NATIONAL WATER RESOURCE INFRASTRUCTURE (NWRI)

Resource Management Plan Review ROODEPLAAT DAM



WATER IS LIFE - SANITATION IS DIGNITY





Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA



i

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Review Period	Month			Year		
Annual Review of Business Plan	December	2018 ¹	2019	2020	2021	2022
Five (5) Yearly Review of RMP	December			2022		

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 Review for DWS Review	08/10/2015
2	Draft RMP Review for DWS Review	19/11/2015
3	Draft RMP Review for DWS Review	02/12/15
4	Final Draft RMP Review for DWS Review	29/06/2016
5	Final Draft RMP Review for DWS Review	12/07/2016
6	Final RMP Review for DWS Approval	16/08/2016
7	Final RMP Review for DWS Approval	30/11/2016
8	Final RMP Review for DWS Approval	14/12/2016

LIST OF ACRONYMS

AtoN	Aid(s) to Navigation
BEE	Black Economic Empowerment
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	Cooperative Inland Waterways Safety Programme
СМА	Catchment Management Area
COGTA	Cooperative Governance and Traditional Affairs
COTMM	City of Tshwane Metropolitan Municipality
CPSI	Centre for Public Service Innovation
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DMC	Dam Management Committee
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
GDARD	Gauteng Department of Agriculture and Rural Development
GIAMA	Government Immovable Asset Management Act
GPS	Global Positioning System
GWWs	Government Waterworks
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IEE	Integrated Environmental Engineering
IRMP	Integrated Resource Management Plan
КРА	Key Performance Area
LED	Local Economic Development
MFMA	Municipal Finance Management Act
MSA	Municipal Systems Act
NDT	National Department of Tourism
NEMA	National Environmental Management Act
NPSC	National Project Steering Committee
NT	National Treasury
NWA	National Water Act
NWRI	National Water Resource Infrastructure
OMC	Operations Management Committee
PCC	Physical Carrying Capacity

Public Finance Management Act
Public Participation Process
Public Private Partnerships
Professional Service Provider
Real Carrying Capacity
Resource Management Plan
Resource Quality Services
South African Maritime Safety Authority
South African Police Services
South African Sports Confederation and Olympic Committee
Spatial Development Framework
Small, Medium and Micro Enterprises
Strengths, Weaknesses, Threats, Opportunities
Working for Water
Water Management Area
Water Treatment Works
Waste Water Treatment Works

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 Dam, are protected, used, Roodeplaat 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 Roodeplaat Dam.

The existing RMP for Roodeplaat Dam was approved on 07 February 2008. However, it was never implemented. On this note DWS has identified the need to review the RMP for Roodeplaat Dam.

Purpose of the RMP Review: The purpose of the RMP review is to ascertain its contribution to the attainment of the National Water Act, 1998 (Act No. 36 of 1998) objectives by ensuring effective engagement of communities affected and interested in the water resource and its utilisation, and also the engagement of industry key role players.

The RMP review also ensures that the plan is based not only on ecological principles but also on the needs and expectations of communities and the recreation industry.

According to DWAF (2006), RMP requires a five (5) year revision and an annual revision for the BP to ensure that management objectives remain relevant and management actions are continually improved.

Location of the dam: Roodeplaat Dam is a concrete arch type of dam which impounds the Pienaars River and Hartbeesspruit. It falls under Wards 87 and 99 within the jurisdiction of the City of Tshwane Metropolitan Municipality in Gauteng Province. It is located 24km north east of Pretoria. Its GPS coordinates are: **25°37'20.00"S 28°22'16.40"E**.

Purpose of the dam: The primary purpose of Buffelspoort Dam is to provide raw water for irrigation, and domestic use.

The dam also offers recreational activities such as eco-tourism, private and public functions, picnic's, swimming boating, rowing, fishing and basic camping facilities.

Dam ownership and management: Roodeplaat Dam is owned and operated by the DWS. There are six access points at the dam.

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 Roodeplaat 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 thus recognized that different roles and responsibilities of the stakeholders [Authorities and Interested and Affected Parties (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 help in producing 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-operation 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.

Below is the list of objectives amongst others that were identified previously, during the development of the existing RMP and also the current identified objectives.

Previously Identified Objectives

• To improve and maintain the water quality of the Roodeplaat Dam;

- Water quality is a key issue that needs to be addressed to ensure the sustainable use of the dam by all;
- To have the Roodeplaat Dam and surrounding area free of invasive alien vegetation;
- To maintain and enhance eco-system composition, functioning, integrity and character surrounding the dam to sustain tourism potential of the area;
- To enable broad public enjoyment of the water resource and surrounding State land through controlled authorized access and associated infrastructure development;
- To enable adjacent landowners and residents access to and use of the water resource;
- To provide exclusive and dedicated time and space for organized sporting events to take place in a manner that is safe and meets the participants' expectations;
- To ensure that users are accurately and timeously notified of matters affecting their safety and involvement at the dam;
- To ensure that necessary services (such as water and sanitation, electricity, roads, telecommunication, and waste disposal) and associated infrastructure are provided to facilitate controlled development of the water resource and surrounding State Land;
- To promote, accommodate and manage a variety of activities and facilities at the dam in a manner that enhances the user experience and minimizes the impact on the resource;
- To evaluate the existing uses of the dam basin and adjacent state and privately owned land to ensure that usage is lawful and that the necessary permits and authorizations are in place;
- To ensure that local communities participate and benefit in local economic

development initiatives occurring in and around the dam; 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.

Current Identified Objectives

- To ensure that the water quality at the dam is improved;
- To have dam basin free of invasive alien vegetation;
- To remove siltation and add debris traps at inlets;
- Introduce canoe facilities to the international clubs and federations at Roodeplaat Dam and also introduce all feasible water recreational activities and transfer skills to the youth of the local communities;
- Introduce small scale fishery at the dam;
- Uplift the local economy and increase benefit flows to the surrounding

communities through community empowerment and job creation; and

 Install buoys to all conservation zones, as per the zoning plan.

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

"To ensure that there is commitment in managing, conserving, developing and utilising the resource in a sustainable, equitable and appropriate manner in order to maximise the potential of Roodeplaat Dam".

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 Roodeplaat Dam that could enhance tourist attraction:

• Provision of exclusive and dedicated space for organized sporting events.

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- Appendix C Newspaper Advert
- Appendix D Flyers
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- Appendix F Comments and Responses Register

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND OF ROODEPLAAT DAM

Roodeplaat Dam is a concrete arch dam found in ward 87 and 99 of the City of Tshwane Metropolitan Municipality (COTMM) in Gauteng Province, South Africa. It impound the Pienaars River and Hartbeesspruit River. It is located 24 km north east of Pretoria on GPS coordinates 25°37'20.00"S 28°22'16.40"E. (See in **Figure 1** the locality map of the dam).

The dam was primarily constructed for irrigation purposes. It has a surface capacity of 43 472 000 m^3 . It is ideal for several activities such as eco-

tourism, private and public functions, picnic, swimming boating, rowing, fishing and basic camping facilities. The dam also supply potable water for urban use via water purification works operated by Magalies Water, located at Klipdrift and Wallmansthal. The dam has also been identified to augment the supply of water to the northern areas of Tshwane through the Montana, Wonderboom and Magaliesberg reservoirs and supply directly to the Doornpoort area (COTMM 2007).The extraction of water for irrigation and urban use affects the water levels which in turn affects recreational use, (see the dam profile in **Table 1**).

Roodeplaat Dam Profile		
Location	South Africa	
Province	Gauteng	
Metro Municipality	Tshwane Metropolitan Municipality	
Nearest Town	Pretoria	
Completion Year	1959	
Coordinates	25,629 590 Sº 28, 349 648Eº	
Purpose	Irrigation and Domestic Use	
Owner	DWS	
Water Management Area	Crocodile & Marico WMA	
Quaternary Catchment	A23B	
Catchment Area (km²)	650.5	
River	Pienaars River and Hartbeesspruit	
Capacity (m ³)	43 472 000	
Surface area (ha)	403	
Wall type	concrete arch	
Wall Height (m)	55	
Length (m)	351	

 Table 1: Roodeplaat Dam Profile

Source: Department of Water Affairs (List of registered dams; March 2013)



Figure 1: Locality Map for Roodeplaat Dam

1.2 BIOPHYSICAL ENVIRONMENT

1.2.1 Flora

The type of vegetation surrounding the dam is classified as Marikana Thornveld. This vegetation type is characterized by open Acacia Karoo woodland with dense shrub areas along drainage lines, termitaria and on rocky outcrops. Dominant tree species include Acacia caffra, Acacia gerrardii, Acacia Karoo, Rhus lancea and Ziziphus mucronata. The shrubs Euclea crispa, Olea europaea subsp. africana, Rhus pyroides and Diospyros lycioides are usually present. The area is covered with primary vegetation and has habitat for plant species in one of the three threatened categories. The following Red Listed (threatened/endangered) plant species may occur in the area surrounding the dam, these include; Trachyandra eruthrorrhiza; Bowiea volubilis; Ceropegia decidua subsp. Pretoriensis; Delosperma *qautengense;* Schizoglossum umbelluliferum; and Trachyandra erythrorrhiza (RMP, 2008).

Common aquatic weeds found in the dam:

Water hyacinth (Eichhrornia crassipes) - is a freefloating perennial aquatic plant (or hydrophyte) native to tropical and sub-tropical South America. With broad, thick, glossy, ovate leaves. Water hyacinth may rise above the surface of the water as much as one (1) meter in height. This invasive alien plant grows in all types of freshwater systems. Water hyacinth has being the major problem in Roodeplaat Dam. It disrupts all normal activities associated with water use and causes substantially increased water losses through transpiration. **Figure 2** shows the water hyacinth at the dam (Sharp, 2014).



Figure 2: Water hyacinth (Eichhrornia crassipes)

<u>Azolla filiculoides (Red water fern)-</u> Water fern forms floating rosettes up to a few centimeters diameter, composed of branched fronds with rows of imbricate leaves covered with dense papillae. It is initially green, becoming reddish late in the season (Sharp, 2014). Globular sporebearing structures sometimes develop the fronds as illustrated in **Figure 3**.



Figure 3: Azolla filiculoides (Red water fern)

<u>Salvinia molesta (Kariba weed)</u>- Is a floating, rootless aquatic fern that consist of the horizontal stems that float just below the water surface, and produce at each node, a pair of floating or emergent leaves. Refer to **Figure 4.**

ROODEPLAAT DAM RESOURCE MANAGEMENT PLAN REVIEW



Figure 4: Picture illustrating Salvia molesta (Kariba weed)

Some areas surrounding the dam are also habitat for Red Data Listed birds and invertebrates. Sensitive features are already protected in the Roodeplaat Nature Reserve which is situated south of the dam. The dam provide ideal habitat for water fowl such as herons, crested coots, darters, cormorants, etc. (Sharp, 2014).

<u>Pistia stratiotes (Water lettuce)</u>-is floating plant. Water lettuces occurs in lakes, rivers and canals ,forming a large dense mats. **Figure 5** shows a picture of Water lettuce.



Figure 5: Water lettuce

<u>Myriophyllum aquaticum (Parrots feather</u>) – is an emerged plant that trails along the ground or water surface .Parrot feather leaves are oblong, deeply cut and feathery looking. The leaf color is bright blue-green. Like most water milfoils, parrot feather leaves are arranged in whorls about the stem. **Figure 6** illustrate the **Parrots feathers** at the dam.



Figure 6: Parrots Feather

Methods Used to Control Aquatic Weeds

Cultural Control

Cultural control and competition includes revegetating, irrigating or fertilizing to encourage the establishment of a healthy ground or crop cover to resist invasive plants. When natural vegetation or soil is disturbed, cultural control can be an effective tool in invasive plant management. Re-vegetated or intensively managed plant communities can offer competition for invasive plants. In some cases where invasive plant species are found in soils deficient in sulphur, fertilization of these sites can help to create competition of natural plant communities, or cultivated crops to decrease the invasive plant population (i.e. ox-eye daisy infestations) (Sharp, 2014).

Mechanical Control

Mechanical control usually refers to the mowing or mechanical cutting of an invasive plant infestation to limit seed production. With mowing, timing is essential. Invasive plants must be removed before the plants go to seed in order to be an effective method of control. Plants should be cut as close to the ground as possible and may have to be treated more than once in a growing season to achieve desired results. (Sharp, 2014).

Manual Control

Manual invasive plant control usually refers to hand-pulling or digging. Manual control works

well for dealing with single plants or small infestations that can be eradicated with a small amount of labour. It is most effective if invasive plants are shallow rooted and the soil is loose or moist. One should be aware this type of control may not be effective for invasive plants that also reproduce by roots and rhizomes. In these instances, limited hand-pulling or digging may actually increase the size of the infestation (Sharp, 2014).

Biological Control

Biological control often works best on large infestations, or infestations that are near water. It is a long-term approach and often it takes many years for insects to establish and results to be seen. In some cases, a single biological control agent can adequately control an invasive plant species. However, in most cases, a variety of agents are needed to achieve control of the weed species population levels. Biological control will not eradicate the infestation directly. Rather, the agents are used to decrease the vigour and seed production of the plants in order to decrease their competitive ability. Therefore, it is important to use other weed management strategies to ensure that the infestations are contained. Some insects may already be present on site. Local weed specialists or Agrologists can assist in identifying insects present and assisting with obtaining insects for biological control.

The bird species and various mammal species have been resettled in the nature conservation areas (e.g. impala, red hartbees, blue wildebeest and zebra). Various amphibian, reptiles and smaller mammal species have previously been recorded.

The natural resource base provides a foundation for tourism development in the area. It is hence in the interest of tourism development that emphasis is placed on the conservation value of the dam and the surrounding area (Sharp, 2014).

1.2.2 Topography

Roodeplaat Dam is situated in an area that is characterized by a flat slope, therefore leaving no constraints to potential development around the dam. The flat topography enhances easy access to the water surface and presents opportunity for various activities such as camping and angling. See **Figure 7** a map showing the slope of the area. Produced by:

Ungineere

SLOPE MAP: ROODEPLAAT DAM



Legend 53 plaatspruit Topography Slope(%) 5,495.121078 - 65,941.45294 65,941.45295 - 137,378.027 137,378.0271 - 214,309.7221 214,309.7222 - 302,231.6593 302,231.6594 - 401,143.8387 401,143.8388 - 527,531.6235 527,531.6238 - 697,880.377 Roodeplaat 697,880.3771 - 956,151.0676 956,151.0677 - 1,401,255.875 1320 1:50,000 Kilometers Date:09/09/2014 0 0.5 1 3 4 2

Figure 7: Slope Map for Roodeplaat Dam

ROODEPLAAT DAM RESOURCE MANAGEMENT PLAN REVIEW

1.2.3 Geology and Soils

Geologically, the terrain at the dam is underlain by three geological units. The eastern and southeastern section of the dam is underlain by the Rayton Formation of the Pretoria Group, within the Transvaal Supergroup. The northern section of the dam is underlain by the Pienaars River Complex, within the alkaline complexes. The western section of the dam is underlain by the Rashoop Granophyre Suite of the Bushveld Complex and the northern side is covered by foyaite, syenite and carbonate (Roodeplaat RMP 2008). concerns exist about the occurrence of cyanobacteria, algae and water hyacinths (*Eichhorinia crassipes*). **Table 2** illustrates the variables which were analysed by DWS, 2015 (Resource Quality Information Services) to determine the fitness of water for recreational use.

The water looks greenish in colour and also have bad odour due to decomposed algae and other aquatic plants. A water body choked up with prolific plant growth, for example water hyacinth, is less aesthetically enjoyable than one that is free from such growth. (See picture in **Figure 8** illustrating the algae on the dam water surface.

1.2.4 Hydrology

1.2.4.1 Water Quality

The water quality of the dam has long been a cause of concern, it is considered poor and

Table 2: Water Quality Variables (DWS Water Quality Management System, 2014)

Characteristics	Tests Results	Water Quality Target Range (Recreational Purposes)	Description
Clarity (Secchi disc, m)	1.55	< 1.0	Unsuitable for swimming. However, if lack of clarity (or turbidity) is the only consideration preventing the use of a water body for swimming, then it may be allowed, provided all subsurface, potential hazards are removed and signs indicating water depth are clearly posted. Risk of disease transmission by organisms associated with particulate matter increases but this cannot solely be determined on the basis of clarity measurements.
pH (pH units)	8.56	8.5 - 9.0	Swimming is acceptable. Some eye irritation expected. Skin, ear and mucous membrane irritation may occur. Adverse aesthetic taste effects expected if water swallowed accidentally.
Tal	137,3	0 – 100	No health and or aesthetic effects can occur.
Algae	45,99	<30	Severe nuisance conditions may be encountered. Aesthetically unacceptable surface algal scums evident for much of the time. (The composition and health of the fish population may be affected, depending on species).

ROODEPLAAT DAM RESOURCE MANAGEMENT PLAN REVIEW

Characteristics	Tests Results	Water Quality Target Range (Recreational Purposes)	Description
			Rotting algae may cause severe odour problems. No health effects expected.
Escherichia coli	1.67	0 – 130	A low risk of gastrointestinal illness is indicated for contact recreational water use. This is not expected to exceed a risk of typically < 8 illnesses/1 000 swimmers

Source: Water Quality Standards (Department of Water Affairs, Water Quality Guideline for Recreational Water Use, 1996).



Figure 8: Visible algae floating on the surface of water

1.2.4.2 Siltation

The dam is affected by siltation, which is a result of erosion due to uncontrolled and/or

unmanaged construction and development as well as inadequate storm water management practices upstream of the dam. High levels of siltation pose a threat as it affects water quality and reduces the volume of the dam, resulting in reduced availability of water, breeding and feeding habitat for various aquatic species. In turn, this will affect the opportunities for conservation and recreational use

1.2.4.3 Water Surface

The dam is located within A23A quaternary catchment area which lies within the Pienaars Sub-catchment area. **Figure 9** illustrates the fluctuation of the water level over a year. Apart from rainfall and climatic conditions, various factors can affect the water level.



Figure 9: Full Storage Capacity, Roodeplaat Dam (DWS website, 2015)

1.2.4.3 Flood Management Zone

The constraints regarding the Flood Management Zone can be summarised as follows and are addressed in the RMP: Buildings and structures located within the 1:100 year flood line are a safety risk and is a liability. Private land owners do not comply with DWS's regulations with regards to the servitude area; along certain areas no servitude of storage exists (e.g. at Hengelaarsvriend) and sedimentation may present increased risk of flooding (rising water levels).

1.3 BUILT ENVIRIONMENT

1.3.1 Infrastructure

The main infrastructures at the dam Includes:

- Housing and Offices for DWS;
- Operators Offices;
- Rowing Club ;
- Ablution Facilities;
- Braai Stands & Picnic sites;
- Guest lodges;
- Conference facilities; and
- Canoeing School.

1.3.2 Transportation Networks

The dam can be accessed by taking the R573 road towards Moloto Road just after Sefako Makgatho off-ramp in Pretoria. Refer to **Figure 10** for road network around the dam.



Figure 10: Road Networks around the Dam

1.4 USES AND USERS OF THE DAM

1.4.1 Domestic Use

The dam has been identified to augment the supply of portable water to the northern areas of Tshwane through the Montana, Wonderboom and Magaliesberg reservoirs and supply directly to the Doornpoort area (COTMM 2007).

1.5 RECREATIONAL INSTITUTIONAL ARRANGEMENTS

1.5.1 Current recreational structure

There is no managing structure at the dam for recreational use.

A recreational Institutional Structure will be established in accordance to the DWS Institutional Arrangements for Managing Use of Water for Recreational Purposes, in order to ensure that it is representative of all users.

1.4.2 Recreational Activities/ Facilities

Activities on the dam and surrounding areas include, power boating, canoeing, rowing, angling, skiing, picnic sites, camping facilities, eco-tourism, accommodation and conference facilities (DWAF 2006a).

1.4.3 Irrigation

The dam was primarily built for irrigation purposes but now it supports various activities.

1.5.2 Management of the Water Surface

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 SAFETY

People access the private properties as well as the nature reserve unauthorized. Hence there was a case where an intruder was shot at one of the properties around the dam.

1.6.1 Safety of Navigation

There are floating Aids to Navigation² (AtoN) and demarcation makers for no-go area and safety zone at the dam wall.

1.6.2 Incident Management

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

1.7 SOCIO ECONOMIC ENVIRONMENT

The main purpose of socio-economic analysis is to examine the general situation of the study area and to determine issues that need to be addressed when reviewing the RMP in order to overcome potential difficulties in the area.

The dam is situated in the CoTMM (within ward 87 & 99), which is regarded as the largest of the three Metro's in Gauteng in terms of geographic space occupying 6 345 Km². It is also identified as the third largest municipality in the world. (IDP 2014/2015). COTMM makes up more than 3 million of the total provincial population.

1.7.1 Population Size

The dam is situated in region 5 in the COTMM and it consist of three wards, namely 87, 99 and 100. However the focus is on Ward 87 and 99 where the dam is located. According to Census (2011), the two wards have total population size of 58 279, it is illustrated in Table 3 below. The two wards constitute 2% of the COTMM see **Figure 11.** The dam can also contribute to the growth of the Municipal socio-economic status.

Copyright 2016 © Department of Water and Sanitation, 2016 Volume 1 of 2 Table 3: Population Size within Two (2) Wards in Region 5

Ward	Population
87	24 867
99	33 412
Total	58 279
СОТММ	2 921 488



Figure 11: Population size of COTMM

1.7.2 Education Level

The Census (2011) breaks down educational levels into each year of study. For the purpose of this report, the educational levels are grouped into key schooling: primary, secondary, tertiary, non-schooling and other. Ward 87 educational level is illustrated in **Table 4** and the percentage is illustrated in **Figure 12**. Ward 99's educational level have been illustrated in **Table 5** and **Figure 13**.

Table 4: Educational Level

Description	Total
Primary	4 030
Secondary	13 830
Tertiary	3 194
Non-Schooling	853
Other	84

enhance the safe and efficient navigation of vessels and/or vessel traffic".

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

As indicated in **Figure 12**, 63% of residents in the ward have secondary education, 15% have tertiary education and a few percentage did not go to school. There is high population of educated people in this ward and this will positively encourage them to participate on the RMP project.



Figure 12: Ward 87 Educational Level

Table 5: Ward 99 Educational Level

Description	Total
Primary	7 190
Secondary	16 950
Tertiary	3 585
Non-Schooling	1 623
Other	70

As indicated in **Figure 13**, 58% of residents in the ward have secondary education, 12% have tertiary education and a few percentage did not go to school. There is high population of educated people in this ward and this will positively encourage them to participate on the RMP and promote socio-economic development.



Figure 13: Ward 99 Educational Level

1.7.3 Employment Status

In terms of employment levels in Ward 87, there is high percentage of employed people than unemployed. About 44% of residents are employed and only 9% of residents are unemployed. Of greater concerned is that 20% of the residents are not economically active whereas only 1% of them are discouraged workseekers and 26% is not applicable (Census, 2011). Refer to **Table 6** and **Figure 14**.

Table 6:	Employment St	tatus for Ward 8	7
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Description	No of people(2011)
Employed	10 962
Unemployed	2 259
Discouraged work-seekers	234
Not economically active	5 006
Not applicable	6 405



Figure 14: Employment Status (Ward 87)

The community members around the dam are willing to participate in any recreational activities. However, In terms of employment status in Ward 99 of COTMM, 37% of the residents are employed, 10% are unemployed, 9% are discouraged, 21% are uneconomically active and 3% is not applicable, it is illustrated in **Table 7** and **Figure 15**.

Table	7: Em	oloyment	Status	(Ward	99)
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Description	No of people(2011)
Employed	12 532
Unemployed	3 252
Discouraged work-seekers	1 082
Not economically active	6 956
Not applicable	9 590



Figure 15: Employment status for Ward 99

1.7.4 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 waterbased 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

The RMP forms the overarching framework for the management of Roodeplaat Dam. It is informed by relevant policy, legislation and planning documents administered by other government departments. Similarly, these government departments are required to use the RMP to inform the development of future policy, legislation and planning documents.

- 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 benefitsharing 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 used, are protected, 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 subject to purposes, 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 maximise 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:

- Communal Land Rights Act, 2004 (Act No.11 of 2004).
- Disaster Management Act, 2002 (Act No. 57 of 2002).
- Environmental Conservation Act, 1989 (Act No, 73 of 1989).
- Intergovernmental Relations Framework Act, 2005 (Act No.13 of 2005).
- Land Administration Act, 1995 (Act No. 2 of 1995).
- Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000).
- National Heritage Resources Act, 1999 (No. 25 of 1999)
- National Treasury Regulations, Public Private Partnership (PPP) and Toolkit for Tourism December 2005.
- Occupational Health and Safety Act, 1993 (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).
- 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 Government's waterways 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 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 complete and 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 utilization 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 environmental impacts and to ensure communities have access to water based economy.

The RMP requires a five (5) year revision and an annual revision for the BP to ensure that management objectives remain relevant and management actions are continually improved.

3.2 PURPOSE OF THE RMP

The purpose of the RMP review is to ascertain its contribution to the attainment of the National

Water Act, 1998 (Act No. 36 of 1998) objectives by ensuring effective engagement of communities affected and interested in the water resource and its utilisation, and also the engagement of industry key role players.

The RMP review also ensures that the plan is based not only on ecological principles but also on the needs and expectations of communities and the recreation industry.

The existing RMP for Roodeplaat Dam was finalised on **07 February 2008**. However, it was never implemented.

3.3 PROCESS TRIGGERS

Triggers Factors 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 for Buffelspoort Dam, as illustrated in **Table 8**.

Trigger Factors	Description	
	Poor management at some parts of the dam:	
	• There are some worn out chalets at the picnic site and there is also some informal settlements at the fishing site. The ablution blocks at the site are not maintained.	
	• Unauthorised abstraction of water from the dam.	
Resource Management	Alien Invasive Plants species:	
	• The dam is infested with invasive alien plants species (Water Hyacinth). The water hyacinth have detrimental impact on the water quality as well as interfere with other recreational activities such as boating, rowing and canoeing because it forms a layer on top of water.	

Table 8: Trigger Factors for the Review of Roodeplaat Dam RMP

ROODEPLAAT DAM RESOURCE MANAGEMENT PLAN REVIEW

Trigger Factors	Description		
Community Participation and Beneficiation	 Community participation and beneficiation The previously disadvantaged local community is generally not aware of the recreational opportunities that the dam can offer. 		
Recreational Industry Involvement	 <u>Access Roads</u> Deterioration of access roads to the fishing site. Management of sporting activities at the dam. 		
Zoning Plan	 Zoning Zoning plan which was developed before finalisation of the report was later changed on the final Document but was then changed in the final report. 		
Legal Agreements	 Existing Agreements It is alleged that there are some existing agreement which are out dated, however the owner are still utilising the dam unlawfully. 		

3.4 RMP REVIEW FRAMEWORK

According to DWAF (2006), the RMP requires 5yearly revisions to ensure that management objectives remain relevant and management actions are continually improved, **Figure 16** illustrates a RMP and BP Review Framework.



Figure 16: RMP Review Procedure

3.5 RMP PLANNING STAGES

3.5.1 Desktop Study

The desktop study was conducted with the aim to acquire background information about the Roodeplaat Dam, this was done in the form of 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

Site inspection was conducted on **07 July & 17 October 2014** to gather baseline information using a checklist questionnaire. The site inspection was undertaken with the DWS officials [(DWS IEE (Northern Operations)] and Water Control Officer). Photos of the study area were also taken during the site inspection.

3.5.3 Public Participation

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).

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

- To engage the Stakeholders (Authorities and IAPs) in the review process.
- To present opportunity to other Stakeholders who were not part of the RMP development process.
- The answering of questions and noting of concerns.
- The identification of new important issues or challenges as well as other objectives that were not incorporated in the existing RMP.

• To verify if the previously identified objectives and vision for the dam is still relevant.

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 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 cooperative 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. The success of the RMP is dependent on the level of involvement by the various stakeholders. Various stakeholders were identified and invited to participate in an open and consultative process. (See attached **Appendix A**). The stakeholder list is updated on a continual basis throughout the RMP process.

3.5.3.2 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 emails.

3.5.3.3 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 development of a RMP.

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

3.5.3.4 **The Advertising Process**

3.5.3.4.1 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 at informing 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).**

3.5.3.4.2 Newspaper Advert

The newspaper advert regarding the RMP project was advertised in the **Pretoria Newspaper.** The advert invited the public to attend the Public Participation Meeting. The advert was published in English on **07 November**

2014. Furthermore, an advert for the draft RMP was advertised on **15 January 2016 (**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 **31 October 2014.** Moreover, the flyers for the draft RMP were distributed on **15 January 2016.** (See attached **Appendix D**).

3.5.3.5 Direct Communication

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 **10 November 2014**. Moreover, the meeting invites for the draft RMP were sent out on 20 January 2016 (See attached **Appendix E**).

3.5.3.5.2 Authority Meeting

The initial authority meeting was held on **19 November 2014** at **Zambesi Conference Room** (Roodeplaat Training Centre).

The purpose of the meeting was:

- To present the RMP Review, 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 **01 February 2016.**

3.5.3.5.3 Public Meeting

The initial public meeting was held on **19 November 2014** at **Roodeplaat Community Hall**. A platform was also given to I&APs to identify other challenges and objectives that were not
incorporated in the existing RMP. A follow up meeting was held on **27 November 2014.**

The draft RMP was presented to the Public on **02 February 2016**.

3.5.3.5.4 Focused Group Meeting

The Focused Group meeting was held **on 20 November 2014 at Roodeplaat Community hall 15H00pm to 17H00pm.**The purpose of the meeting was to give I&AP's the background information about the RMP and review the existing RMP. A platform was also given to I&APs to identify other challenges and objectives that were not incorporated in the existing RMP.

The draft RMP was presented to the focused group on **01 February 2016.**

3.5.3.5.7 Comments and Responses RegisterA copy of the draft report was circulated on 15January 2016 for commenting. The commenting

period was to elapse on **02 February 2016** (See attached **Appendix E**).

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 outlined in **Table 9**.

Table 9: Planning Partners with their Respective N	√andate
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Department/ Agency	Mandate			
City of Tshwane Metropolitan Municipality	The dam is within the jurisdiction of the municipality and is mandated to provide bulk water services.			
	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.			
Department of Agriculture, Forestry and Fisheries (DAFF)	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 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.			

Department/ Agency	Mandate
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 ANYLISIS

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 existing RMP has highlighted and unpacked various issues at the dam. However, most of the issues are still not addressed as the existing RMP was not implemented. The identified encumbrances will assist DWS to identify hindrances and other factors that may influence the implementation of the RMP.

Listed below are the previous and current encumbrances:

Previous Identified Encumbrances:

- Presence of invasive alien vegetation;
- High levels of erosion and sedimentation;
- Presence of red data species;
- Impacts on the ecological integrity by recreational users;
- Unlawful use of water surface and State Land;
- Conflicting policies of government departments;
- Conflicting user needs and expectations.
- Absence of an appropriate flood management zone, posing a safety risk to users;
- The abstraction of water at the Roodeplaat WTWs;
- The discharge of water to the dam from the CoT WWTW; and
- Existing agreements have expired.

Identified Current Encumbrances

The identified encumbrances are broken down into **Biophysical**, **Legal and Social** as illustrated in **Tables 10 – 12.**

Item	Description		
Erosion and Sedimentation	•	Soil erosion and sedimentation lead to siltation as a result water quantity will be reduced thereby limiting other water recreational activities which need large volume of water.	
Alien invasive Species	•	The water hyacinth causes a major problem for the water users, for example some recreational activities can be disturbed due to the water hyacinth that covers the top surface of water for example, rowing, canoeing and boating.	

Table 10: Summary of Biophysical Encumbrances

Item	
Water quality	

Table 11: Summary of Legal Encumbrances

Item	Description		
Agreements	Some of the existing agreements are outdated.Private land owners do not comply with DWS's Regulations.		

Table 12: Social Encumbrances

Item	Description		
	 Some of the existing developments are within the purchased boundary. In some parts of the dam which is allocated for fishing there is an informal 		
Social Environment	settlement there, there is also an ablution block which is not well maintained.		
	 Recreational competition activities are affected because of the water quality. 		
Safety	• There are people who intrude the private properties adjacent the dam, which leave the surrounding environment not safe for tourists.		

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 Objective Identification (Phase 3)

The users put forward their specific objectives during the development of the existing Roodeplaat Dam RMP in order to establish common goals among the user groups.

Objectives were reviewed by all the stakeholders in order to update if there are any other new objectives to be added on the existing document. Furthermore, new objectives were identified by all the stakeholders in order to ascertain common goals. The 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 common key objectives have been categorized into three (3) Key Performance Areas (KPAs) as illustrated below:

Previously Identified Objectives

KPA 1: Resource Management

• To improve and maintain the water quality of the Roodeplaat Dam;

- Water quality is a key issue that needs to be addressed to ensure the sustainable use of the dam by all;
- To have the dam and surrounding area free of alien invasive vegetation; and
- To maintain and enhance eco-system composition, functioning, integrity and character surrounding the dam to sustain tourism potential of the area.

KPA 2: Resource Utilisation

- To enable broad public enjoyment of the water resource and surrounding State Land through controlled authorized access and associated infrastructure development;
- To enable adjacent landowners and residents access to and use of the water resource;
- To provide exclusive and dedicated time and space for organized sporting events to take place in a manner that is safe and meets the participant's expectations;
- To ensure that users are accurately and timeously notified of matters affecting their safety and involvement at the dam;
- To ensure that necessary services (such as water and sanitation, electricity, roads, telecommunication, and waste disposal) and associated infrastructure are provided to facilitate controlled development of the water resource and surrounding State Land;
- To promote, accommodate and manage a variety of activities and facilities at the dam in a manner that enhances the user experience and minimizes the impact on the resource; and
- To evaluate the existing uses of the dam basin and adjacent state and privately owned land to ensure that usage is lawful and that the necessary permits and authorizations are in place.

KPA 3: Benefit Flow Management

- To ensure that local communities participate and benefit in local economic development initiatives occurring in and around the dam; 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.

Current Identified Objectives

KPA 1: Resource Management

- To ensure that the water quality at the dam is improved;
- To remove siltation and add debris traps at inlets; and
- To have dam basin free of invasive alien vegetation.

KPA 2: Resource Utilisation

- Introduce canoe facilities to the international clubs and federations at Roodeplaat Dam and also introduce all feasible water recreational activities and transfer skills to the youth of the local communities; and
- Introduce small scale fishery at the dam.

KPA 3: Benefit Flow Management

 Uplift the local economy and increase benefit flows to the surrounding communities through community empowerment and job creation.

A vision for the dam for a period of 20 years was formulated by stakeholders to be as follows:

"To ensure that there is commitment in managing, conserving, developing and utilising the resource in a sustainable, equitable and appropriate manner in order to maximise the potential of Roodeplaat Dam".

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 by **Figure 17**.



Figure 17: 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; The Dam Management Committee (DMC), Operations Management Committee (OMC) and National Project Steering Committee (NPSC). The appointed management authorities by DWS at the dams, will 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 DWS 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 18 illustrates the proposed user groups that will form part of the DMC.

Figure 18: 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 this is the existing reporting structure. The ToR provide guidance on the following management aspects:

- Roles and responsibility of chairperson;
- 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. Although agreements with some recreational clubs exist there is no overarching agreement to manage recreational use at the dam.

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. Recreational Use Agreements must be developed in line with the conditions stipulated in the agreement between DWS. 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 Aids to Navigation (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 unauthorised 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 unauthorised activity unless they enter into a formal agreement with DWS. Further, a formal agreement with DWS 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

³ AtoN refers to any sort of marker which aids the traveler in navigation; the term is most commonly used to refer to

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nautical or aviation travel, common types of such aids include lighthouses, buoys, fog signals and day beacons.

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 DWS and DEA on the management and maintenance of the facility.

Event Applications

The dam is used for a number of competitive angling events as well as swimming. All events must be managed through an event application process. The applications will be submitted to DWS for approval. 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 19**.

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

Figure 19: 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 20** illustrates a typical example of Governmental Departments that will form part of the NPSC:

Figure 20: 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.

<u>Department of Agriculture, Forestry and</u> 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 (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 Zoning

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 authorised.

Conservation Zones:

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 and fish species as habitat, refuge and breeding areas.

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 wind surfing, kayaking, swimming, rowing, sailing, paddle boating, float tubes, canoeing and angling.

High Impact Activity Zone

This zone has the largest water surface area and is located where the reservoir is at its deepest. It caters for high impact activities associated with high speed, wake and noise activities such as motorised boating and water skiing.

The water surface zoning colour coding means the following:

Colour	Zone Description		
Red	Safety and Security Zone		
Green	Conservation Zone		
Sky Blue Low Impact Activity Zone			
Dark Blue High Impact Activity Zone			

Table 13: 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 demarcation makers and AtoN.
•	Conservation Zone.	• None	•	Public activities (to prevent aquatic habitats disturbance)	•	Area should be demarcated by demarcation makers and AtoN. Strict management and control of these areas, especially with regards to illegal fishing and dumping.
•	Low Impact Activity Zone.	 Activities associated with no or little wakes, such as Swimming Canoeing Rowing Bass fishing House boats Interpretation boats Small scale Fishery 	•	Motorised boating Jet powered boating Water skiing.	•	Area should be demarcated by demarcation makers and AtoN.
•	High Impact Activity Zone.	 Motorised I boating Jet powered boating Water skiing. 	• • • • •	Swimming Canoeing Rowing Bass fishing House boats House boats Interpretation boats Small scale Fishery Parasailing	•	Area should be demarcated by demarcation makers and AtoN. All activities within the high impact zone shall take place beyond 70m from the shoreline. Activities within this zone must be evaluated to determine their impact on the water resources and other dam users before they are allowed into the dam

Figure 21: Proposed Water Surface Zoning Map

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4.2.2 Shoreline Zoning⁴

In addition to the water surface zoning, an integral part of the RMP is also shoreline zoning, which provides guidance on what recreational activities (if any) are permissible and not permissible on the land adjacent to the dam (DWS purchased boundary). The management zones includes:

<u>Safety and Security Zone (dam wall and associated DWS infrastructure):</u>

It is applicable to the area surrounding the dam wall and the outlet works. The extent of this zone is determined by DWS and shall not be less than 100m from the dam wall and downstream. 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 and surrounding areas. This is a no-go zone to the public unless authorised.

Conservation / Low Density Activity Zone:

This zone consists of ecologically sensitive areas and areas with high biodiversity. It also includes the area around the inlets of the dam. Access to this area is limited to low impact activities such as hiking, bird watching, etc. This area is reserved to prevent ecological damage due to development activities hence high impact development not permitted.

Medium Density Activity Zone:

This area is reserved for small scale activities such as day visitors, picnic areas, shoreline fishing, camping (tent and caravan), braai facilities, swimming pools, ablution facilities etc.

High Density Activity Zone:

This area is reserved for large scale activities including chalets, recreational club houses, infrastructure, etc.

Community Resource Zone:

This zone is for the sole beneficiation of the local communities in ensuring that their livelihood is maintained and improved. Activities include subsistence fishing, livestock watering points, small scale community gardens, etc.

The shoreline zoning colour coding means the following:

Colour	Zone Description		
Red Safety and Security Zone			
Green	Conservation / Low Density Activity Zone		
Yellow	Medium Density Activity Zone		
Orange	High Density Activity Zone		
Brown	Community Resource Zone		

⁴ Permanent structures within the purchase line are not allowed. All developments should be outside 1:100 year floodline.

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Table 14: Proposed Shoreline Zoning Description

	Zone Name	Permissible Activities	Non-Permissible Activities	Recommendation
•	Safety and Security Zone.	 Fire management. Alien invasive species clearing. Management of dam infrastructure. Management and maintenance activities by DWS and authorised personnel. 	Public access	 A minimum area of 100m wide downstream the dam wall should be demarcated preventing public access and use
•	Conservation / Low Density Activity Zone	 Conservation activities Hiking and Cycling Bird watching 	Development	 Area should be demarcated by AtoN/ Demarcation Markers. No public activities should be allowed in order to allow for protection of fish breeding habitats. No vessels may be launched anywhere in this area.
•	Medium Density Activity Zone.	 Day visitors Picnic areas Shoreline fishing Camping Braai facilities Swimming Pools Infrastructure for services 	 Accommodation facilities such as Chalets Houses Permanent Structures 	 The management of this area should follow the PPP process in terms of National Treasury. Requirements of NWA and NEMA must be taken into account in all developments, to ensure construction does not impact on dam and must blend in with the natural environment. Camping, birding, hiking, picnicking, shoreline fishing and access to the water must be done in accordance to access agreements. Camping and picnicking is allowed only in designated areas.
•	High Density Activity Zone	 Accommodation facilities such as: Chalets Resorts Recreational club house Infrastructure for services 	 Day visitors Picnic Hiking 	 The management of this area should follow the PPP in terms of National Treasury. Requirements of NWA and NEMA must be taken into account in all developments. Noise levels to be kept at a minimum. No private slipways to be built without approval from DWS.

Figure 22: Proposed Shoreline Zoning Map

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Figure 23: Proposed Overall Zoning Map

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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 or adverse impacts upon the Local or Host Communities, the economy and culture of the area.

In order to determine the degree of recreational use possible on the water surface, the Methodology for Carrying Capacity Assessment: Recreational Water Use (DWAF) was used as a guideline to determine the level of activity that would be sustainable at Roodeplaat Dam.

Determining the carrying capacity ensures that recreational use of the dam is safe and that users do not feel crowded and enjoy their use of the dam. There are three kinds of carrying capacity, namely:

- 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.

Determine Physical Carrying Capacity (PCC)

The maximum number of users that can physically fit into or onto a defined water resource, over a particular time:

 $PCC = A \times U/a \times Rf$

Where: A = 395.1 ha (Total Water Surface at Full Supply Level) U/a = 1 boat/5 ha Rf = 1 (Assume boats are permitted to be on water for entire day) PCC = 395.1 X (1 boat/5 ha) x 1 = 79 crafts

Determine Real Carrying Capacity (RCC)

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: RCC = PCC x (100 - Cf1) % x (100 - Cf2)% x (100 -Cfn)%

Cf1: Structures on the Water Surface. Buoys and rowing infrastructure are a safety hazard as it restricts the movement of boats. Surface coverage is: 1.88 ha (buoy lines High activity zone) 1.1 ha (buoy lines Low activity zone) 5.1 ha (rowing lanes) 29.7 ha (Conservation Zone) 2.1 ha (Safety Zone) 50.7 ha (quasi-transitional area 70 m buffer from shoreline of high impact activity zone). = **90.58 ha**

Corrective Factor 90.58 ha / 395.1 ha x 100 = 22.9 % RCC = PCC - CF1 RCC = 79 x {100 - 22.9}/100 RCC = 79 x 0.771 RCC= 61 Therefore RCC= 61 crafts

Effective Carrying Capacity

The maximum number of visitors that a site can sustain, given the management capacity (MC) available.

Currently, there is no management structure in places, as such MC = 0 and thus the ECC is currently 0. Once a proposed Institutional Structure and infrastructure capacity is in place, the ECC can be recalculated to verify if the RCC can be possible.

4.3 STRATEGIC PLAN

The Strategic Plan is informed by the objectives identified by stakeholders and through research

on feasible opportunities for the dam. The objectives are broken down in management fields which are listed below in **Table 15-18 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?).

Tables 15 - 18 outline 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)			
 Water Quality: To improve and maintain the water quality of the Roodeplaat Dam. 	 Water quality is a key issue that needs to be addressed to ensure the sustainable use of the dam by all water users. The dam is situated within an urban context and is subject to various sources of pollution within the catchment. The two main point sources of pollution (phosphates) are the Baviaanspoort and Zeekoegat Water Treatment Plant. Due to its proximity to the city, it is very popular for recreational use. The dam is hypertrophic and exhibits regular eutrophication problems. Poor water quality affects the cost associated with water purification and may result in loss of biodiversity and affects recreational use. 	 Establish links between the RMP and other projects aimed at improving water quality within the catchment. Pollution sources within the catchment should be identified and monitored on monthly basis. The boats must be inspected before entering the water to get rid of pollution, for example oil spills etc. Research the status of the aquatic resource and associated ecosystem, with a view on developing a comprehensive set of baseline data report for future monitoring purposes. Produce a Status Quo Report on the water quality for the dam (once-off). Implement a quarterly water quality reporting programme for the next Five (5) years, where after the frequency of reporting could be reduced. Establish a forum that should meet every second month to discuss and action issues pertaining to water quality. Implement a procedure for the pro-active identification and rectification of problems that occur at the dam as a result of a reduction in water quality (e.g. 	 Government Departments that concern themselves with water quality and environmental health need to be involved. These will include the COTMM and Magalies Water. Water Quality is monitored on a fortnightly basis by DWS Resource Quality Services Division. Regular reporting and feedback to users, via established communication channels. Existing projects/programmes relating to water quality within the catchment should be harmonized and inform the RMP (Integrated Water Quality Management Plan for the Roodeplaat Dam and the Water Quality Objectives Report for the Hartbees/Morelettaspruit, Pienaars River and Edendalspruit). 			

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 Roodeplaat Dam and surrounding area free of invasive alien vegetation.	 Water hyacinth is a major problem on the surface of the dam, restricting access and recreational use. Exotic species that occur on the shoreline and surrounding the dam include the Bluegum (<i>Eucalyptus</i>), Grey Poplar (<i>Populus x canescens</i>), Syringa (<i>Melia azedarach</i>) and Queen of the Night (<i>Cereus jamacaru</i>). The further spreading can have a detrimental effect on the ecology of the dam and affects the natural aesthetic of the area in general. 	 spills, etc). Set up a dedicated telephone number or e-mail where problems that are identified by users could be reported e.g the (Unique Position Number (UPN) system. Determine the success of current DEA (Working for Water) initiatives to eradicate water hyacinths, identify opportunities and constraints. Ensure that required resources are available for the removal of water hyacinths when action is required, especially during December and January. Quantify and qualify the extent of invasive alien vegetation in order to have a base line survey. Continuous removal of problem plants within the dam boundary line. Develop an inspection and cleaning mechanism to ensure that vessels entering the dam do not contaminate it with alien vegetation 	 Planning and execution of eradication programs must be done in cooperation with Working for Water (DEA). Synchronise eradication projects in the catchment by engaging adjacent landowners and local environmental initiatives. 	
		Construction of wash bay.		

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)
 <u>Siltation:</u> Removal of siltation and add debris traps at inlets. 	 The dam has siltation and it reduces the capacity of the dam. 	 Feasibility study must be done and put some debris traps at the inlets. There must be a Sedimentation Management Plan in place developed by DWS describing the Remedial Action Work Plan for removing the silt from the dam. 	 DEA and DWS as the custodian of the dam should ensure the weir does not degrade.
 Ecosystem: To maintain and enhance eco-system composition, functioning, integrity and character surrounding the dam to sustain tourism potential of the area. 	 The natural resource base provides the foundation for tourism development in the area. It is in the interest of tourism development that emphasis is placed on the conservation value of the dam and the surrounding area. The SDF for the area acknowledges identified sensitive features and identifies the majority of the area surrounding the dam as a Core Conservation Area. The importance of maintaining the existing natural resource base is recognized by tourism operators. 	 Develop an integrated Environmental Management System (EMS) for the dam. Ensure compliance with the NEMA legislation. Devise a Programme to determine the status of rare, threatened and endangered plant and animal species and adapt management interventions accordingly. Undertake a biodiversity assessment and prepare a Biodiversity Management Plan. Install buoys at all Conservation Zones, as per the Zoning Plan. Monitoring of compliance with the zoning plant. Identify areas where vegetation has deteriorated and rehabilitate accordingly. Include Signage in all conservation zones 	 The SDFs, the Dinokeng Master Plan, Gauteng Conservation Plan or any other framework plans with an ecological component, need to be consulted for guidance with regards to planning that may affect biodiversity or for guidance on biodiversity issues itself. Other government departments, i.e. the GDARD as well as relevant components of the local authorities must be involved.

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)	
 Public Enjoyment To enable broad public enjoyment of the water resource and surrounding State land through controlled authorized access and associated infrastructure development. 	 The proximity of the Roodeplaat Dam to developed areas, coupled with its large surface area and surrounding State Land makes it an ideal destination for recreational use. Potential exists for accommodation and various sports and leisure activities including boating, canoeing, swimming, jet-skiing, fishing, picnicking and camping. It is important that the recreational potential of the water surface and surrounding State Land is realized. There are unauthorised structures erected. Visitors entering the water, gain access unlawfully to private properties and even access the Nature Reserve to collect wood. 	• Evaluate the development potential in terms of the Zoning plan and prepare and implement a development strategy.	 The necessary authorisations for access, use and development within the boundary line must be approved by DWS prior to any actions. 	
Access • To enable adjacent landowners and residents access to and use of the water resource.	 Land uses surrounding the dam include various smallholdings and residential estates. Current activities undertaken include accommodation, conference centres and various leisure and sporting activities such as boating, canoeing, swimming, jet-skiing, fishing, picnicking and camping. It is hence crucial that dedicated lawful and controlled 	 Regularization of existing uses, relevant agreements and co- management agreements must be drawn up with all affected private land owners. The adjacent landowners should be allowed access from their properties. 	 All necessary authorisations for use and development within the dam boundary/servitude line where applicable should be approved by DWS prior to any actions. 	

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)	
	access is provided for private land owners.			
 Development Facilities: To ensure that necessary services (such as water and sanitation, electricity, roads, telecommunication, and waste disposal) and associated infrastructure are provided to facilitate controlled development of the water resource and surrounding State Land. 	 Adequate infrastructure and services exist in the vicinity of the dam, however, should further development take place and the tourism facilities be improved, the number of people utilising the dam will undoubtedly increase which will in turn necessitate increased service and infrastructural capacity. To unlock the true recreational potential of the water resource, it is imperative that the water resource and surrounding State Land is developed, taking cognizance of Zoning Plan. Proposed development must progress in an environmentally sound and controlled manner. 	 Prepare an inventory of existing infrastructure and services to facilitate integrated management. Monitor and update the abovementioned inventory regularly, ensuring linkages with the proposed development: (Public Access, Use and Development). 	 The management authority is responsible for ensuring the coordination of relevant government departments and other stakeholders. Other local, provincial and national departments are responsible for providing services and associated infrastructure in accordance with their mandates. Adjacent land owners must be consulted when necessary. 	
 Safety: To ensure that users are accurately and timeously notified of matters affecting their safety and involvement at the dam. 	 During the process of developing this RMP, the importance for an integrated notification system was identified. 	 Develop and implement an integrated notification system. 	 The management authority must ensure that the system is developed and maintained. Linkages must be established with the local and district municipalities regarding disaster management. 	
 Sports Activities: To provide exclusive and dedicated time and space for organized sporting events to take place in a manner that is 	 Roodeplaat Dam is used by various national user groups, including rowing, swimming and canoeing and it is important through integration to meet the 	 Prepare and implement an activity management plan for each sporting code. 	• The management authority must ensure integration and co-ordination.	

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)	
safe and meets the participant's expectations.	needs and expectations of all groups.		 Various sporting groups and federations must provide relevant input. 	
 Dam uses: To evaluate the existing uses of the dam basin and adjacent state and privately owned land to ensure that usage is lawful and that the necessary permits and authorizations are in place. 	 Throughout the RMP compilation process, it has been alleged that for certain land and water uses, the necessary permits and authorizations are not in place. 	 Embark on a project to evaluate the current use of the dam basin and adjacent state and privately owned land and regularize unlawful usage. 	 The management authority is responsible for overall management and co-ordination of the proposed action project. Various national, provincial and local government departments must provide information regarding land and water use authorisations. 	
 Activity Management: To promote, accommodate and manage a variety of activities and facilities at the dam in a manner that enhances the user experience and minimizes the impact on the resource. 	 Roodeplaat Dam is popular for a variety of uses and users. Excessive use of the resource will not only impact on the environment, but will also affect user safety and satisfaction. Excessive use of the resource may not only impact on the water resource (pollution) and environment (soil compaction littering and destruction of vegetation), but will also affect safety and visitor experience. Increasing numbers of visitors result in social impacts measured by overcrowding, accidents, conflicts, noise, etc. Carrying capacity must be determined in order to effectively manage and control access, utilisation and development at the dam. 	 Determine the Effective Carrying Capacity and allocations of vessels for each zone. Develop and implement a customised control and monitoring programme for each of the various carrying capacity aspects. 	 The involvement of the relevant industry with regards to user experience and other aspects such as safety is imperative. Environmental and other planning institutions including relevant government departments need to be consulted when establishing density controls. 	

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)	
CommunityParticipationandBeneficiation:• To ensure that local communities participate and benefit in local economiceconomicdevelopment initiativesinitiativesoccurring and around the dam.	 National, provincial and local governments identify the tourism sector as a vehicle for job creation, skills development, Small, Medium and Micro Enterprises (SMME) development and broad-based black economic empowerment. It is essential that local communities derive benefits from tourism projects implemented. 	 Compilation of a database of job seeking individuals and SMMEs from the local community and ensure that it is regularly updated and monitored. Implement skills development programmes where opportunities exist. Ensure that Black Economic Empowerment (BEE) is attained in any PPP projects. 	 The management authority is responsible for overall coordination and ensuring benefit flows. The local black community user group must provide relevant input. Linkages must be established with relevant government departments. 	
 Instituitional Structure: 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. 	 There is no dam recreational management structure in place. Currently, a Dam Control Committee is in operation. This committee comprises various land owners and users. However, the arrangement is not formalized. Furthermore, a management committee will not have the necessary powers and delegations to effectively manage recreational use. 	 Prepare a roll-out strategy for the establishment of the management authority, defining clearly the functions and responsibilities of all parties. 	 DWS Institutional Establishment section, Process Facilitator and other relevant Departments should be involved so that they can give their input in terms of their respective mandates. 	

Table 18: Strategic Plan for Current Identified Objectives

Current Identified Objectives			
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)
 Water Quality: To ensure that the water quality at the Roodeplaat dam is improved 	 Water quality is a key issue that needs to be addressed to ensure the sustainable use of the dam by all water users. The dam is situated within an urban context and is subject to various sources of pollution within the catchment. The two main point sources of pollution (phosphates) are the Baviaanspoort. Due to its proximity to the city, it is very popular for recreational use. The dam is hypertrophic and exhibits regular eutrophication problems. Poor water quality affects the cost associated with water purification and may result in loss of biodiversity and affects recreational use. 	 Establish links between the RMP and other projects aimed at improving water quality within the catchment. Research the status of the aquatic resource and associated ecosystem, with a view on developing a comprehensive set of baseline data report for future monitoring purposes. Produce a Status Quo Report on the water quality for the dam (once-off). Implement a quarterly water quality reporting programme for the next 5 years, where after the frequency of reporting could be reduced. Establish a forum that should meet every second month to discuss and action issues pertaining to water quality. 	 DWS support will include: Internal resources; Professional Service Provider (management and co- ordination); Transaction Advisors for any PPPs; Specialists for other areas; and Advisory committee. Various government departments such as DEA must participate and provide relevant input in terms of their relevant mandates. DWS Water Quality and River Health section must monitor water quality regularly to ensure its suitability for recreational activities.
 Invasive Alien Vegetation: To have Roodeplaat Dam basin free of invasive alien vegetation. 	 The alien vegetation such as water Hyacinth forms dense rooted mats which disrupt recreational activities, threaten aquatic ecosystems and irrigation schemes. Dense mats clog waterways, reduce water flow and block irrigation equipment hence they need to be removed. 	 The Working for Water Programme is in action trying to clear up the water hyacinth There has to be a Monitoring Plan developed to continuously monitor the occurrence of problem plants within the dam's purchased boundary line. 	 Planning and perfoming eradication should be incorporation with Working for Water (WfW) within the Department of Environmental Affairs (DEA). Their involvement will assist in controling and removing invasive species on the dam's surrounding.

Current Identified Objectives			
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)
Recreational Facilities: Introduce canoe facilities to the international clubs and federations at Roodeplaat Dam and also introduce all feasible water recreational activities such as skiing and transfer skills to the youth of the local communities.	 The zoning plan of April 1997 made specific provision for tournament skiing. There is a need to introduce the activity on the new zoning map. Introduction of water recreational activities to the youngsters living in the nearby communities. 	 Prepare and implement an activity management plan for each sporting code. Construct a Wash bay. 	 The management authority must ensure integration and co- ordination. Various sporting groups and federations must provide relevant input.
 Fishery: Introduce commercial fishery at the dam. 	 The dam is rich in fish, the local residents can benefit from commercial fishery. 	 Educate people on fishing methods that are sustainable, for example for subsistence consumption, they can use fishing lines and for commercial purpose, they can introduce small scale fishery. 	 Department of Agriculture, forestry and fishery must be involved in introducing and issuing fishing licences.
Communities Participate And Benefit: • To ensure that local communities participate and benefit in local economic development initiatives occurring in and around the dam	 Tourism sector have been identified as a vehicle for skills development, job creation, broad-based black economic empowerment, etc. It is imperative that the local communities derive benefits from recreation activities conducted at the dam. The previously disadvantaged local community are generally not aware of the recreational opportunities that the dam can offer. 	 Implement skills development programme where opportunities exist. Compilation of a database of job seeking individuals and SMMEs from the local community and ensure that it is regularly updated and monitored. Ensure that Black Economic Empowerment (BEE) is attained in any PPP projects. 	 Existing social initiatives, NGO and schools as well as other relevant government departments such as Local Economic Development and related organs that deal with social welfare, sport and education must be involved. Put into place some programmes that deal with sporting federations. Involvement of the Ward Councillors in making sure that the community is participating as well as benefiting from the dam through recreational activities.

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 socioeconomic status of the users. The access fees should make a provision for equitable access.

The information acquired from the 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 Roodeplaat 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 24** below shows the RMP & BP review framework.

Figure 24: RMP and BP Review Framework

CONCLUSIONS

The RMP documents the challenges that exists within the Roodeplaat 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 and 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**.

Moreover, 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 of the dam was formulated from the key common objectives identified by Stakeholders. Based on the strategic objectives identified for Roodeplaat Dam, a BP has been developed to describe the manner in which the potential recreational activities are to be financially resourced.

Furthermore, including the RMP in the Local Initiatives such as IDPs, LED, etc. can ensure effective co-operative governance as well as provide necessary support with regards to the use of 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