-	-	-	-	-
WS: borehole	-	1.749	-	-	-	-	-	-	-	-
WS: Measuring facility	-	0.473	-	-	-	-	-	-	-	-
Total	**-**	**1 495.511**	**36.999**	**6.880**	**2.810**	**108.275**	**128.498**	**18.915**	**-**	**-**

Table K.4B: Adjusted upgrades and new capital expenditure forecast (scheme specific)

Asset Facility category	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	-	0.700	0.805	0.756	0.663	0.581	0.465	0.314	0.272	0.208
WR: Canals	-	0.106	5.671	7.806	8.194	29.646	58.407	65.835	71.142	65.195
WR: Dams	-	221.944	255.236	239.700	210.292	184.094	147.310	99.456	86.207	65.880
WR: Power Supply	-	-	-	-	-	-	-	-	-	-
WR: Pump stations	-	0.020	0.023	0.021	0.019	0.016	0.013	0.009	0.008	0.006
WR: Reservoirs	-	-	-	-	-	-	-	-	-	-
WR: Roads and bridge	-	-	-	-	-	-	-	-	-	-
WR: Steel Pipelines	-	1.224	1.407	1.322	1.159	1.015	0.812	0.548	0.475	0.363
WR: Telemetry	-	-	-	-	-	-	-	-	-	-
WR: Tunnels	-	-	-	-	-	-	-	-	-	-
WR: Water Treatment	-	-	-	-	-	-	-	-	-	-
WS: borehole	-	0.262	0.302	0.283	0.249	0.218	0.174	0.118	0.102	0.078
WS: Measuring facility	-	0.071	0.082	0.077	0.067	0.059	0.047	0.032	0.028	0.021
Total	**-**	**224.327**	**263.526**	**249.965**	**220.643**	**215.628**	**207.228**	**166.311**	**158.234**	**131.751**

Table K.5A: Identified upgrades and new capital expenditure forecast (non-scheme specific)

Asset Facility category	Financial Year (Amounts in Million Rands)									
	2017/18	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	-	2.047	-	-	-	-	-	-	-	-
Land	-	-	-	-	-	-	-	-	-	-
WR: Canals	-	-	-	-	-	-	-	-	-	-
Total	**-**	**2.047**	-	-	-	-	-	-	**-**	**-**

Table K.5B: Adjusted upgrades and new capital expenditure forecast (non-scheme specific)

Asset Facility category	Financial Year (Amounts in Million Rands)									
	2017/18	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	-	0.307	0.353	0.332	0.291	0.255	0.204	0.138	0.119	0.091
Land	-	-	-	-	-	-	-	-	-	-
WR: Canals	-	-	-	-	-	-	-	-	-	-
Total	**-**	**0.307**	**0.353**	**0.332**	**0.291**	**0.255**	**0.204**	**0.138**	**0.119**	**0.091**

Table K.6: Adjusted optimal new and upgrade capital costs per scheme

Cost Component	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Botlokwa Dam	-	-	-	-	-	-	-	-	-	-
Duthuni Dam GWS	-	-	-	-	-	-	-	-	-	-
Houtrivier Dam GWS	-	-	-	-	-	-	-	-	-	-
Koster Dam GWS	-	-	-	-	-	-	-	-	-	-
Lepellane Dam	-	-	-	-	-	-	-	-	-	-
Lole Montes Dam GWS	-	-	-	-	-	-	-	-	-	-
Phiring Dam	-	-	-	-	-	-	-	-	-	-
Tours Dam GWS	-	-	-	-	-	-	-	-	-	-

Cost Component	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
MAHONISI DAM GWS	-	-	-	-	-	-	-	-	-	-
Marico-Bosveld (Kromellenboog Dam) GWS	-	-	0.362	0.434	0.416	0.386	0.317	0.220	0.193	0.150
Mashashane Dam GWS	-	-	-	-	-	-	-	-	-	-
Middelkraal Dam	-	-	-	-	-	-	-	-	-	-
Middle Letaba Systems (Middle Letaba & Nsami Dams) GWS	-	35.723	41.081	43.564	40.616	37.013	30.200	20.753	18.183	14.045
Mkhombo Dam GWS	-	28.455	32.724	30.732	26.962	23.603	18.887	12.751	11.053	8.446
Modjadji (Modjadji Dam)	-	-	-	-	-	-	-	-	-	-
Mogalakwena River (Glen Alpine Dam) GWS	-	-	-	-	-	-	-	-	-	-
Mogol River (Mokolo Dam) GWS	-	-	-	-	-	-	-	-	-	-
Molatedi Dam GWS	-	0.020	0.023	0.021	0.019	0.016	0.013	0.009	0.008	0.006
Mutale Weir GWS	-	-	-	-	-	-	-	-	-	-
Mutshedzi River (Mutshedzi River Dam) GWS	-	-	-	-	-	-	-	-	-	-
Ngotoane Dam (Lehurutse / Skuins) GWS	-	-	-	-	-	-	-	-	-	-
Nkadimeng Dam GWS	-	-	-	-	-	-	-	-	-	-
Nooitgedacht (North West) Dam GWS	-	-	-	-	-	-	-	-	-	-
Nwanedzi Luphephe (Nwanedzi Dam) GWS	-	-	-	-	-	-	-	-	-	-
Nzhelele River (Nzhelele Dam) GWS	-	-	0.753	1.708	1.981	8.309	9.277	7.906	7.729	6.580
Sabie River (Inyaka Dam) GWS	-	-	-	-	-	-	-	-	-	-
Sand River (Witklip Dam) GWS	-	-	-	-	-	-	-	-	-	-
Sehujwane (Sehujwane Dam) GWS	-	-	-	-	-	-	-	-	-	-
Seshego Dam	-	-	-	-	-	-	-	-	-	-
Setumo Dam GWS	-	-	-	-	-	-	-	-	-	-
Sterk River GWS (Doorndraai Dam)	-	-	-	-	-	-	-	-	-	-
Sterkstroom (Buffelspoort Dam) GWS	-	-	0.689	0.827	0.793	0.735	0.604	0.418	0.368	0.285
Thabina Dam GWS	-	-	-	-	-	-	-	-	-	-
Thapani Dam GWS	-	4.733	5.443	5.111	4.484	3.926	3.141	2.121	1.838	1.405
Tshakhuma (Tshakhuma Dam) GWS	-	-	-	-	-	-	-	-	-	-

Cost Component	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Apies River (Leeukraal Dam) GWS	-	-	-	-	-	-	-	-	-	-
Acornhoek Dam GWS	-	-	-	-	-	-	-	-	-	-
Blyderivierpoort Dam GWS	-	60.457	69.525	65.293	57.283	50.146	40.127	27.092	23.483	17.946
Bo-MolopoGWS	-	-	-	-	-	-	-	-	-	-
Bospoort Dam GWS	-	-	-	-	-	-	-	-	-	-
Bronkhorstspruit Dam	-	5.680	6.532	6.134	5.382	4.711	3.770	2.545	2.206	1.686
Buffelsdoorn GWS (Makotswane Dam)	-	-	-	-	-	-	-	-	-	-
Casteel Dam	-	-	-	-	-	-	-	-	-	-
Chuniespoort Dam	-	-	-	-	-	-	-	-	-	-
Crocodile River (Kwena Dam) GWS	-	-	-	-	-	-	-	-	-	-
Crocodile River West (Roodekopjes Dam. Vaalkop Dam and Klipvoor Dam) GWS	-	-	0.131	0.157	0.151	0.140	0.115	0.079	0.070	0.054
Damani Dam GWS	-	-	-	-	-	-	-	-	-	-
Disaneng Dam GWS	-	-	-	-	-	-	-	-	-	-
Elands River (Rust De Winter Dam) GWS	-	-	0.121	0.145	0.139	0.129	0.106	0.074	0.065	0.050
Groot Dwars (Der Brochen Dam) GWS	-	-	-	-	-	-	-	-	-	-
Hartbeespoort GWS	-	-	-	-	-	-	-	-	-	-
Kabokweni Dam GWS	-	-	-	-	-	-	-	-	-	-
Klaserie River (Klaserie Dam) GWS	-	-	-	-	-	-	-	-	-	-
Klein Marico River (Klein Maricopoort Dam) GWS	-	-	-	-	-	-	-	-	-	-
Lindleyspoort Dam GWS	-	-	-	-	-	-	-	-	-	-
Lotlamoreng Dam GWS	-	-	-	-	-	-	-	-	-	-
Groot Letaba River GWS	-	73.136	84.106	78.987	69.296	60.663	48.542	32.773	28.407	21.709
Luvuvhu River (Xikundu Weir) GWS	-	-	-	-	-	-	-	-	-	-
Luvuvhu River (Nandoni Dam) GWS	-	-	-	-	-	-	-	-	-	-
Ohrigstad River (Ohrigstad Dam) GWS	-	5.145	5.917	5.557	4.875	4.268	3.415	2.306	1.999	1.527
Olifants River (Flag Boshielo Dam) GWS	-	-	-	-	-	-	-	-	-	-
Palala River (SUSANDALE AND VISGAT WEIR) GWS	-	-	-	-	-	-	-	-	-	-

Cost Component	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Pella (Pella Dam) GWS	-	-	-	-	-	-	-	-	-	-
Phiphidi (Phiphidi Dam) GWS	-	-	-	-	-	-	-	-	-	-
Pienaars River (Roodeplaat Dam) GWS	-	-	4.249	5.099	4.886	4.528	3.724	2.577	2.267	1.758
Politsi GWS	-	-	-	-	-	-	-	-	-	-
Rietfontein Dam 1 & 4	-	-	-	-	-	-	-	-	-	-
Rooikraal GWS	-	-	-	-	-	-	-	-	-	-
Vlakbult Dam GWS	-	-	-	-	-	-	-	-	-	-
Watervals River GWS	-	-	-	-	-	-	-	-	-	-
Vondo Dam GWS	-	-	-	-	-	-	-	-	-	-
Vergelegen Dam	-	-	-	-	-	-	-	-	-	-
Varswater Dam GWS	-	-	-	-	-	-	-	-	-	-
Valkop No 2 Dam GWS	-	-	-	-	-	-	-	-	-	-
Turfloop Dam GWS	-	-	-	-	-	-	-	-	-	-
Spitskop Dam-GWS	-	-	-	-	-	-	-	-	-	-
Piet Gouws Dam GWS	-	-	-	-	-	-	-	-	-	-
Molepo Dam	-	-	-	-	-	-	-	-	-	-
Mapochsgronden GWS	-	-	-	-	-	-	-	-	-	-
Mankwe Dam	-	-	-	-	-	-	-	-	-	-
Makuleke Dam GWS	-	-	-	-	-	-	-	-	-	-
Mahlangu Dam GWS	-	-	-	-	-	-	-	-	-	-
Madikwe Dam	-	-	-	-	-	-	-	-	-	-
Loskop GWS	-	-	-	-	-	4.090	30.267	37.302	41.327	38.500
De Hoop Dam GWS	-	-	-	-	-	-	-	-	-	-
Capes Thorne Dam GWS	-	-	-	-	-	-	-	-	-	-
Albasini (Albasini Dam) GWS	-	10.978	15.718	15.568	13.959	12.403	9.998	6.796	5.915	4.539
Dr. Eiselen Dam	-	-	-	-	-	-	-	-	-	-
Brugspruit Pollution Control Works GWS	-	-	-	-	-	-	-	-	-	-

Cost Component	Financial Year (Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Luvhuvhu River GWS (Malamulele Weir)	-	-	-	-	-	-	-	-	-	-
Sub Total	**-**	**224.020**	**263.173**	**249.633**	**220.352**	**215.373**	**207.024**	**166.173**	**158.115**	**131.660**
Non-scheme specific	-	0.307	0.353	0.332	0.291	0.255	0.204	0.138	0.119	0.091
Total	**-**	**224.327**	**263.526**	**249.965**	**220.643**	**215.628**	**207.228**	**166.311**	**158.234**	**131.751**

APPENDIX L – Asset Impairment, Disposal, Disposal Strategy and Cost Forecast

1 INTRODUCTION

This Appendix covers the: asset disposal strategy; impaired assets; under-utilised or not-in-use assets; as well as assets to be disposed of.

2 DISPOSAL STRATEGY

Refer to the DWS Disposal Strategy for Immovable Assets.

3 IMPAIRED ASSETS

Table L.1: Impaired asset components (based on zero asset carrying values) per facility category

Asset Facility Category	Impaired Asset Components					
	Cluster Total		Scheme Specific		Non-Scheme Specific	
	No.	CRC (R million)	No.	CRC (R million)	No.	CRC (R million)
Borehole	-	-	-	-	-	-
Buildings	40	23.914	29	12.663	11	11.251
Canals	134	99.333	134	99.333	-	-
Dams	16	116.098	16	116.098	-	-
Measuring facilities	57	243.684	5	103.130	52	140.554
Pipelines	1	0.356	1	0.356	-	-
Power supply	-	-	-	-	-	-
Pump stations	1	0.091	1	0.091	-	-
Reservoirs	1	0.105	1	0.105	-	-
Roads	-	-	-	-	-	-
Telemetry	-	-	-	-	-	-
Tunnels	-	-	-	-	-	-
Water Treatment	2	1.211	2	1.211	-	-
Total	**252**	**484.792**	**189**	**332.986**	**63**	**151.805**

Table L.2: Impaired asset components (based on zero asset carrying values) per scheme and per facility category

Scheme Name	Asset Facility Category	Facility Type	Facility Name	Component Type	Component Name	Component UID	Criticality	Condition	CRC 2016 (R Million)
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 2	Canal Lining - TA3	Canal Lining	500002324_4	4	2	3.841
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T4/1	Canal Lining - TA3	Canal Lining	500002332_5	4	2	0.487
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T3	Canal Lining - TA3	Canal Lining	500002333_3	4	2	0.171
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T2	Canal Lining - TA3	Canal Lining	500002339_3	4	2	0.072
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T5 Reach 3	Canal Lining - TA3	Canal Lining	500002341_3	4	2	2.240
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T7	Canal Lining - TA3	Canal Lining	500002344_3	4	2	0.197
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T5 Reach 1	Canal Lining - TA3	Canal Lining	500002345_3	4	2	1.083
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 1	Canal Lining - TA3	Canal Lining	500002668_3	4	2	8.616
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 4	Canal Lining - TA3	Canal Lining	500002677_3	4	2	0.989
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T2 Pipeline Section	Canal Lining - TA3	Canal Lining	500002680_3	4	2	0.271
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 2	Canal Fencing	Canal Fence Left	500002324_2	3	1	0.368
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T4/1	Canal Controls	Long weir o1	500002332_2	3	1	0.142
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 1	Canal Fencing	Canal Fence Left	500002668_1	3	1	0.404
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 4	Canal Fencing	Canal Fence Left	500002677_1	3	1	0.737
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Syphon 3/2	Canal Excavation	Canal excavation	500002330_0	3	3	0.055
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Syphon 3/2	Canal Syphons	Canal Syphon 01 Main Canal	500002330_1	3	3	0.594
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Syphon 3/2	Canal Fencing	Canal Fence	500002330_2	3	3	0.036
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Syphon 3/2	Canal Bridges	Canal Bridge 01	500002330_3	3	3	0.220
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Syphon 3/2	Canal Syphons	Canal Syphon 02 Main Canal	500002330_4	3	3	0.594
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Syphon 3/2	Canal Syphons	Canal Syphon 03 Main Canal	500002330_5	3	3	0.594
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Syphon 3/2	Canal Lining - TA3	Canal Lining	500002330_6	3	3	0.099
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T6	Canal Lining - TA3	Canal Lining	500002340_3	3	3	0.081
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T4 Reach 4	Canal Syphons	Canal Syphon 01	500002343_1	3	3	0.595
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T4 Reach 4	Canal Lining - TA3	Canal Lining	500002343_4	3	3	1.094

Scheme Name	Asset Facility Category	Facility Type	Facility Name	Component Type	Component Name	Component UID	Criticality	Condition	CRC 2016 (R Million)
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T5 Reach 2	Canal Lining - TA3	Canal Lining	500002346_3	3	3	0.403
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T4/2	Canal Syphons	Canal Syphon T04 2	500002678_1	3	3	1.365
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T4/2	Canal Lining - TA3	Canal Lining	500002678_4	3	3	0.495
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T1	Canal Lining - TA3	Canal Lining	500002679_3	3	3	0.313
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T4 Reach 3	Canal Lining - TA3	Canal Lining	500002687_3	3	3	6.242
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T7 Reach 2	Canal Lining - TA3	Canal Lining	500002701_3	3	3	0.288
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 3	Canal Lining - TA3	Canal Lining	500000912_3	3	4	1.528
ALBASINI GWS	WR: Canals	Canal Section	Albasini Branch Canal T4/1	Canal Syphons	Canal Syphon T04 1	500002332_1	2	1	0.676
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 2	Canal Excavation	Canal excavation	500002324_0	2	3	0.168
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 4	Canal Excavation	Canal excavation	500002677_0	2	3	0.336
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 3	Canal Fencing	Canal Fence Right	500000912_2	1	1	0.590
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 2	Canal Bridges	Canal Bridge	500002324_1	1	1	0.178
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 2	Canal Fencing	Canal Fence Right	500002324_3	1	2	0.368
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 1	Canal Fencing	Canal Fence Right	500002668_2	1	2	0.404
ALBASINI GWS	WR: Canals	Canal Section	Albasini Main Canal Reach 4	Canal Fencing	Canal Fence Right	500002677_2	1	2	0.737
ALBASINI GWS	WR: Pump stations	Pump Station	Small Pump Station for Gardens	Auxilliary Equipment Pump Stat	Pump Station	500020041_0	1	2	0.091
AREA MANAGER HARTBEESPOORT	Buildings	Residential Housing	HARTBEESPOORT DAM	Main Building	9 Karp Street	500006928_0	3	1	0.979
AREA MANAGER HARTBEESPOORT	Buildings	Residential Housing	HARTBEESPOORT DAM	Main Building	3 Karp Street	500006931_0	3	1	1.007
AREA MANAGER HARTBEESPOORT	Buildings	Residential Housing	HARTBEESPOORT DAM	Main Building	16 Karp Street	500007614_0	3	1	0.979
AREA MANAGER HARTBEESPOORT	Buildings	Residential Housing	HARTBEESPOORT DAM	Main Building	11 Karp Street	500006927_0	3	1	0.331
AREA MANAGER HARTBEESPOORT	Buildings	Residential Housing	HARTBEESPOORT DAM	Main Building	1 Karp Street	500006932_0	3	1	1.818
AREA MANAGER TZANEEN OFFICE	Buildings	Boat House	Gamkapoort Boathouse	Main Building	Boat house	500009939_0	4	3	0.400
AREA MANAGER TZANEEN OFFICE	Buildings	Office Building	Tzaneen Area Office	Outbuildings	Tzaneen Area Office	500000116_0	3	1	0.071

Scheme Name	Asset Facility Category	Facility Type	Facility Name	Component Type	Component Name	Component UID	Criticality	Condition	CRC 2016 (R Million)
AREA MANAGER TZANEEN OFFICE	Buildings	Residential Housing	Tzaneen Dam House No 14	Main Building	Main building	500006902_0	3	1	1.099
AREA MANAGER TZANEEN OFFICE	Buildings	Residential Housing	Tzaneen Dam House No 15	Main Building	Main building	500007694_0	3	1	1.099
AREA MANAGER TZANEEN OFFICE	Buildings	Residential Housing	Tzaneen House No K15	Main Building	Main building	500007701_0	3	1	0.307
AREA MANAGER TZANEEN OFFICE	Buildings	Office Building	Tzaneen Area Office	Outbuildings	Tzaneen Area Office	500000115_0	3	5	3.161
BO-MOLOPO GWS	WR: Water Treatment	Wastewater Treatment - Convent	Molopo Oog Waste	Wastewater Treatment - Convent	not componentised	500008093_0	2	1	0.855
BO-MOLOPO GWS	WS: Measuring facility	Hydrological Station	D4H015 Kleinfontein @ Grootfontein	Hydrological Station	not componentised	500001437_0	2	1	8.013
BOSPOORT DAM (41)	Buildings	Hostels / Flats / Compounds	Bospoort Dam Hostels 1	Main Building	Main building	500005819_0	3	1	0.164
BOSPOORT DAM (41)	Buildings	Ablution Building	Bospoort Dam Ablution Block	Main Building	Main building	500008649_0	3	1	0.154
BOSPOORT DAM (41)	WS: Measuring facility	Meteorological Station	Bospoort dam	Meteorological Station	Measuring Facility	500001065_0	1	1	0.218
BRONKHORSTSPRUIT DAM (11)	Buildings	Residential Housing	Bronkhorspruit dam Old WCO House	Outbuildings	Bronkhorspruit dam Old WCO House WC's	500003574_2	3	1	0.029
DISANENG DAM (338)	WS: Measuring facility	Hydrological Station	D4H033 Molopo River @ Disaneng	Hydrological Station	not componentised	500001884_0	2	1	9.252
DR. EISELEN DAM	WR: Dams	Main Damwall	Dr. Eiselen Dam	Dam Outlet - Pipework- Steel	Dr Eiselen dam outlet pipe 1	500009264_5	4	2	0.585
DR. EISELEN DAM	WR: Dams	Main Damwall	Dr. Eiselen	Dam Wall - 12m<Height<30m	Dr. Eiselen Earth Embankment Dam	500009264_1	4	3	44.612
GROOT LETABA RIVER GWS	WS: Measuring facility	Hydrological Station	Prieska Weir - B8H017	Gauging Weir - Structure	Prieska Weir - B8H017	500000022_0	3	4	80.494
HARTBEESPOORT DAM (19)	Buildings	Stores	HARTBEESPOORT DAM	Outbuildings	Hydro-Power Generation room with pipeworks	500000093_0	5	1	0.214
HARTBEESPOORT DAM (19)	Buildings	Residential Housing	HARTBEESPOORT DAM	Outbuildings	House No 9	500007642_1	3	1	0.060
HARTBEESPOORT DAM (19)	Buildings	Residential Housing	HARTBEESPOORT DAM	Outbuildings	5 Forel StreetOutbulding Building	500009839_0	3	3	0.191
HARTBEESPOORT DAM (19)	Buildings	Residential Housing	HARTBEESPOORT DAM	Outbuildings	1 Forel Steet Double Garage Building	500009838_0	2	3	0.255

Scheme Name	Asset Facility Category	Facility Type	Facility Name	Component Type	Component Name	Component UID	Criticality	Condition	CRC 2016 (R Million)
HARTBEESPOORT DAM (19)	Buildings	Residential Housing	HARTBEESPOORT DAM	Outbuildings	7 Forel Street Outbuilding Garage	500009921_0	2	4	0.191
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Limpopo River @ Beit Bridge	Gauging Weir - Structure	Limpopo river @ beit bridge - gauging weir structu	500001212_1	3	1	10.644
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Limpopo River @ Beit Bridge	Measuring Facility - Building	Limpopo river @ beit bridge - building	500001212_2	3	1	0.935
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Mutale River @ Kruger National Park	Gauging Weir - Structure	Mutale river@kruger national park - gauging weir s	500001218_1	3	2	4.074
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Mutale River @ Kruger National Park	Measuring Facility - Building	Mutale river @kruger national park - building	500001218_2	3	2	0.935
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	SAND RIVER AT WATERPOORT	Gauging Weir - Structure	sand river at waterproot-gauging weir	500001213_1	3	4	5.876
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	SAND RIVER AT WATERPOORT	Measuring Facility - Building	sand river at waterpoort-measuring facility buildi	500001213_2	3	4	0.793
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Great-Letaba River @ Prieska	Gauging Weir - Structure	great-letaba river@ prieska-gauging weir	500001267_2	3	4	6.810
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Great-Letaba River @ The Junction	Gauging Weir - Structure	great-letaba river @ the junction-gauging weir	500001737_2	3	4	6.476
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Ga-Selati River @ Loole	Gauging Weir - Structure	Ga-selati River@Loole_gauging structure	500001736_1	3	4	6.476
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Ga-Selati River @ Loole	Measuring Facility - Building	Ga-selati River@ Loole-Maesuring Facility building	500001736_2	3	4	0.935
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Limpopo River @ Beit Bridge	Hydrological Station	not componentised	500001212_0	2	1	0.737
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Limpopo River @ Beit Bridge	Measuring Facility - Instrumen	Limpopo river @ beit bridge - Instrumentations	500001212_3	2	1	1.191
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Mutale River @ Kruger National Park	Hydrological Station	not componentised	500001218_0	2	2	3.929
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Mutale River @ Kruger National Park	Measuring Facility - Instrumen	Mutale river@kruger national park-Instrumentation	500001218_3	2	2	1.191
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	SAND RIVER AT WATERPOORT	Measuring Facility - Instrumen	sand river at waterpoort-measuring facility instru	500001213_3	2	4	1.191
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	SAND RIVER AT WATERPOORT	Hydrological Station	not componentised	500001213_0	2	4	4.181
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Great-Letaba River @ Prieska	Hydrological Station	not componentised	500001267_0	2	4	-
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Great-Letaba River @ The Junction	Auxilliary Equip Hydrological	great-Letaba River@ the juntion-auxillary equipmen	500001737_1	2	4	1.033
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Great-Letaba River @ Prieska	Auxilliary Equip Hydrological	great-letaba river @ prieska-auxillary equipment	500001267_1	2	4	1.033
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	Ga-Selati River @ Loole	Measuring Facility - Instrumen	Ga-selati River @ Loole-measuring facility instrum	500001736_3	2	4	1.191
HYDROMETRY LIMPOPO	WS: Measuring facility	Meteorological Station	Vaal Water	Meteorological Station	not componentised	500001068_0	1	3	0.218
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Klein-spekboom River @ Potloodspruit	Gauging Weir - Structure	Klein spekboom river @ potloodspruit - gauging wei	500001724_2	3	1	6.476

Scheme Name	Asset Facility Category	Facility Type	Facility Name	Component Type	Component Name	Component UID	Criticality	Condition	CRC 2016 (R Million)
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Olifants River @ Loskop Noord	Measuring Facility - Building	Olifants River @ Loskop North measuring facility-b	500001720_2	3	3	0.935
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Olifants River @ Loskop Noord	Gauging Weir - Structure	Olifants River @ Loskop North gauging weir structu	500001720_1	3	3	5.342
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	B7H022 Stroomopkanaal at fleur de lys	Measuring Facility - Building	Stroomopkanaal at fleur de lys - building	500008064_2	3	4	0.935
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	B2H008 Koffiespruit sytak at rietvallei	Hydrological Station	not componentised	500008057_0	3	4	1.348
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	B2H007 Koffiespruit at waaikraal	Hydrological Station	not componentised	500008594_0	3	4	1.608
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Blyde River @ Chester	Gauging Weir - Structure	Blyde River @ chester gauging weir structucture	500001729_2	3	4	3.206
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Blyde River @ Chester	Measuring Facility - Building	Blyde River @ chester - measuring facility buildin	500001729_3	3	4	0.589
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Blesbokspruit @ Blesboklaagte	Gauging Weir - Structure	Blesbokspruit@Blesboklaagte-gauging weir	500001716_1	3	4	6.476
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Blesbokspruit @ Blesboklaagte	Measuring Facility - Building	Blesbokspruit @ Blesboklaagte-measuring facility b	500001716_2	3	4	0.854
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Klein-spekboom River @ Potloodspruit	Hydrological Station	not componentised	500001724_0	2	1	3.141
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Klein-spekboom River @ Potloodspruit	Auxilliary Equip Hydrological	Klein spekboom river @ potloodspruit - auxilliary	500001724_1	2	1	1.033
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	B7H009 Olifants at Liverpool	Hydrological Station	not componentised	500008604_0	2	2	6.488
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Olifants River @ Loskop Noord	Measuring Facility - Instrumen	Olifants River @ Loskop North measuring facility -	500001720_3	2	3	1.191
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Olifants River @ Loskop Noord	Hydrological Station	not componentised	500001720_0	2	3	7.220
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Blyde River @ Middlesex	Hydrological Station	not componentised	500001732_0	2	3	0.884
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	B3H017 Olifants at loskopdam	Hydrological Station	not componentised	500008595_0	2	3	7.154
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	B7H022 Stroomopkanaal at fleur de lys	Auxilliary Equip Hydrological	stroomoptanaal at fleur de lys - auxilliary equipm	500008064_1	2	4	1.033
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	B7H022 Stroomopkanaal at fleur de lys	Measuring Facility - Instrumen	Stroomopkanaal at fleur de lys - Instrumentations	500008064_3	2	4	1.191
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Blesbokspruit @ Blesboklaagte	Hydrological Station	not componentised	500001716_0	2	4	2.578
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Blyde River @ Chester	Hydrological Station	not componentised	500001729_0	2	4	5.453
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Blyde River @ Driehoek	Hydrological Station	not componentised	500001731_0	2	4	5.820
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Ga-Selati River @ Loole	Hydrological Station	not componentised	500001736_0	2	4	2.285
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	B1H010 Olifants at wintbank dam	Hydrological Station	not componentised	500008058_0	2	4	2.132
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	B7H022 Stroomopkanaal at fleur de lys	Hydrological Station	not componentised	500008064_0	2	4	0.272
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	B7H024 Kanaal vanuit dam at fleur delys	Hydrological Station	not componentised	500008603_0	2	4	0.272

Scheme Name	Asset Facility Category	Facility Type	Facility Name	Component Type	Component Name	Component UID	Criticality	Condition	CRC 2016 (R Million)
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	B7H024 Kanaal vanuit dam at fleur delys	Auxilliary Equip Hydrological	Kanaal vanuit dam at fleur de lys - auxilliary equ	500008603_2	2	4	1.033
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Blyde River @ Chester	Measuring Facility - Instrumen	Blyde River @ chester - instrumentation	500001729_4	2	4	0.866
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Blyde River @ Chester	Auxilliary Equip Hydrological	Blyde river @ chester - auxilliary equipment	500001729_1	2	4	0.664
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Blesbokspruit @ Blesboklaagte	Measuring Facility - Instrumen	Blesbokspruit @ blesboklaagte-measuring facility i	500001716_3	2	4	1.191
HYDROMETRY MPUMALANGA	WS: Measuring facility	Hydrological Station	Blesbokspruit @ Blesboklaagte	Auxilliary Equip Hydrological	Blesbokspruit @ blesboklaagte-auxillary equipment	500001716_4	2	4	1.033
KABOKWENI DAM	WR: Dams	Main Damwall	Kabokweni Dam	Dam Spillway	Kabokweni spillway	500007605_2	3	1	0.522
KABOKWENI DAM	WR: Dams	Main Damwall	Kabokweni Dam	Dam Outlet - Intake Tower	Kabokweni intake tower	500007605_3	3	3	0.218
KABOKWENI DAM	WR: Dams	Main Damwall	Kabokweni Dam	Dam Wall-15m<Height<30m	Kabokweni damwall	500007605_1	3	4	8.111
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WR: Dams	Main Damwall	Klein Maricopoort	Dam Outlet Valves - Casing	Klein Maricopoort - outlet valve - casing	500010379_9	2	1	1.171
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WS: Measuring facility	Hydrological Station	A3H030 Klein Marico River @ Kalk Dam	Hydrological Station	not componentised	500001195_0	2	1	5.153
LINDLEYSPOORT DAM (27)	Buildings	Residential Housing	Lindleyspoort Dam WCO House	Outbuildings	Lindleyspoort Dam WCO House Garage and staff quart	500006555_1	3	1	0.159
LINDLEYSPOORT DAM (27)	Buildings	Residential Housing	Lindleyspoort Dam Old WCO House	Outbuildings	Lindleyspoort Dam Old WCO House Garage and staff q	500006556_1	3	1	0.060
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	sec cnl 20 end	Canal Berm	Canal berm	500007108_4	3	2	0.079
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal end	Canal Berm	Canal berm	500007173_4	3	2	0.028
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 5.1	Canal Berm	Canal berm	500007205_5	3	2	0.044
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 5	Canal Lining - TA3	Canal Lining	500003521_1	3	3	0.067
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 5	Canal Meters	Measuring Facility	500003521_2	3	3	0.051
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 5	Canal Berm	Canal berm	500003521_4	3	3	0.056
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canaln 5C	Canal Lining - TA3	Canal Lining	500004452_3	3	3	0.016
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 5.1	Canal Lining - TA3	Canal Lining	500007205_3	3	3	0.054

Scheme Name	Asset Facility Category	Facility Type	Facility Name	Component Type	Component Name	Component UID	Criticality	Condition	CRC 2016 (R Million)
MANKWE DAM	WR: Dams	Main Damwall	Mankwe	Dam Intake Gates - Casing	Mankwe - intake gate - casing	500009492_3	2	1	0.305
MANKWE DAM	WR: Dams	Main Damwall	Mankwe	Dam Outlet Valves - Casing	Mankwe - outlet valve - casing	500009492_6	2	1	0.407
MIDDLE LETABA SYSTEM GWS	WR: Canals	Canal Section	MIDDLE LETABA CANAL REACH 3	Canal Fencing	Canal Fence Left	500000644_4	3	2	3.204
MIDDLE LETABA SYSTEM GWS	WR: Canals	Canal Section	MIDDLE LETABA CANAL REACH 2	Canal Fencing	Canal Fence Left	500000910_1	3	3	0.074
MIDDLE LETABA SYSTEM GWS	WR: Canals	Canal Section	MIDDLE LETABA CANAL REACH 1 SCOTCH CAMP	Canal Fencing	Canal Fence Left	500006905_1	3	3	1.271
MIDDLE LETABA SYSTEM GWS	WR: Canals	Canal Section	MIDDLE LETABA CANAL REACH 1 SCOTCH CAMP	Canal Fencing	Canal Fence Left	500003963_4	1	2	2.089
NZHELELE RIVER GWS (NZHELELE DAM)	Buildings	Residential Housing	Nzhelele Dam Residential 4	Main Building	Main building	500007851_0	3	3	0.880
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal reach 1	Canal Bridges	Tractor Briges	500002812_2	3	1	0.123
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Syphon 4/2	Canal Lining - TA3	Canal Lining	500007508_3	3	1	0.210
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	PRIM CNL SEC1 TYD	Canal Syphons	Syphone No1	500019837_1	3	1	0.173
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	PRIM CNL SEC1 TYD	Canal Berm	Canal berm	500019837_5	3	1	0.547
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele D Canal	Canal Lining - TA3	Canal Lining	500000645_3	3	2	2.058
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal reach 6	Canal Lining - TA3	Canal Lining	500002336_3	3	2	2.062
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele E Canal	Canal Lining - TA3	Canal Lining	500002682_3	3	2	0.303
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal reach 1	Canal Excavation	Canal excavation	500002812_0	3	2	0.178
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal reach 1	Canal Fencing	Canal Fence Left	500002812_3	3	2	0.157
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal reach 1	Canal Lining - TA3	Canal Lining	500002812_5	3	2	0.492

Scheme Name	Asset Facility Category	Facility Type	Facility Name	Component Type	Component Name	Component UID	Criticality	Condition	CRC 2016 (R Million)
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Reach 7	Canal Lining - TA3	Canal Lining	500002813_3	3	2	0.098
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Branch Canal A	Canal Lining - TA3	Canal Lining	500002814_3	3	2	0.776
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Syphon Schuitsdrift	Canal Lining - TA3	Canal Lining	500002815_3	3	2	0.080
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele C Canal	Canal Lining - TA3	Canal Lining	500002816_3	3	2	1.030
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal 4/2	Canal Lining - TA3	Canal Lining	500006766_3	3	2	0.277
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	SYPHON A/1	Canal Excavation	Canal excavation	500007134_0	3	2	0.008
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	SYPHON A/1	Canal Syphons	Syphone No1	500007134_1	3	2	0.173
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	SYPHON A/1	Canal Bridges	Tractor Bridge	500007134_2	3	2	1.860
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	SYPHON A/1	Canal Lining - TA3	Canal Lining	500007134_3	3	2	0.030
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	SYPHON A/1	Canal Service Road	Canal service road	500007134_4	3	2	0.008
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	SYPHON A/1	Canal Berm	Canal berm	500007134_5	3	2	0.013
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Reach 5	Canal Lining - TA3	Canal Lining	500007500_3	3	2	1.453
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Reach 3	Canal Lining - TA3	Canal Lining	500007506_5	3	2	9.849
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Reach 3	Canal Lining - TA3	Canal Lining	500007507_5	3	2	3.921
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Reach 2	Canal Lining - TA3	Canal Lining	500007829_5	3	2	3.845
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	PRIM CNL SEC1 TYD	Canal Service Road	Canal service road	500019837_4	3	2	0.403
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Canal 6/1	Canal Lining - TA3	Canal Lining	500002388_3	3	3	0.081

Scheme Name	Asset Facility Category	Facility Type	Facility Name	Component Type	Component Name	Component UID	Criticality	Condition	CRC 2016 (R Million)
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Reach 4/3	Canal Lining - TA3	Canal Lining	500006767_3	3	3	0.393
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Reach 4/4	Canal Lining - TA3	Canal Lining	500007501_3	3	3	0.678
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal 4/4	Canal Lining - TA3	Canal Lining	500007502_3	3	3	0.159
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	PRIM CNL SEC1 TYD	Canal Bridges	Tractor Bridge	500019837_2	3	3	1.860
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	PRIM CNL SEC1 TYD	Canal Lining - TA3	Canal Lining	500019837_3	3	3	3.845
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal reach 1	Canal Syphons	Canal Syphon	500002812_1	2	1	0.935
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Reach 3	Canal Syphons	500mm Conrete pipe	500007506_1	2	1	0.089
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Reach 3	Canal Syphons	500mm Conrete pipe	500007507_1	2	1	0.009
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Reach 2	Canal Syphons	Syphone No1	500007829_1	1	1	0.173
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Reach 2	Canal Bridges	Tractor Bridge	500007829_2	1	1	1.860
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal reach 1	Canal Fencing	Canal Fence Right	500002812_4	1	2	0.157
OHRIGSTAD DAM (87)	Buildings	Residential Housing	Ohrigstad Town Residential (Rondawel)	Outbuildings	Kitchen	500005798_1	3	1	0.159
PIENAARS RIVER GWS (ROODEPLAAT DAM)	Buildings	Residential Housing	Hammanskraal Residential House 2	Main Building	Main building	500006472_0	3	1	0.610
PIENAARS RIVER GWS (ROODEPLAAT DAM)	Buildings	Residential Housing	Hammanskraal Residential House at Army Base No 15	Main Building	Main building	500006474_0	3	1	1.736
PIENAARS RIVER GWS (ROODEPLAAT DAM)	Buildings	Residential Housing	Hammanskraal Residential House at Army Base No 15	Outbuildings	Hammanskraal Residential House at Army Base No 15	500006474_1	3	1	0.159

Scheme Name	Asset Facility Category	Facility Type	Facility Name	Component Type	Component Name	Component UID	Criticality	Condition	CRC 2016 (R Million)
PIENAARS RIVER GWS (ROODEPLAAT DAM)	Buildings	Residential Housing	Hammanskraal Residential House 3	Main Building	Main building	500006950_0	3	1	0.880
PIENAARS RIVER GWS (ROODEPLAAT DAM)	Buildings	Residential Housing	Roodeplaat Dam (Left) House No 11	Main Building	Main building	500007292_0	3	1	0.610
PIENAARS RIVER GWS (ROODEPLAAT DAM)	Buildings	Residential Housing	Hammanskraal Residential House at Army Base No 16	Main Building	Main building	500007304_0	3	1	1.736
PIENAARS RIVER GWS (ROODEPLAAT DAM)	Buildings	Residential Housing	Hammanskraal Residential House at Army Base No 16	Outbuildings	Hammanskraal Residential House at Army Base No 16	500007304_1	3	1	0.159
PIENAARS RIVER GWS (ROODEPLAAT DAM)	Buildings	Residential Housing	Klipdrift Canal WCA House 1	Main Building	Main building	500008210_0	3	1	0.880
PIENAARS RIVER GWS (ROODEPLAAT DAM)	Buildings	Residential Housing	Klipdrift Canal WCA House 2	Main Building	Main building	500008211_0	3	1	0.880
ROOIKRAAL	WR: Canals	Canal Section	prim_canal2	Canal Service Road	Canal service road	500000989_4	3	2	0.093
ROOIKRAAL	WR: Canals	Canal Section	prim_canal1	Canal Lining - TA3	Canal Lining	500000993_3	3	2	3.108
ROOIKRAAL	WR: Canals	Canal Section	sec_canal1	Canal Excavation	Canal excavation	500000673_0	3	3	0.187
ROOIKRAAL	WR: Canals	Canal Section	sec_canal1	Canal Fencing	Canal Fence Left	500000673_1	3	3	0.110
ROOIKRAAL	WR: Canals	Canal Section	sec_canal1	Canal Fencing	Canal Fence Right	500000673_2	3	3	0.110
ROOIKRAAL	WR: Canals	Canal Section	sec_canal1	Canal Lining - TA3	Canal Lining	500000673_3	3	3	0.461
ROOIKRAAL	WR: Canals	Canal Section	sec_canal1	Canal Service Road	Canal service road	500000673_4	3	3	0.140
ROOIKRAAL	WR: Canals	Canal Section	sec_canal1	Canal Berm	Canal berm	500000673_5	3	3	0.212
ROOIKRAAL	WR: Canals	Canal Section	sec_canal5	Canal Excavation	Canal excavation	500000674_0	3	3	0.296
ROOIKRAAL	WR: Canals	Canal Section	sec_canal5	Canal Fencing	Canal Fence Left	500000674_1	3	3	0.122
ROOIKRAAL	WR: Canals	Canal Section	sec_canal5	Canal Fencing	Canal Fence Right	500000674_2	3	3	0.122
ROOIKRAAL	WR: Canals	Canal Section	sec_canal5	Canal Lining - TA3	Canal Lining	500000674_3	3	3	0.653

Scheme Name	Asset Facility Category	Facility Type	Facility Name	Component Type	Component Name	Component UID	Criticality	Condition	CRC 2016 (R Million)
ROOIKRAAL	WR: Canals	Canal Section	sec_canal5	Canal Service Road	Canal service road	500000674_4	3	3	0.156
ROOIKRAAL	WR: Canals	Canal Section	sec_canal5	Canal Berm	Canal berm	500000674_5	3	3	0.237
ROOIKRAAL	WR: Canals	Canal Section	prim_canal2	Canal Excavation	Canal excavation	500000989_0	3	3	0.285
ROOIKRAAL	WR: Canals	Canal Section	prim_canal2	Canal Fencing	Canal Fence Left	500000989_1	3	3	0.126
ROOIKRAAL	WR: Canals	Canal Section	prim_canal2	Canal Fencing	Canal Fence Right	500000989_2	3	3	0.126
ROOIKRAAL	WR: Canals	Canal Section	prim_canal2	Canal Lining - TA3	Canal Lining	500000989_3	3	3	0.674
ROOIKRAAL	WR: Canals	Canal Section	prim_canal2	Canal Berm	Canal berm	500000989_5	3	3	0.231
ROOIKRAAL	WR: Canals	Canal Section	sec_canal3	Canal Excavation	Canal excavation	500000990_0	3	3	0.098
ROOIKRAAL	WR: Canals	Canal Section	sec_canal3	Canal Fencing	Canal Fence Left	500000990_1	3	3	0.063
ROOIKRAAL	WR: Canals	Canal Section	sec_canal3	Canal Fencing	Canal Fence Right	500000990_2	3	3	0.063
ROOIKRAAL	WR: Canals	Canal Section	sec_canal3	Canal Lining - TA3	Canal Lining	500000990_3	3	3	0.288
ROOIKRAAL	WR: Canals	Canal Section	sec_canal3	Canal Service Road	Canal service road	500000990_4	3	3	0.081
ROOIKRAAL	WR: Canals	Canal Section	sec_canal3	Canal Berm	Canal berm	500000990_5	3	3	0.111
ROOIKRAAL	WR: Canals	Canal Section	sec_canal2	Canal Excavation	Canal excavation	500000991_0	3	3	0.014
ROOIKRAAL	WR: Canals	Canal Section	sec_canal2	Canal Lining - TA3	Canal Lining	500000991_3	3	3	0.067
ROOIKRAAL	WR: Canals	Canal Section	sec_canal2	Canal Service Road	Canal service road	500000991_4	3	3	0.036
ROOIKRAAL	WR: Canals	Canal Section	sec_canal2	Canal Berm	Canal berm	500000991_5	3	3	0.053
ROOIKRAAL	WR: Canals	Canal Section	sec_canal4	Canal Excavation	Canal excavation	500000992_0	3	3	0.057
ROOIKRAAL	WR: Canals	Canal Section	sec_canal4	Canal Lining - TA3	Canal Lining	500000992_3	3	3	0.128
ROOIKRAAL	WR: Canals	Canal Section	sec_canal4	Canal Service Road	Canal service road	500000992_4	3	3	0.034
ROOIKRAAL	WR: Canals	Canal Section	sec_canal4	Canal Berm	Canal berm	500000992_5	3	3	0.051
ROOIKRAAL	WR: Canals	Canal Section	prim_canal1	Canal Excavation	Canal excavation	500000993_0	3	3	2.049
ROOIKRAAL	WR: Canals	Canal Section	prim_canal1	Canal Berm	Canal berm	500000993_5	3	3	0.127
ROOIKRAAL	WR: Canals	Canal Section	LB Main canal	Canal Excavation	Canal excavation	500008558_0	3	3	2.260
ROOIKRAAL	WR: Canals	Canal Section	LB Main canal	Canal Fencing	Canal Fence Left	500008558_1	3	3	0.062

Scheme Name	Asset Facility Category	Facility Type	Facility Name	Component Type	Component Name	Component UID	Criticality	Condition	CRC 2016 (R Million)
ROOIKRAAL	WR: Canals	Canal Section	LB Main canal	Canal Fencing	Canal Fence Right	500008558_2	3	3	0.062
ROOIKRAAL	WR: Canals	Canal Section	LB Main canal	Canal Lining - TA3	Canal Lining	500008558_3	3	3	0.647
ROOIKRAAL	WR: Canals	Canal Section	LB Main canal	Canal Service Road	Canal service road	500008558_4	3	3	0.073
ROOIKRAAL	WR: Canals	Canal Section	LB Main canal	Canal Berm	Canal berm	500008558_5	3	3	0.064
ROOIKRAAL	WR: Dams	Main Damwall	Rooikraal	Dam Outlet - Pipework- Steel	Rooikraal outlet pipes	500009162_5	3	1	0.496
ROOIKRAAL	WR: Dams	Main Damwall	Rooikraal	Dam Outlet Valves - Casing	Rooikraal - outlet valve - casing	500009162_6	3	1	0.496
ROOIKRAAL	WR: Dams	Main Damwall	Rooikraal	Dam Outlet Valves - Mechanism	Rooikraal - outlet valve - mechanism	500009162_7	3	1	0.183
ROOIKRAAL	WR: Dams	Main Damwall	Rooikraal	Dam Spillway	Rooikraal Dam Spillway	500009162_1	3	3	4.649
ROOIKRAAL	WR: Dams	Main Damwall	Rooikraal	Dam Wall-15m<Height<30m	Rooikraal Dam wall	500009162_2	3	3	7.868
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal2	Canal Fencing	Canal Fence Left	500000909_1	3	2	0.128
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal2	Canal Fencing	Canal Fence Right	500000909_2	3	3	0.128
SETUMO DAM (296)	WR: Water Treatment	Water Treatment - Conventional	Mmabatho Water Treatment Works	Electric Network	Electrical Network at the WTW Mmabatho	500009851_0	2	2	0.356
STERK RIVER GWS (DOORNDRAAI DAM)	Buildings	Residential Housing	Doorndraai Dam House No. 2	Main Building	Main building	500002909_0	3	1	1.333
STERK RIVER GWS (DOORNDRAAI DAM)	Buildings	Residential Housing	Doorndraai Dam House No. 2	Outbuildings	Garage	500002909_1	3	1	0.106
STERK RIVER GWS (DOORNDRAAI DAM)	Buildings	Residential Housing	Doorndraai Dam House No. 2	Outbuildings	Garage and Domestic Staff Quarters	500002909_2	3	1	0.106
STERK RIVER GWS (DOORNDRAAI DAM)	Buildings	Residential Housing	Doorndraai Dam House No 5	Outbuildings	Garage and Domestic Staff Quarters	500007421_1	3	1	0.106
STERK RIVER GWS (DOORNDRAAI DAM)	Buildings	Residential Housing	Doorndraai Dam House No 6	Outbuildings	Garage and Staff Quarters	500007422_1	3	1	0.106
STERK RIVER GWS (DOORNDRAAI DAM)	Buildings	Residential Housing	Doorndraai Dam House No 17	Outbuildings	Garage and Domestic Staff Quarters	500007429_1	3	1	0.106

Scheme Name	Asset Facility Category	Facility Type	Facility Name	Component Type	Component Name	Component UID	Criticality	Condition	CRC 2016 (R Million)
STERKSTROOM GWS (BUFFELSPOORT DAM)	Buildings	Office Building	Buffelspoort Dam Office Building	Outbuildings	Buffelspoort Dam Office Building Carport	500009218_1	3	2	0.159
STERKSTROOM GWS (BUFFELSPOORT DAM)	WR: Canals	Canal Section	Middelkraal Sec Canal 2	Canal Lining - TA3	Canal Lining	500008544_3	3	1	0.008
STERKSTROOM GWS (BUFFELSPOORT DAM)	WR: Canals	Canal Section	Middelkraal Sec Canal 3 and 4	Canal Lining - TA3	Canal Lining	500007994_3	3	3	0.058
STERKSTROOM GWS (BUFFELSPOORT DAM)	WR: Reservoirs	Reservoir	Sterkstroom	Reservoir	Reservoir NOT USED	500009837_0	2	1	0.105
STERKSTROOM GWS (BUFFELSPOORT DAM)	WR: Steel Pipelines	Pipeline Section	Prim Pipe 2	Pipeline Valves	canal	500008523_2	3	3	0.356
THABINA DAM (301)	WR: Dams	Main Damwall	Thabina Dam	Auxilliary Equip. Main Damwall	Thabina dam control room	500009469_31	2	2	0.228
THAPANI DAM (302)	WR: Dams	Main Damwall	Thapani	Dam Spillway	Thapani Dam spillway	500009176_2	3	1	45.779
TURFLOOP DAM	WR: Dams	Main Damwall	Turfloop	Dam Outlet Structure	Turfloop dam outlet structure	500009177_3	3	1	0.466
WATERVALS RIVER GWS (BUFFELSKLOOF DAM)	Buildings	Hostels / Flats / Compounds	Buffelskloof Dam Single Quarter	Main Building	Main building	500005900_0	3	2	0.478

4 UNDER-UTILISED OR NOT-IN-USE ASSETS

Table L.3: Under-utilised asset components per facility category

Asset Facility Category	Under Utilised Asset Components					
	Cluster Total		Scheme Specific		Non-Scheme Specific	
	No.	CRC (R million)	No.	CRC (R million)	No.	CRC (R million)
Borehole	1	1.128	1	1.128	-	-
Buildings	22	14.594	20	13.757	2	0.837
Canals	458	201.087	458	201.087	-	-
Dams	443	5 220.644	443	5220.644	-	-
Measuring facilities	5	2.689	2	0.412	3	2.277
Pipelines	7	17.177	7	17.177	-	-
Power supply	4	0.874	4	0.874	-	-
Pump stations	1	5.876	1	5.876	-	-
Reservoirs	29	40.342	25	38.145	4	2.197
Roads	4	0.358	3	0.310	1	0.049
Telemetry	12	9.967	12	9.967	-	-
Tunnels	0	-	0	-	-	-
Water Treatment	1	2.058	1	2.058	-	-
Total	**987**	**5 516.794**	**977**	**5 511.434**	**10**	**5.360**

Table L.4: Under-utilised asset components per scheme and per facility category

Scheme	Asset Facility Category (Asset class name)	Facility Type	Facility Name (Asset description)	Component Type	Component Name (Additional description)	Component UID (Combined No)	Criticality	Condition	Utilisation	CRC 2016 (R Million)
ALBASINI GWS	Buildings	Residential Housing	Levubu Canal WCA House 3	Main Building	Main building	500007854_0	3	1	2	0.880
ALBASINI GWS	Buildings	Workshops	Fuel Store Levubu Workshop	Main Building	Main Building	500019926_0	1	2	2	0.074

Scheme	Asset Facility Category (Asset class name)	Facility Type	Facility Name (Asset description)	Component Type	Component Name (Additional description)	Component UID (Combined No)	Criticality	Condition	Utilisation	CRC 2016 (R Million)
ALBASINI GWS	Buildings	Garage & Carports	Albasini WCO Garage	Garage & Carports	Garage & Carports	500019920_0	1	3	2	0.475
ALBASINI GWS	Buildings	Office Building	Swimmingpool Pump House Levubu	Main Building	Main Building	500019928_0	1	3	2	0.006
ALBASINI GWS	Buildings	Hostels / Flats / Compounds	Albasini - Single Flat No 1	Main Building	Main Building	500019922_0	1	5	2	1.141
ALBASINI GWS	Buildings	Hostels / Flats / Compounds	Albasini - Single Flat No 2	Main Building	Main Building	500019923_0	1	5	2	1.141
ALBASINI GWS	Buildings	Hostels / Flats / Compounds	Albasini - Single Flat No 3	Main Building	Main Building	500019924_0	1	5	2	1.141
ALBASINI GWS	WR: Power Supply	Pump Station	Levubu Generator Room	Pump Station	Main Building	500020034_0	3	3	2	0.228
ALBASINI GWS	Buildings	Workshops	Workshop 4 & ablution Levubu	Main Building	Main building	500021560_0	3	1	2	0.726
ALBASINI GWS	WR: Telemetry	Telemetry Station	VSAT - Makhado Area Office	Telemetry Instrument VSAT Dish	Makhado 2.4m Satellite dish	500010300_0	3	3	2	1.212
ALBASINI GWS	WR: Telemetry	Telemetry Station	VSAT - Makhado Area Office	Telemetry Instrument VSAT Equi	Makhado Ancillary equipment	500010300_1	3	3	2	0.449
AREA MANAGER HARTBEESPOORT	WR: Reservoirs	Reservoir	Hartbeespoort Dam Drinking Water Reservoir 1	Reservoir	not componentised	500006903_0	3	3	2	0.373
AREA MANAGER HARTBEESPOORT	WR: Reservoirs	Reservoir	Hartbeespoort Dam Raw Water Reservoir 1	Reservoir	not componentised	500007602_0	3	3	2	0.850
AREA MANAGER HARTBEESPOORT	WR: Reservoirs	Reservoir	Hartbeespoort Dam Raw Water Reservoir 2	Reservoir	not componentised	500007603_0	3	3	2	0.608
AREA MANAGER HARTBEESPOORT	WR: Reservoirs	Reservoir	Hartbeespoort Dam Drinking Water Reservoir 2	Reservoir	not componentised	500007604_0	3	3	2	0.365
AREA MANAGER TZANEEN OFFICE	Buildings	Stores	Mokolo dam store	Main Building	Main building	500021565_0	3	2	2	0.099
AREA MANAGER TZANEEN OFFICE	Buildings	Stores	Nondweni Weir Fuel Store	Main Building	Main building	500021561_0	3	3	2	0.739
AREA MANAGER TZANEEN OFFICE	WR: Roads and bridge	Road Section	Acacia Avenue	Road Section		500021669_0	1	4	2	0.049
BO-MOLOPO GWS	WR: Reservoirs	Reservoir	Molopo Oog Elevated Tank	Reservoir	not componentised	500008636_0	3	3	2	0.227

Scheme	Asset Facility Category (Asset class name)	Facility Type	Facility Name (Asset description)	Component Type	Component Name (Additional description)	Component UID (Combined No)	Criticality	Condition	Utilisation	CRC 2016 (R Million)
BO-MOLOPO GWS	WR: Reservoirs	Reservoir	BALANCING RESEVOIRS AT THE PLANT	Reservoir	BALANCING RESEVOIRS AT THE PLANT	500000119_0	2	4	2	0.148
BOSPOORT DAM (41)	WR: Dams	Main Damwall	Bospoort Dam	Auxilliary Equip. Main Damwall	Bospoort dam - lighting	500009210_103	4	2	2	0.228
BOSPOORT DAM (41)	WR: Dams	Main Damwall	Bospoort Dam	Auxilliary Equip. Main Damwall	Bospoort Dam - safety boom 1	500009210_104	4	2	2	0.228
BOTLOKWA DAM	WR: Dams	Main Damwall	Botlokwa	Dam Wall-15m<Height<30m	Botlokwa dam wall	500001573_1	2	2	2	2.630
BOTLOKWA DAM	WR: Dams	Main Damwall	Botlokwa	Dam Spillway	Botlokwa dam spillway	500001573_2	2	3	2	11.724
CAPES THORNE DAM	WR: Dams	Main Damwall	Capes Thorne	Dam Wall-15m<Height<30m	Capes Thorne Dam wall	500009125_1	3	2	2	12.514
CAPES THORNE DAM	WR: Dams	Main Damwall	Capes Thorne	Dam Outlet - Pipework-Steel	Capes Thorne outlet pipes	500009125_4	3	2	2	0.374
CAPES THORNE DAM	WR: Dams	Main Damwall	Capes Thorne	Dam Outlet Valves - Casing	Capes Thorne - outlet valve - casing	500009125_5	3	2	2	0.039
CAPES THORNE DAM	WR: Dams	Main Damwall	Capes Thorne	Dam Outlet Valves - Mechanism	Capes Thorne - outlet valve - mechanism	500009125_6	3	2	2	0.014
CAPES THORNE DAM	WR: Dams	Main Damwall	Capes Thorne Dam	Dam Outlet - Pipework-Steel	Capes Thorn outlet pipe No2	500009125_8	3	2	2	0.830
CAPES THORNE DAM	WR: Dams	Main Damwall	Capes Thorne Dam	Dam Outlet Valves - Casing	Capes Thorn outlet valve No2 - casing	500009125_9	3	2	2	0.104
CAPES THORNE DAM	WR: Dams	Main Damwall	Capes Thorne Dam	Dam Outlet Valves - Casing	Capes Thorn outlet valve No2 - mechanism	500009125_10	3	2	2	0.035
CAPES THORNE DAM	WR: Dams	Main Damwall	Capes Thorne Dam wall	Dam Wall-15m<Height<30m	Capes Thorne Dam	500009125_7	3	3	2	12.514
CAPES THORNE DAM	WR: Dams	Main Damwall	Capes Thorne Dam	Dam Spillway	Capes Thorn spillway	500009125_11	3	4	2	0.579
CHUNEYS POORT DAM	WR: Dams	Main Damwall	Chuniespoort	Dam Wall-15m<Height<30m	Chuniespoort Earth Embankment Dam	500009478_1	2	5	2	235.707

Scheme	Asset Facility Category (Asset class name)	Facility Type	Facility Name (Asset description)	Component Type	Component Name (Additional description)	Component UID (Combined No)	Criticality	Condition	Utilisation	CRC 2016 (R Million)
CHUNEYS POORT DAM	WR: Dams	Main Damwall	Chuniespoort	Dam Spillway	Chuniespoort Dam Spillway	500009478_2	2	5	2	127.295
CROCODILE RIVER GWS (KWENA DAM)	WR: Reservoirs	Reservoir	Kwena Dam Elevated tank	Reservoir	not componentised	500008196_0	3	3	2	0.227
DE HOOP DAM	Buildings	Residential Housing	DeHoop Roossenekal Building 1 Complex 1	Main Building	Main Building	500021596_0	1	5	2	1.980
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen	Dam Outlet - Pipework-Steel	Der Brochen outlet pipes	500009131_6	4	2	2	0.146
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen	Dam Wall - 30m<Height<60m	Der Brochen Dam Wall	500009131_1	4	3	2	98.163
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen	Dam Spillway	Der Brochen Dam Spillway	500009131_2	4	3	2	136.495
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen	Dam Outlet Valves - Casing	Der Brochen - outlet valve - casing	500009131_7	4	3	2	0.054
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen	Dam Outlet Valves - Mechanism	Der Brochen - outlet valve - mechanism	500009131_8	4	3	2	0.054
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Access Bridge	Der brochen dam access bridge 1	500009131_9	4	3	2	3.215
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Access Bridge	Der brochen dam access bridge 2	500009131_10	4	3	2	0.647
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Dam Outlet - Intake Tower	Der brochen dam intake tower	500009131_11	4	3	2	5.054
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Dam Outlet Valves	Der brochen dam gate valve 3	500009131_12	4	3	2	0.028
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Dam Outlet Valves	Der brochen dam gate valve 4	500009131_13	4	3	2	0.028
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Dam Outlet Valves	Der brochen dam gate valve 7	500009131_14	4	3	2	0.018
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Dam Outlet Valves	Der brochen dam gate valve 8	500009131_15	4	3	2	0.018
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Dam Outlet Valves - Casing	Der brochen dam gate valve 2 - casing	500009131_16	4	3	2	0.017
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Dam Outlet Valves - Casing	Der brochen dam gate valve 5 - casing	500009131_17	4	3	2	0.017
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Dam Outlet Valves - Casing	Der brochen dam gate valve 6 - casing	500009131_18	4	3	2	0.017

Scheme	Asset Facility Category (Asset class name)	Facility Type	Facility Name (Asset description)	Component Type	Component Name (Additional description)	Component UID (Combined No)	Criticality	Condition	Utilisation	CRC 2016 (R Million)
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Dam Outlet Valves - Mechanism	Der brochen dam gate valve 2 - mechanism	500009131_19	4	3	2	0.006
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Dam Outlet Valves - Mechanism	Der brochen dam gate valve 5 - mechanism	500009131_20	4	3	2	0.006
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Dam Outlet Valves - Mechanism	Der brochen dam gate valve 6 - mechanism	500009131_21	4	3	2	0.006
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Auxilliary Equip. Main Damwall	Der brochen dam hand rails	500009131_22	4	4	2	0.304
DER BROCHEN DAM	WR: Dams	Main Damwall	Der Brochen Dam	Auxilliary Equip. Main Damwall	Der brochen dam steel ladders	500009131_23	4	4	2	1.119
DISANENG DAM (338)	WR: Water Treatment	Water Treatment -Conventional	Disaneng Purification Plant	Water Treatment - Conventional	Purification Plant and its Structure	500009920_0	2	3	2	2.058
DR. EISELEN DAM	WR: Dams	Main Damwall	Dr. Eiselen Dam	Dam Outlet - Pipework-Steel	Dr Eiselen dam outlet pipe 1	500009264_5	4	2	2	0.585
DR. EISELEN DAM	WR: Dams	Main Damwall	Dr. Eiselen	Dam Wall - 12m<Height<30m	Dr. Eiselen Earth Embankment Dam	500009264_1	4	3	2	44.612
DR. EISELEN DAM	WR: Dams	Main Damwall	Dr. Eiselen Dam	Dam Spillway	Dr Eiselen dam spillway	500009264_6	4	3	2	1.176
DR. EISELEN DAM	WR: Dams	Main Damwall	Dr. Eiselen Dam	Access Bridge	Dr Eiselen dam access bridge	500009264_3	4	4	2	0.999
DR. EISELEN DAM	WR: Dams	Main Damwall	Dr. Eiselen Dam	Dam Outlet - Intake Tower	Dr Eiselen dam intake tower	500009264_4	4	4	2	1.198
DR. EISELEN DAM	WR: Dams	Main Damwall	Dr. Eiselen	Auxilliary Equip. Main Damwall	Dr. Eiselen Dam auxilliary equipment	500009264_2	3	1	2	0.249
GROOT LETABA RIVER GWS	WR: Power Supply	Power Supply Generator	Ebenezer Dam Genset	Power Supply Generator	not componentised	500001024_0	3	3	2	0.070
HARTBEESPOORT DAM (19)	WR: Reservoirs	Reservoir	Resevoir at the Dam for the Cleaning of Gates	Reservoir	Resevoir at the Dam for the Cleaning of Gates	500000011_0	4	3	2	0.210

Scheme	Asset Facility Category (Asset class name)	Facility Type	Facility Name (Asset description)	Component Type	Component Name (Additional description)	Component UID (Combined No)	Criticality	Condition	Utilisation	CRC 2016 (R Million)
HOUTRIVIER DAM (306	WR: Dams	Main Damwall	Houtrivier Dam	Auxilliary Equip. Main Damwall	Hand Rails	500009267_16	4	3	2	0.380
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	B4H023 Steelpoort river @ De Hoop	Hydrological Station	not componentised	500019984_0	2	3	2	0.759
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	B4H024 Steelpoort river @ Buffelsdrift	Hydrological Station	not componentised	500019985_0	2	3	2	0.759
HYDROMETRY LIMPOPO	WS: Measuring facility	Hydrological Station	B4H025 Steelpoort river @ Taung	Hydrological Station	not componentised	500019986_0	2	3	2	0.759
KABOKWENI DAM	WR: Dams	Main Damwall	Kabokweni Dam	Dam Spillway	Kabokweni spillway	500007605_2	3	1	2	0.522
KABOKWENI DAM	WR: Dams	Main Damwall	Kabokweni Dam	Dam Outlet - Intake Tower	Kabokweni intake tower	500007605_3	3	3	2	0.218
KABOKWENI DAM	WR: Dams	Main Damwall	Kabokweni Dam	Dam Wall-15m<Height<30m	Kabokweni damwall	500007605_1	3	4	2	8.111
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WR: Canals	Canal Section	Sec to Primary South Canal 1	Canal Fencing	Canal Fence Left	500004458_1	3	2	2	0.003
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WR: Canals	Canal Section	Sec to Primary South Canal 1	Canal Lining - TA3	Canal Lining	500004458_3	3	2	2	0.036
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WR: Canals	Canal Section	Sec to Primary South Canal 1	Canal Service Road	Canal service road	500004458_4	3	2	2	0.004
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WR: Canals	Canal Section	Primary canal LB	Canal Excavation	Canal excavation	500007838_0	3	3	2	0.693
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WR: Canals	Canal Section	Primary canal LB	Canal Fencing	Canal Fence Left	500007838_1	3	3	2	0.126
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WR: Canals	Canal Section	Primary canal LB	Canal Fencing	Canal Fence Right	500007838_2	3	3	2	0.126
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WR: Canals	Canal Section	Primary canal LB	Canal Lining - TA3	Canal Lining	500007838_3	3	3	2	0.189
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WR: Canals	Canal Section	Primary canal LB	Canal Service Road	Canal service road	500007838_4	3	3	2	0.175

Scheme	Asset Facility Category (Asset class name)	Facility Type	Facility Name (Asset description)	Component Type	Component Name (Additional description)	Component UID (Combined No)	Criticality	Condition	Utilisation	CRC 2016 (R Million)
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WR: Canals	Canal Section	Primary canal LB	Canal Berm	Canal berm	500007838_5	3	3	2	0.143
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WR: Canals	Canal Section	Sec to Primary South Canal 1	Canal Excavation	Canal excavation	500004458_0	2	2	2	0.061
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WR: Reservoirs	Reservoir	Small Resevoirs at the office	Reservoir	Small Resevoirs at the office	500000000_0	3	2	2	0.246
KLEIN MARICO R-KLEIN MARICOPRT DAM (48)	WR: Reservoirs	Reservoir	Small Resevoirs at the office	Reservoir	Small Resevoirs at the office	500000001_0	3	2	2	0.148
KOSTER RIVER - KOSTER DAM (54)	WR: Reservoirs	Reservoir	Koster Dam Elavated Storage	Reservoir	not componentised	500007818_0	3	4	2	0.361
LEEUWKRAAL (KUDUBE) (339)	WR: Dams	Main Damwall	Leeukraal (Kudube - Themba)	Dam Wall-15m<Height<30m	Leeukraal Earthfill Dam Section Left Bank	500001054_1	3	1	2	8.646
LEEUWKRAAL (KUDUBE) (339)	WR: Dams	Main Damwall	Leeukraal (Kudube - Themba)	Dam Outlet Structure	Leeukraal Dam Outlet Structure	500001054_3	3	1	2	2.479
LEEUWKRAAL (KUDUBE) (339)	WR: Dams	Main Damwall	Leeukraal (Kudube - Themba)	Dam Wall-15m<Height<30m	Leeukraal Earthfill Dam Section Right Bank	500001054_2	3	2	2	8.468
LEEUWKRAAL (KUDUBE) (339)	WR: Dams	Main Damwall	Leeukraal Dam (Kudube - Themba)	Dam Outlet - Pipework-Steel	Leeukraal dam outlet pipe 1 (800mm)	500001054_6	3	2	2	1.082
LEEUWKRAAL (KUDUBE) (339)	WR: Dams	Main Damwall	Leeukraal Dam (Kudube - Themba)	Dam Outlet - Pipework-Steel	Leeukraal dam outlet pipe 2 (800mm)	500001054_7	3	3	2	1.082
LEEUWKRAAL (KUDUBE) (339)	WR: Dams	Main Damwall	Leeukraal Dam (Kudube - Themba)	Dam Outlet Valves - Casing	Leeukraal dam gate valve (800mm) - casing	500001054_8	3	3	2	0.106
LEEUWKRAAL (KUDUBE) (339)	WR: Dams	Main Damwall	Leeukraal Dam (Kudube - Themba)	Dam Outlet Valves - Mechanism	Leeukraal dam gate valve (800mm) - mechanism	500001054_9	3	3	2	0.035
LEEUWKRAAL (KUDUBE) (339)	WR: Dams	Main Damwall	Leeukraal Dam (Kudube - Themba)	Dam Outlet Valves - Casing	Leeukraal dam sleeve valve (400mm) - casing	500001054_10	3	3	2	0.032
LEEUWKRAAL (KUDUBE) (339)	WR: Dams	Main Damwall	Leeukraal Dam (Kudube - Themba)	Dam Outlet Valves - Mechanism	Leeukraal dam sleeve valve (400mm) - mechanism	500001054_11	3	3	2	0.011
LEPELLANE DAM	WR: Dams	Main Damwall	Lepellane	Dam Wall - 12m<Height<30m	Lepellane Earthfill Dam Section Right Bank	500009139_1	3	1	2	62.003

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LEPELLANE DAM	WR: Dams	Main Damwall	Lepellane	Dam Wall - 12m<Height<30m	Lepellane Eartfill Dam Section Left Bank	500009139_2	3	1	2	31.606
LEPELLANE DAM	WR: Dams	Main Damwall	Lepellane	Dam Outlet - Intake Tower	Lepellane Dam Outlet - Intake tower	500009139_3	3	1	2	2.811
LINDLEYSPOORT DAM (27)	Buildings	Hostels / Flats / Compounds	Lindleyspoort Canal Single Quarters	Main Building	Main building	500008207_0	3	1	2	0.641
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	sec_canal3	Canal Lining - TA3	Canal Lining	500000682_3	3	2	2	0.057
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	sec_canal3	Canal Service Road	Canal service road	500000682_4	3	2	2	0.027
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 23	Canal Excavation	Canal excavation	500003520_0	3	2	2	0.020
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 5	Canal Excavation	Canal excavation	500003521_0	3	2	2	0.003
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 17	Canal Excavation	Canal excavation	500003524_0	3	2	2	0.016
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 18	Canal Excavation	Canal excavation	500004453_0	3	2	2	0.006
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	sec cnl 20 end	Canal Excavation	Canal excavation	500007108_0	3	2	2	0.088
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	sec cnl 20 end	Canal Berm	Canal berm	500007108_4	3	2	2	0.079
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec cnl 28 B	Canal Excavation	Canal excavation	500007110_0	3	2	2	0.040
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec cnl 28 B	Canal Fencing	Canal Fence Right	500007110_2	3	2	2	0.011
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec cnl 28 B	Canal Berm	Canal berm	500007110_5	3	2	2	0.015
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 3	Canal Fencing	Canal Fence Right	500007112_2	3	2	2	0.027
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 3	Canal Berm	Canal berm	500007112_5	3	2	2	0.036
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal end	Canal Excavation	Canal excavation	500007173_0	3	2	2	0.050
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal end	Canal Service Road	Canal service road	500007173_3	3	2	2	0.068
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal end	Canal Berm	Canal berm	500007173_4	3	2	2	0.028
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Main canal RB to LB	Canal Excavation	Canal excavation	500007203_0	3	2	2	0.228
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Main canal RB to LB	Canal Fencing	Canal Fence Left	500007203_1	3	2	2	0.031
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Main canal RB to LB	Canal Fencing	Canal Fence Right	500007203_2	3	2	2	0.031
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Main canal RB to LB	Canal Berm	Canal berm	500007203_5	3	2	2	0.041

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LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 5.1	Canal Excavation	Canal excavation	500007205_0	3	2	2	0.010
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 5.1	Canal Fencing	Canal Fence Left	500007205_1	3	2	2	0.046
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 5.1	Canal Fencing	Canal Fence Right	500007205_2	3	2	2	0.046
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 5.1	Canal Berm	Canal berm	500007205_5	3	2	2	0.044
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec cnl 28	Canal Excavation	Canal excavation	500007813_0	3	2	2	0.216
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec cnl 28	Canal Fencing	Canal Fence Left	500007813_1	3	2	2	0.063
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec cnl 28	Canal Berm	Canal berm	500007813_5	3	2	2	0.084
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 3	Canal Fencing	Canal Fence Right	500007815_2	3	2	2	0.013
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 3	Canal Berm	Canal berm	500007815_5	3	2	2	0.017
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 8	Canal Excavation	Canal excavation	500007816_0	3	2	2	0.242
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal sec 2	Canal Fencing	Canal Fence Left	500007858_1	3	2	2	0.118
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal sec 2	Canal Fencing	Canal Fence Right	500007858_2	3	2	2	0.118
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	sec_canal3	Canal Fencing	Canal Fence Right	500000682_2	3	3	2	0.023
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	sec_canal3	Canal Berm	Canal berm	500000682_5	3	3	2	0.042
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 24	Canal Excavation	Canal excavation	500003501_0	3	3	2	0.078
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 24	Canal Lining - TA3	Canal Lining	500003501_1	3	3	2	0.396
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 24	Canal Meters	Measuring Facility	500003501_2	3	3	2	0.097
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 24	Canal Berm	Canal berm	500003501_3	3	3	2	0.154
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 24	Canal Fencing	Canal Fence	500003501_4	3	3	2	0.072
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 24	Canal Service Road	Canal service road	500003501_5	3	3	2	0.110
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 2	Canal Excavation	Canal excavation	500003517_0	3	3	2	0.468
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 2	Canal Lining - TA3	Canal Lining	500003517_1	3	3	2	0.884
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 2	Canal Berm	Canal berm	500003517_2	3	3	2	0.222
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 2	Canal Fencing	Canal Fence	500003517_3	3	3	2	0.118
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 2	Canal Service Road	Canal service road	500003517_4	3	3	2	0.140

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LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 6	Canal Excavation	Canal excavation	500003518_0	3	3	2	0.214
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 6	Canal Lining - TA3	Canal Lining	500003518_1	3	3	2	0.465
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 6	Canal Fencing	Canal Fence	500003518_2	3	3	2	0.077
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 6	Canal Berm	Canal berm	500003518_3	3	3	2	0.093
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 6	Canal Bridges	bridge	500003518_4	3	3	2	0.076
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 6	Canal Service Road	Canal service road	500003518_5	3	3	2	0.091
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 7	Canal Excavation	Canal excavation	500003519_0	3	3	2	0.720
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 7	Canal Lining - TA3	Canal Lining	500003519_1	3	3	2	1.274
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 7	Canal Berm	Canal berm	500003519_2	3	3	2	0.253
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 7	Canal Fencing	Canal Fence	500003519_3	3	3	2	0.103
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 7	Canal Service Road	Canal service road	500003519_4	3	3	2	0.157
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 23	Canal Fencing	Canal Fence Left	500003520_1	3	3	2	0.026
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 23	Canal Fencing	Canal Fence Right	500003520_2	3	3	2	0.026
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 23	Canal Lining - TA3	Canal Lining	500003520_3	3	3	2	0.085
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 23	Canal Service Road	Canal service road	500003520_4	3	3	2	0.031
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 23	Canal Berm	Canal berm	500003520_5	3	3	2	0.043
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 5	Canal Lining - TA3	Canal Lining	500003521_1	3	3	2	0.067
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 5	Canal Meters	Measuring Facility	500003521_2	3	3	2	0.051
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 5	Canal Service Road	Canal service road	500003521_3	3	3	2	0.040
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 5	Canal Berm	Canal berm	500003521_4	3	3	2	0.056
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 5	Canal Bridges	bridge	500003521_5	3	3	2	0.036
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 5	Canal Fencing	Canal Fence Left	500003521_6	3	3	2	0.043
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 5	Canal Fencing	Canal Fence Right	500003521_7	3	3	2	0.043
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 17	Canal Fencing	Canal Fence Left	500003524_1	3	3	2	0.039
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 17	Canal Fencing	Canal Fence Right	500003524_2	3	3	2	0.039

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LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 17	Canal Lining - TA3	Canal Lining	500003524_3	3	3	2	0.097
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 17	Canal Service Road	Canal service road	500003524_4	3	3	2	0.046
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 17	Canal Berm	Canal berm	500003524_5	3	3	2	0.074
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 1	Canal Excavation	Canal excavation	500004451_0	3	3	2	0.274
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 1	Canal Lining - TA3	Canal Lining	500004451_1	3	3	2	0.564
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 1	Canal Berm	Canal berm	500004451_2	3	3	2	0.132
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 1	Canal Fencing	Canal Fence	500004451_3	3	3	2	0.075
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal 1	Canal Service Road	Canal service road	500004451_4	3	3	2	0.089
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canaln 5C	Canal Excavation	Canal excavation	500004452_0	3	3	2	0.002
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canaln 5C	Canal Fencing	Canal Fence Left	500004452_1	3	3	2	0.016
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canaln 5C	Canal Fencing	Canal Fence Right	500004452_2	3	3	2	0.016
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canaln 5C	Canal Lining - TA3	Canal Lining	500004452_3	3	3	2	0.016
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canaln 5C	Canal Service Road	Canal service road	500004452_4	3	3	2	0.014
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canaln 5C	Canal Berm	Canal berm	500004452_5	3	3	2	0.021
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 18	Canal Fencing	Canal Fence Left	500004453_1	3	3	2	0.015
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 18	Canal Fencing	Canal Fence Right	500004453_2	3	3	2	0.015
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 18	Canal Lining - TA3	Canal Lining	500004453_3	3	3	2	0.039
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 18	Canal Service Road	Canal service road	500004453_4	3	3	2	0.017
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec Canal 18	Canal Berm	Canal berm	500004453_5	3	3	2	0.026
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal Left	Canal Excavation	Canal excavation	500004454_0	3	3	2	0.091
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal Left	Canal Lining - TA3	Canal Lining	500004454_1	3	3	2	0.353
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal Left	Canal Berm	Canal berm	500004454_2	3	3	2	0.152
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal Left	Canal Fencing	Canal Fence	500004454_3	3	3	2	0.089
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary Canal Left	Canal Service Road	Canal service road	500004454_4	3	3	2	0.106
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	sec cnl 20 end	Canal Lining - TA3	Canal Lining	500007108_1	3	3	2	0.483

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LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	sec cnl 20 end	Canal Fencing	Canal Fence	500007108_2	3	3	2	0.156
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	sec cnl 20 end	Canal Service Road	Canal service road	500007108_3	3	3	2	0.120
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primay canal 5 B	Canal Excavation	Canal excavation	500007109_0	3	3	2	0.218
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primay canal 5 B	Canal Lining - TA3	Canal Lining	500007109_1	3	3	2	0.414
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primay canal 5 B	Canal Fencing	Canal Fence	500007109_2	3	3	2	0.043
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primay canal 5 B	Canal Berm	Canal berm	500007109_3	3	3	2	0.051
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primay canal 5 B	Canal Bridges	bridge	500007109_4	3	3	2	0.051
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primay canal 5 B	Canal Service Road	Canal service road	500007109_5	3	3	2	0.051
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec cnl 28 B	Canal Fencing	Canal Fence Left	500007110_1	3	3	2	0.011
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec cnl 28 B	Canal Lining - TA3	Canal Lining	500007110_3	3	3	2	0.135
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec cnl 28 B	Canal Service Road	Canal service road	500007110_4	3	3	2	0.017
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 3	Canal Lining - TA3	Canal Lining	500007112_3	3	3	2	0.318
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 3	Canal Service Road	Canal service road	500007112_4	3	3	2	0.041
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal end	Canal Lining - TA3	Canal Lining	500007173_1	3	3	2	0.274
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal end	Canal Fencing	Canal Fence	500007173_2	3	3	2	0.089
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	RB prim canal sec 4 a	Canal Excavation	Canal excavation	500007175_0	3	3	2	1.994
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	RB prim canal sec 4 a	Canal Lining - TA3	Canal Lining	500007175_1	3	3	2	3.135
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	RB prim canal sec 4 a	Canal Service Road	Canal service road	500007175_2	3	3	2	0.521
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	RB prim canal sec 4 a	Canal Fencing	Canal Fence	500007175_3	3	3	2	0.253
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	RB prim canal sec 4 a	Canal Berm	Canal berm	500007175_4	3	3	2	0.758
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	tyd2	Canal Excavation	Canal excavation	500007176_0	3	3	2	0.028
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	tyd2	Canal Lining - TA3	Canal Lining	500007176_1	3	3	2	0.047
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	tyd2	Canal Service Road	Canal service road	500007176_2	3	3	2	0.008
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	tyd2	Canal Fencing	Canal Fence	500007176_3	3	3	2	0.004
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	tyd2	Canal Berm	Canal berm	500007176_4	3	3	2	0.001

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LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	RB Prim canal sec 4 b	Canal Excavation	Canal excavation	500007177_0	3	3	2	0.091
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	RB Prim canal sec 4 b	Canal Lining - TA3	Canal Lining	500007177_1	3	3	2	0.153
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	RB Prim canal sec 4 b	Canal Service Road	Canal service road	500007177_2	3	3	2	0.003
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	RB Prim canal sec 4 b	Canal Fencing	Canal Fence	500007177_3	3	3	2	0.001
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	RB Prim canal sec 4 b	Canal Berm	Canal berm	500007177_4	3	3	2	0.004
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Main canal RB to LB	Canal Lining - TA3	Canal Lining	500007203_3	3	3	2	0.778
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Main canal RB to LB	Canal Service Road	Canal service road	500007203_4	3	3	2	0.047
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal 2 T	Canal Excavation	Canal excavation	500007204_0	3	3	2	0.100
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal 2 T	Canal Fencing	Canal Fence Left	500007204_1	3	3	2	0.029
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal 2 T	Canal Fencing	Canal Fence Right	500007204_2	3	3	2	0.029
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal 2 T	Canal Lining - TA3	Canal Lining	500007204_3	3	3	2	0.341
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal 2 T	Canal Service Road	Canal service road	500007204_4	3	3	2	0.044
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal 2 T	Canal Berm	Canal berm	500007204_5	3	3	2	0.035
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 5.1	Canal Lining - TA3	Canal Lining	500007205_3	3	3	2	0.054
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 5.1	Canal Service Road	Canal service road	500007205_4	3	3	2	0.045
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 5 A	Canal Excavation	Canal excavation	500007811_0	3	3	2	0.129
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 5 A	Canal Lining - TA3	Canal Lining	500007811_1	3	3	2	0.245
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 5 A	Canal Fencing	Canal Fence	500007811_2	3	3	2	0.026
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 5 A	Canal Berm	Canal berm	500007811_3	3	3	2	0.018
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 5 A	Canal Bridges	bridge	500007811_4	3	3	2	0.051
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 5 A	Canal Service Road	Canal service road	500007811_5	3	3	2	0.030
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec cnl 28	Canal Fencing	Canal Fence Right	500007813_2	3	3	2	0.063
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec cnl 28	Canal Lining - TA3	Canal Lining	500007813_3	3	3	2	0.737
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec cnl 28	Canal Service Road	Canal service road	500007813_4	3	3	2	0.095
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 3	Canal Lining - TA3	Canal Lining	500007815_3	3	3	2	0.153

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LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 3	Canal Service Road	Canal service road	500007815_4	3	3	2	0.020
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 8	Canal Lining - TA3	Canal Lining	500007816_1	3	3	2	0.891
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 8	Canal Fencing	Canal Fence	500007816_2	3	3	2	0.117
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 8	Canal Berm	Canal berm	500007816_3	3	3	2	0.226
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 8	Canal Bridges	bridge	500007816_4	3	3	2	0.063
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 8	Canal Service Road	Canal service road	500007816_5	3	3	2	0.116
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal sec 2	Canal Excavation	Canal excavation	500007858_0	3	3	2	0.406
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal sec 2	Canal Lining - TA3	Canal Lining	500007858_3	3	3	2	1.384
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal sec 2	Canal Service Road	Canal service road	500007858_4	3	3	2	0.179
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	LB canal sec 2	Canal Berm	Canal berm	500007858_5	3	3	2	0.157
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	tyd cut 1	Canal Excavation	Canal excavation	500007860_0	3	3	2	0.129
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	tyd cut 1	Canal Lining - TA3	Canal Lining	500007860_1	3	3	2	0.244
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	tyd cut 1	Canal Service Road	Canal service road	500007860_2	3	3	2	0.030
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	tyd cut 1	Canal Fencing	Canal Fence	500007860_3	3	3	2	0.025
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	tyd cut 1	Canal Berm	Canal berm	500007860_4	3	3	2	0.012
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	tyd cut 1	Canal Syphons	syphon	500007860_5	3	3	2	0.236
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 3	Canal Excavation	Canal excavation	500007861_0	3	3	2	0.392
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 3	Canal Lining - TA3	Canal Lining	500007861_1	3	3	2	0.744
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 3	Canal Service Road	Canal service road	500007861_2	3	3	2	0.092
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 3	Canal Fencing	Canal Fence	500007861_3	3	3	2	0.078
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 3	Canal Berm	Canal berm	500007861_4	3	3	2	0.118
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Primary canal 3	Canal Syphons	syphon	500007861_5	3	3	2	0.236
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Syphon (Large)	Sec Canal 5	Canal Syphon (large)	not componentised	500003522_0	2	1	2	0.068
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Syphon (Large)	Syphon cnl 28	Canal Syphon (large)	not componentised	500007814_0	2	1	2	0.895
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Syphon (Large)	Brakkloof Syphon	Canal Syphon (large)	not componentised	500007812_0	2	3	2	0.816

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LINDLEYSPOORT DAM (27)	WR: Canals	Canal Syphon (Large)	Syphon RB LB	Canal Syphon (large)	not componentised	500007857_0	2	3	2	0.785
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 3	Canal Excavation	Canal excavation	500007815_0	1	2	2	0.045
LINDLEYSPOORT DAM (27)	WR: Canals	Canal Section	Sec canal 3	Canal Fencing	Canal Fence Left	500007815_1	1	2	2	0.013
LINDLEYSPOORT DAM (27)	WR: Dams	Main Damwall	Lindleyspoort	Dam Outlet - Pipework-Steel	Lindleyspoort outlet pipes	500009279_5	2	2	2	0.055
LINDLEYSPOORT DAM (27)	WR: Dams	Main Damwall	Lindleyspoort Dam	Dam Outlet - Pipework-Steel	Lindleyspoort dam outlet pipe 2	500009279_10	2	2	2	0.055
LINDLEYSPOORT DAM (27)	WR: Dams	Main Damwall	Lindleyspoort Dam	Auxilliary Equip. Main Damwall	Lindleyspoort dam handrails	500009279_11	2	2	2	0.531
LINDLEYSPOORT DAM (27)	WR: Dams	Main Damwall	Lindleyspoort Dam	Auxilliary Equip. Main Damwall	Lindleyspoort dam staircase	500009279_13	2	2	2	1.708
LINDLEYSPOORT DAM (27)	WR: Dams	Main Damwall	Lindleyspoort	Dam Wall - 30m<Height<60m	Lindleyspoort Dam Concrete Wall	500009279_1	2	3	2	101.352
LINDLEYSPOORT DAM (27)	WR: Dams	Main Damwall	Lindleyspoort	Dam Intake Gates - Mechanism	Lindleyspoort - intake gate - mechanism	500009279_3	2	3	2	0.030
LINDLEYSPOORT DAM (27)	WR: Dams	Main Damwall	Lindleyspoort	Dam Outlet Valves - Casing	Lindleyspoort - outlet valve 1 - casing	500009279_6	2	3	2	0.055
LINDLEYSPOORT DAM (27)	WR: Dams	Main Damwall	Lindleyspoort	Dam Outlet Valves - Mechanism	Lindleyspoort - outlet valve 1 - mechanism	500009279_7	2	3	2	0.033
LINDLEYSPOORT DAM (27)	WR: Dams	Main Damwall	Lindleyspoort Dam	Dam Intake Gates	Lindleyspoort trashracks	500009279_12	2	3	2	0.082
LINDLEYSPOORT DAM (27)	WR: Dams	Main Damwall	Lindleyspoort	Dam Meter & Instrumentation	Lindleyspoort dam meter and instrumentation	500009279_4	2	4	2	1.993
LINDLEYSPOORT DAM (27)	WR: Steel Pipelines	Pipeline Section	Sec cnl 3 pipeline	Pipeline- Steel	Pipeline	500007111_0	3	3	2	1.182
LINDLEYSPOORT DAM (27)	WR: Steel Pipelines	Pipeline Section	Lyndeleyspoort pipe line	Pipeline- Steel	Pipeline	500007810_0	3	3	2	0.842
LINDLEYSPOORT DAM (27)	WR: Steel Pipelines	Pipeline Section	Secondary canal 5.1	Pipeline- Steel	Pipeline	500007859_0	3	3	2	2.030
LINDLEYSPOORT DAM (27)	WR: Steel Pipelines	Pipeline Valve Chamber	Lyndleyspoort Gate valve	Pipeline Valve Chamber	not componentised	500007809_0	2	3	2	0.400
LINDLEYSPOORT DAM (27)	WS: Measuring facility	Meteorological Station	Lindleyspoort @ Lindleyspoort Dam	Meteorological Station	not componentised	500001582_0	1	5	2	0.135

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LOLE MONTES DAM	WR: Dams	Main Damwall	Lole Montes	Dam Outlet - Pipework-Steel	Lole Montes outlet pipes	500009077_5	1	1	2	0.246
LOLE MONTES DAM	WR: Dams	Main Damwall	Lole Montes	Dam Outlet Valves - Casing	Lole Montes - outlet valve - casing	500009077_6	1	1	2	0.246
LOLE MONTES DAM	WR: Dams	Main Damwall	Lole Montes	Dam Outlet Valves - Mechanism	Lole Montes - outlet valve - mechanism	500009077_7	1	1	2	0.101
LOLE MONTES DAM	WR: Dams	Main Damwall	Lole Montes Dam	Dam Outlet Valves - Casing	Lole Montes dam gate valve 2 - casing	500009077_10	1	1	2	-
LOLE MONTES DAM	WR: Dams	Main Damwall	Lole Montes Dam	Dam Outlet Valves - Mechanism	Lole Montes dam gate valve 2 - mechanism	500009077_11	1	1	2	-
LOLE MONTES DAM	WR: Dams	Main Damwall	Lole Montes	Auxilliary Equip. Main Damwall	Lola Montes Dam staircase	500009077_4	1	2	2	0.249
LOLE MONTES DAM	WR: Dams	Main Damwall	Lole Montes Dam	Auxilliary Equip. Main Damwall	Lole Montes dam handrails	500009077_12	1	2	2	0.593
LOLE MONTES DAM	WR: Dams	Main Damwall	Lole Montes Dam	Auxilliary Equip. Main Damwall	Lole Montes dam staircase	500009077_13	1	2	2	0.297
LOLE MONTES DAM	WR: Dams	Main Damwall	Lole Montes	Dam Wall - 12m<Height<30m	Lola Montes Concrete Dam Wall	500009077_1	1	3	2	59.535
LOLE MONTES DAM	WR: Dams	Main Damwall	Lole Montes Dam	Dam Outlet Structure	Lole Montes Dam access bridge	500009077_8	1	3	2	1.377
LOLE MONTES DAM	WR: Dams	Main Damwall	Lole Montes Dam	Dam Outlet - Intake Tower	Lole Montes Dam intake tower	500009077_9	1	4	2	0.049
LOSKOP DAM (88)	Buildings	Ablution Building	Loskop Dam ablution facility	Outbuildings	Ablution building	500009967_0	4	3	2	0.605
LOTLAMORENG DAM	WR: Dams	Main Damwall	Lotlamoreng	Dam Wall-15m<Height<30m	Lotlamoreng Dam Spillway Concrete Section	500009140_1	3	2	2	36.074
LOTLAMORENG DAM	WR: Dams	Main Damwall	Lotlamoreng	Dam Wall-15m<Height<30m	Lotlamoreng Earthfill Dam Section Left Bank	500009140_2	3	2	2	6.581
LOTLAMORENG DAM	WR: Dams	Main Damwall	Lotlamoreng	Dam Wall-15m<Height<30m	Lotlamoreng Earthfill Dam Section Right Bank	500009140_3	3	2	2	2.812
LOTLAMORENG DAM	WR: Dams	Main Damwall	Lotlamoreng Dam	Dam Outlet - Pipework-Steel	Lotlamoreng dam outlet pipe (600mm)	500009140_5	3	2	2	1.042

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LOTLAMORENG DAM	WR: Dams	Main Damwall	Lotlamoreng Dam	Dam Outlet Valves - Casing	Lotlamoreng dam gate valve (600mm) - casing	500009140_6	3	2	2	0.077
LOTLAMORENG DAM	WR: Dams	Main Damwall	Lotlamoreng Dam	Dam Outlet Valves - Mechanism	Lotlamoreng dam gate valve (600mm) - mechanism	500009140_7	3	2	2	0.026
LOTLAMORENG DAM	WR: Dams	Main Damwall	Lotlamoreng	Dam Spillway	Lotlamoreng Dam Spillway	500009140_4	3	3	2	0.447
LUVUVHU RIVER-NANDONI DAM (298)	WR: Dams	Main Damwall	Nandoni Dam	Auxilliary Equip. Main Damwall	Boat Slipway	500000526_84	4	4	2	0.380
LUVUVHU RIVER-NANDONI DAM (298)	WR: Reservoirs	Reservoir	Nandoni Dam Elevated Tank	Reservoir	not componentised	500007020_0	3	3	2	0.076
LUVUVHU RIVER-NANDONI DAM (298)	WR: Telemetry	Telemetry Station	VSAT - Nandoni	Telemetry Instrument VSAT Dish	Nandoni 2.4m Satellite dish	500010296_0	3	3	2	1.212
LUVUVHU RIVER-NANDONI DAM (298)	WR: Telemetry	Telemetry Station	VSAT - Nandoni	Telemetry Instrument VSAT Equi	Nandoni Ancillary equipment	500010296_1	3	3	2	0.449
LUVUVHU RIVER-NANDONI DAM (298)	WR: Telemetry	Telemetry Station	VSAT - Mopani District Office (Giyani/Sami dam)	Telemetry Instrument VSAT Dish	Mopani 2.4m Satellite dish	500010299_0	3	3	2	1.212
LUVUVHU RIVER-NANDONI DAM (298)	WR: Telemetry	Telemetry Station	VSAT - Mopani District Office (Giyani/Sami dam)	Telemetry Instrument VSAT Equi	Mopani Ancillary equipment	500010299_1	3	3	2	0.449
MANKWE DAM	WR: Dams	Main Damwall	Mankwe	Dam Intake Gates - Casing	Mankwe - intake gate - casing	500009492_3	2	1	2	0.305
MANKWE DAM	WR: Dams	Main Damwall	Mankwe	Dam Intake Gates - Mechanism	Mankwe - intake gate - mechanism	500009492_4	2	1	2	0.120
MANKWE DAM	WR: Dams	Main Damwall	Mankwe	Dam Outlet - Pipework-Steel	Mankwe outlet pipes	500009492_5	2	1	2	0.407
MANKWE DAM	WR: Dams	Main Damwall	Mankwe	Dam Outlet Valves - Casing	Mankwe - outlet valve - casing	500009492_6	2	1	2	0.407
MANKWE DAM	WR: Dams	Main Damwall	Mankwe	Dam Outlet Valves - Mechanism	Mankwe - outlet valve - mechanism	500009492_7	2	1	2	0.160
MANKWE DAM	WR: Dams	Main Damwall	Mankwe	Dam Wall - 12m<Height<30m	Mankwe Earth Embankment Dam	500009492_1	2	2	2	36.579
MANKWE DAM	WR: Dams	Main Damwall	Mankwe	Dam Spillway	Mankwe Earth Embankment dam spillway	500009492_2	2	2	2	37.788

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MARICO BOSVELD GWS	Buildings	Residential Housing	Marico-Bosveld Canal house at Staatsdrift 1	Main Building	Main building	500021298_0	3	1	2	0.626
MARICO BOSVELD GWS	Buildings	Residential Housing	Marico-Bosveld Canal house at Staatsdrift 2	Main Building	Main building	500021299_0	3	1	2	0.602
MARICO BOSVELD GWS	Buildings	Residential Housing	Marico-Bosveld House at balancing dam 1	Main Building	Main building	500021300_0	3	1	2	0.599
MARICO BOSVELD GWS	Buildings	Residential Housing	Marico-Bosveld House at balancing dam 2	Main Building	Main building	500021301_0	3	1	2	0.590
MARICO BOSVELD GWS	Buildings	Hostels / Flats / Compounds	Marico-Bosveld Toilet and shower at balancing dam	Outbuildings	Outbuildings	500021297_0	2	1	2	0.218
MARICO BOSVELD GWS	WR: Canals	Canal Section	Prim KoppiesKraal East 2	Canal Excavation	Canal excavation	500003559_0	3	3	2	0.067
MARICO BOSVELD GWS	WR: Canals	Canal Section	Prim KoppiesKraal East 2	Canal Lining - TA3	Canal Lining	500003559_1	3	3	2	0.234
MARICO BOSVELD GWS	WR: Canals	Canal Section	Prim KoppiesKraal East 2	Canal Service Road	Canal service road	500003559_2	3	3	2	0.111
MARICO BOSVELD GWS	WR: Canals	Canal Section	Prim KoppiesKraal East 2	Canal Fencing	Canal Fence	500003559_3	3	3	2	0.094
MARICO BOSVELD GWS	WR: Canals	Canal Section	Prim KoppiesKraal East 2	Canal Berm	Canal berm	500003559_4	3	3	2	0.158
MASHASHANE DAM (307)	WR: Dams	Main Damwall	Mashashane Dam	Dam Outlet Valves - Casing	Mashashane Floating Inlet - casing	500009283_4	2	2	2	0.030
MASHASHANE DAM (307)	WR: Dams	Main Damwall	Mashashane Dam	Dam Outlet Valves - Mechanism	Mashashane Floating Inlet - mechanism	500009283_5	2	2	2	0.010
MASHASHANE DAM (307)	WR: Dams	Main Damwall	Mashashane Dam	Dam Outlet - Pipework-Steel	Mashashane Dam outlet pipe	500009283_6	2	2	2	0.759
MASHASHANE DAM (307)	WR: Dams	Main Damwall	Mashashane Dam	Dam Outlet Valves - Casing	Mashashane Outlet Valve - casing	500009283_7	2	2	2	0.106
MASHASHANE DAM (307)	WR: Dams	Main Damwall	Mashashane Dam	Dam Outlet Valves - Mechanism	Mashashane Outlet Valve - mechanism	500009283_8	2	2	2	0.035
MASHASHANE DAM (307)	WR: Dams	Main Damwall	Mashashane	Dam Wall - 12m<Height<30m	Mashashane dam wall	500009283_1	2	3	2	24.363

Scheme	Asset Facility Category (Asset class name)	Facility Type	Facility Name (Asset description)	Component Type	Component Name (Additional description)	Component UID (Combined No)	Criticality	Condition	Utilisation	CRC 2016 (R Million)
MASHASHANE DAM (307)	WR: Dams	Main Damwall	Mashashane	Dam Spillway	Mashashane dam spillway	500009283_2	2	4	2	0.725
MASHASHANE DAM (307)	WR: Dams	Main Damwall	Mashashane	Dam Outlet Structure	Mashashane dam outlet structure	500009283_3	2	4	2	3.635
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal2	Canal Fencing	Canal Fence Left	500001006_4	3	2	2	0.057
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal2	Canal Fencing	Canal Fence Right	500001006_5	3	2	2	0.057
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal2	Canal Service Road	Canal service road	500001006_6	3	2	2	0.024
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal2	Canal Berm	Canal berm	500001006_7	3	2	2	0.111
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal2	Canal Excavation	Canal excavation	500001006_0	3	3	2	0.124
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal2	Canal Controls	Middelkraal prim_canal2	500001006_1	3	3	2	0.095
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal2	Canal Lining - TA3	Canal Lining	500001006_2	3	3	2	0.066
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal2	Canal Controls	Canal Controls	500001006_3	3	3	2	0.275
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal1	Canal Excavation	Canal excavation	500006554_0	3	3	2	0.041
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal1	Canal Fencing	Canal Fence Left	500006554_1	3	3	2	0.025
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal1	Canal Fencing	Canal Fence Right	500006554_2	3	3	2	0.025
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal1	Canal Lining - TA3	Canal Lining	500006554_3	3	3	2	0.104
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal1	Canal Service Road	Canal service road	500006554_4	3	3	2	0.017
MIDDELKRAL DAM	WR: Canals	Canal Section	Middelkraal prim_canal1	Canal Berm	Canal berm	500006554_5	3	3	2	0.045
MIDDELKRAL DAM	WR: Dams	Main Damwall	Middelkraal	Dam Meter & Instrumentation	Middelkraal Dam Meter and Instrumentation	500009082_4	3	1	2	0.889
MIDDELKRAL DAM	WR: Dams	Main Damwall	Middelkraal	Dam Outlet - Pipework-Steel	Middelkraal outlet pipes	500009082_5	3	1	2	0.407
MIDDELKRAL DAM	WR: Dams	Main Damwall	Middelkraal	Dam Outlet Valves - Casing	Middelkraal - outlet valve - casing	500009082_6	3	1	2	0.407
MIDDELKRAL DAM	WR: Dams	Main Damwall	Middelkraal	Dam Outlet Valves - Mechanism	Middelkraal - outlet valve - mechanism	500009082_7	3	1	2	0.160
MIDDELKRAL DAM	WR: Dams	Main Damwall	Middelkraal	Dam Wall-15m<Height<30m	Middelkraal Earth Embankment	500009082_1	3	3	2	4.042

Scheme	Asset Facility Category (Asset class name)	Facility Type	Facility Name (Asset description)	Component Type	Component Name (Additional description)	Component UID (Combined No)	Criticality	Condition	Utilisation	CRC 2016 (R Million)
MIDDLE LETABA SYSTEM GWS	WR: Canals	Canal Section	prim_canal3	Canal Excavation	Canal excavation	500001031_0	3	3	2	0.056
MIDDLE LETABA SYSTEM GWS	WR: Canals	Canal Section	prim_canal3	Canal Lining - TA3	Canal Lining	500001031_1	3	3	2	0.160
MIDDLE LETABA SYSTEM GWS	WR: Canals	Canal Section	prim_canal3	Canal Service Road	Canal service road	500001031_2	3	3	2	0.083
MIDDLE LETABA SYSTEM GWS	WR: Canals	Canal Section	prim_canal3	Canal Berm	Canal berm	500001031_3	3	3	2	0.065
MIDDLE LETABA SYSTEM GWS	WR: Canals	Canal Section	MIDDLE LETABA CANAL REACH 1 SCOTCH CAMP	Canal Fencing	Canal Fence Left	500003963_4	1	2	2	2.089
MIDDLE LETABA SYSTEM GWS	WR: Power Supply	Power Supply Generator	Middle Letaba Genset	Power Supply Generator	not componentised	500001571_0	3	3	2	0.121
MKOMBO DAM	WR: Reservoirs	Reservoir	Mkhombo Reservoir	Reservoir	not componentised	500000579_0	2	3	2	19.241
MKOMBO DAM	WR: Reservoirs	Reservoir	Mkhombo Reservoir	Reservoir Lining	Mkhombo Reservoir	500000579_1	2	3	2	0.006
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Auxilliary Equip. Main Damwall	Glen Alpine Dam hand rails Left	500009265_6	4	2	2	1.383
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Auxilliary Equip. Main Damwall	Glen Alpine Dam hand rails right	500009265_7	4	2	2	1.383
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Auxilliary Equip. Main Damwall	Glen Alpine handrails at outlet structure	500009265_8	4	2	2	1.383
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Auxilliary Equip. Main Damwall	Glen Alpine standby generator	500009265_10	4	2	2	0.830
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Cranes	Glen Alpine Dam Gantry crane 15t	500009265_28	4	2	2	1.058
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Dam Meter & Instrumentation	Glen Alpine Dam Hydro instrumentation	500009265_29	4	2	2	0.455
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Dam Outlet - Gates & Valves	Glen Alpine dam toe drain	500009265_31	4	2	2	0.301
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Auxilliary Equip. Main Damwall	Glen Alpine dam lighting	500009265_35	4	2	2	0.925
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Auxilliary Equip. Main Damwall	Glen Alpine dam staircase	500009265_36	4	2	2	0.578

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MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Auxilliary Equip. Main Damwall	Glen Alpine Dam sump pump	500009265_5	4	3	2	0.415
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Auxilliary Equip. Main Damwall	Glen Alpine dam safety boom & boys	500009265_9	4	3	2	0.691
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine A6R002	Electric Network	Glen Alpine dam - electrical networks	500009265_21	4	3	2	3.941
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine A6R002	Dam Tunnel	Glen Alpine dam - Dam Tunnel	500009265_22	4	3	2	4.629
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Auxilliary Equip. Main Damwall	Glen Alpine dam control room	500009265_27	4	3	2	0.347
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Dam Intake Gates	Glen Alpine Dam Emergancy gate	500009265_37	4	3	2	0.531
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Dam Intake Gates	Glen Alpine Dam Service Gate	500009265_38	4	3	2	0.531
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine A6R002	Dam Wall - 12m<Height<30m	Glen Alpine Dam - Dam wall	500009265_1	4	4	2	216.195
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine A6R002	Dam Outlet Valves - Casing	Glen Alpine - outlet valve 2 - casing	500009265_2	4	4	2	0.649
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine A6R002	Dam Outlet Valves - Mechanism	Glen Alpine - outlet valve 2 - mechanism	500009265_3	4	4	2	0.231
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Dam Outlet - Pipework-Steel	Glen Alpine outlet pipes	500009265_4	4	4	2	0.886
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Gate Valves - Casing	Glen Alpine Dam Radial gate No1 - casing	500009265_11	4	4	2	1.037
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Gate Valves - Casing	Glen Alpine Dam Radial gate No2 - casing	500009265_12	4	4	2	1.037
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Dam Intake Gates - Casing	Glen Alpine Dam intake gate No 2 (Right) - casing	500009265_13	4	4	2	0.415
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Gate Valves - Mechanism	Glen Alpine Dam Radial gate No1 - mechanism	500009265_14	4	4	2	0.346
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Gate Valves - Mechanism	Glen Alpine Dam Radial gate No2 - mechanism	500009265_15	4	4	2	0.346

Scheme	Asset Facility Category (Asset class name)	Facility Type	Facility Name (Asset description)	Component Type	Component Name (Additional description)	Component UID (Combined No)	Criticality	Condition	Utilisation	CRC 2016 (R Million)
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Dam Intake Gates - Mechanism	Glen Dam intake gate No 2 (Right) - mechanism	500009265_16	4	4	2	0.138
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine A6R002	Dam Intake Gates - Casing	Glen Alpine - intake gate - casing	500009265_18	4	4	2	0.974
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine A6R002	Dam Intake Gates - Mechanism	Glen Alpine - intake gate - mechanism	500009265_19	4	4	2	0.815
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine A6R002	Dam Outlet Structure	Glen Alpine Dam - outlet structure	500009265_20	4	4	2	2.746
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine A6R002	Dam Wall - 12m<Height<30m	Glen Alpine earth wall (left+right)	500009265_23	4	4	2	176.242
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine A6R002	Dam Outlet - Pipework-Steel	Glen Alpine outlet pipes	500009265_24	4	4	2	0.886
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine A6R002	Dam Outlet Valves - Casing	Glen Alpine - outlet valve 1 - casing	500009265_25	4	4	2	0.649
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine A6R002	Dam Outlet Valves - Mechanism	Glen Alpine - outlet valve 1 - mechanism	500009265_26	4	4	2	0.383
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Dam Wall-Height>60m	Glen Alpine earth wall right	500009265_30	4	4	2	28.714
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Dam Intake Gates	Glen Alpine dam intake grid 1	500009265_32	4	4	2	0.167
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Dam Intake Gates	Glen Alpine dam intake grid 2	500009265_33	4	4	2	0.167
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Dams	Main Damwall	Glen Alpine Dam	Dam Intake Gates	Glen Alpine dam intake grid 3	500009265_34	4	4	2	0.167
MOGALAKWENA RIV. - GLEN ALPINE DAM (68)	WR: Reservoirs	Reservoir	Glen Alpine Raw Water Storage	Reservoir	not componentised	500007024_0	3	3	2	0.313
MOGOL RIVER - MOKOLO DAM (78)	Buildings	Stores	MOGOL RIVER - MOKOLO DAM	Main Building	Store	500006584_0	2	3	2	0.390
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo dam control room	500010381_70	4	2	2	0.417
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Meter & Instrumentation	Mokolo dam Billing meter 1	500010381_71	4	2	2	0.556

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MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Meter & Instrumentation	Mokolo dam Billing meter 2	500010381_72	4	2	2	0.556
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Meter & Instrumentation	Mokolo hydro instrumentation	500010381_73	4	2	2	0.759
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo	Dam Outlet Valves - Casing	Mokolo - outlet valve 1 - casing	500010381_2	4	3	2	0.822
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo	Dam Outlet Valves - Mechanism	Mokolo - outlet valve 1 - mechanism	500010381_3	4	3	2	4.849
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo	Dam Outlet Valves - Casing	Mokolo - outlet valve 2 - casing	500010381_4	4	3	2	0.870
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo	Dam Outlet Valves - Mechanism	Mokolo - outlet valve 2 - mechanism	500010381_5	4	3	2	2.272
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo 1000KVA transformer	500010381_20	4	3	2	1.079
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo electric network	500010381_21	4	3	2	1.079
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo hand rails in outlet control room	500010381_22	4	3	2	1.349
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo handrails at outlet stilling basin	500010381_23	4	3	2	1.349
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo handrails on inlet tower	500010381_24	4	3	2	1.349
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo hydraulic power pack	500010381_25	4	3	2	1.079
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo Rack Lift	500010381_26	4	3	2	2.159
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo lightning in inlet tower	500010381_27	4	3	2	1.439
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo lightning in tunnel	500010381_28	4	3	2	1.439
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo safety buoys	500010381_29	4	3	2	1.349

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MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo staitcase and platforms	500010381_30	4	3	2	1.349
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo standby generator	500010381_31	4	3	2	1.079
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet - Pipework-Steel	Mokolo 2200mm diam mild steel scour pipe	500010381_32	4	3	2	5.808
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet - Pipework-Steel	Mokolo outlet pipe Left (600mm diam)	500010381_33	4	3	2	1.660
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet - Pipework-Steel	Mokolo outlet pipe Left to WTP (1000mm diam)	500010381_34	4	3	2	2.213
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet - Pipework-Steel	Mokolo outlet pipe Right (600mm diam)	500010381_35	4	3	2	1.660
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet - Pipework-Steel	Mokolo outlet pipe Right to WTP (1000mm diam)	500010381_36	4	3	2	2.213
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet - Pipework-Steel	Mokolo outlet pipes Right (1200mm diam)	500010381_37	4	3	2	2.766
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo 1800mm diam spherical valve - casing	500010381_38	4	3	2	1.917
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Mokolo 1800mm diam spherical valve - mechanism	500010381_49	4	3	2	0.639
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo	Dam Intake Gates - Casing	Mokolo - intake gate - casing	500010381_61	4	3	2	4.549
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo	Dam Intake Gates - Mechanism	Mokolo - intake gate - mechanism	500010381_62	4	3	2	3.510
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Auxilliary Equip. Main Damwall	Mokolo dam boat slipway	500010381_69	4	3	2	0.417
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet - Gates & Valves	Mokolo dam toe drain	500010381_75	4	3	2	0.493
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo scour jet valve - casing	500010381_77	4	3	2	0.628
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Mokolo scour jet valve - mechanism	500010381_78	4	3	2	0.209
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo	Dam Spillway	Mokolo dam spillway	500010381_1	4	4	2	216.577

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MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo outlet valve 4 (914mm diam) - casing	500010381_6	4	4	2	0.595
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Mokolo outlet valve 4 (914mm diam) - mechanism	500010381_7	4	4	2	0.806
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo butterfly valve L1 (1200mm diam) - casing	500010381_8	4	4	2	0.806
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Mokolo butterflyvalve L1 (1200mm diam) - mechanism	500010381_9	4	4	2	0.806
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo butterfly valve L3 (1000mm diam) - casing	500010381_10	4	4	2	0.595
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Mokolo butterflyvalve L3 (1000mm diam) - mechanism	500010381_11	4	4	2	0.595
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo butterfly valve L4 (1000mm diam) - casing	500010381_12	4	4	2	0.595
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Mokolo butterflyvalve L4 (1000mm diam) - mechanism	500010381_13	4	4	2	0.198
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo butterfly valve R3 (1000mm diam) - casing	500010381_14	4	4	2	0.269
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Mokolo butterflyvalve R3 (1000mm diam) - mechanism	500010381_15	4	4	2	0.269
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo butterfly valve R4 (1000mm diam) - casing	500010381_16	4	4	2	0.269
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Mokolo butterflyvalve R4 (1000mm diam) - mechanism	500010381_17	4	4	2	0.198
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Butterflyvalve (1000mm isolating L& R) - casing	500010381_18	4	4	2	0.198
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Butterflyvalve (1000mm isolating L& R) - mechanism	500010381_19	4	4	2	0.198
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo butterfly valve L2 (600mm diam) - casing	500010381_39	4	4	2	0.347
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo butterfly valve R1 (600mm diam) - casing	500010381_40	4	4	2	0.347

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MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo butterfly valve R2 (1200mm diam) - casing	500010381_41	4	4	2	1.733
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo outlet valve 3 (600mm sleeve) - casing	500010381_42	4	4	2	0.346
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo intake gate L1 (1200mm butterfly) - casing	500010381_43	4	4	2	1.528
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo intake gate L2 (1200mm butterfly) - casing	500010381_44	4	4	2	1.528
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo intake gate L3 (1200mm butterfly) - casing	500010381_45	4	4	2	1.528
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo intake gate R2 (1200mm butterfly) - casing	500010381_46	4	4	2	1.528
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo intake gate R3 (1200mm butterfly) - casing	500010381_47	4	4	2	1.528
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Casing	Mokolo intake gate R4 (1200mm butterfly) - casing	500010381_48	4	4	2	1.528
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Mokolo butterfly valve L2 (600mm diam) - mechanism	500010381_50	4	4	2	0.116
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Mokolo butterfly valve R1 (600mm diam) - mechanism	500010381_51	4	4	2	0.116
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Butterfly valve R2 (1200mm diam) - mechanism	500010381_52	4	4	2	0.578
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Mokolo outlet valve 3 (600mm sleeve) - mechanism	500010381_53	4	4	2	0.115
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Dam intake gate L1 (1200mm butterfly) - mechanism	500010381_54	4	4	2	0.509
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Dam Intake gate L2 (1200mm butterfly) - mechanism	500010381_55	4	4	2	0.509
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Dam Intake gate L3 (1200mm butterfly) - mechanism	500010381_56	4	4	2	0.509
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Dam Intake gate R2 (1200mm butterfly) - mechanism	500010381_57	4	4	2	0.509

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MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Dam Intake gate R3 (1200mm butterfly) - mechanism	500010381_58	4	4	2	0.509
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Valves - Mechanism	Dam Intake gate R4 (1200mm butterfly) - mechanism	500010381_59	4	4	2	0.509
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo	Dam Wall - 30m<Height<60m	Mokolo dam wall	500010381_60	4	4	2	316.754
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo	Dam Tunnel	Mokolo dam Tunnel	500010381_64	4	4	2	80.886
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo	Dam Outlet - Intake Tower	Mokolo Dam tower	500010381_65	4	4	2	17.356
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo	Auxilliary Equip. Main Damwall	Mokolo Dam Standby Generator	500010381_66	4	4	2	1.121
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo	Cranes	Mokolo Dam Crane	500010381_67	4	4	2	0.521
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo	Dam Outlet - Pipework-Steel	Mokolo outlet pipes	500010381_68	4	4	2	5.086
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Outlet Structure	Mokolo Dam outlet structure	500010381_74	4	4	2	2.277
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Intake Gates	Mokolo intake grid	500010381_76	4	4	2	1.139
MOGOL RIVER - MOKOLO DAM (78)	WR: Dams	Main Damwall	Mokolo Dam	Dam Intake Gates	Mokolo service gate	500010381_79	4	4	2	1.139
MOGOL RIVER - MOKOLO DAM (78)	WS: Measuring facility	Meteorological Station	Bridge river crossing	Meteorological Station	Bridge river crossing	500000012_0	3	3	2	0.277
MOLATEDI DAM (71)	WR: Reservoirs	Reservoir	Molatedi Dam Elavated Tank	Reservoir	not componentised	500007116_0	3	3	2	0.305
MOLATEDI DAM (71)	WR: Reservoirs	Reservoir	Twasa Weir Forbay	Reservoir	not componentised	500007795_0	3	3	2	11.064
MOLATEDI DAM (71)	WR: Reservoirs	Reservoir	Twasa Weir Elevated Tank	Reservoir	not componentised	500008274_0	3	3	2	0.327
MOLATEDI DAM (71)	WR: Reservoirs	Reservoir	Twasa Balancing Reservoir (Supply to Botswana)	Reservoir	not componentised	500007792_0	2	3	2	2.365
MOLEPO DAM	WR: Pump stations	Pump Station	Molepo Dam	Pump Station	Molepo Dam Pump Station	500021640_0	3	3	2	5.876
MOLEPO DAM	WR: Steel Pipelines	Pipeline Section	Molepo Dam	Pipeline Section	Molepo Dam rising main to WTW	500021639_0	2	3	2	4.770

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NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane	Dam Intake Gates - Casing	Ngotoane - intake gate - casing	500009098_4	3	3	2	0.726
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane	Dam Intake Gates - Mechanism	Ngotoane - intake gate - mechanism	500009098_5	3	3	2	0.262
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane	Dam Outlet - Pipework-Steel	Ngotoane outlet pipes	500009098_6	3	3	2	0.968
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane	Dam Outlet Valves - Casing	Ngotoane - outlet valve - casing	500009098_7	3	3	2	0.968
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane	Dam Outlet Valves - Mechanism	Ngotoane - outlet valve - mechanism	500009098_8	3	3	2	0.349
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane Dam	Dam Intake Gates - Casing	intakebuttrfly valve 1 (350mm) RL 1104.00m-casing	500009098_9	3	3	2	0.054
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane Dam	Dam Intake Gates - Casing	intakebuttrfly valve 2 (350mm) RL 1103.00m-casing	500009098_10	3	3	2	0.054
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane Dam	Dam Intake Gates - Casing	intakebuttrfly valve 3 (350mm) RL 1102.00m-casing	500009098_11	3	3	2	0.054
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane Dam	Dam Intake Gates - Mechanism	intake buttrfly valve 1 (350mm) RL 1104.00m-mech	500009098_12	3	3	2	0.018
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane Dam	Dam Intake Gates - Mechanism	intake buttrfly valve 2 (350mm) RL 1103.00m-mech	500009098_13	3	3	2	0.018
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane Dam	Dam Intake Gates - Mechanism	intake buttrfly valve 3 (350mm) RL 1102.00m-mech	500009098_14	3	3	2	0.018
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane Dam	Dam Intake Gates	Ngotoane Dam intake gate 2 - gate	500009098_16	3	3	2	0.126
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane Dam	Dam Intake Gates	Ngotoane Dam intake gate 3 - gate	500009098_17	3	3	2	0.126
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane Dam	Dam Intake Gates - Mechanism	Ngotoane Dam intake gate 2 - mechanism	500009098_18	3	3	2	0.042
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane Dam	Dam Intake Gates - Mechanism	Ngotoane Dam intake gate 3 - mechanism	500009098_19	3	3	2	0.042
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane	Dam Wall - 12m<Height<30m	Ngotoane Earthfill Dam Section Right Bank	500009098_1	3	4	2	30.816

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NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane	Dam Spillway	Ngotoane Dam Spillway Concrete Section	500009098_2	3	4	2	120.465
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane	Dam Outlet - Intake Tower	Ngotoane Dam Outlet - Intake Tower	500009098_3	3	4	2	4.959
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane Dam	Access Bridge	Ngotoane Dam access bridge	500009098_15	3	4	2	1.068
NGOTOANE DAM (LEHURUTSE / SKUINS) (336)	WR: Dams	Main Damwall	Ngotoane Dam	Dam Outlet - Gates & Valves	Ngotoane dam toe drain	500009098_20	3	4	2	0.415
NOOITGEDACHT (NORTH WEST) DAM	WR: Dams	Main Damwall	Nooitgedacht	Dam Outlet Valves - Mechanism	Nooitgedacht - outlet valve - mechanism	500007494_6	3	3	2	0.137
NOOITGEDACHT (NORTH WEST) DAM	WR: Dams	Main Damwall	Nooitgedacht	Dam Wall-15m<Height<30m	Nooitgedacht dam wall	500007494_1	2	2	2	10.507
NOOITGEDACHT (NORTH WEST) DAM	WR: Dams	Main Damwall	Nooitgedacht	Dam Intake Gates - Casing	Nooitgedacht - intake gate - casing	500007494_2	2	4	2	0.288
NOOITGEDACHT (NORTH WEST) DAM	WR: Dams	Main Damwall	Nooitgedacht	Dam Intake Gates - Mechanism	Nooitgedacht - intake gate - mechanism	500007494_3	2	4	2	0.102
NOOITGEDACHT (NORTH WEST) DAM	WR: Dams	Main Damwall	Nooitgedacht	Dam Outlet - Pipework-Steel	Nooitgedacht outlet pipes	500007494_4	2	4	2	0.385
NOOITGEDACHT (NORTH WEST) DAM	WR: Dams	Main Damwall	Nooitgedacht	Dam Outlet Valves - Casing	Nooitgedacht - outlet valve - casing	500007494_5	2	4	2	0.385
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	PRIM CNL SEC1 TYD	Canal Syphons	Syphone No1	500019837_1	3	1	2	0.173
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	PRIM CNL SEC1 TYD	Canal Berm	Canal berm	500019837_5	3	1	2	0.547
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele D Canal	Canal Berm	Canal berm	500000645_5	3	2	2	0.522
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	PRIM CNL SEC1 TYD	Canal Service Road	Canal service road	500019837_4	3	2	2	0.403
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	PRIM CNL SEC1 TYD	Canal Bridges	Tractor Bridge	500019837_2	3	3	2	1.860

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NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	PRIM CNL SEC1 TYD	Canal Lining - TA3	Canal Lining	500019837_3	3	3	2	3.845
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele D Canal	Canal Fencing	Canal Fence Right	500000645_2	3	4	2	0.810
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Reach 7	Canal Berm	Canal berm	500002813_5	2	2	2	0.090
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Canals	Canal Section	Nzhelele Main Canal Reach 7	Canal Fencing	Canal Fence Right	500002813_2	1	2	2	0.053
NZHELELE RIVER GWS (NZHELELE DAM)	WR: Power Supply	Power Supply Generator	Nzhelele Dam Housing Generator Room	Power Supply Generator	Nzhelele houses generator	500000024_1	2	3	2	0.455
PALALA RIVER GWS (SUSANDALE AND VISGAT W	WR: Dams	Main Damwall	Visgat Weir	Dam Meter & Instrumentation	Visgat Hydro Instrumentation	500009119_4	1	2	2	0.455
PALALA RIVER GWS (SUSANDALE AND VISGAT W	WR: Dams	Main Damwall	Visgat Weir	Dam Outlet - Pipework-Steel	Visgat weir outlet pipe	500009119_5	1	2	2	0.019
PALALA RIVER GWS (SUSANDALE AND VISGAT W	WR: Dams	Main Damwall	Susandale Weir	Dam Meter & Instrumentation	Susandale Hydro Instrumentation	500009468_3	1	2	2	0.033
PALALA RIVER GWS (SUSANDALE AND VISGAT W	WR: Dams	Main Damwall	Susandale Weir	Dam Outlet - Pipework-Steel	Susandale weir outlet pipe	500009468_4	1	2	2	0.001
PALALA RIVER GWS (SUSANDALE AND VISGAT W	WR: Dams	Main Damwall	Susandale Weir	Dam Outlet Valves - Casing	Susandale weir gate valve (300mm) - casing	500009468_5	1	2	2	0.001
PALALA RIVER GWS (SUSANDALE AND VISGAT W	WR: Dams	Main Damwall	Susandale Weir	Dam Outlet Valves - Mechanism	Susandale weir gate valve (300mm) - mechanism	500009468_6	1	2	2	-
PALALA RIVER GWS (SUSANDALE AND VISGAT W	WR: Dams	Main Damwall	Visgat weir	Dam Wall-15m<Height<30m	Visgat weir dam wall	500009119_1	1	4	2	5.738
PALALA RIVER GWS (SUSANDALE AND VISGAT W	WR: Dams	Main Damwall	Visgat Weir	Dam Outlet Valves - Casing	Visgat Outlet Gate (5) - casing	500009119_2	1	4	2	0.245
PALALA RIVER GWS (SUSANDALE AND VISGAT W	WR: Dams	Main Damwall	Visgat Weir	Dam Outlet Valves - Mechanism	Visgat Outlet Gate (5) - mechanism	500009119_3	1	4	2	0.082
PALALA RIVER GWS (SUSANDALE AND VISGAT W	WR: Dams	Main Damwall	Suzandale weir	Dam Wall-15m<Height<30m	Susandale weir dam wall	500009468_1	1	4	2	8.842
PALALA RIVER GWS (SUSANDALE AND VISGAT W	WR: Dams	Main Damwall	Susandale weir	Dam Spillway	Susandale weir spillway	500009468_2	1	4	2	5.818

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PELLA DAM (335)	WR: Dams	Main Damwall	Pella	Dam Intake Gates - Casing	Pella - intake gate - casing	500009460_2	2	1	2	0.007
PELLA DAM (335)	WR: Dams	Main Damwall	Pella	Dam Intake Gates - Mechanism	Pella - intake gate - mechanism	500009460_3	2	1	2	0.003
PELLA DAM (335)	WR: Dams	Main Damwall	Pella	Dam Outlet - Pipework-Steel	Pella outlet pipes	500009460_5	2	1	2	0.002
PELLA DAM (335)	WR: Dams	Main Damwall	Pella	Dam Outlet Valves - Casing	Pella - outlet valve - casing	500009460_6	2	1	2	0.009
PELLA DAM (335)	WR: Dams	Main Damwall	Pella	Dam Outlet Valves - Mechanism	Pella - outlet valve - mechanism	500009460_7	2	1	2	0.004
PELLA DAM (335)	WR: Dams	Main Damwall	Pella Dam	Dam Outlet Valves - Casing	Pella dam butterfly valve 1 - casing	500009460_9	2	1	2	0.042
PELLA DAM (335)	WR: Dams	Main Damwall	Pella Dam	Dam Outlet Valves - Mechanism	Pella dam butterfly valve 1 - mechanism	500009460_10	2	1	2	0.014
PELLA DAM (335)	WR: Dams	Main Damwall	Pella Dam	Dam Intake Gates	Pella dam intake gate 2 - gate	500009460_11	2	1	2	0.126
PELLA DAM (335)	WR: Dams	Main Damwall	Pella Dam	Dam Intake Gates - Mechanism	Pella dam intake gate 2 - mechanism	500009460_12	2	1	2	0.042
PELLA DAM (335)	WR: Dams	Main Damwall	Pella Dam	Dam Outlet - Pipework-Steel	Pella dam outlet pipe 2	500009460_13	2	1	2	0.007
PELLA DAM (335)	WR: Dams	Main Damwall	Pella	Dam Outlet - Intake Tower	Pella Dam Outlet - Intake Tower	500009460_4	2	4	2	9.918
PELLA DAM (335)	WR: Dams	Main Damwall	Pella Dam	Access Bridge	Pella dam access bridge	500009460_8	2	4	2	2.803
PELLA DAM (335)	WR: Dams	Main Damwall	Pella Dam	Dam Outlet - Gates & Valves	Pella dam toe drain	500009460_14	2	4	2	0.506
PELLA DAM (335)	WR: Dams	Main Damwall	Pella	Dam Wall - 12m<Height<30m	Pella Earthfill Dam Section Left Bank	500009460_1	2	5	2	53.977
PHIRING DAM	WR: Dams	Main Damwall	Phiring	Dam Meter & Instrumentation	Phiring dam meter and instrumentation	500000604_4	2	2	2	0.889
PHIRING DAM	WR: Dams	Main Damwall	Phiring	Dam Outlet - Pipework-Steel	Phiring outlet pipes	500000604_5	2	2	2	0.135

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PHIRING DAM	WR: Dams	Main Damwall	Phiring	Dam Intake Gates - Casing	Phiring - intake gate - casing	500000604_2	2	3	2	0.101
PHIRING DAM	WR: Dams	Main Damwall	Phiring	Dam Intake Gates - Mechanism	Phiring - intake gate - mechanism	500000604_3	2	3	2	0.037
PHIRING DAM	WR: Dams	Main Damwall	Phiring	Dam Outlet Valves - Casing	Phiring - outlet valve - casing	500000604_6	2	3	2	0.135
PHIRING DAM	WR: Dams	Main Damwall	Phiring	Dam Outlet Valves - Mechanism	Phiring - outlet valve - mechanism	500000604_7	2	3	2	0.050
PHIRING DAM	WR: Dams	Main Damwall	Phiring	Dam Wall-15m<Height<30m	Phiring Concrete Dam Wall	500000604_1	2	4	2	27.916
PIENAARS RIVER GWS (ROODEPLAAT DAM)	WR: Canals	Canal Section	ter cnl5 T	Canal Excavation	Canal excavation	500003362_0	3	3	2	0.455
PIENAARS RIVER GWS (ROODEPLAAT DAM)	WR: Canals	Canal Section	ter cnl5 T	Canal Bridges	bridge @wpt 318	500003362_1	3	3	2	0.123
PIENAARS RIVER GWS (ROODEPLAAT DAM)	WR: Canals	Canal Section	ter cnl5 T	Canal Bridges	bridge @wpt 319	500003362_2	3	3	2	0.123
PIENAARS RIVER GWS (ROODEPLAAT DAM)	WR: Canals	Canal Section	ter cnl5 T	Canal Fencing	Canal Fence Left	500003362_3	3	3	2	0.177
PIENAARS RIVER GWS (ROODEPLAAT DAM)	WR: Canals	Canal Section	ter cnl5 T	Canal Fencing	Canal Fence Right	500003362_4	3	3	2	0.177
PIENAARS RIVER GWS (ROODEPLAAT DAM)	WR: Canals	Canal Section	ter cnl5 T	Canal Lining - TA2	Canal Lining	500003362_5	3	3	2	0.597
PIENAARS RIVER GWS (ROODEPLAAT DAM)	WR: Canals	Canal Section	ter cnl5 T	Canal Service Road	Canal service road	500003362_6	3	3	2	0.225
PIENAARS RIVER GWS (ROODEPLAAT DAM)	WR: Canals	Canal Section	ter cnl5 T	Canal Berm	Canal berm	500003362_7	3	3	2	0.374
PIENAARS RIVER GWS (ROODEPLAAT DAM)	WR: Reservoirs	Reservoir	Roodeplaat Dam Raw Water supply	Reservoir	not componentised	500007121_0	3	3	2	0.246
POLITSI RIVER (MAGOEBASKLOOF DAM)	WR: Reservoirs	Reservoir	Magoebaskloofdam Domestic reservoir	Reservoir	not componentised	500006951_0	3	3	2	0.227

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POLITSI RIVER (MAGOEBASKLOOF DAM)	WR: Roads and bridge	Road Section	Access Road 2	Road Section		500021670_0	1	5	2	0.028
POLITSI RIVER (MAGOEBASKLOOF DAM)	WR: Roads and bridge	Road Section	Access Road 3	Road Section		500021671_0	1	5	2	0.131
POLITSI RIVER (MAGOEBASKLOOF DAM)	WR: Roads and bridge	Road Section	Access Road 4	Road Section		500021672_0	1	5	2	0.151
RIETFONTEIN DAM 1& 2	WR: Dams	Main Damwall	Rietfontein I	Dam Wall-15m<Height<30m	Rietfontein 1 dam wall	500000705_1	3	2	2	14.134
RIETFONTEIN DAM 1& 2	WR: Dams	Main Damwall	Rietfontein I	Dam Intake Gates - Mechanism	Rietfontein I - intake gate - mechanism	500000705_4	3	2	2	0.206
RIETFONTEIN DAM 1& 2	WR: Dams	Main Damwall	Rietfontein I	Dam Outlet - Pipework-Steel	Rietfontein I outlet pipes	500000705_5	3	2	2	0.744
RIETFONTEIN DAM 1& 2	WR: Dams	Main Damwall	Rietfontein II	Dam Wall-15m<Height<30m	Rietfontein II damwall	500000706_1	3	2	2	21.302
RIETFONTEIN DAM 1& 2	WR: Dams	Main Damwall	Rietfontein II	Dam Intake Gates - Casing	Rietfontein II - intake gate - casing	500000706_3	3	2	2	0.390
RIETFONTEIN DAM 1& 2	WR: Dams	Main Damwall	Rietfontein II	Dam Intake Gates - Mechanism	Rietfontein II - intake gate - mechanism	500000706_4	3	2	2	0.150
RIETFONTEIN DAM 1& 2	WR: Dams	Main Damwall	Rietfontein II	Dam Outlet - Pipework-Steel	Rietfontein II outlet pipes	500000706_5	3	2	2	0.520
RIETFONTEIN DAM 1& 2	WR: Dams	Main Damwall	Rietfontein I	Dam Spillway	Rietfontein 1 Dam Spillway	500000705_2	3	3	2	0.530
RIETFONTEIN DAM 1& 2	WR: Dams	Main Damwall	Rietfontein I	Dam Intake Gates - Casing	Rietfontein I - intake gate - casing	500000705_3	3	3	2	0.558
RIETFONTEIN DAM 1& 2	WR: Dams	Main Damwall	Rietfontein II	Dam Spillway	Rietfontein II dam spillway	500000706_2	3	3	2	0.775
ROOIKRAAL	Buildings	Stores	Rooikraal Store	Main Building	Main building	500006621_0	3	1	2	0.042
ROOIKRAAL	WR: Canals	Canal Section	prim_canal2	Canal Service Road	Canal service road	500000989_4	3	2	2	0.093
ROOIKRAAL	WR: Canals	Canal Section	prim_canal1	Canal Fencing	Canal Fence Left	500000993_1	3	2	2	0.425
ROOIKRAAL	WR: Canals	Canal Section	prim_canal1	Canal Fencing	Canal Fence Right	500000993_2	3	2	2	0.425

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ROOIKRAAL	WR: Canals	Canal Section	prim_canal1	Canal Lining - TA3	Canal Lining	500000993_3	3	2	2	3.108
ROOIKRAAL	WR: Canals	Canal Section	prim_canal1	Canal Service Road	Canal service road	500000993_4	3	2	2	0.503
ROOIKRAAL	WR: Canals	Canal Section	sec_canal1	Canal Excavation	Canal excavation	500000673_0	3	3	2	0.187
ROOIKRAAL	WR: Canals	Canal Section	sec_canal1	Canal Fencing	Canal Fence Left	500000673_1	3	3	2	0.110
ROOIKRAAL	WR: Canals	Canal Section	sec_canal1	Canal Fencing	Canal Fence Right	500000673_2	3	3	2	0.110
ROOIKRAAL	WR: Canals	Canal Section	sec_canal1	Canal Lining - TA3	Canal Lining	500000673_3	3	3	2	0.461
ROOIKRAAL	WR: Canals	Canal Section	sec_canal1	Canal Service Road	Canal service road	500000673_4	3	3	2	0.140
ROOIKRAAL	WR: Canals	Canal Section	sec_canal1	Canal Berm	Canal berm	500000673_5	3	3	2	0.212
ROOIKRAAL	WR: Canals	Canal Section	sec_canal5	Canal Excavation	Canal excavation	500000674_0	3	3	2	0.296
ROOIKRAAL	WR: Canals	Canal Section	sec_canal5	Canal Fencing	Canal Fence Left	500000674_1	3	3	2	0.122
ROOIKRAAL	WR: Canals	Canal Section	sec_canal5	Canal Fencing	Canal Fence Right	500000674_2	3	3	2	0.122
ROOIKRAAL	WR: Canals	Canal Section	sec_canal5	Canal Lining - TA3	Canal Lining	500000674_3	3	3	2	0.653
ROOIKRAAL	WR: Canals	Canal Section	sec_canal5	Canal Service Road	Canal service road	500000674_4	3	3	2	0.156
ROOIKRAAL	WR: Canals	Canal Section	sec_canal5	Canal Berm	Canal berm	500000674_5	3	3	2	0.237
ROOIKRAAL	WR: Canals	Canal Section	prim_canal2	Canal Excavation	Canal excavation	500000989_0	3	3	2	0.285
ROOIKRAAL	WR: Canals	Canal Section	prim_canal2	Canal Fencing	Canal Fence Left	500000989_1	3	3	2	0.126
ROOIKRAAL	WR: Canals	Canal Section	prim_canal2	Canal Fencing	Canal Fence Right	500000989_2	3	3	2	0.126
ROOIKRAAL	WR: Canals	Canal Section	prim_canal2	Canal Lining - TA3	Canal Lining	500000989_3	3	3	2	0.674
ROOIKRAAL	WR: Canals	Canal Section	prim_canal2	Canal Berm	Canal berm	500000989_5	3	3	2	0.231
ROOIKRAAL	WR: Canals	Canal Section	sec_canal3	Canal Excavation	Canal excavation	500000990_0	3	3	2	0.098
ROOIKRAAL	WR: Canals	Canal Section	sec_canal3	Canal Fencing	Canal Fence Left	500000990_1	3	3	2	0.063
ROOIKRAAL	WR: Canals	Canal Section	sec_canal3	Canal Fencing	Canal Fence Right	500000990_2	3	3	2	0.063
ROOIKRAAL	WR: Canals	Canal Section	sec_canal3	Canal Lining - TA3	Canal Lining	500000990_3	3	3	2	0.288
ROOIKRAAL	WR: Canals	Canal Section	sec_canal3	Canal Service Road	Canal service road	500000990_4	3	3	2	0.081
ROOIKRAAL	WR: Canals	Canal Section	sec_canal3	Canal Berm	Canal berm	500000990_5	3	3	2	0.111

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ROOIKRAAL	WR: Canals	Canal Section	sec_canal2	Canal Excavation	Canal excavation	500000991_0	3	3	2	0.014
ROOIKRAAL	WR: Canals	Canal Section	sec_canal2	Canal Fencing	Canal Fence Left	500000991_1	3	3	2	0.029
ROOIKRAAL	WR: Canals	Canal Section	sec_canal2	Canal Fencing	Canal Fence Right	500000991_2	3	3	2	0.029
ROOIKRAAL	WR: Canals	Canal Section	sec_canal2	Canal Lining - TA3	Canal Lining	500000991_3	3	3	2	0.067
ROOIKRAAL	WR: Canals	Canal Section	sec_canal2	Canal Service Road	Canal service road	500000991_4	3	3	2	0.036
ROOIKRAAL	WR: Canals	Canal Section	sec_canal2	Canal Berm	Canal berm	500000991_5	3	3	2	0.053
ROOIKRAAL	WR: Canals	Canal Section	sec_canal4	Canal Excavation	Canal excavation	500000992_0	3	3	2	0.057
ROOIKRAAL	WR: Canals	Canal Section	sec_canal4	Canal Fencing	Canal Fence Left	500000992_1	3	3	2	0.027
ROOIKRAAL	WR: Canals	Canal Section	sec_canal4	Canal Fencing	Canal Fence Right	500000992_2	3	3	2	0.027
ROOIKRAAL	WR: Canals	Canal Section	sec_canal4	Canal Lining - TA3	Canal Lining	500000992_3	3	3	2	0.128
ROOIKRAAL	WR: Canals	Canal Section	sec_canal4	Canal Service Road	Canal service road	500000992_4	3	3	2	0.034
ROOIKRAAL	WR: Canals	Canal Section	sec_canal4	Canal Berm	Canal berm	500000992_5	3	3	2	0.051
ROOIKRAAL	WR: Canals	Canal Section	prim_canal1	Canal Excavation	Canal excavation	500000993_0	3	3	2	2.049
ROOIKRAAL	WR: Canals	Canal Section	prim_canal1	Canal Berm	Canal berm	500000993_5	3	3	2	0.127
ROOIKRAAL	WR: Canals	Canal Section	LB Main canal	Canal Excavation	Canal excavation	500008558_0	3	3	2	2.260
ROOIKRAAL	WR: Canals	Canal Section	LB Main canal	Canal Fencing	Canal Fence Left	500008558_1	3	3	2	0.062
ROOIKRAAL	WR: Canals	Canal Section	LB Main canal	Canal Fencing	Canal Fence Right	500008558_2	3	3	2	0.062
ROOIKRAAL	WR: Canals	Canal Section	LB Main canal	Canal Lining - TA3	Canal Lining	500008558_3	3	3	2	0.647
ROOIKRAAL	WR: Canals	Canal Section	LB Main canal	Canal Service Road	Canal service road	500008558_4	3	3	2	0.073
ROOIKRAAL	WR: Canals	Canal Section	LB Main canal	Canal Berm	Canal berm	500008558_5	3	3	2	0.064
RUST DE WINTER DAM (28)	WR: Canals	Canal Syphon (Large)	RB Primary 1 - Elands River syphon	Canal Syphon (large)	not componentised	500007654_0	4	2	2	1.525
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	prim_Main	Canal Fencing	Canal Fence Right	500000994_2	3	1	2	0.280
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	prim_Main	Canal Berm	Canal berm	500000994_5	3	1	2	0.838

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RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal3	Canal Berm	Canal berm	500000675_5	3	2	2	0.334
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal1	Canal Fencing	Canal Fence Left	500000676_1	3	2	2	0.172
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal1	Canal Lining - TA2	Canal Lining	500000676_3	3	2	2	1.001
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal1	Canal Berm	Canal berm	500000676_5	3	2	2	0.332
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal6	Canal Fencing	Canal Fence Left	500000677_1	3	2	2	0.297
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal6	Canal Lining - TA2	Canal Lining	500000677_3	3	2	2	2.365
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal6	Canal Berm	Canal berm	500000677_5	3	2	2	0.579
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal7	Canal Fencing	Canal Fence Left	500000678_1	3	2	2	0.033
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal7	Canal Lining - TA2	Canal Lining	500000678_3	3	2	2	0.190
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal7	Canal Berm	Canal berm	500000678_5	3	2	2	0.063
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal5	Canal Fencing	Canal Fence Left	500000679_2	3	2	2	0.201
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal5	Canal Fencing	Canal Fence Right	500000679_3	3	2	2	0.201
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal5	Canal Lining - TA2	Canal Lining	500000679_4	3	2	2	1.967
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal5	Canal Berm	Canal berm	500000679_6	3	2	2	0.357
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal2	Canal Fencing	Canal Fence Left	500000909_1	3	2	2	0.128
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal2	Canal Lining - TA2	Canal Lining	500000909_3	3	2	2	0.640
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal2	Canal Berm	Canal berm	500000909_5	3	2	2	0.257
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	prim_Main	Canal Fencing	Canal Fence Left	500000994_1	3	2	2	0.280
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	prim_Main	Canal Lining - TA2	Canal Lining	500000994_3	3	2	2	3.012
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB sec_canal5	Canal Fencing	Canal Fence Left	500000995_1	3	2	2	0.159
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB sec_canal5	Canal Lining - TA2	Canal Lining	500000995_3	3	2	2	1.040
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB sec_canal5	Canal Berm	Canal berm	500000995_5	3	2	2	0.328
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal8	Canal Fencing	Canal Fence Left	500001004_1	3	2	2	0.074
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal8	Canal Lining - TA2	Canal Lining	500001004_3	3	2	2	0.433
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal8	Canal Berm	Canal berm	500001004_5	3	2	2	0.144

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RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal3	Canal Excavation	Canal excavation	500000675_0	3	3	2	1.334
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal3	Canal Fencing	Canal Fence Left	500000675_1	3	3	2	0.179
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal3	Canal Fencing	Canal Fence Right	500000675_2	3	3	2	0.179
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal3	Canal Lining - TA2	Canal Lining	500000675_3	3	3	2	1.885
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal3	Canal Service Road	Canal service road	500000675_4	3	3	2	0.228
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal1	Canal Excavation	Canal excavation	500000676_0	3	3	2	0.497
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal1	Canal Fencing	Canal Fence Right	500000676_2	3	3	2	0.172
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal1	Canal Service Road	Canal service road	500000676_4	3	3	2	0.219
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal6	Canal Excavation	Canal excavation	500000677_0	3	3	2	1.190
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal6	Canal Fencing	Canal Fence Right	500000677_2	3	3	2	0.297
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal6	Canal Service Road	Canal service road	500000677_4	3	3	2	0.379
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal7	Canal Excavation	Canal excavation	500000678_0	3	3	2	0.096
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal7	Canal Fencing	Canal Fence Right	500000678_2	3	3	2	0.033
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal7	Canal Service Road	Canal service road	500000678_4	3	3	2	0.042
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal5	Canal Excavation	Canal excavation	500000679_0	3	3	2	1.258
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal5	Canal Bridges	Canal bridge	500000679_1	3	3	2	0.154
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal5	Canal Service Road	Canal service road	500000679_5	3	3	2	0.257
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal2	Canal Excavation	Canal excavation	500000909_0	3	3	2	0.276
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal2	Canal Fencing	Canal Fence Right	500000909_2	3	3	2	0.128
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_canal2	Canal Service Road	Canal service road	500000909_4	3	3	2	0.163
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	prim_Main	Canal Excavation	Canal excavation	500000994_0	3	3	2	2.383
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	prim_Main	Canal Service Road	Canal service road	500000994_4	3	3	2	0.357
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB sec_canal5	Canal Excavation	Canal excavation	500000995_0	3	3	2	0.347
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB sec_canal5	Canal Fencing	Canal Fence Right	500000995_2	3	3	2	0.159
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB sec_canal5	Canal Service Road	Canal service road	500000995_4	3	3	2	0.202

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RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal8	Canal Excavation	Canal excavation	500001004_0	3	3	2	0.201
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal8	Canal Fencing	Canal Fence Right	500001004_2	3	3	2	0.074
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_canal8	Canal Service Road	Canal service road	500001004_4	3	3	2	0.095
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 3	Canal Excavation	Canal excavation	500006758_0	3	3	2	6.468
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 3	Canal Fencing	Canal Fence Left	500006758_1	3	3	2	0.496
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 3	Canal Fencing	Canal Fence Right	500006758_2	3	3	2	0.496
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 3	Canal Lining - TA2	Canal Lining	500006758_3	3	3	2	7.630
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 3	Canal Service Road	Canal service road	500006758_4	3	3	2	0.633
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 3	Canal Berm	Canal berm	500006758_5	3	3	2	1.029
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB Primary 1	Canal Excavation	Canal excavation	500006759_0	3	3	2	1.885
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB Primary 1	Canal Fencing	Canal Fence Left	500006759_1	3	3	2	0.263
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB Primary 1	Canal Fencing	Canal Fence Right	500006759_2	3	3	2	0.263
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB Primary 1	Canal Lining - TA2	Canal Lining	500006759_3	3	3	2	3.124
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB Primary 1	Canal Service Road	Canal service road	500006759_4	3	3	2	0.335
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB Primary 1	Canal Berm	Canal berm	500006759_5	3	3	2	0.519
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 4	Canal Excavation	Canal excavation	500007147_0	3	3	2	2.868
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 4	Canal Fencing	Canal Fence Left	500007147_1	3	3	2	0.408
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 4	Canal Fencing	Canal Fence Right	500007147_2	3	3	2	0.408
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 4	Canal Lining - TA2	Canal Lining	500007147_3	3	3	2	4.457
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 4	Canal Service Road	Canal service road	500007147_4	3	3	2	0.520
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 4	Canal Berm	Canal berm	500007147_5	3	3	2	0.671
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 1	Canal Excavation	Canal excavation	500007497_0	3	3	2	3.398
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 1	Canal Bridges	Canal Bridge LB Prim1	500007497_1	3	3	2	0.154
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 1	Canal Fencing	Canal Fence Left	500007497_2	3	3	2	0.457
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 1	Canal Fencing	Canal Fence Right	500007497_3	3	3	2	0.457

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RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 1	Canal Lining - TA2	Canal Lining	500007497_4	3	3	2	4.525
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 1	Canal Service Road	Canal service road	500007497_5	3	3	2	0.583
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 1	Canal Berm	Canal berm	500007497_6	3	3	2	0.877
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 2	Canal Excavation	Canal excavation	500007498_0	3	3	2	2.594
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 2	Canal Bridges	Canal Bridge LB Prim2	500007498_1	3	3	2	0.184
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 2	Canal Fencing	Canal Fence Left	500007498_2	3	3	2	0.200
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 2	Canal Fencing	Canal Fence Right	500007498_3	3	3	2	0.200
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 2	Canal Lining - TA2	Canal Lining	500007498_4	3	3	2	3.078
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 2	Canal Service Road	Canal service road	500007498_5	3	3	2	0.255
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB Primary 2	Canal Berm	Canal berm	500007498_6	3	3	2	0.411
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal 3a	Canal Excavation	Canal excavation	500007791_0	3	3	2	0.504
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal 3a	Canal Fencing	Canal Fence Left	500007791_1	3	3	2	0.157
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal 3a	Canal Fencing	Canal Fence Right	500007791_2	3	3	2	0.157
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal 3a	Canal Lining - TA2	Canal Lining	500007791_3	3	3	2	1.128
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal 3a	Canal Service Road	Canal service road	500007791_4	3	3	2	0.200
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec_canal 3a	Canal Berm	Canal berm	500007791_5	3	3	2	0.294
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB Primary 2	Canal Excavation	Canal excavation	500007831_0	3	3	2	1.520
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB Primary 2	Canal Fencing	Canal Fence Left	500007831_1	3	3	2	0.202
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB Primary 2	Canal Fencing	Canal Fence Right	500007831_2	3	3	2	0.202
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB Primary 2	Canal Lining - TA2	Canal Lining	500007831_3	3	3	2	2.402
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB Primary 2	Canal Service Road	Canal service road	500007831_4	3	3	2	0.258
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB Primary 2	Canal Berm	Canal berm	500007831_5	3	3	2	0.419
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB sec canal 6	Canal Excavation	Canal excavation	500007835_0	3	3	2	0.487
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB sec canal 6	Canal Fencing	Canal Fence Left	500007835_1	3	3	2	0.072
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB sec canal 6	Canal Fencing	Canal Fence Right	500007835_2	3	3	2	0.072

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RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB sec canal 6	Canal Lining - TA2	Canal Lining	500007835_3	3	3	2	0.782
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB sec canal 6	Canal Service Road	Canal service road	500007835_4	3	3	2	0.091
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB sec canal 6	Canal Berm	Canal berm	500007835_5	3	3	2	0.021
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_cnl9	Canal Excavation	Canal excavation	500008052_0	3	3	2	0.076
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_cnl9	Canal Fencing	Canal Fence Left	500008052_1	3	3	2	0.018
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_cnl9	Canal Fencing	Canal Fence Right	500008052_2	3	3	2	0.018
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_cnl9	Canal Lining - TA2	Canal Lining	500008052_3	3	3	2	0.044
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_cnl9	Canal Service Road	Canal service road	500008052_4	3	3	2	0.023
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	ter_cnl9	Canal Berm	Canal berm	500008052_5	3	3	2	0.012
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4	Canal Excavation	Canal excavation	500008053_0	3	3	2	3.560
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4	Canal Fencing	Canal Fence Left	500008053_1	3	3	2	0.335
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4	Canal Fencing	Canal Fence Right	500008053_2	3	3	2	0.335
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4	Canal Lining - TA2	Canal Lining	500008053_3	3	3	2	2.038
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4	Canal Service Road	Canal service road	500008053_4	3	3	2	0.427
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4	Canal Berm	Canal berm	500008053_5	3	3	2	0.216
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4b	Canal Excavation	Canal excavation	500008054_0	3	3	2	1.007
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4b	Canal Fencing	Canal Fence Left	500008054_1	3	3	2	0.095
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4b	Canal Fencing	Canal Fence Right	500008054_2	3	3	2	0.095
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4b	Canal Lining - TA2	Canal Lining	500008054_3	3	3	2	0.576
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4b	Canal Service Road	Canal service road	500008054_4	3	3	2	0.121
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4b	Canal Berm	Canal berm	500008054_5	3	3	2	0.061
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB ter canal 1b	Canal Excavation	Canal excavation	500008055_0	3	3	2	1.100
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB ter canal 1b	Canal Fencing	Canal Fence Left	500008055_1	3	3	2	0.259
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB ter canal 1b	Canal Fencing	Canal Fence Right	500008055_2	3	3	2	0.259
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB ter canal 1b	Canal Lining - TA2	Canal Lining	500008055_3	3	3	2	0.630

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RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB ter canal 1b	Canal Service Road	Canal service road	500008055_4	3	3	2	0.330
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	LB ter canal 1b	Canal Berm	Canal berm	500008055_5	3	3	2	0.167
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_cnl 1b	Canal Excavation	Canal excavation	500008587_0	3	3	2	2.176
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_cnl 1b	Canal Fencing	Canal Fence Left	500008587_1	3	3	2	0.205
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_cnl 1b	Canal Fencing	Canal Fence Right	500008587_2	3	3	2	0.205
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_cnl 1b	Canal Lining - TA2	Canal Lining	500008587_3	3	3	2	1.246
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_cnl 1b	Canal Service Road	Canal service road	500008587_4	3	3	2	0.261
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	sec_cnl 1b	Canal Berm	Canal berm	500008587_5	3	3	2	0.132
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec cnl 2	Canal Excavation	Canal excavation	500008588_0	3	3	2	4.891
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec cnl 2	Canal Fencing	Canal Fence Left	500008588_1	3	3	2	0.460
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec cnl 2	Canal Fencing	Canal Fence Right	500008588_2	3	3	2	0.460
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec cnl 2	Canal Lining - TA2	Canal Lining	500008588_3	3	3	2	2.800
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec cnl 2	Canal Service Road	Canal service road	500008588_4	3	3	2	0.587
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec cnl 2	Canal Berm	Canal berm	500008588_5	3	3	2	0.296
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4c	Canal Excavation	Canal excavation	500008590_0	3	3	2	0.322
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4c	Canal Fencing	Canal Fence Left	500008590_1	3	3	2	0.030
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4c	Canal Fencing	Canal Fence Right	500008590_2	3	3	2	0.030
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4c	Canal Lining - TA2	Canal Lining	500008590_3	3	3	2	0.184
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4c	Canal Service Road	Canal service road	500008590_4	3	3	2	0.039
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4c	Canal Berm	Canal berm	500008590_5	3	3	2	0.019
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4d	Canal Excavation	Canal excavation	500008591_0	3	3	2	0.664
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4d	Canal Fencing	Canal Fence Left	500008591_1	3	3	2	0.062
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4d	Canal Fencing	Canal Fence Right	500008591_2	3	3	2	0.062
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4d	Canal Lining - TA2	Canal Lining	500008591_3	3	3	2	0.380
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4d	Canal Service Road	Canal service road	500008591_4	3	3	2	0.080

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RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 4d	Canal Berm	Canal berm	500008591_5	3	3	2	0.040
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 6	Canal Excavation	Canal excavation	500008592_0	3	3	2	1.262
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 6	Canal Fencing	Canal Fence Left	500008592_1	3	3	2	0.119
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 6	Canal Fencing	Canal Fence Right	500008592_2	3	3	2	0.119
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 6	Canal Lining - TA2	Canal Lining	500008592_3	3	3	2	0.722
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 6	Canal Service Road	Canal service road	500008592_4	3	3	2	0.151
RUST DE WINTER DAM (28)	WR: Canals	Canal Section	RB sec canal 6	Canal Berm	Canal berm	500008592_5	3	3	2	0.076
RUST DE WINTER DAM (28)	WR: Canals	Canal Balancing Dam	Balancing dam LB1	Canal Balancing Dam	not componentised	500006697_0	2	3	2	0.846
RUST DE WINTER DAM (28)	WR: Canals	Canal Balancing Dam	Balancing dam RB	Canal Balancing Dam	not componentised	500007495_0	2	3	2	0.846
RUST DE WINTER DAM (28)	WR: Canals	Canal Balancing Dam	Balancing dam LB 2	Canal Balancing Dam	not componentised	500007496_0	2	3	2	0.846
RUST DE WINTER DAM (28)	WR: Canals	Canal Balancing Dam	RB bal dam 2	Canal Balancing Dam	not componentised	500008589_0	2	3	2	0.846
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Access Bridge	Rust de winter dam access bridge	500009465_12	2	2	2	1.683
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Auxilliary Equip. Main Damwall	Rust de winter dam boat slipway	500009465_13	2	2	2	0.770
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Auxilliary Equip. Main Damwall	Rust de winter dam control room	500009465_14	2	2	2	0.770
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Auxilliary Equip. Main Damwall	Rust de winter dam crawl beam	500009465_15	2	2	2	0.898
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Dam Outlet - Intake Tower	Rust de winter dam intake tower	500009465_18	2	2	2	0.456
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Electric Network	Rust de winter dam electric network	500009465_20	2	2	2	0.561
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Auxilliary Equip. Main Damwall	Rust de winter dam handrails	500009465_21	2	2	2	0.898
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Auxilliary Equip. Main Damwall	Rust de winter dam handrails 2	500009465_22	2	2	2	0.898
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Auxilliary Equip. Main Damwall	Rust de winter dam lighting	500009465_23	2	2	2	2.053

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RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Auxilliary Equip. Main Damwall	Rust de winter dam ligthing 2	500009465_24	2	2	2	2.053
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Auxilliary Equip. Main Damwall	Rust de winter dam concrete staicase	500009465_26	2	2	2	2.887
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Auxilliary Equip. Main Damwall	Rust de winter dam staircase	500009465_27	2	2	2	2.887
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Auxilliary Equip. Main Damwall	Rust de winter dam steel platform	500009465_28	2	2	2	1.732
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter	Main Damwall	Dam (main asset)	500009465_0	2	3	2	3.127
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter	Dam Intake Gates - Casing	Rust De Winter - intake gate - casing	500009465_2	2	3	2	0.873
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter	Dam Intake Gates - Mechanism	Rust De Winter - intake gate - mechanism	500009465_3	2	3	2	0.521
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Dam Intake Gates	Rust de winter dam intake gate 2 - gate	500009465_16	2	3	2	0.052
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Dam Intake Gates - Mechanism	Rust de winter dam intake gate 2 - mechanism	500009465_17	2	3	2	0.017
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Auxilliary Equip. Main Damwall	Rust de winter dam safety boom and buoys	500009465_25	2	3	2	2.887
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter	Dam Spillway	Rust de Winter Dam Open Channel Spillway	500009465_1	2	5	2	35.567
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter	Dam Wall - 30m<Height<60m	Rust de Winter Dam Wall	500009465_4	2	5	2	90.404
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter	Dam Outlet - Pipework-Steel	Rust De Winter outlet pipes	500009465_7	2	5	2	1.078
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter	Dam Outlet Valves - Casing	Rust De Winter - outlet valve 1 - casing	500009465_8	2	5	2	0.868
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter	Dam Outlet Valves - Mechanism	Rust De Winter - outlet valve 1 - mechanism	500009465_9	2	5	2	0.881
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter	Dam Outlet Valves - Casing	Rust De Winter - outlet valve 2 - casing	500009465_10	2	5	2	0.868
RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter	Dam Outlet Valves - Mechanism	Rust De Winter - outlet valve 2 - mechanism	500009465_11	2	5	2	0.634

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RUST DE WINTER DAM (28)	WR: Dams	Main Damwall	Rust De Winter Dam	Dam Outlet - Pipework- Steel	Rust de winter dam outlet pipe 2	500009465_19	2	5	2	1.078
RUST DE WINTER DAM (28)	WR: Steel Pipelines	Pipeline Section	RB Prim Pipe	Pipeline- Steel	Pipeline	500007141_0	4	3	2	7.767
RUST DE WINTER DAM (28)	WR: Steel Pipelines	Pipeline Section	Left Bank Section 4	Pipeline- Steel	Pipeline	500007148_0	4	3	2	0.186
RUST DE WINTER DAM (28)	WS: borehole	Borehole Pump Station	Rust De Winter Town - domestic borehole	Borehole Pump Station	not componentised	500000501_0	3	2	2	1.128
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Cranes	Injaka dam 20t portal crane	500009074_54	4	2	2	1.222
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Cranes	Injaka dam grappel	500009074_55	4	2	2	1.139
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam crawl beam 1	500009074_56	4	2	2	0.254
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam crawl beam 2	500009074_57	4	2	2	0.254
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam crawl beam 3	500009074_58	4	2	2	0.254
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam crawl beam 4	500009074_59	4	2	2	0.254
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam crawl beam 5	500009074_60	4	2	2	0.254
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam crawl beam 6	500009074_61	4	2	2	0.254
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam crawl beam 7	500009074_62	4	2	2	0.254
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet - Gates & Valves	Injaka dam toe drains	500009074_70	4	2	2	0.349
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Electric Network	Injaka dam electric network	500009074_73	4	2	2	0.771
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam handrails	500009074_78	4	2	2	0.304
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam handrails 2	500009074_79	4	2	2	0.304

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SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam lighting	500009074_82	4	2	2	0.290
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam staircase 2	500009074_89	4	2	2	0.181
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam staircases	500009074_90	4	2	2	0.181
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka	Main Damwall	Dam (main asset)	500009074_0	4	3	2	1.216
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam dewatering pump 1	500009074_71	4	3	2	0.759
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam dewatering pump 2	500009074_72	4	3	2	0.759
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam hydraulic power pack for sleeve valves	500009074_80	4	3	2	0.290
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Intake Gates	Injaka dam thrashracks	500009074_81	4	3	2	1.037
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam safety boom & buoys	500009074_83	4	3	2	0.362
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Auxilliary Equip. Main Damwall	Injaka dam security cameras and alarms	500009074_84	4	3	2	0.022
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Intake Gates	Injaka dam service gate	500009074_91	4	3	2	1.034
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka	Dam Outlet Valves - Casing	Inyaka - outlet valve 2 - casing	500009074_2	4	4	2	0.169
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka	Dam Outlet Valves - Mechanism	Inyaka - outlet valve 2 - mechanism	500009074_3	4	4	2	0.060
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka	Dam Outlet - Intake Tower	Inyaka dam intake tower	500009074_5	4	4	2	27.273
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka	Dam Outlet Structure	Inyaka dam outlet structure	500009074_6	4	4	2	8.669
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka	Dam Tunnel	Inyaka dam tunnel	500009074_10	4	4	2	51.797
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka	Dam Outlet - Pipework-Steel	Inyaka outlet pipes	500009074_11	4	4	2	0.017
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka	Dam Outlet Valves - Casing	Inyaka - outlet valve 1 - casing	500009074_12	4	4	2	0.169

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SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka	Dam Outlet Valves - Mechanism	Inyaka - outlet valve 1 - mechanism	500009074_13	4	4	2	0.060
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves	Injaka dam airvalve 1	500009074_14	4	4	2	0.003
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves	Injaka dam airvalve 2	500009074_15	4	4	2	0.003
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves	Injaka dam airvalve 3	500009074_16	4	4	2	0.003
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves	Injaka dam airvalve 4	500009074_17	4	4	2	0.003
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 1 - casing	500009074_18	4	4	2	0.530
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 10 - casing	500009074_19	4	4	2	0.530
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 11 - casing	500009074_20	4	4	2	0.304
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 12 - casing	500009074_21	4	4	2	0.304
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 13 - casing	500009074_22	4	4	2	0.304
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 14 - casing	500009074_23	4	4	2	0.304
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 15 - casing	500009074_24	4	4	2	0.169
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 16 - casing	500009074_25	4	4	2	0.530
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 17 - casing	500009074_26	4	4	2	0.530
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 18 - casing	500009074_27	4	4	2	0.169
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 2 - casing	500009074_28	4	4	2	0.530
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 3 - casing	500009074_29	4	4	2	0.530
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 4 - casing	500009074_30	4	4	2	0.530

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SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 5 - casing	500009074_31	4	4	2	0.530
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 6 - casing	500009074_32	4	4	2	0.530
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 7 - casing	500009074_33	4	4	2	0.530
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 8 - casing	500009074_34	4	4	2	0.530
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam butterfly valve 9 - casing	500009074_35	4	4	2	0.530
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 1 - mechanism	500009074_36	4	4	2	0.177
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 10 - mechanism	500009074_37	4	4	2	0.177
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 11 - mechanism	500009074_38	4	4	2	0.101
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 12 - mechanism	500009074_39	4	4	2	0.101
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 13 - mechanism	500009074_40	4	4	2	0.101
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 14 - mechanism	500009074_41	4	4	2	0.101
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 15 - mechanism	500009074_42	4	4	2	0.056
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 16 - mechanism	500009074_43	4	4	2	0.177
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 17 - mechanism	500009074_44	4	4	2	0.177
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 18 - mechanism	500009074_45	4	4	2	0.056
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 2 - mechanism	500009074_46	4	4	2	0.177

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SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 3 - mechanism	500009074_47	4	4	2	0.177
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 4 - mechanism	500009074_48	4	4	2	0.177
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 5 - mechanism	500009074_49	4	4	2	0.177
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 6 - mechanism	500009074_50	4	4	2	0.177
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 7 - mechanism	500009074_51	4	4	2	0.177
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 8 - mechanism	500009074_52	4	4	2	0.177
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam butterfly valve 9 - mechanism	500009074_53	4	4	2	0.177
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Meter & Instrumentation	Injaka dam flow meter 1	500009074_63	4	4	2	0.759
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Meter & Instrumentation	Injaka dam flow meter 2	500009074_64	4	4	2	0.759
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet - Pipework-Steel	Injaka dam main outlet pipe 1	500009074_65	4	4	2	0.138
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet - Pipework-Steel	Injaka dam main outlet pipe 2	500009074_66	4	4	2	0.138
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet - Pipework-Steel	Injaka dam outlet pipe 3	500009074_67	4	4	2	0.009
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet - Pipework-Steel	Injaka dam outlet pipe 4	500009074_68	4	4	2	0.009
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet - Pipework-Steel	Injaka outlet pipe 2 (to pump-station)	500009074_69	4	4	2	0.017
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam gate valve 1 - casing	500009074_74	4	4	2	0.237
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam gate valve 2 - casing	500009074_75	4	4	2	0.237

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SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam gate valve 1 - mechanism	500009074_76	4	4	2	0.079
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam gate valve 2 - mechanism	500009074_77	4	4	2	0.079
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam sleeve valve 3 - casing	500009074_85	4	4	2	0.306
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Casing	Injaka dam sleeve valve 4 - casing	500009074_86	4	4	2	0.044
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam sleeve valve 3 - mechanism	500009074_87	4	4	2	0.102
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka Dam	Dam Outlet Valves - Mechanism	Injaka dam sleeve valve 4 - mechanism	500009074_88	4	4	2	0.015
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka	Dam Wall - 30m<Height<60m	Inyaka dam wall	500009074_1	4	5	2	870.546
SABIE RIVER GWS (INYAKA DAM)	WR: Dams	Main Damwall	Inyaka	Dam Spillway	Inyaka dam spillway	500009074_4	4	5	2	770.799
SABIE RIVER GWS (INYAKA DAM)	WR: Telemetry	Telemetry Station	VSAT - Inyaka	Telemetry Instrument VSAT Dish	Inyaka 2.4m Satellite dish	500010297_0	3	3	2	1.212
SABIE RIVER GWS (INYAKA DAM)	WR: Telemetry	Telemetry Station	VSAT - Inyaka	Telemetry Instrument VSAT Equi	Inyaka Ancillary equipment	500010297_1	3	3	2	0.449
SABIE RIVER GWS (INYAKA DAM)	WR: Telemetry	Telemetry Station	VSAT - Vhembe District Office (Sibasa)	Telemetry Instrument VSAT Dish	Vhembe 2.4m Satellite dish	500010298_0	3	3	2	1.212
SABIE RIVER GWS (INYAKA DAM)	WR: Telemetry	Telemetry Station	VSAT - Vhembe District Office (Sibasa)	Telemetry Instrument VSAT Equi	Vhembe Ancillary equipment	500010298_1	3	3	2	0.449
SAND RIVER GWS (WITKLIP DAM)	WR: Reservoirs	Reservoir	Witklip Dam Reservoir 1	Reservoir	not componentised	500006670_0	3	3	2	0.155
SEHUWJANE DAM (337)	WR: Reservoirs	Reservoir	Resevoir	Reservoir	Resevoir	500000106_0	2	4	2	0.148
SETUMO DAM (296)	WR: Reservoirs	Reservoir	Balancing Dam @ WTW	Reservoir	Balancing Dam @ WTW	500000241_0	2	5	2	0.210
SETUMO DAM (296)	WR: Reservoirs	Reservoir	Balancing Dam @ WTW	Reservoir	Balancing Dam @ WTW	500000243_0	2	5	2	0.148

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SPITSKOP DAM (327)	WR: Telemetry	Telemetry Station	VSAT - Sekhukhune District (Leboakghomo)	Telemetry Instrument VSAT Dish	Sekhukhune 2.4m Satellite dish	500010301_0	3	3	2	1.212
SPITSKOP DAM (327)	WR: Telemetry	Telemetry Station	VSAT - Sekhukhune District (Leboakghomo)	Telemetry Instrument VSAT Equi	Sekhukhune Ancillary equipment	500010301_1	3	3	2	0.449
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	RB main canal sec 3	Canal Fencing	Canal Fence Canal LB	500003475_3	3	2	2	0.099
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB MAIN CANAL7 T	Canal Lining - TA3	Canal Lining	500003566_1	3	2	2	0.916
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB MAIN CANAL7 T	Canal Fencing	Canal Fence Main C7	500003566_3	3	2	2	0.078
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB MAIN CANAL4 DAM-TK5 T	Canal Lining - TA3	Canal Lining	500004285_7	3	2	2	3.202
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB CANAL 1	Canal Lining - TA3	Canal Lining	500007139_1	3	2	2	3.507
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	RB main canal sec 3	Canal Excavation	Canal excavation	500003475_0	3	3	2	0.201
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	RB main canal sec 3	Canal Lining - TA3	Canal Lining	500003475_1	3	3	2	0.422
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	RB main canal sec 3	Canal Service Road	Canal service road	500003475_4	3	3	2	0.204
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	RB main canal sec 3	Canal Berm	Canal berm	500003475_5	3	3	2	0.160
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB MAIN CANAL7 T	Canal Excavation	Canal excavation	500003566_0	3	3	2	1.035
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB MAIN CANAL7 T	Canal Service Road	Canal service road	500003566_2	3	3	2	0.250
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB MAIN CANAL7 T	Canal Berm	Canal berm Main C7	500003566_4	3	3	2	0.081
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB MAIN CANAL4 DAM-TK5 T	Canal Excavation	Canal excavation	500004285_0	3	3	2	0.381
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB MAIN CANAL4 DAM-TK5 T	Canal Berm	Canal berm	500004285_1	3	3	2	0.105
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB MAIN CANAL4 DAM-TK5 T	Canal Fencing	Canal Fence main C 4	500004285_3	3	3	2	0.162
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB MAIN CANAL4 DAM-TK5 T	Canal Service Road	Canal service road	500004285_4	3	3	2	0.322
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB CANAL 1	Canal Excavation	Canal excavation	500007139_0	3	3	2	2.664
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB CANAL 1	Canal Service Road	Canal service road	500007139_4	3	3	2	0.352

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STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB CANAL 1	Canal Fencing	Canal Fence Right	500007139_5	3	3	2	0.178
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB CANAL 1	Canal Berm	Canal berm	500007139_6	3	3	2	0.245
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	RB main canal sec 3	Canal Syphons	Syphon	500003475_2	2	4	2	0.044
STERK RIVER GWS (DOORNDRAAI DAM)	WR: Canals	Canal Section	LB MAIN CANAL4 DAM-TK5 T	Canal Syphons	Syphon	500004285_2	2	4	2	0.439
STERKSTROOM GWS (BUFFELSPOORT DAM)	WR: Dams	Main Damwall	Middelkraal Dam	Dam Spillway	Middelkraal Spillway	500007988_1	3	3	2	2.766
STERKSTROOM GWS (BUFFELSPOORT DAM)	WR: Reservoirs	Reservoir	Buffelspoort Dam Water Storage	Reservoir	not componentised	500007119_0	3	3	2	0.361
STERKSTROOM GWS (BUFFELSPOORT DAM)	WR: Reservoirs	Reservoir	Sterkstroom	Reservoir	Reservoir NOT USED	500009837_0	2	1	2	0.105
THABINA DAM (301)	WR: Dams	Main Damwall	Thabina Dam	Auxilliary Equip. Main Damwall	Lighting	500009469_44	4	3	2	0.228
TOURS DAM (309)	Buildings	Stores	Tours Dam Valve Room 1	Main Building	Main building	500006953_0	2	4	2	0.940
TOURS DAM (309)	Buildings	Stores	Tours Dam Valve Room 2	Main Building	Main building	500006954_0	2	4	2	0.940
TOURS DAM (309)	WR: Dams	Main Damwall	Tours	Dam Outlet - Intake Tower	Tours dam intake tower	500009472_4	2	2	2	9.302
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Dam Outlet Valves - Casing	Tours dam butterfly valve 1 - casing	500009472_6	2	3	2	0.222
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Dam Outlet Valves - Casing	Tours dam butterfly valve 2 - casing	500009472_7	2	3	2	0.222
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Dam Outlet Valves - Casing	Tours dam butterfly valve 3 - casing	500009472_8	2	3	2	0.222
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Dam Outlet Valves - Casing	Tours dam butterfly valve 4 - casing	500009472_9	2	3	2	0.222
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Dam Outlet Valves - Mechanism	Tours dam butterfly valve 1 - mechanism	500009472_10	2	3	2	0.074
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Dam Outlet Valves - Mechanism	Tours dam butterfly valve 2 - mechanism	500009472_11	2	3	2	0.074

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TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Dam Outlet Valves - Mechanism	Tours dam butterfly valve 3 - mechanism	500009472_12	2	3	2	0.074
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Dam Outlet Valves - Mechanism	Tours dam butterfly valve 4 - mechanism	500009472_13	2	3	2	0.074
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Cranes	Tours dam 1.6t overhead crane	500009472_14	2	3	2	0.613
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Dam Outlet - Pipework-Steel	Tours dam outlet pipe 1	500009472_15	2	3	2	1.866
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Dam Outlet - Pipework-Steel	Tours dam outlet pipe 2	500009472_16	2	3	2	1.866
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Dam Outlet Valves - Casing	Tours dam gate valve 1 - casing	500009472_18	2	3	2	0.155
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Dam Outlet Valves - Mechanism	Tours dam gate valve 1 - mechanism	500009472_19	2	3	2	0.052
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Auxilliary Equip. Main Damwall	Tours dam handrails	500009472_20	2	3	2	0.553
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Auxilliary Equip. Main Damwall	Tours dam staircase	500009472_21	2	3	2	0.180
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Auxilliary Equip. Main Damwall	Tours dam steel structure	500009472_22	2	3	2	0.166
TOURS DAM (309)	WR: Dams	Main Damwall	Tours	Dam Wall - 12m<Height<30m	Tours Dam Earth Embankment LHS	500009472_1	2	4	2	72.219
TOURS DAM (309)	WR: Dams	Main Damwall	Tours	Dam Wall - 12m<Height<30m	Tours Dam Earth Embankment RHS	500009472_2	2	4	2	399.956
TOURS DAM (309)	WR: Dams	Main Damwall	Tours Dam	Access Bridge	Tours dam access bridge	500009472_5	2	4	2	2.229
TURFLOOP DAM	WR: Dams	Main Damwall	Turfloop	Dam Wall- 15m<Height<30m	Turfloop dam wall	500009177_1	3	1	2	24.639
TURFLOOP DAM	WR: Dams	Main Damwall	Turfloop	Dam Outlet Structure	Turfloop dam outlet structure	500009177_3	3	1	2	0.466
TURFLOOP DAM	WR: Dams	Main Damwall	Turfloop	Dam Spillway	Turfloop dam spillway	500009177_2	3	3	2	47.324
VAALKOP NO 2 DAM	WR: Dams	Main Damwall	Vaalkop No 2	Dam Wall- 15m<Height<30m	Vaalkop no 2 earthfill dam wall (left+right)	500007476_1	3	3	2	41.966

Scheme	Asset Facility Category (Asset class name)	Facility Type	Facility Name (Asset description)	Component Type	Component Name (Additional description)	Component UID (Combined No)	Criticality	Condition	Utilisation	CRC 2016 (R Million)
VAALKOP NO 2 DAM	WR: Dams	Main Damwall	Vaalkop No 2	Dam Spillway	Vaalkop no 2 dam spillway	500007476_2	3	3	2	21.704
VAALKOP NO 2 DAM	WR: Dams	Main Damwall	Vaalkop No 2	Dam Intake Gates - Casing	Vaalkop No 2 - intake gate - casing	500007476_3	3	4	2	0.288
VAALKOP NO 2 DAM	WR: Dams	Main Damwall	Vaalkop No 2	Dam Intake Gates - Mechanism	Vaalkop No 2 - intake gate - mechanism	500007476_4	3	4	2	0.102
VAALKOP NO 2 DAM	WR: Dams	Main Damwall	Vaalkop No 2	Dam Outlet - Pipework-Steel	Vaalkop No 2 outlet pipes	500007476_5	3	4	2	0.385
VAALKOP NO 2 DAM	WR: Dams	Main Damwall	Vaalkop No 2	Dam Outlet Valves - Casing	Vaalkop No 2 - outlet valve - casing	500007476_6	3	4	2	0.385
VAALKOP NO 2 DAM	WR: Dams	Main Damwall	Vaalkop No 2	Dam Outlet Valves - Mechanism	Vaalkop No 2 - outlet valve - mechanism	500007476_7	3	4	2	0.137
VARSWATER DAM	WR: Dams	Main Damwall	Varswater Dam	Dam Intake Gates - Casing	Varswater Dam - intake gate - casing	500007655_2	3	1	2	0.305
VARSWATER DAM	WR: Dams	Main Damwall	Varswater Dam	Dam Intake Gates - Mechanism	Varswater Dam - intake gate - mechanism	500007655_3	3	1	2	0.120
VARSWATER DAM	WR: Dams	Main Damwall	Varswater Dam	Dam Outlet - Pipework-Steel	Varswater Dam outlet pipes	500007655_4	3	1	2	0.407
VARSWATER DAM	WR: Dams	Main Damwall	Varswater Dam	Dam Outlet Valves - Casing	Varswater Dam - outlet valve - casing	500007655_5	3	1	2	0.407
VARSWATER DAM	WR: Dams	Main Damwall	Varswater Dam	Dam Outlet Valves - Mechanism	Varswater Dam - outlet valve - mechanism	500007655_6	3	1	2	0.160
VARSWATER DAM	WR: Dams	Main Damwall	Varswater Dam	Dam Wall - 30m<Height<60m	Varswater Damwall	500007655_1	3	3	2	17.825
WATERVALS RIVER GWS (BUFFELSKLOOF DAM)	WR: Reservoirs	Reservoir	Buffelskloof small domestic reservoir	Reservoir	not componentised	500008224_0	3	3	2	0.445
WATERVALS RIVER GWS (BUFFELSKLOOF DAM)	WR: Reservoirs	Reservoir	Buffelskloof Large domestic reservoir	Reservoir	not componentised	500008781_0	3	3	2	0.838

5 ASSETS TO BE DISPOSED OF

Table L.5: Assets to be disposed of

Facility Category (Asset Class)	Facility Type	Facility Name (Asset Description)	Component Type	Component Name (Additional Description)	Component No.	Comment
-	-	-	-	-	-	-
-	-	-	-	-	-	-

APPENDIX M – Infrastructure Assets Movement

Table M.1:1 Accumulated acquisition cost per asset facility category (scheme specific)

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	273.089	380.880	380.880	381.790	446.715	446.715	450.668	450.728	450.728	450.728
Land	-	-	-	-	-	-	-	-	-	-
WR: Canals	1 370.948	1 449.783	1 486.782	1 588.441	2 096.067	2 204.342	2 444.956	2 532.136	2 571.832	2 603.104
WR: Dams	10 232.416	12 197.775	12 197.775	12 227.567	12 270.179	12 273.768	12 335.057	12 335.057	12 336.519	12 369.094
WR: Power Supply	7.205	12.253	12.253	14.038	14.038	14.038	14.038	14.038	15.765	15.765
WR: Pump stations	21.147	24.324	24.324	24.422	24.695	24.695	25.366	25.529	29.285	29.725
WR: Reservoirs	14.092	14.477	14.477	14.479	14.479	14.479	14.479	14.479	24.982	24.982
WR: Roads and bridge	1.337	1.869	1.869	1.869	1.869	1.869	2.084	2.084	2.084	2.084
WR: Steel Pipelines	496.892	557.035	557.035	560.636	796.182	797.310	799.152	948.468	948.647	949.778
WR: Telemetry	3.953	3.953	3.953	3.953	3.953	3.953	5.113	5.113	5.113	5.113
WR: Tunnels	2.291	2.291	2.291	2.291	2.291	2.291	2.291	2.291	2.291	2.291
WR: Water Treatment	9.997	15.155	15.155	15.155	15.155	15.155	17.310	17.310	17.310	17.310
WS: borehole	17.431	28.650	28.650	28.650	28.650	28.650	30.862	31.581	31.581	31.581
WS: Measuring facility	265.249	275.983	278.349	289.925	290.351	295.500	329.714	366.965	371.402	379.120
Total	**12 716.047**	**14 964.428**	**15 003.793**	**15 153.216**	**16 004.624**	**16 122.765**	**16 471.09**	**16 745.779**	**16 807.539**	**16 880.675**

Table M.1. 2: Accumulated acquisition cost per asset facility category (non-scheme specific)

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	106.955	155.282	155.282	155.282	186.153	186.153	188.777	188.777	188.777	188.777
WR: Canals	-	-	36.999	43.879	46.689	154.964	283.463	302.378	302.378	302.378
WR: Dams	0.048	0.048	0.048	0.048	0.079	0.079	0.079	0.079	0.079	0.079
WR: Power Supply	0.220	0.220	0.220	0.414	0.414	0.414	0.414	0.414	0.414	0.414
WR: Pump stations	0.010	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
WR: Reservoirs	0.794	0.794	0.794	0.794	0.794	0.794	0.794	0.794	1.423	1.423
WR: Roads and bridge	1.330	1.330	1.330	1.330	1.330	1.330	1.330	1.330	1.330	1.330
WR: Water Treatment	3.171	3.804	3.804	3.804	4.425	5.284	5.284	5.284	5.284	5.284

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
WS: borehole	0.979	0.979	0.979	0.979	0.979	0.979	1.894	1.894	1.894	1.894
WS: Measuring facility	719.544	824.867	828.811	879.856	882.501	887.762	980.614	1 148.386	1 151.859	1 187.493
Total	**833.051**	**987.343**	**1 028.286**	**1 086.405**	**1 123.383**	**1 237.778**	**1 462.668**	**1 649.355**	**1 653.457**	**1 689.091**

Table M.2:1 Accumulated depreciation cost per asset facility category (Scheme Specific)

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	134.645	148.934	160.849	172.780	186.859	201.901	216.793	231.686	246.579	261.472
Land	-	-	-	-	-	-	-	-	-	-
WR: Canals	675.854	712.384	741.772	774.022	825.327	878.898	934.753	993.499	1 052.415	1 113.033
WR: Dams	1 677.096	1 809.911	1 913.506	2 018.741	2 125.717	2 262.388	2 398.989	2 535.591	2 672.232	2 810.026
WR: Power Supply	4.473	4.929	5.374	5.886	6.424	6.947	7.470	7.993	8.582	9.172
WR: Pump stations	6.704	7.387	7.986	8.564	9.122	9.859	10.614	11.376	12.034	12.720
WR: Reservoirs	4.768	5.108	5.289	5.470	5.650	6.011	6.372	6.733	7.036	7.339
WR: Roads and bridge	0.568	0.605	0.641	0.677	0.713	0.750	0.791	0.832	0.873	0.914
WR: Steel Pipelines	209.542	232.916	247.964	263.197	285.937	311.976	337.891	362.485	387.085	411.752
WR: Telemetry	3.346	3.389	3.501	3.522	3.543	3.575	3.616	3.657	3.698	3.738
WR: Tunnels	1.043	1.119	1.195	1.271	1.348	1.424	1.500	1.576	1.652	1.728
WR: Water Treatment	4.660	5.068	5.366	5.663	5.961	6.388	6.794	7.200	7.606	8.013
WS: borehole	8.115	8.786	9.396	10.006	10.616	11.296	11.976	12.725	13.473	14.222
WS: Measuring facility	108.756	116.241	121.899	127.334	136.304	149.478	162.960	170.878	196.722	222.189
Total	**2 839.568**	**3 056.777**	**3 224.737**	**3 397.133**	**3 603.521**	**3 850.891**	**4 100.520**	**4 346.229**	**4 609.987**	**4 876.316**

Table M.2:2 Accumulated depreciation cost per asset facility category (Non-Scheme Specific)

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	58.076	63.899	68.840	73.780	79.732	85.987	92.071	98.155	104.239	110.323
Land	-	-	-	-	-	-	-	-	-	-
WR: Canals	-	-	-	0.710	1.548	2.460	5.339	10.829	16.705	22.581
WR: Dams	0.010	0.015	0.017	0.019	0.022	0.025	0.028	0.032	0.035	0.038
WR: Power Supply	0.082	0.104	0.115	0.136	0.157	0.176	0.196	0.216	0.235	0.255
WR: Pump stations	0.006	0.006	0.006	0.006	0.007	0.007	0.007	0.007	0.008	0.008
WR: Reservoirs	0.263	0.282	0.292	0.302	0.312	0.333	0.353	0.374	0.391	0.408
WR: Roads and bridge	0.068	0.098	0.125	0.152	0.178	0.209	0.239	0.270	0.301	0.331
WR: Water Treatment	1.434	1.565	1.662	1.759	1.881	2.021	2.162	2.302	2.443	2.583
WS: borehole	0.415	0.449	0.469	0.488	0.508	0.545	0.580	0.616	0.652	0.688
WS: Measuring facility	268.742	292.131	310.450	326.867	359.488	407.941	455.550	478.991	580.068	680.245
Total	**329.097**	**358.549**	**381.976**	**404.220**	**443.832**	**499.704**	**556.527**	**591.792**	**705.076**	**817.460**

Table M.3:1 Asset carrying value per asset facility category (Scheme Specific)

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	138.445	231.938	220.031	209.010	259.857	244.814	233.875	219.042	204.149	189.256
Land	-	-	-	-	-	-	-	-	-	-
WR: Canals	695.191	737.399	745.010	814.420	1 270.740	1 325.445	1 510.203	1 538.637	1 519.417	1 490.071
WR: Dams	8 555.320	10 387.865	10 284.269	10 208.826	10 144.462	10 011.381	9 936.068	9 799.466	9 664.287	9 559.068
WR: Power Supply	2.732	7.324	6.879	8.152	7.614	7.091	6.569	6.046	7.182	6.593
WR: Pump stations	14.447	16.937	16.338	15.858	15.573	14.836	14.752	14.153	17.250	17.005
WR: Reservoirs	9.324	9.368	9.188	9.010	8.829	8.468	8.108	7.747	17.946	17.643
WR: Roads and bridge	0.770	1.264	1.228	1.192	1.156	1.119	1.293	1.252	1.211	1.170
WR: Steel Pipelines	287.350	324.119	309.071	297.438	510.245	485.334	461.260	585.983	561.562	538.026
WR: Telemetry	0.607	0.564	0.452	0.431	0.410	0.377	1.497	1.456	1.416	1.375

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
WR: Tunnels	1.249	1.173	1.096	1.020	0.944	0.867	0.791	0.715	0.639	0.563
WR: Water Treatment	5.337	10.087	9.789	9.492	9.195	8.767	10.516	10.110	9.704	9.298
WS: borehole	9.317	19.864	19.254	18.644	18.034	17.354	18.886	18.856	18.107	17.359
WS: Measuring facility	156.493	159.758	156.450	162.591	154.047	146.022	170.132	196.087	174.787	158.685
Total	**9 876.580**	**11 907.659**	**11 779.056**	**11 756.084**	**12 401.104**	**12 271.876**	**12 373.950**	**12 399.551**	**12 197.659**	**12 006.112**

Table M.3:2 Asset carrying value per asset facility category (Non-Scheme Specific)

Asset Facility Category	Financial Year (Amounts in Million Rands)									
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Buildings	48.878	91.383	86.443	81.502	106.421	100.166	96.706	90.622	84.538	78.454
Land	-	-	-	-	-	-	-	-	-	-
WR: Canals	-	-	36.999	43.169	45.141	152.504	278.123	291.549	285.673	279.797
WR: Dams	0.039	0.034	0.032	0.030	0.058	0.054	0.051	0.048	0.044	0.041
WR: Power Supply	0.138	0.115	0.104	0.277	0.257	0.237	0.218	0.198	0.178	0.159
WR: Pump stations	0.004	0.013	0.013	0.013	0.012	0.012	0.012	0.012	0.011	0.011
WR: Reservoirs	0.531	0.512	0.502	0.492	0.482	0.461	0.441	0.420	1.032	1.015
WR: Roads and bridge	1.262	1.232	1.205	1.179	1.152	1.121	1.091	1.060	1.029	0.999
WR: Tunnels	-	-	-	-	-	-	-	-	-	-
WR: Water Treatment	1.736	2.239	2.142	2.045	2.544	3.263	3.122	2.982	2.841	2.701
WS: borehole	0.564	0.530	0.511	0.491	0.471	0.434	1.314	1.278	1.242	1.206
WS: Measuring facility	451.130	532.779	518.360	552.989	523.013	479.821	539.959	669.395	572.148	514.982
Total	**504.282**	**628.837**	**646.310**	**682.186**	**679.552**	**738.075**	**921.036**	**1 057.562**	**948.737**	**879.364**