Department of Water and Sanitation

NATIONAL WATER RESOURCE INFRASTRUCTURE (NWRI)

Resource Management Plan
LOSKOP DAM

REPORT – Volume 4 of 5

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water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

2030 NDP

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- Department of Economic Development, Environment and Tourism;
- Department of Environmental Affairs;
- Eco-Care Trust;
- Department of Transport;
- Department of Water and Sanitation;
- Mpumalanga Tourism and Parks Agency;
- Nkangala District Municipality;
- South African Sports Angling and Casting Confederation;
- South African Maritime Safety Authority;
- South African Police Services;
- Steve Tshwete Local Municipality; and
- The community members of Ntwane and Kranspoort Town.

Acknowledgement is also extended to other Stakeholders, not listed above, who attended and participated in the Stakeholder engagements.

TITLE AND APPROVAL PAGE

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Review:

Review Period	Month	Year				
Annual Review of Business Plan	December	2019[1]	2020	2021	2022	2023
Five (5) Yearly Review of RMP	December	2023				

[1] The implementation of the RMP and BP requires a year budget planning prior to operationalisation.

AMENDMENTS PAGE

Revision No	Description	Date
1	Draft RMP for DWS Review	15/12/2016
2	Draft RMP for DWS Review	20/02/2017
3	Draft RMP for Public Review	28/02/2017
4	Final Draft RMP for DWS Review	11/05/2017
5	Final Draft RMP for DWS Review	27/06/2017
6	Final Draft RMP for Authorities Review	11/07/2017
7	Final RMP for DWS Approval	31/07/2017
8	Final RMP for DWS Sign off	16/08/2017

LIST OF ACRONYMS

AtoN	Aids to Navigation
BID	Background Information Document
BP	Business Plan
CATHSSETA	Culture, Arts, Tourism, Hospitality, Sports Sector Education and Training Authority
CD: IO MANCO	Chief Director: Infrastructure Operations Management Committee
CIWSP	Co-operative Inland Waterways Safety Programme
CMA	Catchment Management Committee
COGTA	Department of Cooperative Governance and Traditional Affairs
CPSI	Centre for Public Service Innovation
DAC	Department of Arts and Culture
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DHS	Department of Human Settlement
DMC	Dam Management Committee
DO	Dissolved oxygen
DoT	Department of Transport
DPW	Department of Public Works
DRDLR	Department of Rural Development and Land Reform
DSR	Department of Sport and Recreation
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
EA	Environmental Authorization
ECC	Effective Carrying Capacity
EIA	Environmental Impact Assessment Regulations
EMF	Environmental Management Framework
FSL	Full Supply Level
GIAMA	Government Immovable Asset Management Act
GPS	Global Positioning System
GWWs	Government Waterworks
I&APs	Interested and Affected Parties
IA	Implementing Agency
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IBA	Important Birding Area
IDP	Integrated Development Plan
IEE	Integrated Environmental Engineering
IMP	Integrated Management Plan
IRMP	Integrated Resource Management Plan
KPA	Key Performance Areas
LDNR	Loskop Dam Nature Reserve
LED	Local Economic Development
MFMA	Municipal Finance Management Act
MOA	Memorandum of Agreement
MSA	Municipal Systems Act

MTPA	Mpumalanga Tourism Parks Agency
NDT	National Department of Tourism
NEMA	National Environmental Management Act
NEMPAA	National Environmental Management: Protected Areas Act
NPSC	National Project Steering Committee
NWA	National Water Act
NWRI	National Water Resource Infrastructure
OMC	Operations Management Committee
PCC	Physical Carrying Capacity
PFMA	Public Finance Management Act
PP	Public Participation
PPP	Public Private Partnerships
PSP	Professional Service Provider
RCC	Real Carrying Capacity
RF	Real Factor
RMP	Resource Management Plan
SAMSA	South African Maritime Safety Authority
SAPS	South African Police Services
SASACC	South African Sports Angling and Casting Confederation
SASCOC	South African Sports Confederation and Olympic Committee
SDM	Sekhukhune District Municipality
STLM	Steve Tshwete Local Municipality
SDF	Spatial Development Framework
SWOT	Strengths, Weaknesses, Threats, Opportunities
TSS	Total Suspended Solids
WfW	Working for Water
WMA	Water Management Area
WMS	Water Modelling System

EXECUTIVE SUMMARY

Mandate: The Department of Water and Sanitation (DWS), through the National Water Act, 1998 (Act No. 36 of 1998), is mandated to protect aquatic and associated ecosystems and their biological diversity. The Minister of Water and Sanitation, as the custodian of the nation's water resources must ensure that the Government Waterworks (GWWs), including Loskop Dam, are protected, used, developed, managed and controlled in a sustainable manner, for the benefit of all. To assist the Minister in attaining the mandate, and to ensure that access to, and use of, the dam is equitable, the DWS initiated and commissioned the development of the Resource Management Plan (RMP) for Loskop Dam.

Purpose of the RMP: A Resource Management Plan (RMP) is a plan which aims to regulate access and the recreational utilization of a water resource and the surrounding state land in ways which promote community participation and beneficiation, environmental conservation and to unlock socio-economic potential of the water resource.

According to DWAF (2006), the use and management of the GWWs for recreation purpose needs to be based on Integrated Resource Management Plan (IRMP) included within the RMP.

Location of the dam: The Loskop Dam is a gravity and arch type of a dam which impounds the Olifants River. It falls under ward 29 within the jurisdiction of Steve Tshwete Local Municipality (STLM) and ward 8 within Thembisile Hani Local Municipality (THLM); all the two local municipalities forms part of the Nkangala District Municipality in Mpumalanga Province. The dam is located close to Groblersdal Town. Its GPS co-ordinates are **23° 6'12.82"S 30° 5'38.27"E.**

Purpose of the dam: The primary purpose of the dam is mainly for irrigation.

The dam also currently offers recreational activities such as angling, fishing, camping and picnicking. Other recreational activities which require full contact, such as swimming, are not allowed at the dam due to the presence of dangerous animals and/or reptiles such as hippopotamuses and crocodiles.

Dam ownership and management: Loskop Dam is owned and operated by the DWS. There are three access points at the dam, through LDNR, Forever Resort and Marulani Lodge.

There is currently no institutional structure to manage the recreational use of the dam. However, the structure has been proposed in the RMP. The recreational institutional structure is necessary for the effective governance of the Loskop Dam for recreational purposes.

Stakeholder engagement: The success of the development and implementation of the RMP depends on the role players and their level of participation. It is recognized that different roles and responsibilities of the stakeholders (Authorities and I&APs), their relationship towards each other and the steps in the planning procedure are imperative in the successful development of the RMP. As such, proper consultation with the public was done in order to produce a credible RMP.

DWAF's Guidelines for Public Participation (2001) outlines three (3) broad phases for public participation namely the **Planning, Participation** and **Exit phase**.

During the **Planning phase** a site inspection was conducted and literature reviewed in order to gather baseline information about the dam. A process was also established to get into contact

with the I&APs and relevant authorities to ensure co-operative interests and support in the RMP project.

The **Participation phase** entailed three (3) important aspects, namely:

- Informing stakeholders about the RMP project;
- Meeting the stakeholders to present the RMP process; and
- Giving Feedback in the form of meeting minutes, follow-up emails, telephonic and direct communication.

During the **Exit phase**, a draft RMP was presented to the stakeholders for comment and inputs. The Exit phase entailed two (2) important aspects, namely:

- Ensuring that all goals, challenges, concerns, objectives and the vision of the dam are identified and documented in the RMP; and
- Officially ending the public participation process.

Identified objectives and vision: During the Authority and Public Meetings issues of concerns were raised from which common objectives were identified and a vision for the dam, for a period of 20 years, were formulated by the stakeholders.

The identified key common objectives are:

- To have the Loskop Dam free from alien invasive vegetation;
- To improve water quality by monitoring and assessing the main pollution sources;
- To frequently monitor water quality;
- To have an alternative access point to the dam for the surrounding communities;
- To make the Loskop Dam a tourist attraction centre.
- To prioritise local communities in job opportunities emanating from the dam;
- To introducing some business initiatives through Public Private Partnership;
- To encourage Local Business to employ local people; and
- To ensure that a suitable institutional structure with the appropriate powers and delegations is in place to effectively manage the recreational use of the water resource in accordance with this RMP.

A vision for the dam for a period of 20 years was formulated from the key common objectives to be as follows:

"To make Loskop Dam a tourist destination, keep the environment safe and to maintain the natural ecosystem in order to keep the economic potential of the area".

The aforementioned objectives and vision are aimed at supporting the attainment of DWS's vision, mission and objectives.

Tourism Potential: The following were identified as some of the potential recreational developments at the Loskop Dam that could enhance tourist attraction:

- Bird watching;
- Game viewing; and
- Construction of swimming pools.

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CHAPTER: 1 INTRODUCTION

1.1 BACKGROUND OF LOSKOP DAM

Loskop Dam is situated within the Loskop Dam Nature Reserve and it impounds the Olifants River. It is situated within ward 29 in the jurisdiction of Steve Tshwete Local Municipality, some parts of the dam fall under ward 8 within Thembisile Hani Local Municipality which form part of the Nkangala District Municipality in Mpumalanga Province. The dam is located near the Groblersdal town at co-ordinates **23° 6'12.82"S 30° 5'38.27"E. Figure 1** shows the locality map. The closest community to the dam is Kranspoort village which is within the STLM.

The dam was finished in 1939, and the dam wall was later raised in 1979. It is owned and operated by DWS. The dam was primarily built for agricultural purposes.

Forever Resort, situated at the Kranspoort inlet, south of the dam wall, offers recreational activities such as camping, picnic site and fishing to both day and overnight visitors. MTPA has developed chalets, within the Nature Reserve however, there is no access allowed to the dam via the Nature Reserve for day visitors.

A detailed description of the dam is summarised in **Table 1.**

Table 1*:* Loskop Dam Profile

Loskop Dam Profile	
Location	South Africa
Province	Mpumalanga Province
District Municipality	Nkangala District Municipality
Local Municipality	Steve Tshwete and Thembisile Hani local Municipality
Nearest Town	Groblersdal
Completion Year	1939
Completion Date Raised	1979
GPS Coordinates	23° 6'12.82"S; 30° 5'38.27"E
Purpose	irrigation
Owner	DWS
Water Management Area	Olifants Water Management Area
Quaternary Catchment	B32C
Catchment Area (km^2)	12285
Rivers	Olifants River
Capacity (m^3)	361,000
Surface Area (ha)	2427.7
Wall type	Gravity and Arch
Wall Height (m)	49
Length (m)	497

Source: Department of Water and Sanitation (List of registered dams; March 2016)

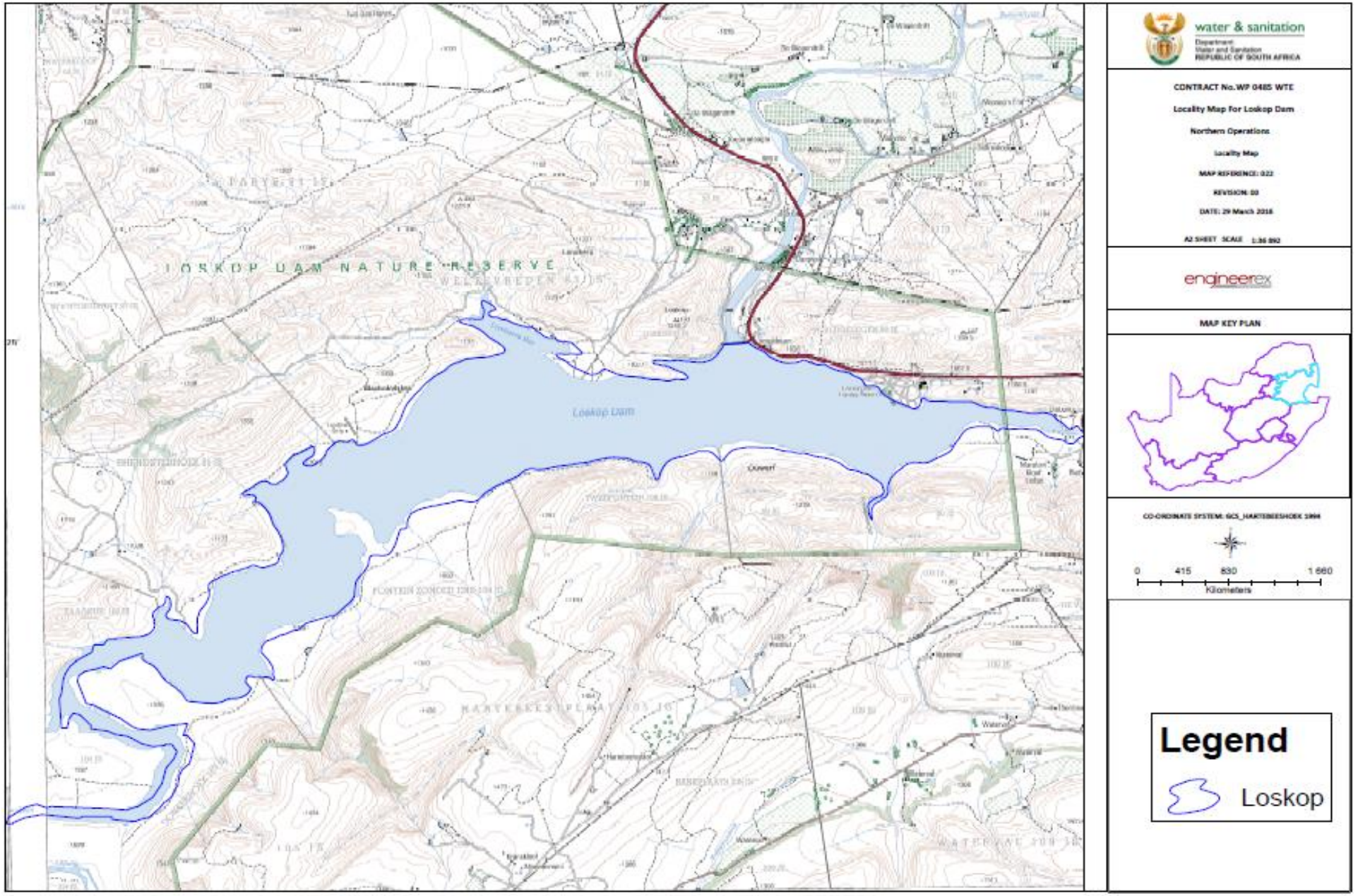


Figure 1: Locality Map for Loskop Dam

1.2 BIO-PHYSICAL ENVIRONMENT

1.2.1 Climate

The dam is located in an area characterised by local steppe climate. The climate here is classified as BSh by the Köppen-Geiger system. (Climate Data.Org). During the year there is little rainfall and average annual rainfall is 600 mm. Precipitation is lowest in July, with an average of 4 mm. Most of the precipitation falls in December, averaging 112 mm.

Between the driest and wettest months, the difference in precipitation is 108 mm, throughout the year,

The average temperature in the area is 24.3 °C. January is the hottest month of the year and June is the coldest month, with temperatures averaging 13.1 °C. Between the driest and wettest months, the difference in temperatures vary by 11.2°C. (Climate Data.Org). (Refer to **Figure 2** for the average temperatures and rainfall patterns for the area in 2016).

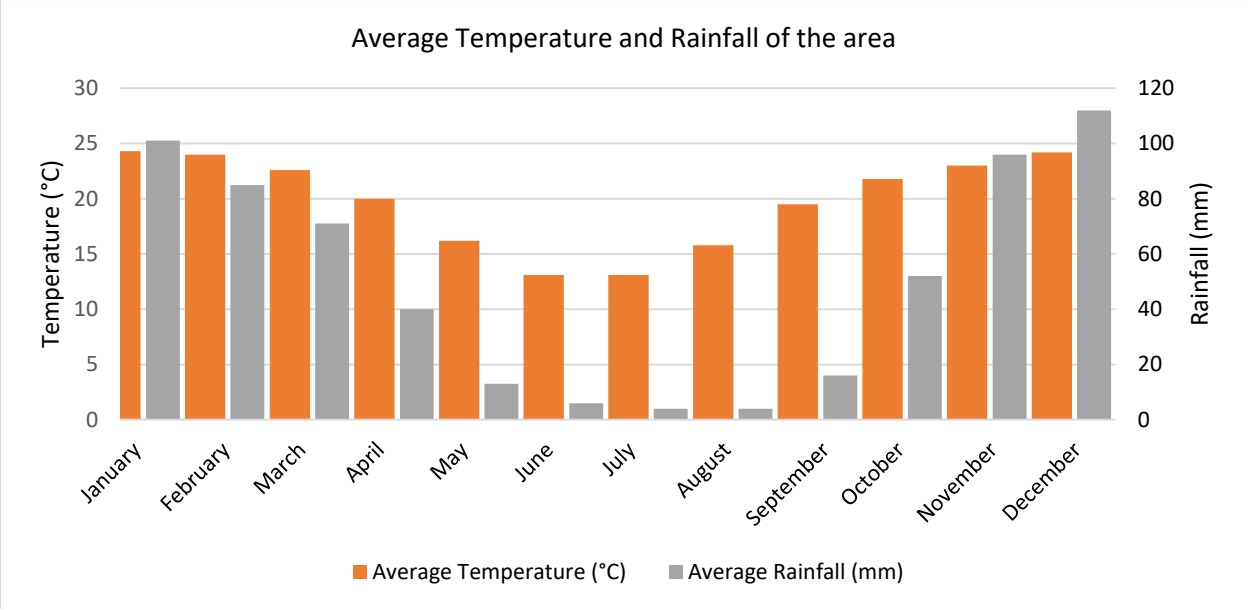


Figure 2: Average Temperature and Rainfall of the area (2016)

1.2.2 Flora

Loskop Dam lies on the transition between Grassland and Savanna Biomes. The vegetation of the higher lying regions of the area is typical of the Grassland Biome, while the lower lying areas fall within the Savanna Biome. As a result the vegetation is very heterogeneous.

The strong currents caused by the influx of water from Witbank Dam literally flushed the water hyacinth plants into the dam, see **Figure 3** showing the map of the area which was infested by water hyacinth.

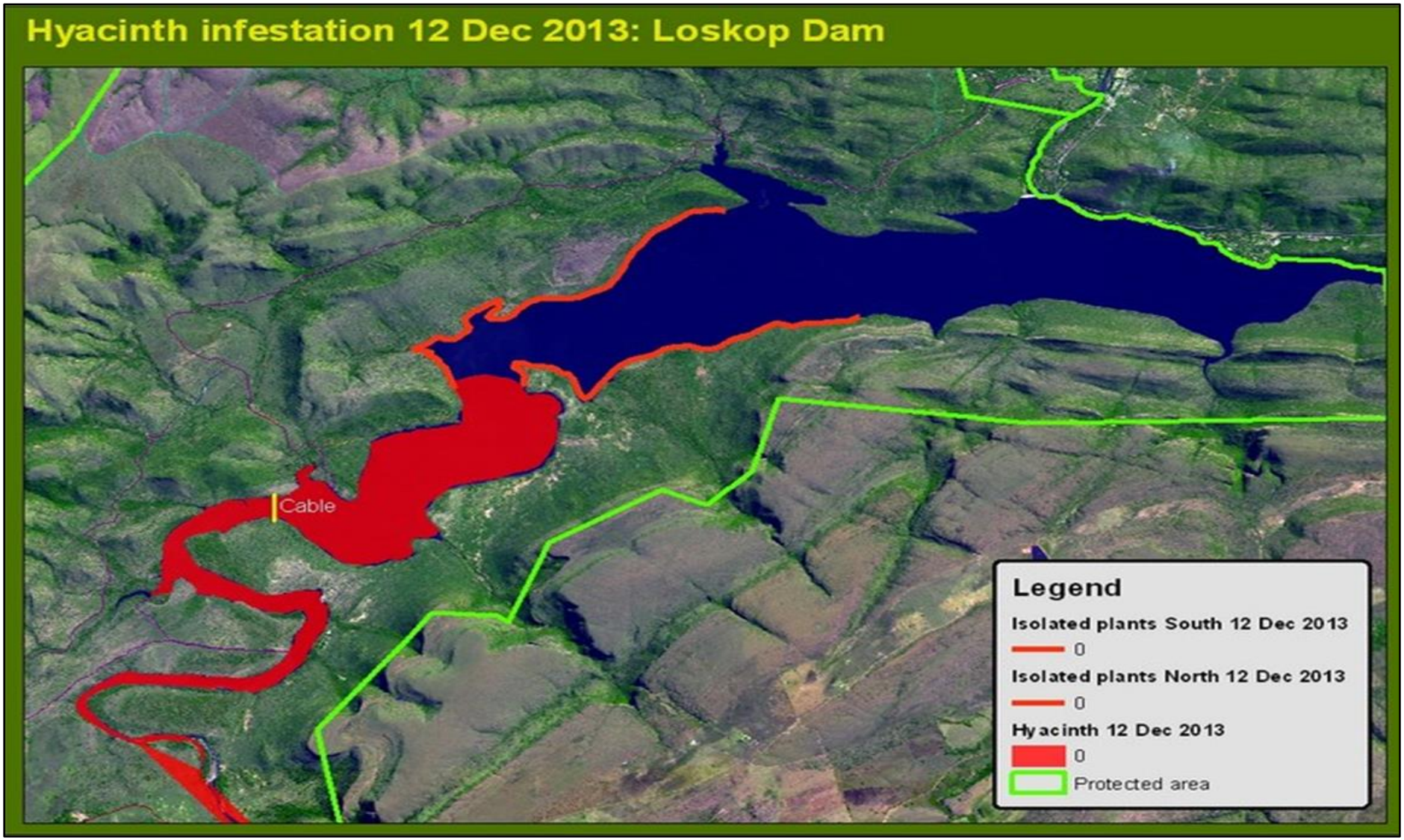


Figure 3: Map Showing the Areas on the dam infested by Hyacinth

1.2.3 Fauna

The dam is situated in a Nature Reserve which is rich in fauna. However there are some alien fish species in the dam. There are also some dangerous aquatic animals such as hippopotamuses and crocodiles.

1.2.3.1 **Birds**

Loskop Dam Nature Reserve is an IBA (Important Birding Area) registered with BirdLife South Africa these include Cape vulture, martial eagle, denham's bustard, caspian tern, African Finfoot, Southern Bald ibis, and blue crane and red-billed Oxpecker has been successfully introduced. A project for the re-establishment of Southern Ground-Hornbills is in its final stages.

1.2.3.2 **Amphibians**

According to the Frog map Atlas, four (4) species were found in locus 2925ad. All the frog recorded are categorised as Least Concern in the Red Data Book, these include bubbling Kassina, Common Plantana, Common Caca and Tremelo Sand Frog.

1.2.3.3 **Mammals**

According to MTPA a total of 15 mammal predator species have been listed for LDNR. This includes some threatened species like African wild cat, aardwolf, brown hyena, serval and leopard. The reserve also supports a healthy population of white rhino and sable. A total of about 28 small mammal species, which include one alien invasive species, have been recorded for LDNR. The small mammals referred to comprise of bat, insectivore and small rodent species.

However 10 mammal species have been recorded in locus 2925ad (http://vmus.adu.org.za/vm_projects.php). The mammal species have been listed in different categories which include; Least Concern and Endangered, see **Table 2.**

Table 2: Showing Identified Mammal species List

Species Common Name	Red list category
Namaqua Rock Mouse	Least Concern
Bushveld Gerbil	
Southern African Mastomys	
Large Eared African Desert Mouse	
South African Pygmy Mouse	
South African Spring Hare	
South African ground Squirrel	
African White-tailed Rat	Endangered

1.2.3.4 **Reptiles**

According to MTPA, a total of 42 reptile species have been recorded on the reserve such as snakes, lizards, tortoises, terrapins, crocodiles and pythons are regularly observed. A natural population of crocodiles occurs on the reserve.

1.2.3.5 **Fish**

A total of 26 freshwater fish species occur in Loskop Dam of which four are exotic alien and invasive species. They are Carp (*Cyprinus carpio)*, Mosquito fish (*Gambusia affinis)*, Largemouth Bass (*Micropterus salmoides)* and Smallmouth Bass (*Micropterus dolomieu*). One indigenous species, Moggel (*Labeo umbratus*) historically did not occur in this river system.

The indigenous fish species are under threat of the exotic alien and invasive species, especially from Largemouth Bass (*Micropterus salmoides).*Species of special interest such as Bulldog fish (*Marcosenius macrolepidotus)*, Paper mouth (*Enteromius rappax* (Formerly *Barbus mattozi*), Silver Robber (*Micralestes acutidens)* and River sardine (*Mesobola brevianalis)* are under threat and population numbers of these species in Loskop Dam are less than 50% of what it was.

Loskop Dam is known for its large Mozambique Tilapia (*Oreochromis mossambicus)* and the possible introduction of another exotic alien and invasive species, Nile Tilapia (*Oreochromis niloticus)*, used in aquaculture, is of great

concern because they hybridise with the indigenous *O. mossambicus* and this will lead to the extinction of *O. mossambicus*, not only in Loskop Dam but in southern Africa (LDNR 2014).

1.2.4 Topography

The topography around the dam is extremely hilly with deeply incised drainage lines leading to the valley bottoms.The three geological systems underlying the area give rise to an extremely hilly terrain with deeply carved drainage lines. The terrain varies from incised plateaus on the higher lying areas, through steep cliffs and a variety of slope types to some deep valleys and some relatively flat valley bottoms (MTPA, 2013).

1.2.5 Geology and Soils

The Loskop Dam is underlain by five geological systems. These are Rhyolite, Granophyre, Formation Loskop, Group Waterberg and Dolerite. Rhyolite underlies the mountains to the north of the dam (Lani van Vuuren 2008). The soil patterns of the area are very complex as a result of the topography and the weathering of the different geological substrate types. Acid soil patterns are commonly observed, specifically related to the underlying sandstone and rhyolite rock types. The foothills and valley floors have deeper soils; classed as sandy-loam to sandy-clay-loam soils. **Figure 4** illustrates a geological map showing the geological features of the area.

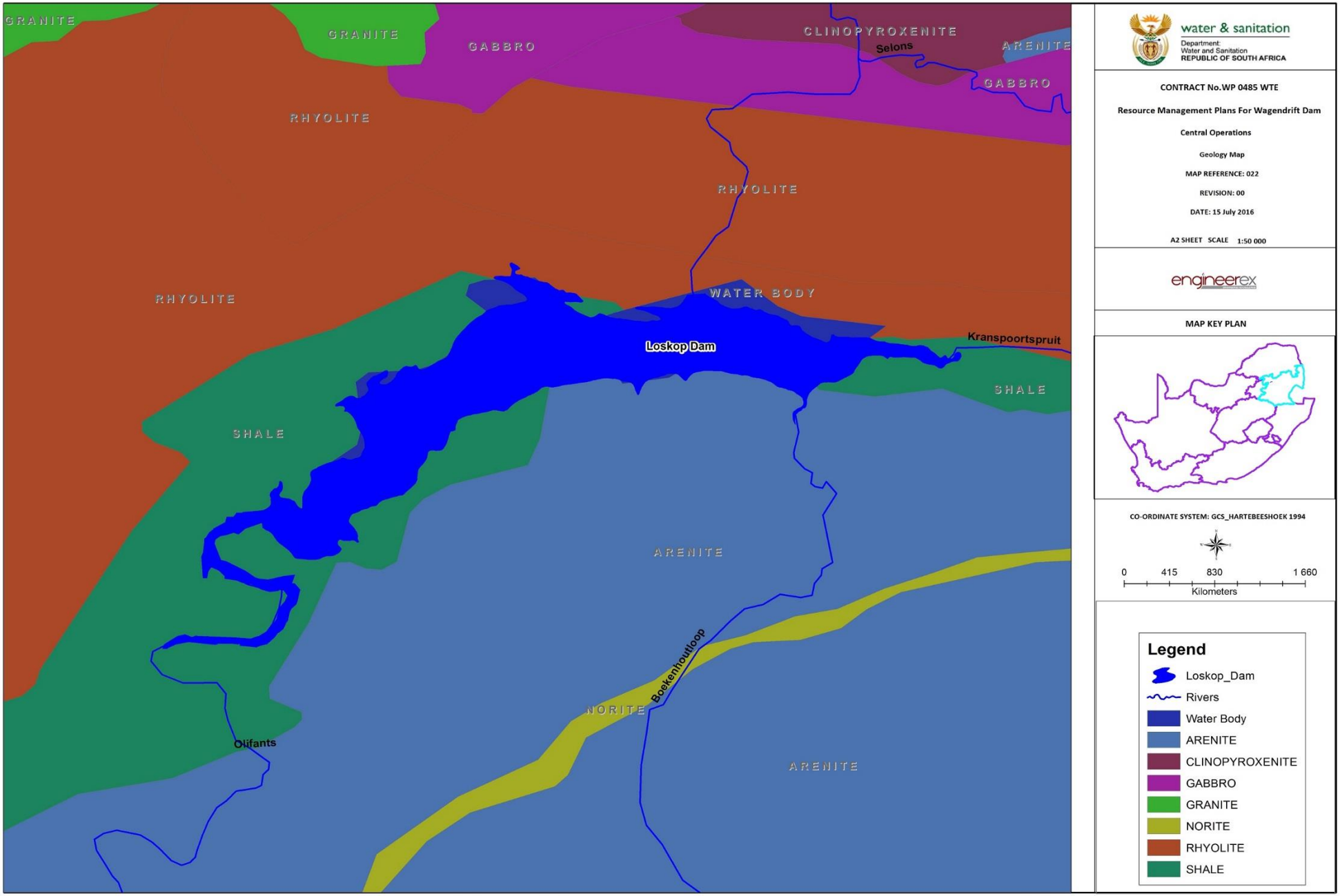


Figure 4: Geological Map for Loskop Dam

1.2.6 Hydrology

1.2.6.1 Water Surface

The dam is situated in the upper catchment of the Oliphants River under the Oliphants Water Management Area. The dam was very low in September 2016 due to drought. It was at 55.7% full. Below is a picture showing the level of water at the dam in **Figure 5.**

Figure 5: Water Level at the Dam (September, 2016)

The state of dams released by DWS indicated that Loskop Dam was approximately 55.7% full on 26 July 2016 as indicated in **Figure 6**.

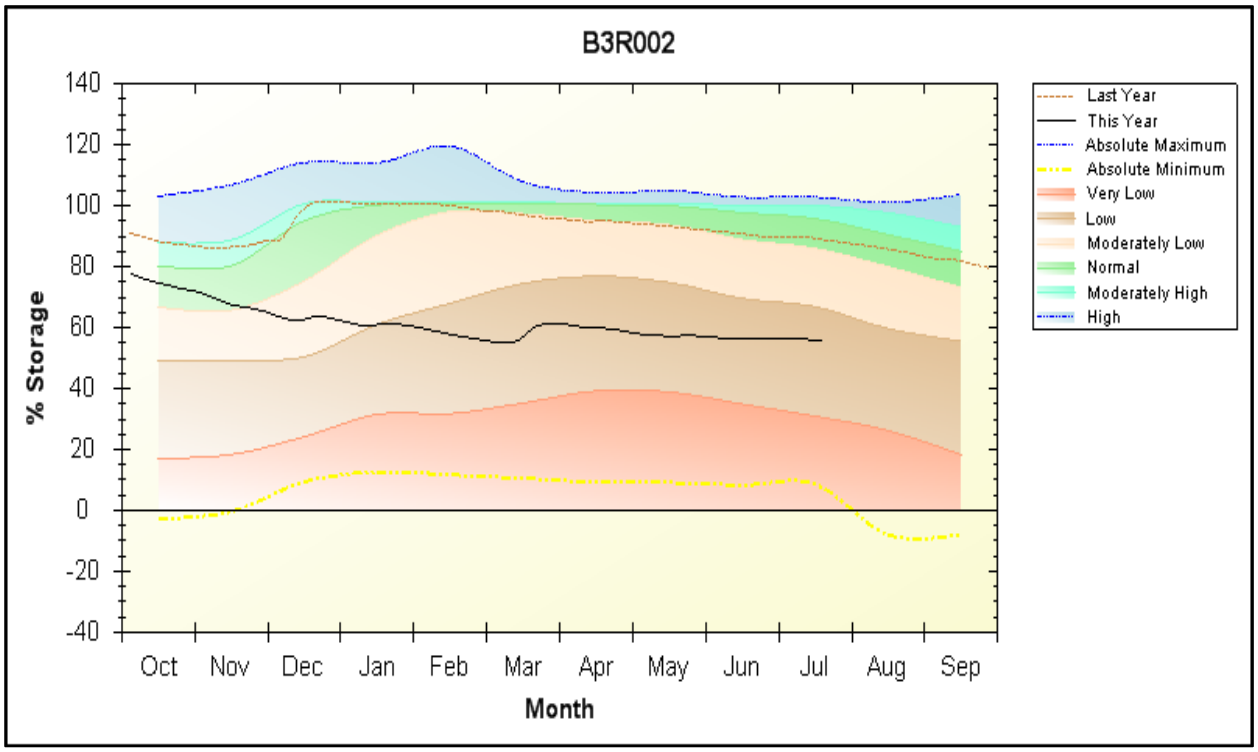


Figure 6: Water level at the dam

1.2.6.2 Water Quality

A number of land and water use activities that take place in the upper Olifants River also play a role in polluting the dam. However, the Olifants River has been described as one of the most polluted rivers in Southern Africa because of the number of anthropogenic activities that are taking place particularly in the upper catchment of the Olifants (Judy 2013). According to Oberholster et al (2011) Loskop Dam indicated

that the most important impacts affecting water quality were those arising from or linked to mining and nutrient enrichment.

However the water is still suitable for recreational activities. See **Table 3,** illustrating the water quality variables results for 2016 (DWS 2016).

Table 3: Water Quality Data (DWS Water Quality Management System, 2016)

Characteristics	Tests Results	Water Quality Target Range (Recreational Purposes)	Description
pH (pH units)	7.9	6.5 - 8.5	No significant effects on health for intermediate activities
Ammonia(mg/L)	0.08	N/A	No health or aesthetic effects.
Sulphate (mg/L)	0.6	N/A	No health or aesthetic effects
Electrical Conductivity (ms/m)	37.2	N/A	No health effects associated with the electrical conductivity of water.
Nitrate (NO_3)	0.1	N/A	No adverse health effects
Chloride	8.38	N/A	No aesthetic or health effects.

Source: Water Quality Standards: Department of Water and Sanitation, (2016) and Recreational Use: Volume 2, 1996

NB: N/A - Not available

1.2.7 Conservation

The dam is located in a protected area, which is LDNR, hence it is currently managed by MTPA.

1.3 BUILT ENVIRONMENT

1.3.1 Infrastructure

The dam is owned by DWS, therefore there are some infrastructure at the dam which includes DWS offices, dam wall and houses for workers who operate the dam.

1.3.2 Transport Network

The main access route to the reserve is by means of the R11 tarred road between Middelburg and Groblersdal.

1.4 USERS AND USE OF THE DAM

1.4.1 Domestic Use

The Loskop Dam provides bulk raw water to the Steve Tshwete local municipality.

1.4.2 Irrigational Use

The dam provide water for irrigation schemes downstream. The schemes include farming of citrus fruits and vegetables.

1.4.3 Recreational Use

The recreational activities that take place at the dam include hiking trails, guided boat ride/cruises, motorised recreational boats (offered by Forever Resort). In the Lombard's bay area there are three rustic MTPA huts provide basic self-catering accommodation. Angling.

1.5 RECREATIONAL INSTITUTIONAL STRUCTURE

The Management Authority responsible and accountable for the Loskop Dam is MTPA.

1.5.1 Management of Water Surface

The management of the surface water in terms of operation of the Dam is done by DWS.

In addition to the DWS, Local Accountable AtoN Parties (LAAP) and other Bodies providing access to government waterways and watercourses have a responsibility to ensure that the required fixed and/or floating AtoN are provided after obtaining the necessary support from DWS and thereafter the permission by SAMSA.

1.6 LAND OWNERSHIP

1.6.1 Agreements

The dam is situated in a nature reserve. MTPA has been given responsibility to manage the dam for secondary use.

The Zaagkuil concession area is situated on the Conservation Zone at the inlet of the dam. The concessionaire use the dam to access the concession area to transport their guests to their facility.

1.6.2 Land Claims

There are registered land claims, however, the land which is being claimed is not on the DWS purchase boundary, but on the part of the LDNR.

1.6.3 Access

There are three (3) access points at the dam, these are; through the Forever Resort, Marulani Lodge and the LDNR.

1.7 SAFETY

There is no overall safety system in place at the dam. There are hippopotamuses and crocodiles in the dam.

1.7.1 Safety of Navigation

There is currently no adequate, standardised and harmonised fixed and floating Aids to Navigation[2] (AtoN) and Demarcation Markers in place.

1.7.2 Incident Management

There is no specific incident management system in place to ensure that incidents are responded to in a coordinated manner.

[2] A marine Aid to Navigation (AtoN) is defined by the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) as "A device or system external to vessels that is designed and operated to enhance the safe and efficient navigation of vessels and/or vessel traffic".

1.8 EXISTING PLANS

1.8.1 Zoning Plan

MTPA has compiled an IMP in 2013 for the entire Nature Reserve. The Zoning Plan compiled includes the water surface zone and terrestrial zone.

1.9 SOCIO ECONOMIC ENVIRONMENT

1.9.1 Tourism Information

The dam is located in a nature reserve, therefore it is a hot spot of a variety of plants and animals. It also supports an extensive birdlife. Many people visit the dam for its biodiversity. Some are attracted to the monument of the labourers who were involved in the construction of the dam. **Figure 7** is a picture showing the monument. There is accommodation for overnight visitors at the Forever Resort and at the Nature Reserve.

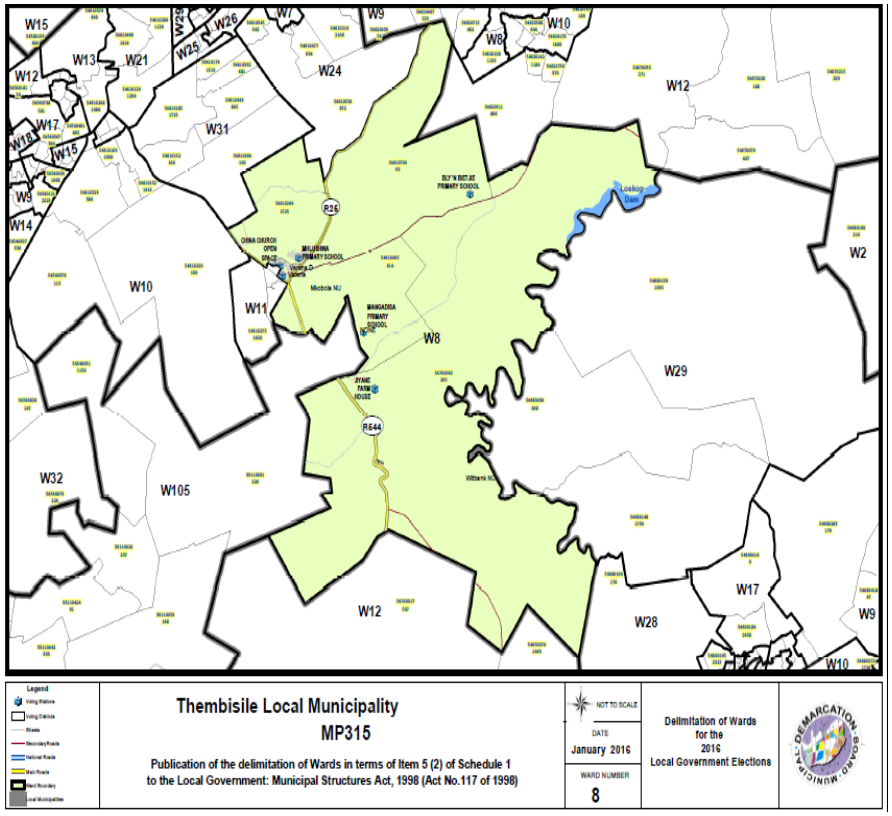
Figure 7: Monument at the Loskop Dam

1.9.2 Social Audit

The main purpose of social audit is to examine the general status of the study area and to determine issues that need to be addressed when developing the RMP in order to overcome potential difficulties in an area. The study area falls within Ward 8 and 29 of THLM and STLM as shown in **Figure 8**. An understanding of socio-economic conditions of Ward 8 and 29 can be used at a later stage to determine the impact of

a RMP in the area in terms of changed socio-economic conditions.

A social Audit which focused on the population composition of the ward, Education level and employment status was undertaken and is presented in section 1.9.1.1 to 1.9.1.4, respectively.



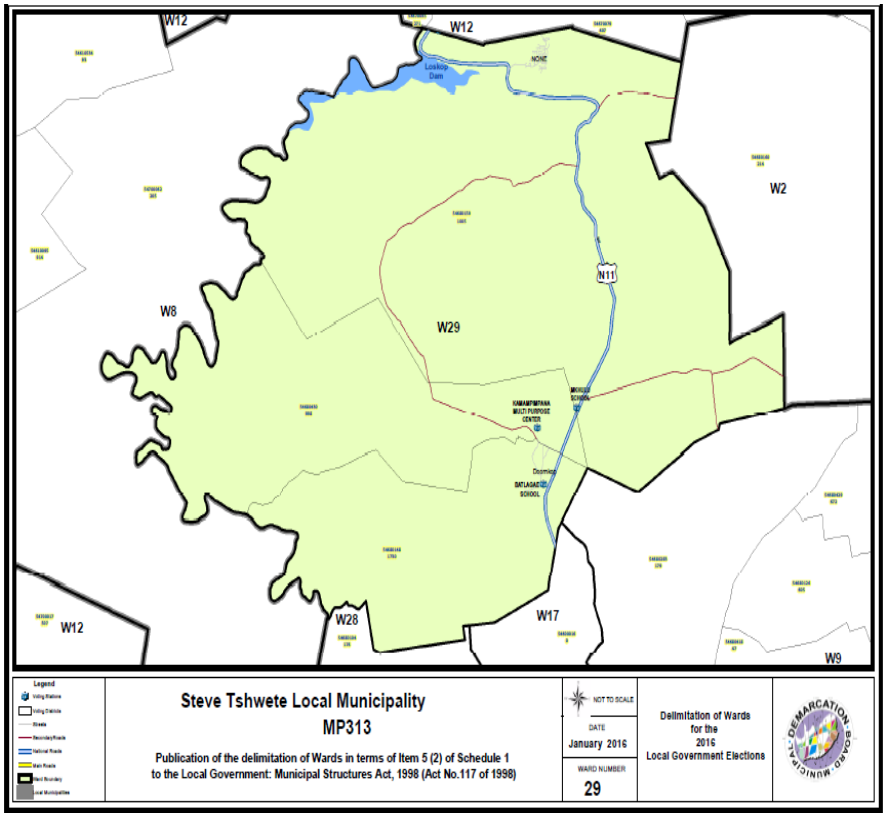


Figure 8: Maps showing the two Wards within which the dam is situated

1.9.2.1 Population Dynamics

According to (STATS SA, 2011), the population of Kranspoort Community is composed of 42.6% female and 57.4% are males. The table and figure below indicate the population groups in Kranspoort Town. The highest population in the area is white with 54.4%, Black 43.8% and Coloureds have the lowest percentage 1.8%. The population groups in Kranspoort community are illustrated in **Figure 9.**

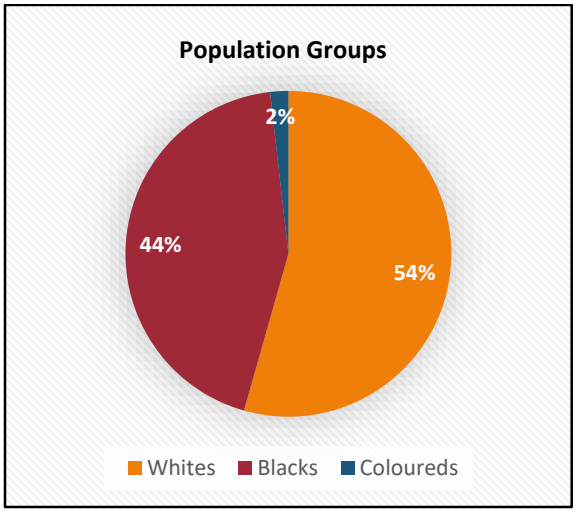


Figure 9: Population Groups at Kranspoort

The population of Ntwane village is composed of about 99.6% Black African, Indian 0.1%, Coloureds 0.1% and other 0.1%. The population groups in the community are illustrated in **Figure 10.**

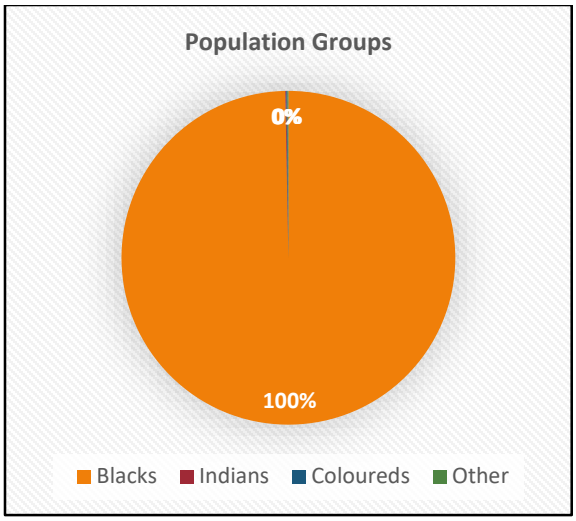


Figure 10: Population groups at Ntwane

1.9.2.2 Educational Level

Tables 4 and 5 show the level of education in Kranspoort Community and Ntwane Village.

Table 4: Education Percentage at Kranspoort

Education Percentage	
Higher Education	4.5%
Matric	17.6 %
Some Secondary	29 %
Completed Primary	3.6%
Some Primary	8.7%
No Schooling	36.3%

Table 5: Education Percentage at Ntwane

Education Percentage	
Higher Education	25.5%
Matric	25.8 %
Some Secondary	27.7 %
Completed Primary	3.6%
Some Primary	10.6%
No Schooling	6.6%

1.9.2.2 Economic status for the two (2) Nearest Communities to the dam

Tables 6 and 7 show the economic status of Kranspoort and Ntwane communities. It shows the income on a monthly basis. The income

status of Kranspoort is good because everyone is earning and a few percentage is earning less than R9 600. However the income status at Ntwane village is very bad because the percentage of people earning R 19 600 and below is high.

Table 6: Kranspoort Community Monthly Income Status

Income	Percentage
No income	0%
R1 - R4,800	1%
R4,801 - R9,600	4%
R9,601 - R19,600	22.1%
R19,601 - R38,200	19.6%
R38,201 - R76,400	16.1%
R76,401 - R153,800	10.6%
R153,801 - R307,600	10.6%
R307,601 - R614,400	5.5%
R614,001 - R1,228,800	3%
R1,228,801 - R2,457,600	1%
R2,457,601+	0%

Table 7: Ntwane Community Monthly Income Status

Income	Percentage
No income	13.7%
R1 - R4,800	6.1%
R4,801 - R9,600	10.8%
R9,601 - R19,600	29.4%
R19,601 - R38,200	24.3%
R38,201 - R76,400	8.8%
R76,401 - R153,800	3.2%
R153,801 - R307,600	2.2%
R307,601 - R614,400	1.1%
R614,001 - R1,228,800	0.3%
R1,228,801 - R2,457,600	0.1%
R2,457,601+	0.1%

1.9.3 Community Beneficiation

It is DWS's belief that Local Communities should equally share the benefits emanating from the utilisation of the dam for recreational purposes, by ensuring that they have both physical access to the resource, as well as access to the water-based recreation economy.

According to DWAF (2006), by ensuring that the Local Communities move beyond merely being affected by or living close to a water resource, but rather undertaking the transition to become participants will ensure that water resources can and will be protected by the people closest to and most affected by the dam.

The community will benefit in amongst others the following ways:

- By having equitable access to the dam;
- The community needs will be addressed in an appropriate and equitable manner;
- By being safe while accessing and using the dam;
- By being given first preference when there are employment opportunities and skills development;
- Through the PPP; and
- By participating in decision-making with respect to major developments planned or proposed for the dam (through the Dam Management Committee).

CHAPTER 2: LEGISLATIVE FRAMEWORK

This RMP forms the overarching framework for the management of Loskop Dam. It is informed by relevant policy, legislation and planning documents administered by other government departments, most of which are herein under discussed. Similarly, these government departments are required to use the RMP to inform the development of future policy, legislation and planning documents.

I. **The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996), Section 24:** Provides that, everyone has a right to an environment that is not harmful to their health or well-being.

II. **Conservation of Agricultural Resource Act, 1983 (Act No. 43 of 1983):** Provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith. Regulation 7 and 8 within the same Act deals with the protection of wetlands and water courses, while regulations 15 and 16 deals with Alien Invasive Plant Species and bush encroachment**.**

III. **Consideration on Institutional Arrangement for Managing Use of Water for Recreational Purposes (DWAF, 2003):** It outlines some of the institutional issues at a local level and makes recommendations about the conditions under which different Institution Management arrangements may be considered.

IV. **General Public Participation Guidelines (DWAF, 2001):** Public Participation refers to the ongoing interaction between Role Players and all stakeholders that is aimed at improving decision making during planning, design, implementation and evaluation of all projects within the state, this includes the proposed development of the RMP.

V. **Government Immovable Asset Management Act, 2007 (Act No. 19 of 2007):** To provide for a uniform framework for the management of an immovable asset that is held or used by a national or provincial department; to ensure the coordination of the use of an immovable asset with the service delivery objectives of a national or provincial department; to provide for issuing of guidelines and minimum standards in respect of immovable asset management by a national or provincial department; and to provide for matters incidental thereto.

VI. **Government Notice R654 dated 1 May 1964, in terms of the Water Act, 1956 (Act No. 54 of 1956):** Regulates access and use of government waterworks for recreational purposes.

VII. **Guidelines for Compilation of Resource Management Plans (DWAF, 2006):** Directs and guides the development of RMPs by providing insight into the purpose and objectives of these plans, the procedure for its compilation and structure of such documents.

VIII. **Merchant Shipping (National Small Vessel Safety) Regulations (2007):** These Regulations provide *inter alia* for:

- Requirements for vessel safety;
- Crewing requirements and responsibilities;
- Controlled events such as competitions and regattas; and
- Responsibilities of authorised agencies (governing boards/ clubs/

organisations and regulating authorities).

These Regulations apply to the Department of Water and Sanitation as they are applicable to all inland and sheltered waters and as the Department and its agencies are allowing access to government waterworks for recreational boating vessels.

IX. **Methodology for Carrying Capacity Assessment for the Use of Water for Recreational Purposes (DWAF, 2003):** The carrying capacity of a water resource represents the maximum level of visitor/recreational use and related infrastructure that the water resource and surrounding area can accommodate, without diminishing user satisfaction or adverse impacts upon the local or host community, the economy and culture of the area.

X. **National Environmental Management Act, 1998 (Act No. 107 of 1998):** NEMA serves as South Africa's Environmental Framework Legislation. It was designed to provide for co-operative and Integrated Environmental Governance by establishing a general framework for decision-making on matters affecting the environment.

XI. **National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) and Related Regulations:** This Act aims to provide the framework, norms and standards for the conservation, sustainable use and equitable benefit-sharing of South Africa's biological resources.

The Alien and Invasive Species Regulations for this Act came into effect 01 October 2014. NEMBA together with these Regulations aim to prevent the introduction and spread of alien and invasive species across South Africa.

XII. **National Environmental Management: Protected Area Act, 2003 (Act No. 57 of 2003):** The aim of this Act is to provide for the protection and conservation of ecologically viable areas, which are representative of South Africa's Biodiversity, as well as natural landscapes and seascapes.

XIII. **National Treasury Public Private Partnership (PPP) Toolkit for Tourism, 2005:** This toolkit assist the process of development of tourism-based businesses on State-owned Land. The Toolkit make it easier for Institutions and the Private Sector to enter into tourism related partnerships on State Property managed by National and Provincial Government Institutions.

XIV. **National Water Act, 1998 (Act No. 36 of 1998):** The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in a sustainable and appropriate manner, for the benefit of all. Furthermore Section 113 of the Act states that the water of a government waterworks and surrounding state owned land may be made available for recreational purposes, subject to controls determined by the Minister and regulations made by the Minister.

Using water for recreational purposes is a water use under Section 21K and can be exercised as permissible use of water under Schedule 1 of the Act. However, this provision does not cater for commercial use hence the RMP should be implemented in line with General Strategic Plan for commercialisation of Tourism Public Private Partnerships at Government Waterworks, 2009 and PFMA Treasury Regulation 16.

Once the RMP has been approved, the RMP will regulate access and use of the dam. It is important to note that users will need to comply with other relevant legislation.

XV. **Operational Policy: Using Water for Recreational Purposes (DWAF, 2004):** This policy is the main guideline in support of the RMP process with regards to the basic principles, policies, strategies and actions for regulating the use of water for recreational purposes.

XVI. **Public Finance Management Act (PFMA) (Act No. 29 of 1999**): Section 76 of the Act secures transparency, accountability and sound management of the revenue, expenditure, assets and liabilities of government departments. The Act promotes the objective of good financial management in order to maximize service delivery. The Act allows DWS to enter into PPP agreements with the private sector for the commercial use of state assets.

XVII. **Safety at Sport and Recreational Events Act, 2010 (Act No. 2 of 2010):** Events management is addressed by Safety at Sport and Recreational Events Act (Act No. 2 of 2010). This act deals with ensuring responsibility for safety and security at events. The act deals with among other things,

- Responsibility for safety and security at the events;
- Risk categorization of events; and
- Safety certificates.

XVIII. **South African Maritime Safety Authority Act, 1998 (Act No. 5 of 1998):** One of SAMSA's three legislative mandates is "to ensure safety of life and property at sea". The Act enables SAMSA to administer and execute the relevant maritime legislation.

XIX. **Water Services Act (Act No. 108 of 1997):** The Act outlines the roles and responsibilities for the supply of water and sanitation to citizens. It also recognises the rights of all humans to basic water supply and sanitation services.

The RMP process also takes cognizance of the following Legislations, Policies, Programmes and Reports:

- Broad-based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003).
- Communal Land Rights Act, 2004 (Act No.11 of 2004).
- Development Facilitation Act, 1995 (Act No. 67 of 1995).
- Disaster Management Act, 2002 (Act No. 57 of 2002).
- Environmental Conservation Act, 1989 (Act No, 73 of 1989).
- Fire Brigade Services Act [No. 99 of 1987]
- Intergovernmental Relations Framework Act, 2005 (Act No.13 of 2005).
- Land Administration Act, 1995 (Act No. 2 of 1995).
- Local Government: Municipal Systems Act [No. 32 of 2000]
- Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000).
- Mpumalanga Tourism and Parks Agency (MTPA) Act [2005]
- MTPA Regulations
- National Heritage Resources Act, 1999 (No. 25 of 1999)
- Occupation Health and Safety Act, 1993 (Act No. 85 of 1993).
- Occupational Health and Safety Act [No. 85 of 1993]
- Restitution of Land Rights Act, 1994 (Act No. 22 of 1994).
- State Land Disposal Act, 1961 (Act No. 48 of 1961).

- Sustainable Development Goals (2015)

- **Safety of Navigation:** In addition to its common-law responsibility, DWS is, in terms of the requirements described in the National Water Act, Act No 36 of 1998, amongst others, responsible for the safety of GWWs. DWS, its delegated public sector partner, or a delegated water management institution, has therefore the responsibility to provide the required fixed and/or floating AtoN for general navigation. In addition to the DWS, Local Accountable AtoN Parties (LAAP) and other Bodies providing access to Government waterways and watercourses have a responsibility to ensure that the required fixed and/or floating AtoN are provided after obtaining the necessary support from DWS and thereafter the permission by SAMSA. In order to demarcate specific zones/areas, standardised demarcation markers are to be used in conjunction with the relevant AtoN.
  - SAMSA Marine Notices and its Directive on the Standardisation of fixed and floating AtoN and Demarcation Markers on all navigable Inland Waterways in the Republic of South Africa.

The aim is to enhance the development of a best practice model to ensure a safe and structured inland maritime environment and culture, whilst protecting the country's precious water resources.Not only do these Acts, Regulations and Frameworks guide specific decisions and actions, they also provide the framework for monitoring performance and compliance, and provide guidelines regarding contravention, offences and penalties. This list is not extensive, other legislation could be applicable.

CHAPTER 3: WHAT IS A RESOURCE MANAGEMENT PLAN

3.1 DEFINITION OF RMP

A Resource Management Plan (RMP) is a plan which aims to regulate access, and the recreational utilisation, of a water resource and the surrounding state land, in ways which promote community participation and beneficiation, environmental conservation and unlock socio-economic potential of the water resource.

Recreational use includes activities ranging from leisure, sport to culture and religion. Although recreational use does not involve consumption of water, it is still a major water use and needs to be managed effectively with minimal negative environmental impacts and to ensure communities have access to water based economy.

3.2 PURPOSE OF THE RMP

The main aim of RMPs is to attain the objectives underlying sustainability and to compile functional, workable sustainable access and utilization plans for water resources.

Without approved management plans relating to water resources utilized for recreational purposes, it is difficult for informed decisions to be made, necessitating a precautionary approach to access, utilization and development proposals.

One of the components of the RMP process is to implement an Institutional Plan for effective management of GWWs. The focus on the Institutional Plan is accompanied by a Zoning Plan which is influenced by current and potential recreational uses. The RMP also outlines the Strategic Plan for all the identified objectives for the dam by addressing the following questions: What, Why, How and Who. In addition a Financial Plan is incorporated into the BP and provides guidance on funding requirements and funding options to implement the potential recreational activities at the dam.

3.3 PROCESS TRIGGERS

Triggers are factors that have encouraged DWS to initiate and commission the development of RMPs.

A number of generic factors have been identified by DWS for the development of RMPs, however, the Process Facilitator identified site specific trigger factors, as illustrated by **Table 8.**

Table 8: Trigger Factors for the Development of Loskop Dam RMP

Trigger Factors	Description
Resource Management	**Land pollution** • The dam wall is adjacent to a main road (N11) where people stop to have a view of the dam, then dump the litter during the viewing. **Illegal Activities** • It is alleged that there is unlawfull fishing taking place at the dam. • The water surface is currently being utilised for recreational purposes such as boating which might lead to the spread of alien vegetation because there are no relevant facilities such as wash–bays within the dam to wash the boats before they are launched.

Trigger Factors	Description
	Alien Invasive Species • It is confirmed that the dam was infested by alien aquatic weeds, (water hyacinth). Such weeds may have a detrimental effect on the water quality, they may cause bad odor on the water body. • It is alleged that there are graves under water.
Recreational Industry Involvement	**Access Control** • The dam is situated in a Nature Reserve, therefore the access to the dam is limited to the public and there are only two (2) access points at the dam.
Community Participation and Beneficiation	**Community Beneficiation** • The local communities feel that they are not benefiting from the dam.
Public Policy	**Local Planning Initiatives** • To ensure that the RMP incorporates the planning documents from Local or District Municipality in cases where the dam is identified as local development objective in terms of the Integrated Development Plan (IDP), Spatial Development Framework (SDF) or Tourism Master Plans for the relevant Local or District municipality.

3.4 RMP DEVELOPMENT PROCESS

The RMP is being be compiled in accordance with the RMP Guideline (DWAF, 2006) as illustrated in **Figure: 11.**

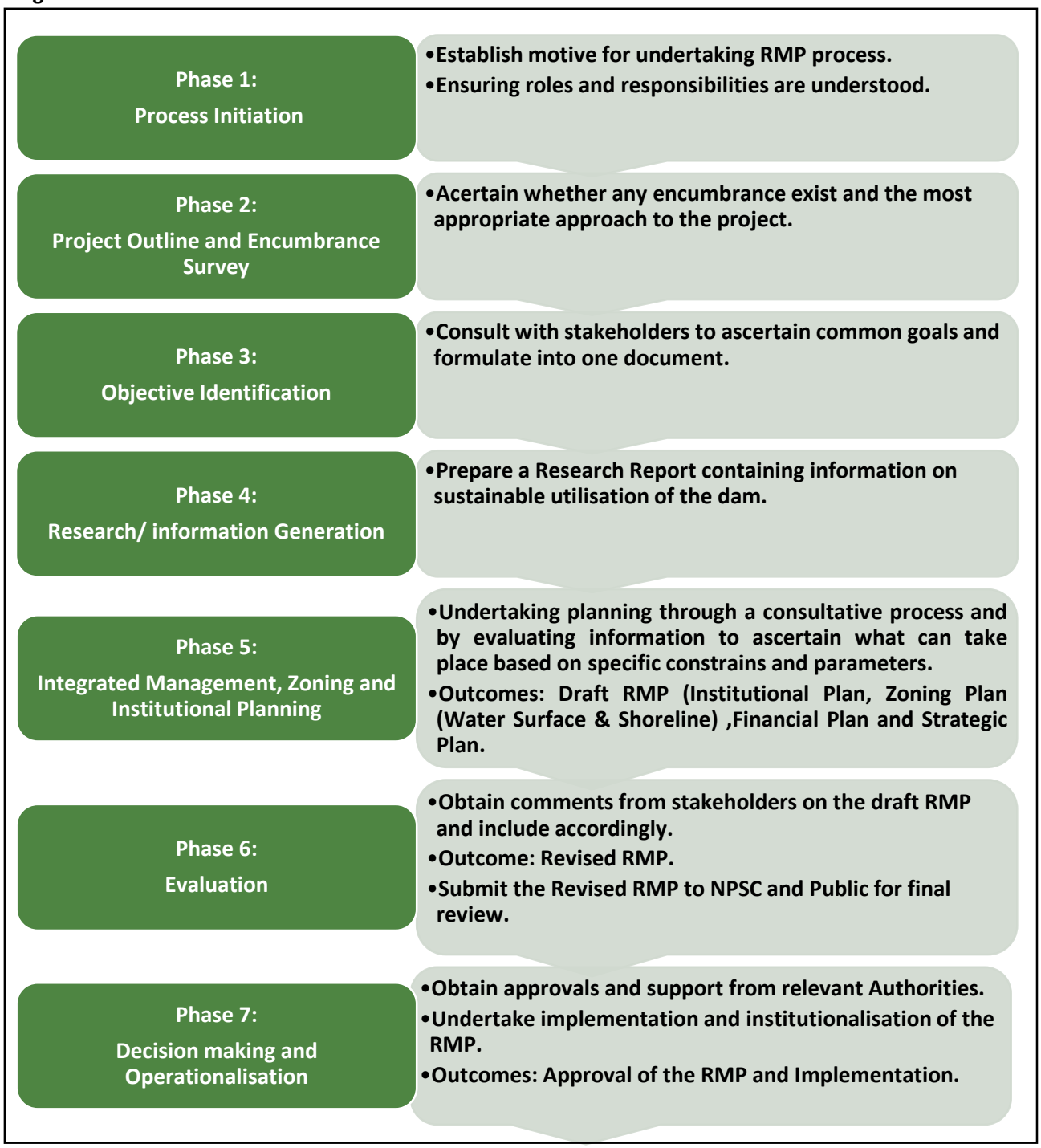


Figure 11: RMP Procedure

3.5 RMP PLANNING STAGES

3.5.1 Desktop Study

The desktop study was conducted with the aim of acquiring background information about the Loskop Dam. This was done through literature review. This study provided information such as the location of the dam, user groups, current activities, previous studies conducted for the dam.

3.5.2 Site Inspection

A site inspection was conducted at Loskop Dam on **20 November 2015** to gather baseline information using a checklist questionnaire. The site inspection was undertaken with the DWS delegates (DWS IEE, Northern Operations Manager, Dam Manager and Northern Operations Champion). Photos of the study area were also taken during site inspection as illustrated in **Figure 12.**

Figure 12: Picture taken during Site Inspection

3.5.3 Public Participation Process (PP)

Public Participation process (PP) is a process in which potential Interested and Affected Parties (I&APs) are given an opportunity to comment on or raise issues relevant to specific matters. The three (3) fundamental and theoretical objectives of PP process as stipulated in the DWAF's Guideline for Public Participation (2001) are:

- To improve decision-making;
- To bring about sustainable development; and
- To normalise the attitudes of stakeholders (Authorities and I&APs).

A Public Participation was conducted in order to obtain information for **Phase 2 (Encumbrance Survey), Phase 3 (Objective Identification)** and **Phase 4 (Research/ Information Gathering)** from stakeholders, which was used to complete **Phase 5 (Integrated Management, Zoning and Institutional Planning)**. In order to successfully complete the RMP, it is essential that the information obtained in the previous phases is utilised as planning input.

The public participation process for this project was formulated to include the following objectives:

- The identification of role players;
- Introduce the RMP project to role players and inform them about their roles and responsibilities;
- To engage the Stakeholders (Authorities and I&APs) in the planning process;
- The answering of questions and noting of concerns;
- The identification of important issues, problems, conflicts and alternatives;
- Identification of the overall vision of the dam;
- The elimination of false expectations and preconceptions; and
- The creation of awareness amongst users.

DWAF's Guidelines for Public Participation (2001) outlines three (3) broad phases for public participation namely the **Planning, Participation** and **Exit phase**. Summarized below are the aspects of each phase and the approach for this project.

3.5.3.1 **The Planning Phase**

Planning phase entails three (3) important aspects namely:

- Decision analysis;
- Participation planning; and

- Implementation planning.

During the **Planning phase** a Site inspection and literature review was conducted to gather baseline information about the dam. A process was also established to get into contact with the I&APs and relevant Authorities to ensure co-operative interests and support in the RMP project.

3.5.3.1.1 The Role Players

It is recognized that different roles and responsibilities of the Stakeholders (Authorities and I&APs), and their relationship towards each other and the steps in the planning procedure are imperative in the successful development of the RMP. It is also important that proper consultation with the public is done in order to produce a credible RMP. As such the success of this RMP is dependent on the level of involvement of the various Stakeholders. Numerous Stakeholders were identified and invited to participate in an open and consultative process. (See attached registered stakeholder list in **Appendix A)**. The Stakeholder list is updated on a continuous basis throughout the RMP process.

3.5.3.2 **The Participation Phase**

The **Participation Phase** entails three (3) important aspects:

- Informing stakeholders – explained briefly under **3.5.3.4 Advertising Process.**
- Meeting the stakeholders – explained briefly under **3.5.3.5 Direct Communication.**
- Feedback – it is of utmost importance that feedback is directed to and from stakeholders. In this project feedback thus far has been given in a form of minutes of the meetings and follow up e-mails.

3.5.3.3 **The Exit Phase**

The **Exit Phase** entails two (2) important aspects namely:

- Ensuring that all goals, challenges, concerns, objectives and the vision for the dam have been identified and documented in the RMP.
- Officially ending the public participation process for the RMP process.

During this phase, a draft RMP will be presented to the Stakeholders so that they comment and give inputs.

3.5.3.2 **The Advertising Process**

3.5.3.2.1 Compilation and Distribution of the Background Information Document (BID)

The purpose of this document was to provide Stakeholders (Authorities and I&APs) with the background information about the proposed RMP project and to introduce the processes which will be followed in developing the plan. It also aimed to inform authorities and I&APs on how to fully participate in the process and to encourage active attendance in Stakeholder engagement meetings. The BID was compiled from the information collated through the desktop study and site inspection (See attached **Appendix B).**

3.5.3.2.2 Newspaper Advert

Newspaper advert regarding the RMP project was advertised on the **Daller Newspaper**. The advert invited the public to attend the Public Participation Meeting. The advert was published in English on **08 June 2016**. Furthermore, an advert for the draft RMP was advertised on **24 February 2017.** (See attached **Appendix C**).

3.5.3.4.3 Flyer Compilation and Distribution

Flyers were also used as a form of notification, they aimed at informing the I&APs about the public consultative meetings. The flyer detailed a brief description of the RMP, meeting date, time, venue and relevant contact details.Flyers were compiled in English and distributed on **08 June 2016.**

The flyers for the draft RMP were distributed on **28 February 2017.** (See attached **Appendix D**)**.**

3.5.3.5 **Direct Communications**

3.5.3.5.1 E-mails

Meeting invitations were sent out to authorities and I&APs notifying them about the scheduled consultative meetings. The invitation entailed the BID, meeting venue and time. The email notification was sent out on **08 June 2016.** Moreover, the meeting invites for the draft RMP were sent out on **01 March 2017**. (See attached **Appendix E).**

3.5.3.5.2 Authority Meeting

The initial authority meeting was held on **30 June 2016 at Loskop Dam Nature Reserve Offices.**

- To present the RMP, its goal and objectives of the project to the authorities; and
- To allow the authorities an opportunity to participate in the project by sharing information on their respective mandates.

The draft RMP was presented to the authorities on **14 March 2017.**

3.5.3.5.3 Public Meeting

The initial public meeting was held on **30 June 2016** at **Loskop Dam Nature Reserve Office.** A platform was also given to I&APs to identify encumbrances/ challenges that might hinder the progress of the RMP as well as to identify objectives and vision for the Loskop Dam.

The follow up meetings were held on **18 August 2016** and **07 September 2016.**

The draft RMP was presented to the public on **14** and **15 March 2017.**

3.5.3.5.3 Comments and Responses Register

A copy of the draft report was circulated on **28 March 2017** for commenting**.** The commenting period was to elapse on **20 March 2017.** (See attached **Appendix F**).

3.5.4 Planning Partners

RMPs are developed through a process of cooperative governance and Stakeholder participation. The distinctly different roles and responsibilities of the stakeholders, and their relationship towards each other and the steps in the planning procedure are imperative in the success compilation of the RMP.

The RMP provides for coordination between different governments and agencies to ensure that not only the objectives of DWS are attained, but also the objectives of other relevant Government Departments are attained. Such Departments includes among others as illustrated by **Table 9**.

Table 9: RMP Planning Partners and their Respective Mandates

Department/ Agency	Mandate
Nkangala District Municipality/Steve Tshwete Local Municipality / Elias Motsoaledi Local Municipality	The dam is within the jurisdiction of the Nkangala District Municipality and is mandated to provide bulk water services.
Department of Agriculture, Forestry and Fisheries (DAFF)	The purpose of DAFF includes sustainable development and management of resources to maximizing the economic potential of the fisheries sector while protecting the integrity and quality of the country's aquatic ecosystems. Operation Phakisa expansion to inland dams is one of DAFF initiative aimed at unlocking economic potential of fisheries sector within the inland water. The latter programme will be used as benchmark for implementation of conservation policies while implementing job creation within fishery and fish processing market.

Department/ Agency	Mandate
Department of Rural Development and Land Reform (DRDLR).	The department will assist in terms of Land Claims/Ownership issues.
Department of Environmental Affairs (DEA).	Responsible for Biodiversity Management within the dam including Invasive Alien Species.
Department of Public Works (DPW).	Has the power to regulate and control the use of state land outside the GWWs. In this regard, lease agreements or permits will be required from the department as some of the recreational activities will overlap into the state land.
Department of Transport (DoT).	Responsible for legislation, policy and regulations for all transportation in South Africa, including shipping and other transport by water or sea also inland waterways.
National Treasury (NT)	The use of State assets is governed by National Treasury Regulations, requiring DWS to plan concessions in compliance or association with National Treasury, guided by the Tourism Public Private Partnership (PPP) Toolkit of 2005.
South African Maritime Safety Authority (SAMSA)	One of SAMSA's three legislative mandates is "to ensure safety of life and property at sea". The Act enables SAMSA to administer and execute the relevant maritime legislation.

3.6 RMP DATA ANALYSIS

3.6.1 Encumbrance Survey (Phase 2)

The purpose of the Encumbrance Survey is to investigate/ ascertain whether any encumbrances exist around the dam and other factors that may influence the development and implementation of the RMP. The survey also identifies the information that is required for effective decision-making regarding the RMP (DWAF, 2006).

The identified encumbrances will assist DWS to identify hindrances and other factors that may influence the development and implementation of the RMP. The identified encumbrances are broken down into **Biophysical** and **Social.**

Tables 10-11 outline the summary of limitations that might affect the development or implementation of the RMP for the dam.

Table 10: Summary of Biophysical Encumbrances

Item	Description
Water Quality	• Water is polluted by pollutants from anthropogenic activities such as mining activities which in turn affect the aquatic life in the dam.
Biodiversity	• Aquatic weeds such as water hyacinth are easily spread and they have a detrimental effects on the water quality when they decompose and deplete the water body oxygen. • Some of the full contact activities will not be feasible due to the presence of crocodiles and hippos which can attack people. • There are four exotic alien and invasive fish species in Loskop Dam. These are carp (*Cyprinus capio*), Mosquito fish (*Gambusia affinis),* largemouth Bass (*Micropterus salmoides*) and Smallmouth Bass (*Micropterus dolomieu*). • The indigenous fish species are under threat of those exotic alien and invasive species, especially from largemouth Bass (*Micropterus salmoides*). • Species of special interest such as Bulldog fish (*Morcosenius macrolepidotus*), Papermouth (*Enteromius rappax*), (*Formely Barbus mattozi*), Silver Robber (*Micralestes acutidens*) and River sardine (*Mesobola brevianalis*) are under threat and population numbers of these species in Loskop Dam are less than 50%of what it was.

Item	Description
	• Loskop Dam is known for its large Mozambican Tilapia (*Oreochromis mossambicus*) and the possible introduction of another exotic alien and invasive species , Nile Tilapia (*Oreochromis niloticus*), used in aquaculture, is of great concern because they hybridise with indigenous *O.mossambicus* and this will lead to the extinction of *O.mossambicus,* not only in Loskop but in southern Africa.

Table 11: Summary of Social Encumbrances

Item	Description
Tourism Action	• The dam is not well marketed.
Economic Status	• The "No-income group" at Ntwane is of great concern as they have no income. They are also not educated. They need to be taught on the importance of the dam for them to participate on the RMP project.
Access	• Access is one of the critical issue at the dam because the dam cannot be accessed via the LDNR and Forever Resort entrance fees are too high for some local people and thus encourage exclusivity in that regard.

Upon identifying the encumbrances, objectives needed to be identified in order to facilitate a planning procedure aimed at the compilation of a RMP. It is essential to clarify objectives to be met by the planning procedure (DWAF, 2006).

3.6.2 SWOT Analysis and Objective Identification

The SWOT Analysis was conducted to gather **Strengths** and **Opportunities** that define the potential of the dam whereas the challenges regarding the dam where identified through **Weaknesses** and **Threats**. The common key objectives were formulated and identified from the **Strengths** and **Opportunities** of the dam. Moreover, the vision for the dam for a period of 20 years was formulated by stakeholders from the identified objectives.

3.6.2.1 **SWOT Analysis Approach**

There were issues of concerns that were raised in the stakeholder engagement meetings prior to conducting the SWOT Analysis. Other challenges or encumbrances that may hinder the progress of the dam's RMP process were identified by the stakeholders following the SWOT analysis approach as illustrated in **Table 12.**

Table 12: SWOT Analysis for Loskop Dam

Strengths	Weaknesses
• The dam has a potential in tourism. • The dam supply water to downstream farmers. • The road to the dam is in good condition, leading to easy access to the dam. • The dam is in a protected area. • The access road has been upgraded. • It is a good hot spot for biodiversity. • Angling tourism potential. • There are fishing clubs already practising fishing	• The mandate of the management structure is not clear in terms of allocation of roles and responsibilities. • There are only three access points at the dam, which limits the local people from accessing the dam. • There are aquatic alien invasive species invading the dam. • The dam does not benefit the local communities, since day visitors are not accommodated at LDNR.

at the dam. • The dam is in a protected area.	• The dam is not well marketed. • It is alleged that people bring alien fish species into the dam. • The entrance fee at Forever Resort is R90 per person which is too high for the locals to afford. • It is currently under developed in comparison to other state dams. • There is poor water quality.
Opportunities	**Threats**
• It can provides food security. • Job creation opportunities. • There is availability of venue for different events. • The dam can become a destination of choice. • Farming opportunities for the local communities. • Loskop Dam is closely situated near Gauteng, Mpumalanga and Limpopo, with many anglers who often visit Dam. • The Loskop dam has been chosen as one of the dams that will be hosting international fishing championship in 2020. • Construct swimming pools and establish picnic sites.	• There are crocodiles in the dam which renders water contact activities such as swimming impossible. • It is alleged that people who were relocated prior to the construction of the dam left graves which are now under water. • Littering of waste closer to the dam wall. • The water quality in the dam is deteriorating at an alarming rate due to pollution from upstream sources. • Many fish species have disappeared because of the bad water quality. • There are alien invasive both plants and aquatic faunal species. • Contaminated segments will continuously affect the water quality.

3.6.2.2 **Objective Identification (Phase 3)**

Objectives were identified by all the stakeholders in order to ascertain common goals. These objectives address the following questions:

- What do we want?
- How are we going to achieve this?
- Who will be involved?
- By when would we like to achieve our goals?
- Why would we want to achieve our goals?

The set common key objectives were derived from the SWOT Analysis for the Loskop Dam and have been categorized into three (3) Key Performance Areas (KPAs) as illustrated below:

KPA 1: Resource Management:

- To have the Loskop Dam free from alien invasive vegetation;
- To improve water quality by monitoring and assessing the main pollution sources; and
- To have an alternative access point to the dam for the surrounding communities.

KPA 2: Resource Utilisation

- To make the Loskop Dam a tourist attraction centre and
- To enable that there is water for domestic and irrigation purposes at the Ntwane village.

KPA 3: Benefit Flow Management

- To prioritise Local communities in job opportunities emanating from the dam;
- To introduce some business initiatives through PPP;
- To encourage local businesses to employ local people; and
- To ensure that a suitable institutional structure with the appropriate powers and delegations is in place to effectively manage the recreational use of the

water resource in accordance with this RMP.

Action projects required for these objectives to be met are provided in detail in **Section 4.3** (**The Strategic Plan**).

A vision for the dam for a period of 20 years was formulated from the key common objectives identified by the stakeholders and stands as follows:

"To make Loskop Dam as a tourist destination, keep the environment safe and to maintain the natural ecosystem in order to keep the economic potential of the area".

After setting both the dam's specific objectives, a research was conducted in order to provide relevant information to decision – makers regarding the sustainable utilisation of the water resource and where applicable the State Land.

3.6.3 Research/ Information Generation (Phase 4)

The aim of undertaking the research process was to collect the relevant data about the dam so as to assist the decision makers regarding the sustainable utilization of the dam and the surrounding State Land where applicable. The report will serve as a decision-making guideline tool, guided by the objectives set for the dam and any limitations due to encumbrances. The report documents the following data as illustrated in **Figure 13**.

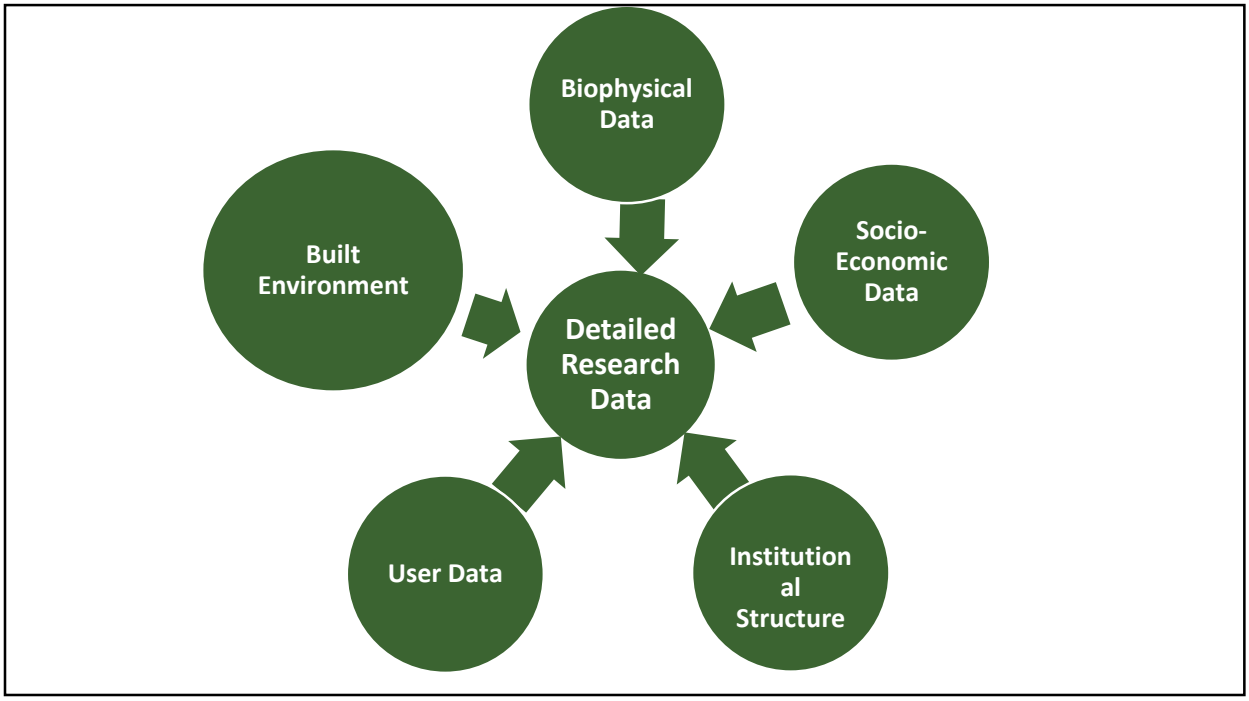


Figure 13: Research Data

The main aim of the research was to identify the dam tourism development potential and also to evaluate the practicability/ feasibility of the potential objectives identified.

3.6.3.1**. Tourism Development Potential**

The presence of the dam means that there is ample water throughout the year offering excellent wildlife photo opportunities for tourists. For purposes of this tourism, the LDNR is considered the core planning. The dam is located in a Nature Reserve, this gives it a potential in tourism business.

The dam also support an extensive birdlife. Many people visit the dam because it is rich in biodiversity including three of the Big 5; white rhino, buffalo and leopard. Numbers of oribi, white rhino, buffalo and sable antelope are dwindling so these animals enjoy special protection(http://www.savenues.com/thingstodo/mpumalanga/spend-a-day-at-the-loskop-dam/).

The STLM is willing to make the dam a tourism destination. The vision provides an ambitious focus for where the STLM wants to go. The approach to developing tourism in and around the Loskop Dam entails public and private enterprise working hand in hand towards a common goal.

In this respect, it is imperative that adjacent facilities complement each other, and that diversity and variety is offered without necessarily creating undue competition between operators. It is proposed that the development of a tourism master plan for Loskop Dam NR, take cognizance of the potential long term future synergy that may arise from the expansion of current conservation boundaries (MTPA, 2013).

3.6.3.2 **Feasibility of Identified Potential Objectives**

According to DWAF (2006), the feasibility of the proposed objectives needs to be determined in light of the local environmental conditions.

Table 13 shows the practicability of all proposed recreational objectives.

Table 13: Feasibility of Potential Objectives Identified

KPA 1: Resource Management		
Objectives	**Status Quo**	**Practicability**
• To have the Loskop Dam free from alien invasive vegetation.	• The alien invasive plants have been cleared a few years ago however the alien invasive aquatic weeds (water hyacinth) have been confirmed that they are a threat at the dam.	• Monitor the inlets in order to make action plans immediately if aquatic weeds are discovered. • Planning and performing eradication should be incorporated with the Department of Environmental Affair's programmes such as Working for Water (WfW).
• Improve water quality by monitoring and assessing the main pollution sources.	• Water quality is threatened by pollution from mining activities upstream.	• Pollution sources within the catchment should be identified and monitored. • The boats must be inspected before launching to get rid of possible pollutants such as hydrocarbons.
• To have an alternative access point to the dam from surrounding communities.	• There are only three (3) access points thus, through LDNR, Marulani and Forever Resort, however, the LDNR allows overnight visitors only and Forever Resort is not affordable for local people to afford.	• Introduce alternative access point. • Conduct a survey to get a suitable site for access road taking safety into consideration.
KPA 2: Resource Utilisation		
Objectives	**Status Quo**	**Practicability**
• To make Loskop Dam a tourist destination.	• Loskop Dam is closely situated near to the Gauteng, Mpumalanga and Limpopo provinces making it proximity to all three provinces and also has many anglers who often visit dam.	• Introduce some development structures such as lodges, hotel and chalets to provide accommodation for tourist. • The STLM should incorporate the dam on its Development Plans because it has a potential in tourism.
• There is a need of water for domestic and irrigation purposes at the Ntwane village.	• The local communities are willing to do farming. • The local communities requests DWS to intervene on the matter of water supply with the Local Municipality. • The neighboring communities are concerned about the issues of not getting water from the dam.	• The Municipality as per their mandate per National Water Service Act (Act No. 108 of 1997) needs to supply water to the nearby communities. • The Nkangala District Municipality has the responsibility of bulk water supply to the communities, if they are unable, they can request DWS through the Minister for intervention.

KPA: Benefit Flow Management		
Objective	**Status Quo**	**Practicability**
• To ensure that a suitable Institutional Structure with the appropriate powers and delegations is in place to effectively manage the recreational use of the water resource in accordance with this RMP.	• Clear mandate on the management of the dam for secondary use must be clarified to avoid current confusion.	• MTPA to be appointed as an Implementing Agency.
• Local communities must get job opportunities • Introducing some business initiatives through PPP.	• The introduction of recreational activities will create job opportunities to the local communities. • It is alleged that there are local people who have qualifications suitable to be employed at Local business and LDNR.	• MTPA to be appointed as an Implementing Agency. • Local business must employ local people.

CHAPTER 4: INTEGRATED MANAGEMENT, ZONING AND INSTITUTIONAL PLANNING (PHASE 5)

The purpose of this phase is to evaluate the information obtained from previous stages to ascertain what could be achieved based on specific constraints and parameters of the various input factors such as biophysical, cultural and socio-economic, current institutional and needs of the dam users. The Integrated Resource Management Plan (IRMP) will take into account the following:

- Biophysical, Cultural and Socio-economic and User needs constraints;
- Development potential and requirements;
- Site planning and Zonation;
- Programmes and Plans that will unlock the potential of the water resource; and
- Institution options and legal aspects required to create these programmes and plans.

The IRMP is broken down into four (4) main plans namely the **Institutional Plan**, **Zoning Plan, Strategic Plan** and **Financial Plan** as illustrated in **Figure 14.**

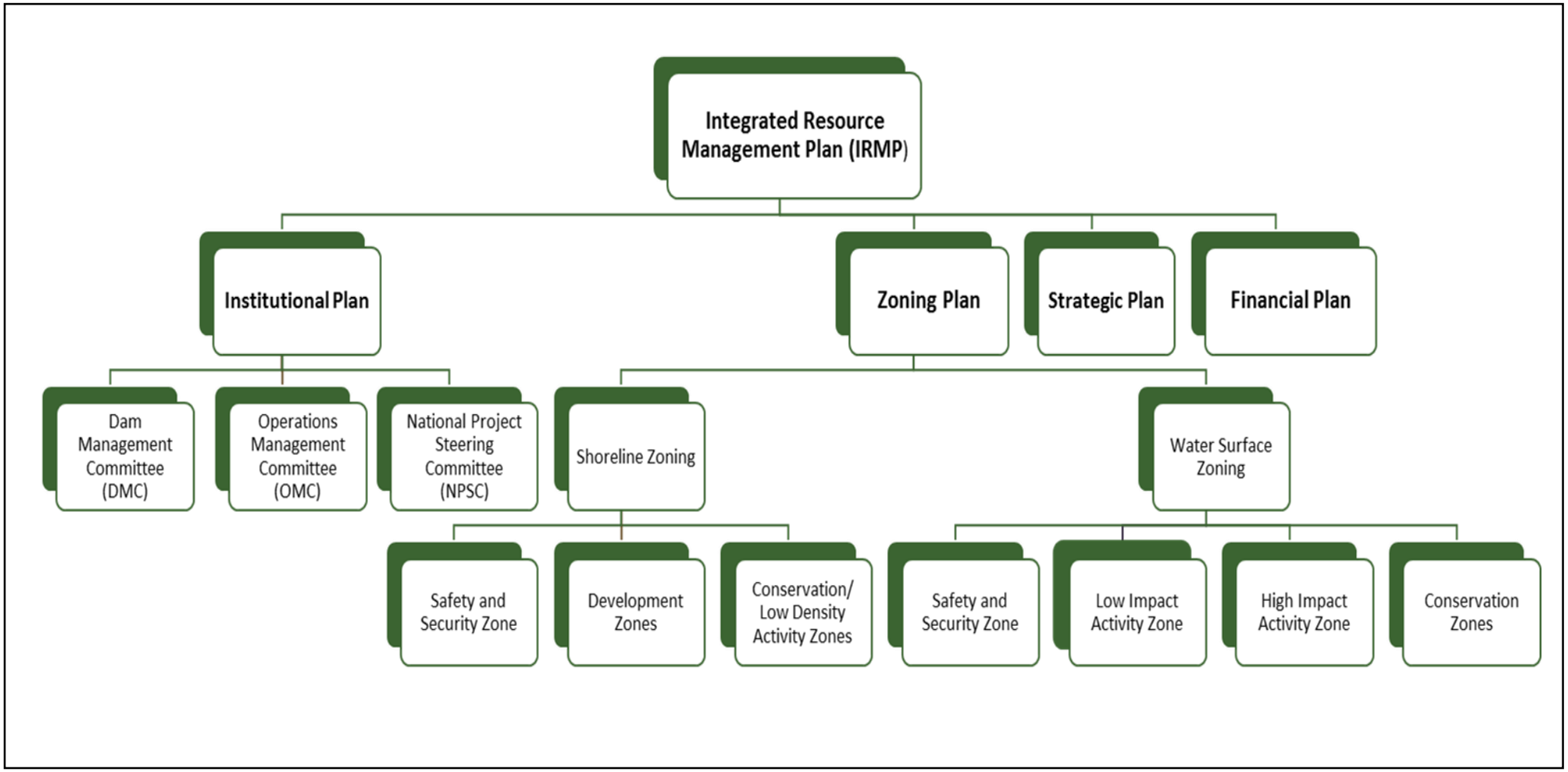


Figure 14: Integrated Resource Management Plan

4 1 INSTITUTIONAL PLAN

The Institutional Plan provides a framework for the institutional arrangements at the dam. The proposed management systems includes three (3) committees namely; Dam Management Committee (DMC), Operations Management Committee (OMC), and National Project Steering Committee (NPSC). The appointed management authorities by DWS at the dams, should also form part of the institutional structure.

4.1.1 Dam Management Committee (DMC)

DMC refers to any party that is interested or affected by the dam and will assist in raising and addressing issues relating to the dam.

One of the main functions of the DMC is to give support to Implementing Agency (IA) in the management of the dam for recreational purposes. Moreover, to assess commercial opportunities at the dam. As such, an agenda item related to the Strategic Plan for commercialization is required. In addition, changes in water quality, developments in the area, status of Aquatic Invasive Species and education and information programmes should be discussed. The DMC must meet quarterly.

The functions of the DMC include the following (amongst others):

- Seeking resolution for general management issues;
- Monitoring the practical implementation of the RMP and BP;
- Reviewing the feedback received from I&APs;
- Operational management of recreational activities such as ensuring the floating AtoN and demarcation markers are in place and setting times for use of the dam (no recreational activities can take place between sunset and sunrise);
- Conveying the Management Objectives and decisions pertaining to the dam to the relevant stakeholders; and
- Management of the incident management system and wash bays.

Figure 15 illustrates the proposed user groups that will form part of the DMC.

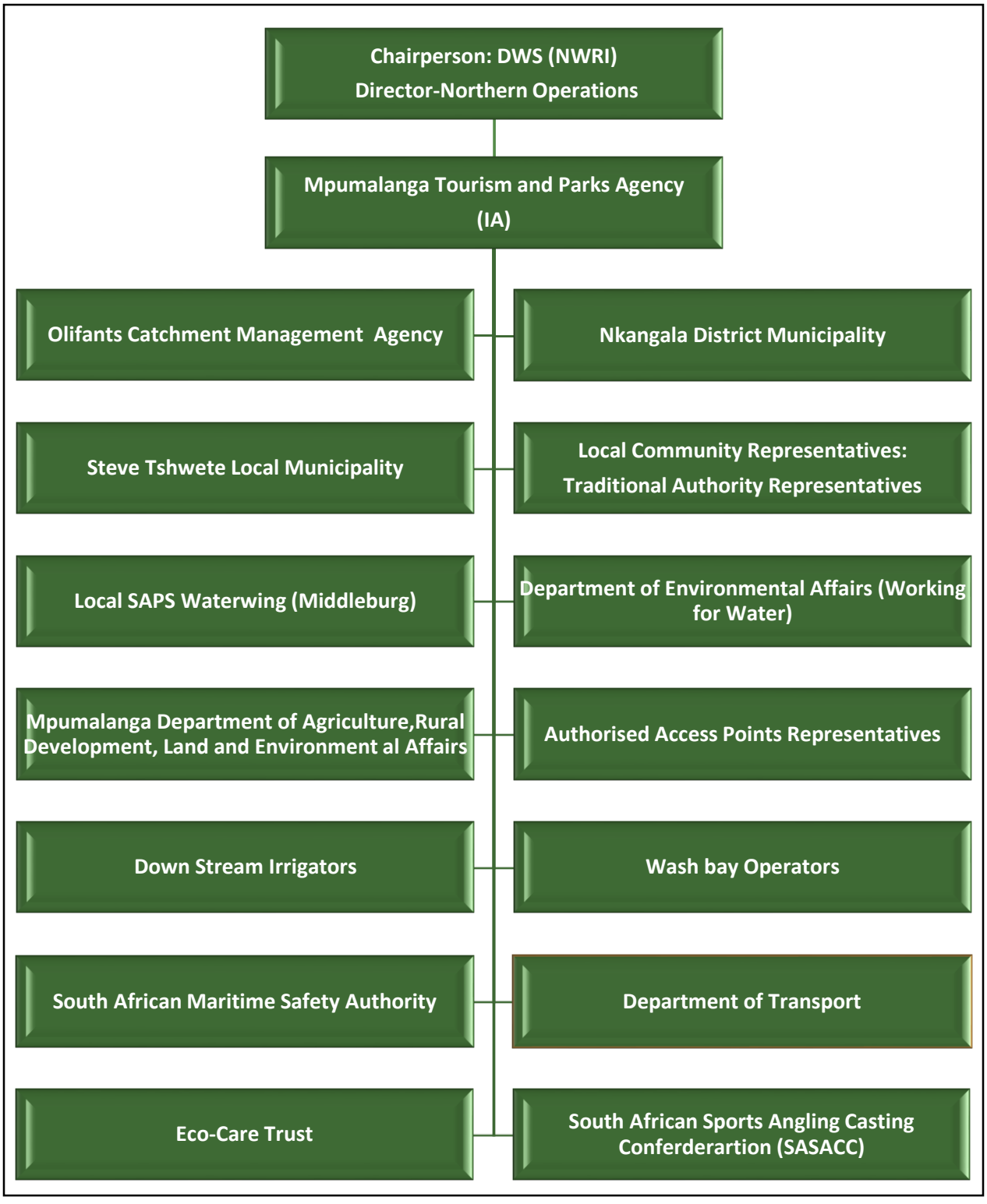


Figure 15: Proposed DMC

The DMC will have a number of management tools which will enable proper management of the dam in line with existing Legislations and Regulations requirements.

4.1.1.1 Management Tools

Terms of Reference

The DMC and NPSC will be guided by Terms of Reference (ToR) regarding roles and responsibilities ToR is not required for the **OMC** as it is the existing reporting structure.The ToR provide guidance on the following management aspects:

- Roles and responsibility of chairperson;
- Roles and responsibility of IA;
- Roles and responsibilities of members;
- Minutes and attendance requirements;
- Reporting requirements;
- Management of agreements;
- Management of access objectives;
- Management of development targets;
- Management of water quality monitoring;
- Management of the control of aquatic invasive species;
- Management of development pressure;
- Management of incident management system and wash bays; and
- Management of AtoN and demarcation markers.

Agreements

One of the main management tool available is the use of agreements to ensure proper use of the dam in line with the RMP vision and objectives.

All the existing agreements should be reviewed within the 12 months of the RMP being approved. This is to ensure that the agreements are aligned with the objectives of the RMP.

Agreements between DWS and Implementing Agency)

MTPA will be appointed as an Implementing Agency (IA) for the RMP of Loskop Dam. MTPA and DWS will sign a MOA, which is a legal binding document which outlines the roles and responsibilities and conditions to be followed by both parties in terms of managing the water resource for recreational use.

The minimum requirements of an IA includes the following:

- An IA can be a government entity or public sector body identified by DWS;
- Must have the best interest of a water resource and the community at large; and
- Must be willing to work with DWS and other users of the water resource.

The IA is appointed to manage commercial and recreational use of the dam. This would include the following:

- Management of public access area;
- Management of incident management system;
- Management of community skills and training programmes;
- Management of commercial activities (in line with Treasury Requirements); and
- Management of AtoN and demarcation markers.

Regardless, all agreements should be in line with the RMP requirements and relevant Legislations and Regulations.

Recreational Use Agreements

Recreational Clubs must enter into an agreement with the IA who will be responsible for the surface water and shoreline management of the dam. All recreational use at the dam must be through an appropriate Legal Framework. However all agreements must be approved in writing by DWS and the IA. Recreational Use Agreements must be developed in line with the conditions stipulated in the agreement between DWS and the IA. All agreements must be finalised within twelve (12) months of the RMP being approved.

Safety of Navigation Agreements

In addition to its common law responsibility, DWS is, in terms of the requirements described in the National Water Act, 1998 (Act No 36 of 1998), amongst others, responsible for the safety of GWWs and watercourses, including its dams. DWS, its delegated public sector partner, or a delegated water management institution, has therefore the responsibility to provide the required fixed and/or floating AtoN[3] for general navigation.

Agreements between SAMSA and DWS, other relevant Parties or Bodies are to be concluded to allow them to:

- Exhibit the relevant AtoN; and
- Establish or deploy the relevant fixed and/or floating AtoN.

Access Agreements

All surface water and shoreline access must be formalised. The conditions for such access must be written into the agreement. All illegal practices must be addressed. Appropriate action must be taken to ensure that all parties comply with the requirements of the RMP.

All adjacent landowners and clubs must be made aware that access to the surface water as well as shoreline should only be through authorised access points. Accessing the surface water through unauthorised access points is an illegal activity unless they enter into a formal agreement with IA. Further, a formal agreement with IA will be required for all adjacent landowners and recreational clubs that have direct access to the water surface of the dam through constructed slipways, natural slipways or jetties for angling and/or launching of vessels.

The wash bay must be built on State Property as part of the CIWSP. A formal agreement is necessary between the IA and DEA on the management and maintenance of the facility.

[3] AtoN refers to any sort of marker which aids the traveler in navigation; the term is most commonly used to refer to nautical or aviation travel, common types of such aids include lighthouses, buoys, fog signals and day beacons.

Event Applications

The dam is used for a number of competitive angling events. All events must be managed through an event application process. The application should be submitted to the IA for approval and to DWS for commenting. These applications must follow a specific template and will include the following:

- Number of participants;
- Emergency Response Plan;
- Advertising and branding (will need to be in line with DWS communication requirements); and
- Access points and slipways to be used.

Furthermore, all events must meet the requirements of the Safety at Sports and Recreation Act, 2010 (Act No. 2 of 2010).

National Affiliations

All recreational clubs should be affiliated to a SASCOC affiliated organisation. The development targets set by the National Organisations must be met.

4.1.2 Operations Management Committee (OMC)

There is an existing Chief Director: Infrastructure Operations Management Committee (CD: IO MANCO) within Infrastructure Operations which comprises of all directors of four (4) operations (Northern, Southern, Eastern and Central) and is chaired by the Chief Director: Infrastructure Operations within NWRI as illustrated in **Figure 16**.

The committee should meet quarterly discussing matters relating to operations and maintenance of all GWWs. RMP must be a standard item on the agenda. Any matters relating to the RMP that are outside the scope of DWS will be escalated to the NPSC.

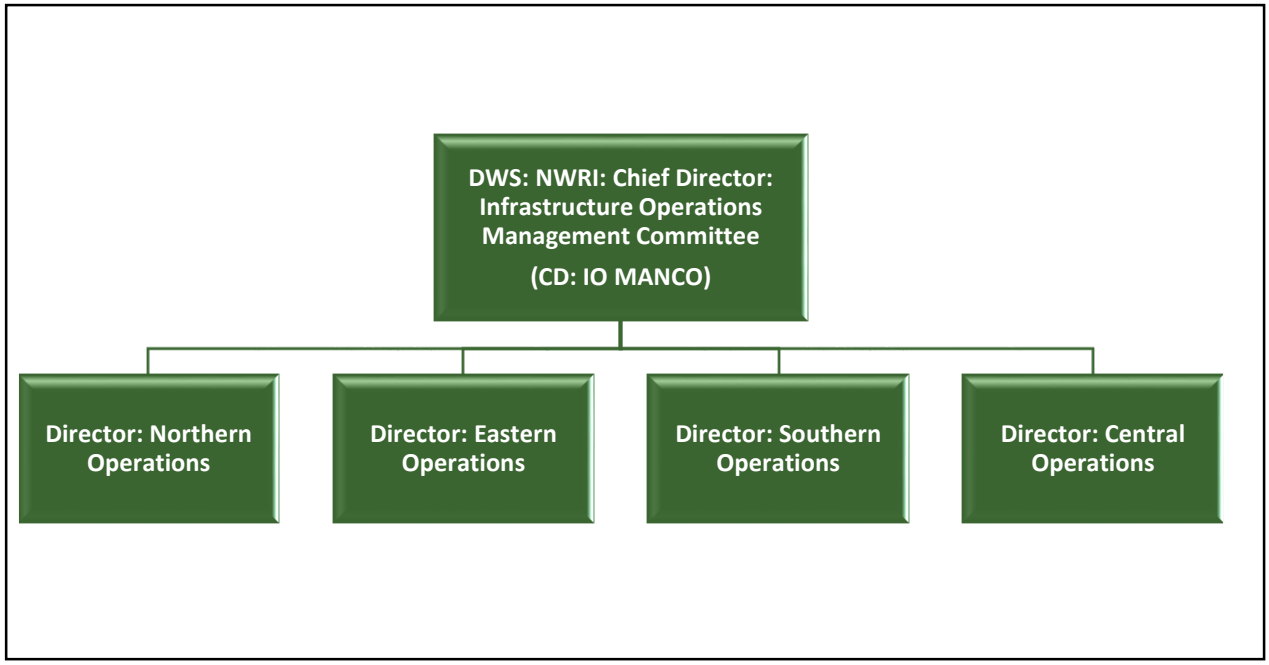


Figure 16: Existing CD: IO MANCO

4.1.3 National Project Steering Committee (NPSC)

NPSC is formed by DWS and is made up of representatives from National Government Departments and Implementing Agencies that are relevant in terms of managing the water resource.

The primary function of the NPSC is to provide guidance on recreational water use in terms of their respective mandates as well as to ensure that continuous support by different Government Sectors is provided to the dam with the aim of achieving sustainable utilisation of the dam for recreational purposes. The NPSC should meet twice a year. **Figure 17** illustrates a typical example of Governmental Departments that will form part of the NPSC:

Figure 17: Proposed NPSC

The role of the relevant departments forming part of the NPSC is listed below:

Centre for Public Service Innovation (CPSI):
The CPSI is supporting a multi-departmental working group that is developing an innovative approach to inland water and safety integrity. The project, was initiated out of the need to find an innovative, practical and cost-effective way to implement SAMSA' vessel safety regulations on inland waterways and to implement responsible water use within the broader socio-economic context of the country.

The CIWSP is a project piloted by CPSI that is a partnership between multiple Government entities and between the Government and communities. The main aim of the project is to enhance the development of a best practice model to ensure safe and structured inland maritime environment and culture, whilst protecting the country's precious water resource.

Culture, Arts, Tourism, Hospitality, Sport Sector, Education and Training Authority (CATHSSETA):
CATHSSETA deals with the approval and financing of training relating to culture, hospitality, tourism and sport sectors.

Department of Agriculture, Forestry and Fisheries (DAFF):
The purpose of DAFF includes sustainable development and management of resources to maximizing the economic potential of the fisheries sector while protecting the integrity and quality of the country's aquatic ecosystems.

Operation Phakisa expansion to inland dams is one of DAFF initiative aimed at unlocking economic potential of fisheries sector within the inland water. The latter programme will be used as benchmark for implementation of conservation policies while implementing job creation within fishery and fish processing market.

Department of Corporative Governance and Traditional Affairs (CoGTA):
Its function is to develop national policies and legislation with regard to Provinces and Local government, and to monitor their implementation. Other function of the Department is to support Provinces and Local Government in fulfilling their constitutional and legal obligations.

Department of Environmental Affairs (DEA):
DEA is mandated to give effect to the right of citizens to an environment that is not harmful to their health or wellbeing, and to have the environment protected for the benefit of present and future generations. In relation to the RMP, the Department should ensure that Environmental Impact Assessments is undertaken for all activities that triggers EIA Regulations at the dam. Furthermore, DEA through WfW programme can assist to eradicate alien invasive plants species (Blue Gums and Parrot Furthers) and alien invasive fish species at the dam.

Department of Public Works (DPW):
DPW has the power to regulate and control the use of state land outside the GWWs. In this regard, lease agreements or permits will be required from the Department as some of the recreational activities will overlap into the State Land, e.g. trail running, biking and running.

Department of Rural Development and Land Reform (DRDLR):
The Department is tasked with the facilitation of land claims within the country. They are also involved in rural development by improving both economic infrastructure (such as roads, etc.) and social infrastructure (e.g. communal sanitation and non-farming activities).

Department of Sports and Recreation (DSR):
The Department is mandated to promote and develop sport and recreation activities and also in co-ordination of the relationships between the Sports Commission, national and recreation federations and other agencies.

Department of Tourism (NDT):
The Department is mandated to create conditions for the sustainable growth and development of tourism in South Africa. The Tourism Act makes provision for the promotion of tourism to and in the Republic and for regulation and rationalisation of the tourism sector, including measures aimed at the enhancement and maintenance of the standards of facilities and services utilised by tourists; and the co-ordination and rationalisation of the activities of those who are active in the tourism sector.

Department of Transport (DoT):
Responsible for legislation, policy and regulations for all transportation in South Africa, including shipping and other transport by water or sea, including small vessels and inland waterways.

Department of Water and Sanitation (DWS):
DWS through the National Water Act, 1998 (Act No. 36 of 1998) is mandated to protect aquatic and associated ecosystems and their biological diversity as well as to reduce degradation of the water resources. As part of its mandate, DWS initiated the development of RMPs together with the supporting BPs with the aim of ensuring sustainable and equitable development, utilisation and management of GWWs.

National Treasury (NT):
The Department is mandated to support the optimal allocation and utilisation of financial resources in all spheres of government. As part of the RMP, The National Treasury Public Private Partnership (PPP) Toolkit for Tourism (2005), will assist the process of tourism-based businesses development on State-owned Land. The Toolkit make it easier for Institutions and the Private Sector to enter into tourism related partnerships on State Property managed by National, Provincial and Local Government Institutions.

South African Maritime Safety Authority (SAMSA):
Administers and executes maritime related legislation and regulations, including the National Small Vessel Safety Regulations and ensures standardisation, harmonisation and compliance of all AtoN in South African waters.

South African Police Service (SAPS):
The South African Police Service have been entrusted with the responsibility of creating a safe and secure environment for all people in South Africa as well as to prevent anything that may threaten the safety or security of any community.

South African Sports Confederation and Olympic Committee (SASCOC):
SASCOC is mandated to promote and develop high performance of sports as well as to act as a controlling body for sports in South Africa. It can also assist to coordinate organise events at the dam.

4.2 ZONING PLAN

According to DWAF RMP Guideline RWU GP2 (2006), a site specific master planning and zoning which describes a framework for the allocation of zones needs to be undertaken based on the results of the Encumbrance Survey and basic Research regarding the Bio-physical, Social and Cultural environment as well as the objectives set by the Stakeholders (refer to section **3.6**).

The proposed Zoning Plan will integrate conservation, recreation and development whilst not retarding the primary functions of the dam.

4.2.1 Water Surface Zones

The water surface zoning provides guidance on permissible and non-permissible recreational activities on the water surface taking into account the biophysical factors of the dam. The Water Surface is zoned as follows:

Safety and Security Zone:

It covers a minimum of 100m area from the wall and outlet works indicated by demarcation markers and AtoN. This area is reserved for DWS management purposes.

Management of this zone is aimed at protecting the dam wall and outlet works, as well as to ensure the safety of the public. This is a no-go zone to the public unless authorized.

Conservation Zone:

The aim of this zone is to conserve and protect sensitive aquatic habitation at the inlet(s) of the dam. According to Section 12 and 26 of NWA, the existence of these zones is thus not negotiable as it is imperative to protect the water resource for the purposes relating to basic human needs, environmental sustainability and water quality requirements. Access to these areas is generally not allowed due to the following:

- The areas intercept sediments and nutrients/pollutants which pose safety risks to the public due to muddy clay, and
- They are used by aquatic birds, fish and crocodile species as habitat, refuge and breeding areas.

Concession Zone

This zone is situated between the Conservation and Low Impact Activity Zones. Guests are transported using the boat to reach to the concession area. Access in this zone is thus restricted.

Low Impact Activity Zone:

This zone act as a buffer between High Impact Activity Zones and Conservation Zones. Low Impact Activity Zone allows for low intensity activities, i.e. activities associated with little or no wake such as fishing from boats and provision of drinking area for livestock

NB: The shoreline is not zoned because the dam is situated in a Nature Reserve and the shoreline land is a narrow strip which extends to the expropriation line, a feasibility study need to be conducted.

The water surface zoning colour coding means the following:

Colour	Zone Description
Red	Safety and Security Zone
Green	Conservation Zone
Orange	Concession Area
Dark Blue	Low Impact Activity Zone

Table 14: Proposed Water Surface Zoning Description

Zone Name	Permissible Activities	Non-Permissible Activities	Recommendation
• Safety and Security Zone.	• Alien invasive species clearing • Management of dam infrastructure • Management and maintenance activities by DWS and authorised personnel.	• Public access	• Area should be demarcated by dermacation makers and AtoN.
• Conservation Zone.	• None	• Public activities (in order to prevent aquatic habitats disturbance)	• Area should be demarcated by demarcation makers and AtoN. • Strict management and control of these areas.
• Concession Area	• Boat with no or little waves (Transportation of guests)	• Public access.	• Area should be demarcated by demarcation makers and AtoN. • Only the concessionaire will be allowed to transport their guests.
• Low Impact Activity Zone.	• Activities associated with no or little wakes, such as • Boat Fishing • Interpretation/Cruise boating (Low gear) • Rowing • Kayaking • Canoeing • Yachting	• Wind surfing • Speed boats (motorised) • Skiing • Swimming • Float tubes	• Area should be demarcated by cables and buoys. • Launching and mooring of vessels should take place at identified waterfront zones.

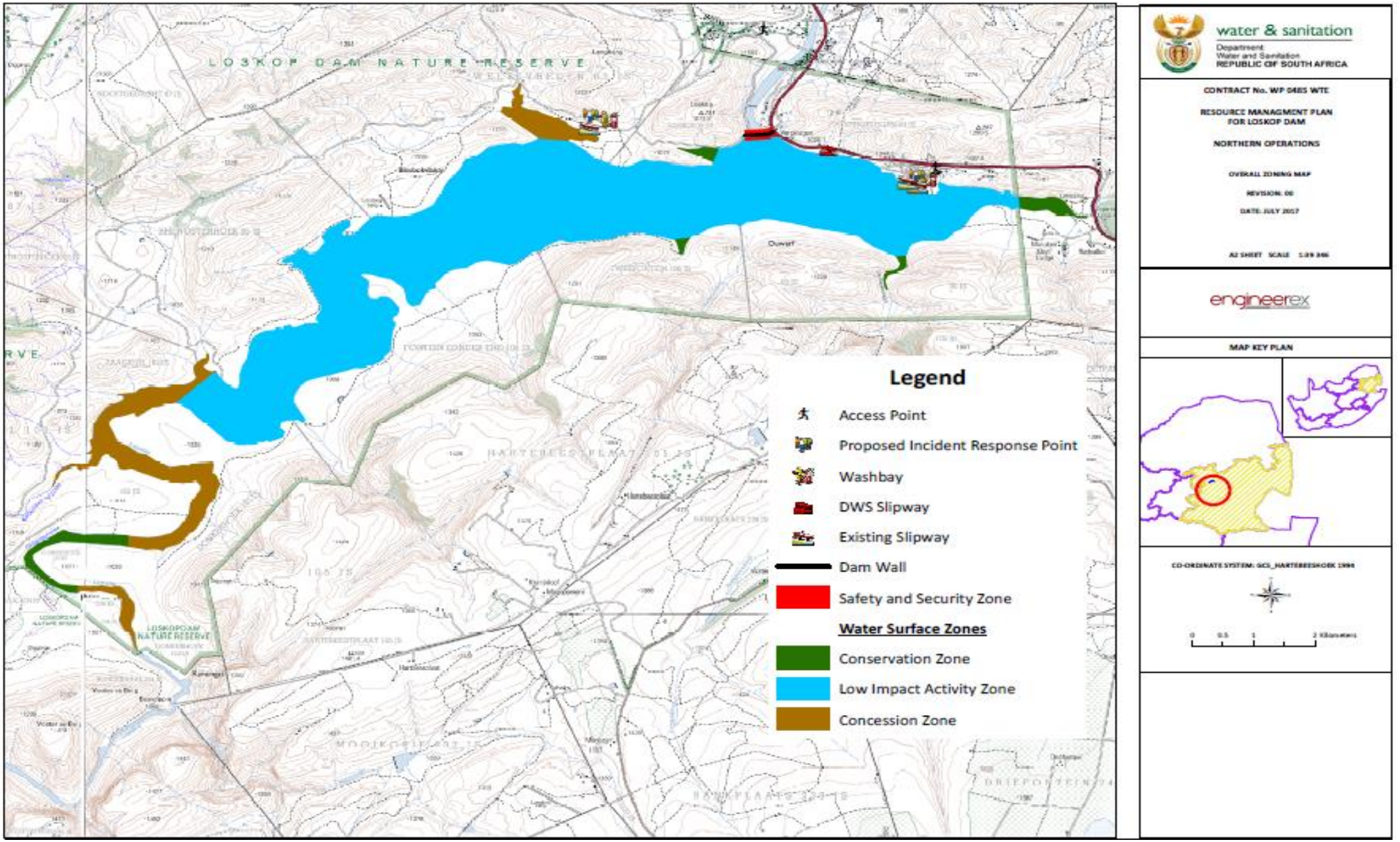


Figure 18: Proposed Overall Zoning Map

4.2.3 Carrying Capacity

The carrying capacity of a water resource represents the maximum level of users and related infrastructure that the water resource and surrounding area can accommodate, without diminishing user satisfaction, the economy and culture of the area.

In order to determine the degree or possible recreational use on the water surface, the Methodology for Carrying Capacity Assessment: Recreation Water Use (DWS 2003) was used as guideline to determine the level of activities that would be sustainable at Loskop Dam

Carrying capacity for recreation provides a guideline to ensure that recreation at the dam is safe, that users do not feel crowded and that they enjoy the use of the dam for leisure activities.

There are three kinds of carrying capacity:

- **Physical Carrying Capacity** (PCC) – this is the maximum number of users that can physically fit onto the water surface at any given time;
- **Real Carrying Capacity** (RCC) – this is the maximum number of users that can use the resource once corrective factors that are unique to the dam are taken into account; and
- **Effective** (or permissible) **Carrying Capacity** (ECC) – this is the number of visitors that can use the resource, given the management capacity.

Each level constitutes a corrected capacity level of the preceding level. The PCC is always greater than the RCC, and the RCC is greater than the ECC, thus: **PCC > RCC and RCC ≥ ECC.**

The process of establishing the carrying capacity is normally determined through the following tasks:

- Analysis of recreation and water resource management policies;
- Analysis of objectives of the water resource;
- Analysis of current recreational water use;
- Definition, strengthening or modification of policies regarding recreational water use management;
- Identification of factors influencing recreational water use; and
- Determination of the recreational water use carrying capacity.

Physical Carrying Capacity (PCC)

PCC is calculated as PCC = A × U/a × Rf

Where:

A = Area available for public use;
U/a = area required for each user; and
Rf = Rotation Factor (the number of visits per day)

A is calculated as the area of the water surface available for public use: **1189.6ha (49 % Water level)**

A= 1189.6ha

The ***U/a*** is assumed to be the average which was calculated as 1 craft/3 ha. And again the rotation factor (*Rf*) is assumed as 1 visit per day.

The **U/A** used for the assessment is as follows:

Craft	U/A (ha/craft)
Rowing	0.4
Canoeing	0.3
Motorized Boating	4
Boat Angling	3
Average	**1.9**

Based on the table above the average hectare per user is 1.9 ha (190 000 m^2).

The PCC for Loskop Dam can further be calculated as:

PCC = A × U/a × Rf
=1189.6ha ×1/3× 1
=397 crafts

Real Carrying Capacity (RCC)

It refers to the maximum permissible number of users to the water resource, once the corrective factors (Cf) derived from the particular characteristics of the site have been applied to the PCC.

Formula: RCC = PCC x (100 – Cf1)% x (100 – Cf2)% x … (100 – Cfn)%

Where:

Cf = a corrective factor expressed as a percentage.

The RCC takes into account factors that limit recreation use (craft based) of the dam. For Loskop Dam these factors includes sensitive areas, such as conservation areas (145,8ha) as well as aspects regarding the safe operation and management of the dam (4.5 ha).

These factors accounts for 150ha, which is 6.2%

Therefore: RCC = PCC x (100 – cf1)% x (100 – cf1)% x (100 – cf1)%

= 397 x (100 – 6.2)%/100

=372 crafts

Real capacity is the PCC, taking into account factors that limit recreation. In this case limiting factors include:

- Biophysical, such as terrain and sensitive environments
- Safety No Go Zones
- One of the main limiting factors in regards to recreational use is the number of picnic spots. Currently there are no formalised picnic spots at the dam.

Calculating the area of the surface of the dam, adding a buffer-zone at the dam wall and the restricting factors outlined above

RCC for Loskop Dam is therefore:

RCC = PCC x (100 – Cf1)% x (100 – Cf2)% x (100 – Cfn)%

Where **Cf** = a corrective factor expressed as a percentage.

Effective Carrying Capacity (ECC)

The maximum number of visitors that a site can sustain, given the management capacity (MC) available. Currently there is no formal management structure in place, as such the ECC is 0. The ECC will be calculated after the proposed Institutional structure (as part of the RMP) have been implemented in order to manage the sustainable utilization of the dam for recreational purposes.

Determine Allocations

Once ECC has been confirmed, allocations for each zone can be refined. This will be done through an action project.

4.3 STRATEGIC PLAN

The Strategic Plan is informed by the objectives identified by stakeholders and through research on potential opportunities at the dam. The objectives are broken down into management fields which are listed below in a format offering ease of reference:

- Objective (What do we want?);
- Motivation (Why do we want to achieve this?);
- Action Projects (How do we achieve this?); and
- Management Support (Who will be involved?).

In **Tables 15-17,** the Strategic Plan on how to achieve the identified objectives regarding the dam.

Table 15: Strategic Plan for KPA 1**:** Resource Management

KPA 1: Resource Management			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
Alien Invasive Species: • To have the Loskop Dam free from alien invasive vegetation.	• There were alien invasive aquatic weeds (water hyacinth) in the dam few years back and it has been confirmed that they are a threat at the dam.	• Remove all invasive alien vegetation within the dam and the surrounding area immediately upon discovery. The species should be rooted out to avoid re-growth. • There has to be a Monitoring Plan developed to continuously monitor the occurrence of problem plants within the dam. This will measure the effectiveness of the eradication method. • To construct wash bays at the dam in order to control, eliminate and transfer of alien aquatic weeds from other dams	• MTPA (IA) • DMC • DEA (WfW)
Water Quality: • Improve water quality by monitoring and assessing the main pollution sources.	• Water quality is threatened by pollutants from upstream mines. • Fish mortality has been confirmed in the past years due to water pollution in the dam.	• Pollution sources within the catchment should be identified and monitored. • The boats must be inspected before entering the water to get rid of pollution, such as oil leaks, hydrocarbons including aquatic alien weeds.	• DWS • MTPA (IA) • DMC • SAMSA • DEA • STLM
Access: • To have an alternative access point to the dam for the surrounding communities.	• Most people at Ntwane village are not working, so high tarrifs will unable them to access the dam.	• Conduct a survey for a proposed site for access road development. • Conduct research for an alternative access point. • Alternative access point must be investigated for implementation.	• DWS, • MTPA (IA) • DMC
Safety: • To ensure safety regarding the utilization of the	• The dam is a major attraction to various water based recreational activities in the area. Currently there is no overarching safety	• Implementation of Incident Management System and extended to the local communities. • Standardized Aids to Navigation (AtoN)	• DEA WfW • SAMSA • MTPA (IA) • DWS

KPA 1: Resource Management			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
resource and associated State Land within the boundary line.	system at the dam and also there is no mechanism for reporting environmental and recreational emergencies nor incidents	and demarcation markers to be implemented. • Implement all other aspects of the CIWSP best practice model.	

Table 16: Strategic Plan for KPA 2: Resource Utilisation

KPA 2: Resource Utilisation			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
Tourism: • To make the Loskop Dam a tourist attraction centre.	• Loskop Dam is accessible by people from Gauteng, Mpumalanga and Limpopo with many anglers often visiting the Dam. • STLM must market the dam given that is within their jurisdiction and encourages economic growth within the municipality.	• The STL must do a feasibility studies to identify which development structures are feasible within the purchase land. • Introduce more development structures such as lodges, hotel and chalets to provide accommodation for tourist. • The STLM has to incorporate the dam on its Development Plans because it has a potential in tourism.	• MTPA (IA) • DMC • STLM
Domestic and Irrigation Purposes: • To ensure that Ntwane village get water for domestic and irrigation purposes.	• The local communities are willing to do farming. • The local communities requests DWS to intervene on the matter of water supply with the Municipality.	• The Municipality as per their mandate per National Water Service Act (Act No. 108 of 1997) needs to supply water to the nearby communities.	• SDM

Table 17: Strategic Plan for KPA 3: Benefit Flow Management

KPA 3: Benefit Flow Management			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
Community Beneficiation:	• The neighbouring communities are	• Local communities must be first	• MTPA (IA)

KPA 3: Benefit Flow Management			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
• To ensure that local communities be prioritised in job opportunities emanating from the dam. • Introducing some business initiatives through Public Private Partnership. •	concerned about the issue of not getting water from the dam. • The introduction of recreational activities might create job opportunities to the local communities. • It is alleged that there are local youth who have qualifications suitable for them to be employed at LDNR.	priority if anything arise from the dam e.g. business and job opportunities. • Local business should be encouraged to employ local people.	• DMC • STLM
<u>Institutional Structure:</u> • To ensure that a suitable institutional structure with the appropriate powers and delegations is in place to effectively manage the recreational use of the water resource in accordance with this RMP.	• MTPA is unable to manage the dam optimally due to uncertain roles and responsibilities.	• MTPA to be appointed as an Implementing Agency. • Roles and responsibilities must be clear.	• DWS • MTPA (IA)

4.4 FINANCIAL PLAN

The RMP provides guidance on cost recovery mechanisms to ensure the sustained and improved management of the dam. There are opportunities for PPPs which could further unlock the economic potential of the dam. PPPs allows for DWS to make State Assets such as GWWs available to private parties who wish to engage in tourism related commercial operations (DWAF, 2009). PPPs should be established as per Regulation 16 of the National Treasury.

The dam is a state asset and as such all profits generated from the recreational use, should also be used to further develop the dam. People should not be denied access to the dam. All fees associated with the usage of the dam for recreation should take into account the socio-economic status of the users. The access fees should make a provision for equitable access.

The information acquired from the draft RMP will be used to produce the Business Plan based on the action projects for each objective as stipulated under the Strategic Plan. However, many of the identified objectives are not of commercial nature and as such these non-economic objectives will not feature in the BP.

The BP provides a good description of possible economic recreational activities and the methods that can be used or enhanced to achieve the ultimate vision and the key objectives of Loskop Dam RMP. It also describes the financial management and operational requirements to implement the Objectives of the RMP

The BP will include a Financial Plan (FP) which will facilitate the implementation of the RMP by providing implementation program cost estimate for all possible economic recreational activities.

WAY FORWARD

Once the RMP and its BP are approved by the Minister of Water and Sanitation, it will be published in the Government Gazette as a regulation in terms of Section 26 of the NWA.

Review of RMP

According to DWAF (2006), the RMP is reviewed and updated every five (5) years to ensure that the management objectives remains relevant and management actions are continually improved. The BP is updated annually. **Figure 19** illustrates the RMP & BP review framework.

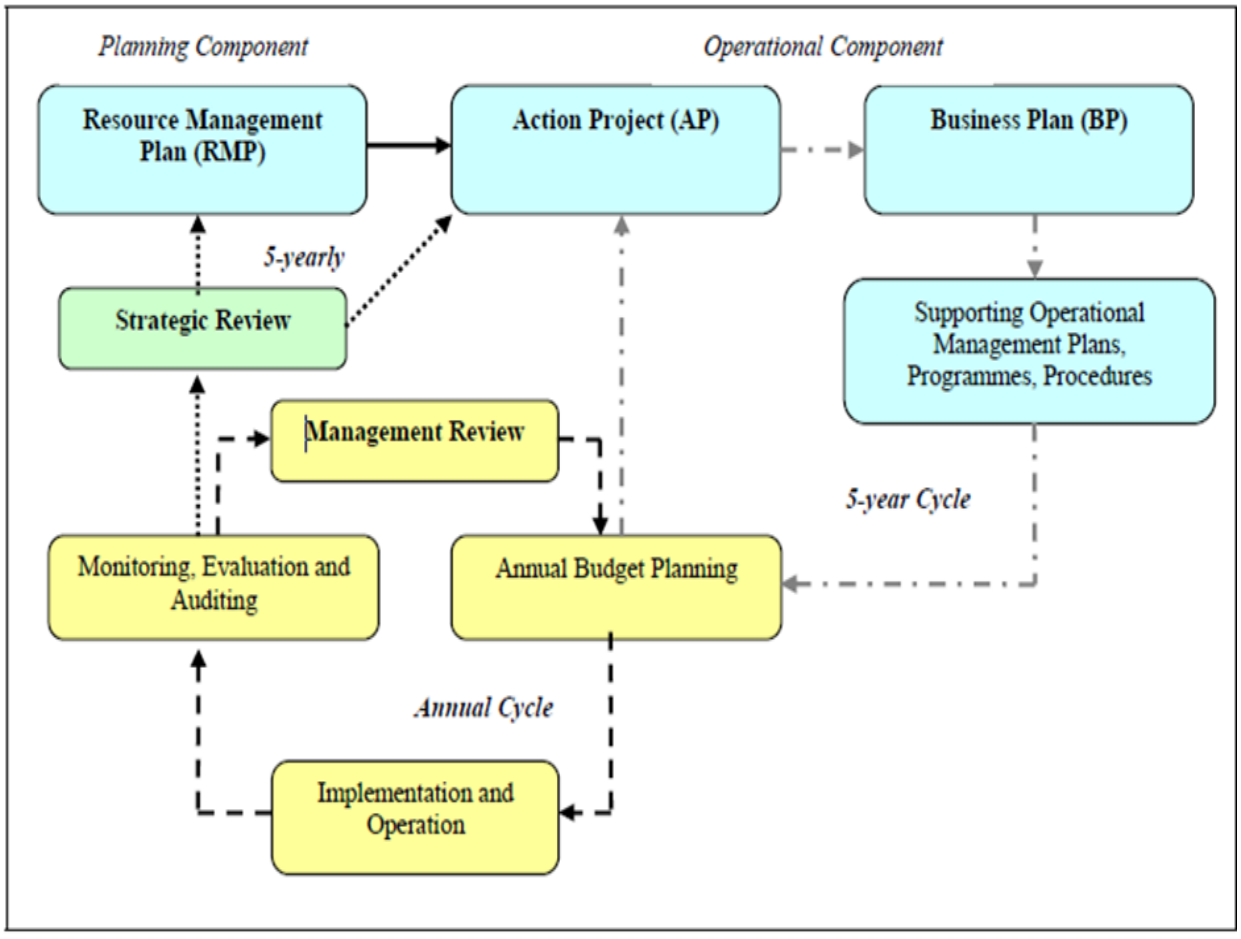


Figure 19: RMP and BP Review Framework

CONCLUSIONS

The RMP documents the challenges that exists within the Loskop Dam that can significantly impact on the utilisation and management of the dam and it's surrounding for recreational purposes. Such factors include legal, biophysical, socio-economic, hydrological as well as access to the resource. These factors will assist DWS with the most appropriate approach to ascertain that the issues are addressed before the implementation of the RMP.

The RMP will assist in effectively managing the dam and its surrounding environment. Furthermore its function is to implement an **Institutional Plan** for the effective management of dam. The focus on Institutional Plan is accompanied by a **Zonal Plan** which provides guidance on potential activities that are allowed on the dam, together with a **Strategic Plan**. In addition, a **Financial Plan** will provide guidance on funding requirements and funding options to implement the objectives of the RMP.

Furthermore the RMP promotes community participation and beneficiation, through Stakeholders engagement which were conducted to obtain common key objectives to be met by the RMP. The vision for the dam was formulated from the key common objectives identified by Stakeholders. Based on the strategic objectives identified for Loskop Dam, a BP has been developed to describe a manner in which the potential recreational activities are to be financially resourced. Furthermore, by including the RMP in the Local Initiatives such as IDPs, LED, etc, can ensure effective co-operative governance as well as to provide necessary support with regards to the use of the dam for recreational purposes. Undertaken in this manner, it is believed that the potential of the water resource can be optimally unlocked in a sustainable and equitable manner.

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APPENDICES