Department of Water and Sanitation

NATIONAL WATER RESOURCE INFRASTRUCTURE (NWRI)

Resource Management Plan Review

HARTBEESPOORT DAM

REPORT – Volume 1 of 2

August 2017

WATER IS LIFE - SANITATION IS DIGNITY

water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

2030 NDP

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- Department of Environmental Affairs;
- Department of Public Works;
- Department of Rural Development and Land Reform;
- Department of Water and Sanitation;
- North west Provincial Government;
- Bojanala Platinum District Municipality;
- Magalies Water;
- Rand Water;
- Adjacent land owners;
- Madibeng Local Municipality; and
- Local communities which includes: Schoemansville, Magalies Golf estate, Kosmos, Melodie, Ifafi, Xanadu Eco Park, Meerhof, Oberon, Port D' Afrique and West lake Country Estate.

Acknowledgement is also extended to all other Stakeholders who attended and participated in the Stakeholder engagements.

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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	DWS Review	03/10/2016
2	Final Draft for DWS Review	23/11/2016
3	Draft for Public Review	02/12/2016
4	Final RMP for DWS Approval	03/03/2017
5	Final RMP for DWS Approval	02/06/2017
6	Final RMP for DWS Approval	08/08/2017
7	Final RMP for DWS Sign off	16/08/2017

LIST OF ACRONYMS

ADU	Animal Demography Unit
AtoN	Aid(s) to Navigation
BID	Background Information Document
BP	Business Plan
CATHSSETA	Culture, Arts, Tourism, Hospitality, Sports Sector, Education and Training Authority
CD: IO MANCO	Chief Director: Infrastructure Operations Management Committee
CIWSP	Cooperative Inland Waterways Safety Programme
CPSI	Centre for Public Service Innovation
DHS	Department of Human Settlement
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
ECC	Effective Carrying Capacity
ECHOS	Environmental Characteristics Opportunity Spectrum
EMF	Environmental Management Framework
FSL	Full Supply Level
GP	Guideline Programme
GWWs	Government Waterworks
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IEE	Integrated Environmental Engineering
IRMP	Integrated Resource Management Plan
IMP	Integrated Management Plan
KPA	Key Performance Area
NEMA	National Environmental Management Act
NEMPAA	National Environmental Management: Protected Areas Act
NPSC	National Project Steering Committee
NWA	National Water Act
NWRI	National Water Resources Infrastructure
OMC	Operations Management Committee
PCC	Physical Carrying Capacity
PP	Public Participation
PPP	Public Private Partnership
PSP	Professional Service Provider
QDS	Quarter Degree Square
RCC	Real Carrying Capacity
RF	Rotation Factor
RMP	Resource Management Plan
RWU	Recreational Water Use
SAMSA	South African Marine Safety Authority
SASCOC	South African Sports Confederation and Olympic Committee
SAPS	South African Police Service

SDF	Spatial Development Framework
SSA	Swimming South Africa
SWOT	Strengths, Weaknesses, Opportunities, Threats
TWQR	Target Water Quality Range
WfW	Working for Water
WMA	Water Management Area

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 Hartbeespoort Dam, are protected, used, developed, managed and controlled in a sustainable manner, for the benefit of all. To assist the Minister in attaining the mandate, and to ensure that access to, and use of the dam is equitable, the DWS initiated and commissioned the development of the Resource Management Plan (RMP) for Hartbeespoort Dam.

The existing RMP for Hartbeespoort Dam was approved in **July 2010**. However, it was never signed. On this note DWS has identified the need to review the RMP for Hartbeespoort 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: Hartbeespoort Dam is an arch type dam which impounds the Crocodile and Juskei Rivers. It falls under ward 29 of Madibeng Local Municipality (MLM) which forms part of the Bojanala Platinum District Municipality (BPDM) in the North West Province, South Africa Its GPS coordinates are **25^{0}44'34.81'' S 27^{0}52'07.05''E**.

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

Secondary activities at the dam includes water based recreational activities such as boating, skiing, picnicking and other activities. The dam also has various up-market estates nearby which complements to the scenic view of the dam.

Dam ownership and management: Hartbeespoort Dam is owned and operated by DWS. There are many access points into the dam, some are used by DWS for maintenance purposes whereas some are privately owned.

There is currently no institutional structure to manage the recreational use of the dam. However, the structure has been proposed in the RMP review. The recreational institutional structure is necessary for the effective management of the Hartbeespoort 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-operative interests and support in the RMP project.

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

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

During the **Exit phase**, a draft RMP Review 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.

Outlined below is the list of objectives that were previously identified by different sector groups during the development of the existing RMP:

Government sector group:

- Technical Advisory Committee had to be established to support the implementation of the remediation programme. The rationale was that the Intergovernmental forum would address compliance enforcement through cooperative governance, effective regulation of public assets and equitable access, sustainable resource management through policy and regulation, government to promote public private partnerships (PPP) and that effective communication was promoted between government departments.

Recreational industry sector group:

- Access and access control to the dam - both private residents and the public;
- Guaranteed access to the water for homeowners and controlled access for the public;
- Safety of the dam - skipper training, water sport safety, physical boat safety (SAMSA) and off- water safety and security;
- Utilities – electricity, water, sewage. Good infrastructure for water users. Compliance with industry norms and standards;
- Encourage appropriate use and numbers on the dam – water sports, fishing, shoreline use etc;
- Appropriate use zoning;
- Regulating the number and size of boats on the dam; and
- Encourage tourism to provide overall economic benefit to the HPD area.

Land owners sector group:

- There are nineteen (19) projects to be implemented by Harties metsi a me by December 2009;
- Property values must be sustained;
- Safety on water;
- Management with regards to institutional management, policing, zoning for Jet Skis and promoting business;
- Transparency of the use of donor and government funding. Proper institutional management;

- Sewage works i.e. hard pollution upstream, addressing the use of phosphates in soaps; and
- Back-up generators for all sewage pumps etc. to prevent spills during load shedding. Ensure sustainable development infrastructure e.g. sewage spilling.

Resource managers group:

- Execute and implement water quality standards;
- Establish conservation areas and advisory facility for the public;
- Establish and co-operate with landowners to establish shoreline. Percentage for reverse engineering to re-establish shoreline. Vegetation; and
- Implement the remediation programme.

During the RMP review, objectives were identified as follows:

- Establishment of wash bays;
- Proper management of recreational activities to avoid conflicts at the dam;
- Alien invasive plant species control;
- Equitable access to the dam;
- Addressing illegal land uses at the dam;
- Improvement of the access roads around the dam;
- Sufficient water supply to the Hartbeespoort Dam communities; and
- Establishment of a research centre at the dam.

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

"To make the Hartbeespoort Dam more accessible to all the people, while improving the state of the water quality. Making the dam and its surrounding environment more usable and improving its economic potential".

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

Tourism Potential: Hartbeespoort Dam is home to a number of secondary activities which play a vital role in the tourism development of the North West province. During the review of the RMP it was evident from the stakeholder engagements that there is no desire to add more recreational activities at the dam. The suitable management of the current activities was pointed out as a key factor in promoting tourism at Hartbeespoort Dam.

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1.1. BACKGROUND OF HARTBEESPOORT DAM

Hartbeespoort Dam is an arch type dam which impounds the Crocodile and Juskei Rivers. It falls under ward 29 of Madibeng Local Municipality (MLM) which forms part of the Bojanala Platinum District Municipality (BPDM) in the North West Province, South Africa Its GPS coordinates are **25^{0}44'34.81'' S 27^{0}52'07.05''E**. (Refer to **Figure 1** for the Locality Map).

The primary purpose of the Hartbeespoort Dam is to provide water for irrigation. Roughly 80% of water is used for irrigation with lesser uses for domestic consumption and compensation flows. It currently offers recreational activities such as water activities, mountain sports and a variety of other activities such as hiking, angling, yachting, ballooning hang-gliding, parasailing and abseiling. Places of interest include the aquarium, private zoo, Snake Park and a cableway. Hartbeespoort Dam has a number of arts, craft and curio outlets and it is part of the Heritage route to the World Heritage site (Cradle of Humankind) where a variety of historical and cultural interests are to be found.

Hartbeespoort Dam is owned and operated by DWS. There are many access points to the dam, some are used by DWS for maintenance purposes whereas some are privately owned. **Table 1** summarises the dam profile.

Table 1: Hartbeespoort Dam profile

Hartbeespoort Dam Profile	
Location	South Africa
Province	North West
District Municipality	Bojanala District Municipality
Local Municipality	Madibeng Local Municipality
Nearest Town	Brits
Completion Year	1923
GPS Coordinates	25044'34.81'' S 27052'07.05''E
Purpose	Irrigation and domestic use
Owner	DWS
Water Management Area	Crocodile (West) and Marico Catchment Area
Quaternary Catchment	A21H
Catchment Area (km^2)	4 120
River	Crocodile
Capacity (m^3)	195 000 000
Surface Area (ha)	2 062.8
Wall type	Arch
Wall Height (m)	59
Length (m)	140

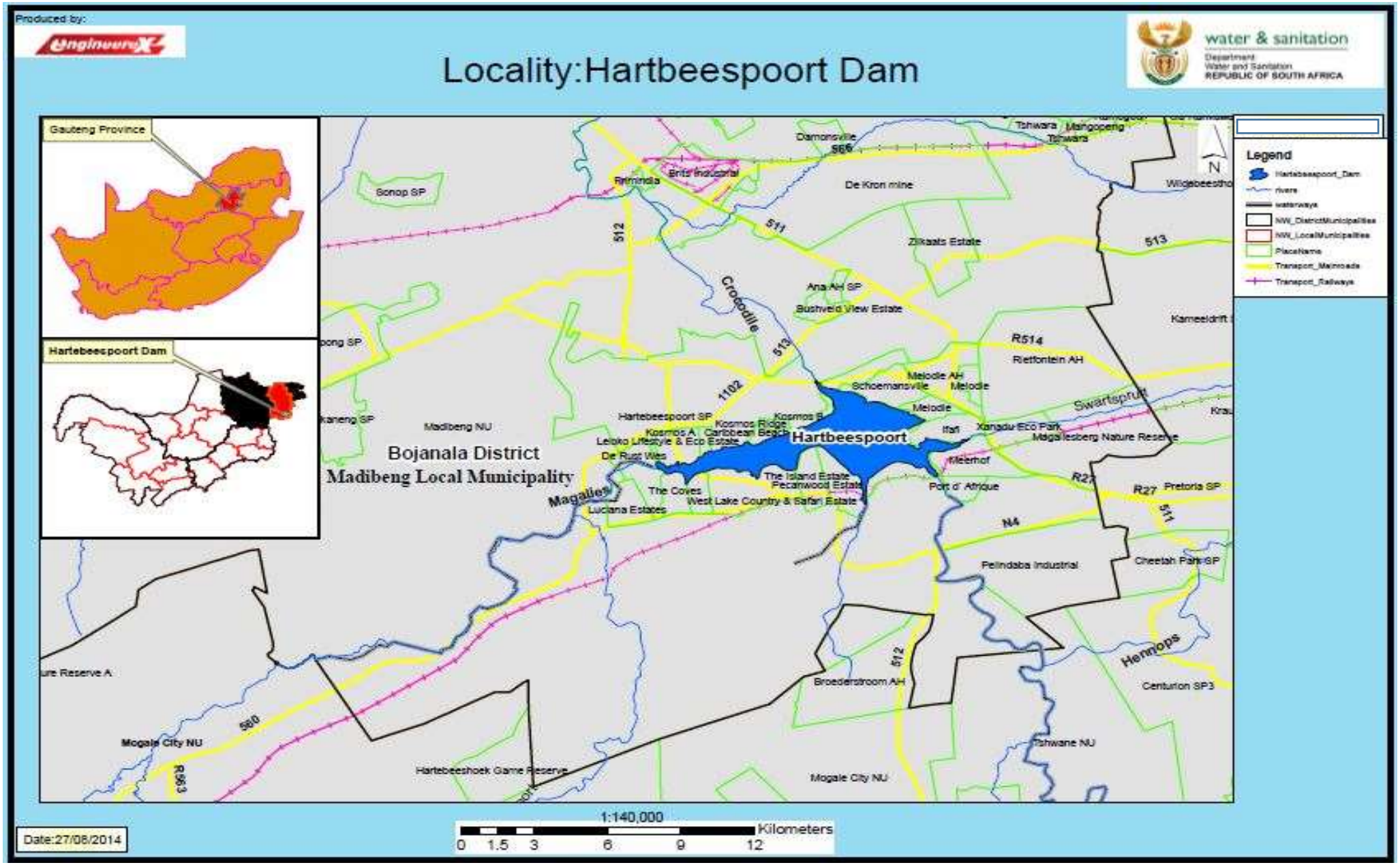

Figure 1: Locality Map for Hartbeespoort Dam

1.2. BIOPHYSICAL ENVIRONMENT

1.2.1 Climate

Hartbeespoort Dam falls within the Highveld Climate Region, characterised by warm summers and mild winters with frost. Temperatures range from extremes of approximately 40^0C to -6^0C, although average temperatures are in line with a temperate climate.

Average summer highs is 30^0C lowering to 15^0C at night, whilst typical average winter temperatures range from 24^0C during the day to 5^0C at night. The diurnal range of the study area is quite large, averaging 14^0C during summer and 18^0C during the winter months. The rainy season for the Hartbeespoort Dam area is from mid-October to March, peaking during January. Whilst the precipitation of the Highveld Climate Region is characterised by thunderstorms, there are on average only 23 days per year when thunder is recorded.

Hail occurs on average 3 days per year whilst the annual average rainfall is between 668 and 671mm. Rain of greater than or equal to 1mm per day occurs on average 55 days per year (NWDACE, 2006). The wind conditions are light to moderate with the dominant winds blowing from a north-easterly direction but for thunderstorm conditions when it has a southerly component. Cold air drains into the Hartbeespoort Dam mainly from the east and west, supplemented from the south (Pelindaba) and from there it moves through the poort at the dam wall. (Hartbeespoort Dam, RMP, 2010)

1.2.2 Flora

The dam falls within the Moot Plains Bushveld and Gold Reef Mountain Bushveld Vegetation types. The main vegetation type is; however, the Moot Plains Bushveld Vegetation Type described as being open to closed, low, often thorny savanna, dominated by *Acacia spp* in the plains and bottomlands. Woodland of varying height is found on the lower slopes and hillsides and the herbaceous layer is typically dominated by grasses. (Mucinah, L and Rutherford M.C. (2006))

1.2.1.1. **Terrestrial alien species**

Alien invasive plant species are non-indigenous plants introduced from other countries. Once they were introduced, they tend to spread beyond the area where they are desired. Alien plant species also outcompete the indigenous species wherever they germinate. Many of these species are prominent in riparian ecosystems. I.e. on the banks of water sources (streams, rivers, estuaries, dams and lakes).

Alien species were either intentionally or unintentionally introduced to South Africa. The intentional introduction was for aesthetic and/or economic gain. Some plants have been introduced with the intent of aesthetically improving public recreation areas or private properties, whilst others are introduced for ornamental or timber uses.

The most common Terrestrial Alien Plants in South Africa are the Black Wattle (Arcacia mearnsii) , Mauritius Thorn (*Caesalpinia decapetala*), Guava (*Psidium guajava*), Castor Oil plant (*Ricinas communis*), Blue Gum (*Eucalyptus globulus*), Pine Trees, Bug weed (*Solanum mauritinum*), Port Jackson willow (Acacia saligna), weeping willow (*Salix babylonica*), Tickberry (*Lantana camara*, blackwood (*Dalbergia melanoxylon*) and the silver wattle (*Acacia dealbata*).

Impacts of alien plants on natural environment:

- They are water guzzlers;
- They cause Eutrophication;
- They outcompete and displace the indigenous species; and
- They cause soil erosion.

Control methods

There are three methods to control or eradicate alien invasive species growing in the environment namely; **Physical control, Chemical and Biological control**.

Physical Control

Many invasive plants can be removed manually or with the help of simple tools. Shrubs can be removed by using a tree popper. The top growth of such plants can be cut, followed by the removal of the stem and roots from the ground. Larger trees can be dealt with using

the ring-barking method. This involves peeling off the barks on the stem of the tree.

Chemical control
Herbicides can be sprayed on plants less than 2m in height for quick results. Spraying needs to be done when there is no wind in order to prevent spray drifting onto adjacent wanted plants. All plants that are subjected to the spray will be destroyed. Large tree can be cut down, leaving a stump as flat and as close to the ground as possible, and apply a recommended herbicide.

Biological control
Biological control consists of the use of natural enemies to reduce the vigour or reproductive potential of an invasive alien plant.

1.2.1.2. **Aquatic alien species**
Aquatic weeds is defined as "unwanted and/or undesired plants which grow and reproduce in an aquatic environment ".Whilst plants are important components of the aquatic environment, the excessive growth and spread of aquatic weeds can have a detrimental effect on water bodies and its inhabitants. Some of the problems caused by the growth and spread of aquatic weeds in water bodies are as follows:

- Interfere with or prohibit recreational activities such as swimming, fishing, and boating;
- Detract from the aesthetic appeal of a water body;
- Stunt or interfere with a balanced fish population;
- Produce quiet water areas that are ideal for mosquito breeding;
- Certain weeds can give water bad tastes and odours;
- Impede water flow in drainage ditches, irrigation canals, and culverts, causing water to back up; and
- Deposition of weeds, sediment, and debris, can hinder bodies of water to fill in.

There are ten known aquatic weeds in South Africa. The known weeds include, among others, the Water Hyacinth (Eichhornia crassipes), Red water fern (Azolla filiculoides), Parrots feather (Myriophyllum aquaticum), Water lettuce (Pistia Stratoites), etc.

Control methods

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.

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.

Biological control
Biological control often works best on large infestations, or infestations that are near the 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 vigor 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.

1.2.3 Geology and Soils

The geology of the area is dominated by formations in the Pretoria Group of the Transvaal sequence; however, undifferentiated surface deposits are located in the low lying areas. Outcrops within this group include Magaliesberg, Silverton, Daspoort, Hekpoort and Timeball which are largely comprised of quartzites and shales.

The geological formations run from the northeast to the southwest through the study area. The weather resistant quartzite ridges are the dominant landforms in the area as they are harder than the more easily eroded shales, and give rise to the Magaliesberg and Witwatersberg. The Silverton and Timeball Shales form the valleys in between these ridges. (Hartbeespoort Dam, RMP, 2010).

1.2.4 Historical, Archaeological and Cultural Resources

The cultural-heritage of the Hartbeespoort Dam is primarily associated with human interventions and creations from earliest times until recent past. These heritage resources are non-renewable and therefore vulnerable to environmental and social pressures (NWDACE, 2006). An inventory of these sites has been prepared by the Hartbeespoort Environment and Heritage Association.

1.2.5 Hydrology

1.2.5.1. **Catchment**

Hartbeespoort Dam falls within the Crocodile (West) Marico Water Management Area (WMA) within the Crocodile River catchment that drains into the Limpopo River. The Crocodile and Magalies Rivers and several smaller tributary stream systems, including the Leeuspruit and Swartspruit, feed the dam. Ninety percent (90%) of the annual inflow to the reservoir is derived from the Crocodile River which has a catchment area of 29,349km2.

The volume of water in the river is showing a steady increase as a result of return flows from the Witwatersrand urban area. The Crocodile River drains a large, highly industrialised and urbanised area and hence the return flows are largely of treated sewage and industrial effluents and subject to high levels of pollution. The Crocodile River continues on from the dam, flowing towards the northwest past Brits. (Mucinah, L and Rutherford M.C. (2006))

1.2.5.2. **Water Quality**

Water quality monitoring in the upper Hartbeespoort catchment, including the dam itself has been conducted comprehensively for the last few decades. From this data it can be seen that chemical variables have remained constant, with sulphate concentrations in the dam improving slowly but steadily in the last 3 decades. Water quality in terms of nutrients also improved since the implementation of the special phosphate standard in the catchment, but unfortunately, since 2000 have been showing a decreasing trend in both the dam as well as the major feeding river.

As part of the MAMP, additional monitoring was implemented to investigate the dynamic nature of the dam. Up to 14 points were monitored at different depths, looking at the nutrient distribution within the dam, as well as the intensive monitoring in the Crocodile River, to allow more accurate determination of the quantity of phosphorus entering the dam.

While the dam monitoring supplied sufficient information to allow the defining of the current condition, it is still far too soon to make statements about the effect of the Programme, as other factors such as the biological state of the dam must also be considered at all times when reporting the status of the dam.

1.3. USERS AND USES OF THE DAM

1.3.1 Primary Function of the dam

The primary purpose of the dam is to provide raw water for irrigation and domestic use.

1.3.2 Secondary Function of the dam

1.3.2.1 **Recreational Use**

Currently the recreational use of the water surface could be considered to be of a casual

nature related to a weekend recreational market including boating and fishing; a few

commercial operations (i.e. "party boats"), and the occasional organised event. Many of these uses, in particular the commercial operations are; however, regarded as unlawful and will undergo regularisation. Although the main triggers for the RMP and remediation process were not conflict between the various user groups but rather water quality concerns, it could amplify without intervention when the water quality improves and the recreational demand increases.

1.3.2.1 **Water-based use**

Water uses in terms of S21 of the National Water Act, 1998 (Act No. 36 of 1998) [NWA] include the use of water for recreational purposes (S21 (k)); waste and discharge related uses and changes to the flow of the water in the dam as well as its characteristics (S21(c) and (i)).

The portions of the shoreline that are significantly developed in terms of S21(c) and (i) water uses include *inter alia*:

The entire northern portion of the Schoemansville shoreline: Ifafi; Ile du Lac; Ile dÁfriq; Pecanwood; Eagles Landing; The Islands; Club Nautique; Westlake; Lakeland; and Kosmos.

1.4. RECREATIONAL INSTITUTIONAL STRUCTURE

There is currently no institutional structure that is managing recreational use of the dam. The Institutional Structure should be established and formalised as per the DWAF's considerations on the Institutional Arrangements for Managing Use of Water for Recreational Purposes guideline (2003).

1.4.1 Management of Water Surface

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

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

1.4.2 Access

There are many access points to the dam, some are used by DWS for maintenance purposes whereas some are through private properties.

1.5 SAFETY

1.5.1 Safety of Navigation

There is currently no fixed and floating Aids to Navigation (AtoN) and Demarcation Markers in place.

1.5.2 Incident Management

There is no specific Incident Management System in place to ensure that incidents are responded to in a co-ordinated manner.

1.6 SOCIO-ECONOMIC ENVIRONMENT

1.6.1. Social Audit

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 an area. The study area falls entirely within Ward 29 of MLM. it is also in close proximity with ward 30 and 33 (refer to **Figure 2**).An understanding of socio-economic conditions of Ward 32 can be used at a later stage to determine the impact of a RMP in the area in terms of changed socio-economic conditions.

A social Audit which focused on the population composition of the ward, Education level, employment status and monthly income was undertaken and is presented in section 1.6.1.1 to 1.6.1.4, respectively.

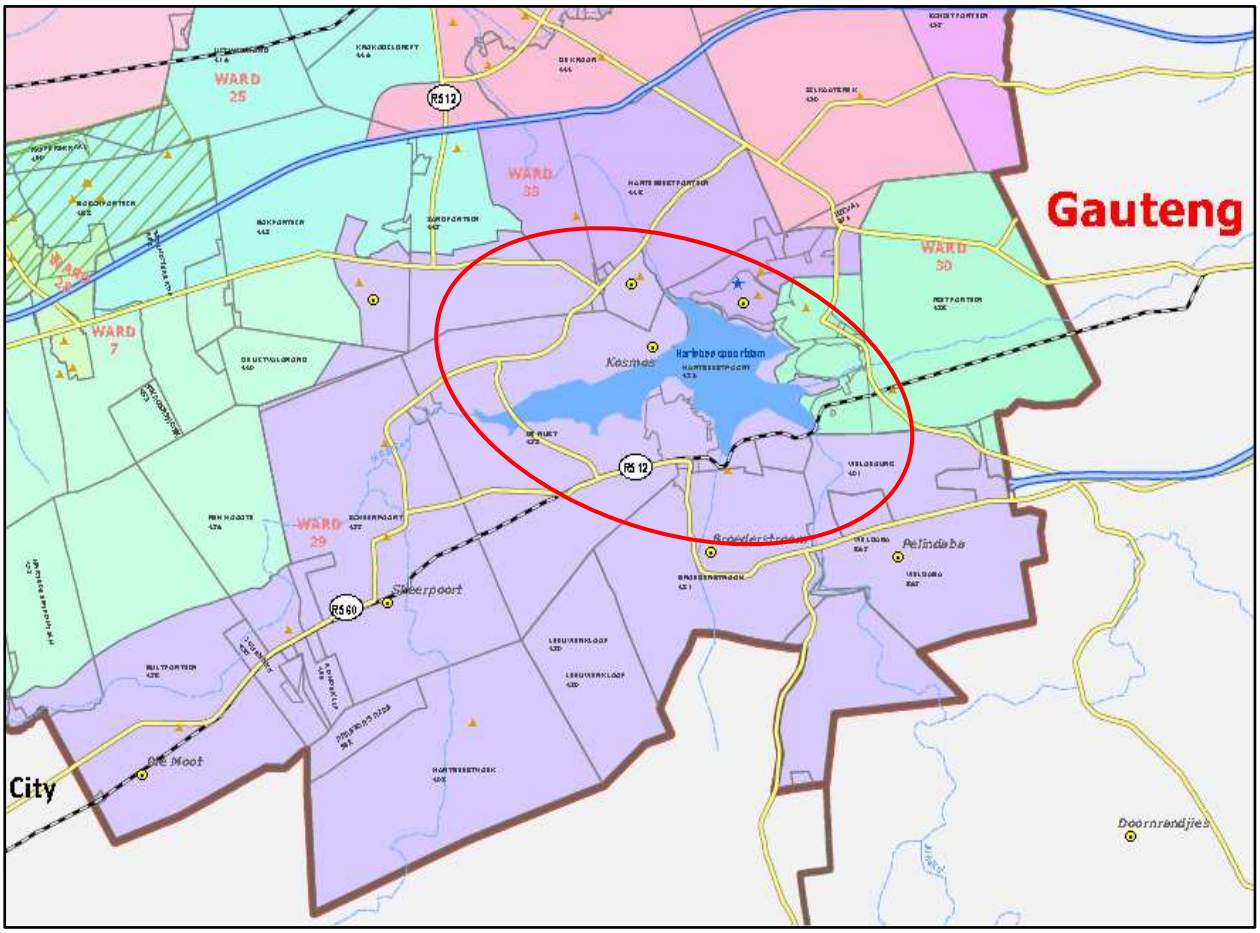

Figure 2: MLM Boundaries of Ward 29, 30 and 33 of MLM

1.6.1.1 **Population Size**

According to Statistics South Africa Census 2011(Census 2011), Hartbeespoort area has a total population of approximately 22374 with 9012 households. (Refer to **Table 2**). The population in the Hartbeespoort has been growing steadily over the past number of years the trend being the expansion of urbanisation in the form of both the conversion of farms to townships as well as densification of existing residential and small holding areas. **Figure 3** shows the sex and age distribution in the area.

Table 2: Population Size

Population Group	People	Percentage
White	13293	59.41%
Black	8549	38.21%
Coloured	256	1.14%
Indian or Asian	164	0.73%
Other	112	0.50%

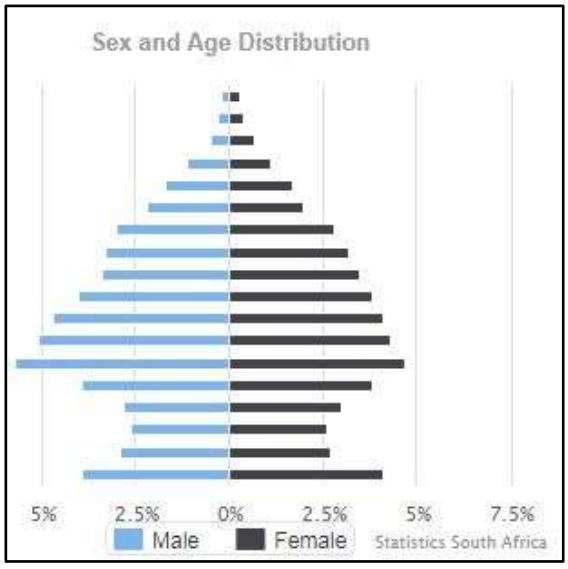

Figure 3: Age distribution at Hartbeespoort Dam

The area is dominated by Afrikaans speaking individuals and it constitute approximately 46.5%. The lowest spoken language is Xitsonga with 6.2%.

1.6.1.2 **Education Level**

According to (Census, 2011), 32.8% of the population over the age of twenty (20) have obtained higher education qualifications. The rate of no schooling in the area is 3.8% whereas the percentage of individual who obtained matric certificates is 30.3%. **Table 3** shows the education level.

Table 3: Educational Level

Education Level	Percentage
No schooling aged 20+	3,8%
Higher education aged 20 +	32,8%
Matric aged 20+	30,3%

1.6.3.1. **Cultural Heritage**

The cultural-heritage of the Hartbeespoort Dam is primarily associated with human interventions and creations from earliest times until recent past. These heritage resources are non-renewable and therefore vulnerable to environmental and social pressures (NWDACE, 2006). An inventory of these sites has been prepared by the Hartbeespoort Environment and Heritage Association.

1.6.2 Community Beneficiation

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

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

The community will benefit in amongst others the following ways:

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

CHAPTER 2: LEGISLATIVE FRAMEWORK

The RMP forms the overarching framework for the management of Hartbeespoort 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.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Once the RMP has been approved, the RMP will regulate access and use of the dam. It is important to note that users

will need to comply with other relevant legislation.

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

XVI. **Public Finance Management Act (PFMA) (Act No. 29 of 1999**): Section 76 of the Act secures transparency, accountability and sound management of the revenue, expenditure, assets and liabilities of government departments. The Act promotes the objective of good financial management in order to 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:

- Broad-based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003).
- Communal Land Rights Act, 2004 (Act No.11 of 2004).
- Disaster Management Act, 2002 (Act No. 57 of 2002).
- 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).
- North West Strategic Environmental Assessment (2004).
- Occupation Health and Safety Act, 1993 (Act No. 85 of 1993).
- Policy for the small scale fisheries sector in South Africa (Department of Agriculture, Forestry and Fisheries, 2012).
- Restitution of Land Rights Act, 1994 (Act No. 22 of 1994).
- Spatial Development Framework of RLM (2005).
- State Land Disposal Act, 1961 (Act No. 48 of 1961).
- Water supply and sanitation policy (DWAF, 1994).
- South African Water Quality Guidelines for Recreational Use (DWA, 1996).
- Soil Conservation Amendment Act, 1977 (Act No. 22 of 1977).
- The National Sport and Recreation Act, 1998 (Act No. 110 of 1998).

- **Safety of Navigation:** In addition to its common-law responsibility, DWS is, in terms of the requirements described in the National Water Act, Act No 36 of 1998, amongst others, responsible for the safety of GWWs. DWS, its

delegated public sector partner, or a delegated water management institution, has therefore the responsibility to provide the required fixed and/or floating AtoN for general navigation. In addition to the DWS, Local Accountable AtoN Parties (LAAP) and other Bodies providing access to Government waterways and watercourses have a responsibility to ensure that the required fixed and/or floating AtoN are provided after obtaining the necessary support from DWS and thereafter the permission by SAMSA. In order to demarcate specific zones/areas, standardised demarcation markers are to be used in conjunction with the relevant AtoN.

- SAMSA Marine Notices and its Directive on the Standardisation of fixed and floating AtoN and Demarcation Markers on all navigable Inland Waterways in the Republic of South Africa.

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

CHAPTER 3: WHAT IS A RESOURCE MANAGEMENT PLAN

3.1. DEFINITION OF THE RMP

A Resource Management Plan (RMP) is a plan which aims to regulate access and the recreational utilisation of a water resource and the surrounding state land in ways which promote community participation and beneficiation, environmental conservation and to 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 water consumption, it is still a major water use and needs to be managed correctly to ensure increased community participation and beneficiation with minimal disturbances and environmental impacts.

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 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 recreational industry.

The existing RMP for Hartbeespoort Dam was approved in **June 2010**. However, it was not gazetted. In this regards, the resultant approved reviewed RMP will be published in the Government Gazette after the review. This will serve as a regulation in terms of Section 26 of NWA to guide the management authority in decision-making purposes as well as an awareness-building tool for staff, operators, contractors and water users.

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 Hartbeespoort Dam, as illustrated in **Table 4.**

Table 4: Trigger Factors for the Development of Hartbeespoort Dam RMP

Trigger Factors	Description
Resource Management	**Alien Invasive Species** • Hartbeespoort Dam has a problem of water hyacinth which needed to be removed. **Water Quality** • The discharge of raw sewage from sewage plants into the impoundment has reduced the water quality and increased the buildup of algae and blue green bacteria. • The occurrence of algae has resulted in the descent of the water quality and caused bad odour. • Remediation Programs had to be initiated in order to rehabilitate the dam. **Secondary Activities** • The dam is comprised of different recreational activities which needs proper management.

Trigger Factors	Description
Community Participation and Beneficiation	**Tourism** • The dam is well known as a good tourism destination in the Northwest Province. There are also various illegal commercial activities that developed around the dam.
Public Policy	**Integration of Hartbeespoort Dam in Planning Initiatives** • The Hartbeespoort Dam should be integrated in other planning initiatives and decision support tools such as Madibeng Local Municipality IDP, LED plans as well as Bojanala Platinum District Municipality Environmental Management Framework (EMF).

3.4 RMP REVIEW FRAMEWORK

According to DWAF (2006), the RMP requires 5-yearly revisions to ensure that management objectives remain relevant and management actions are continually improved, **Figure 4** shows a RMP and BP Review Framework.

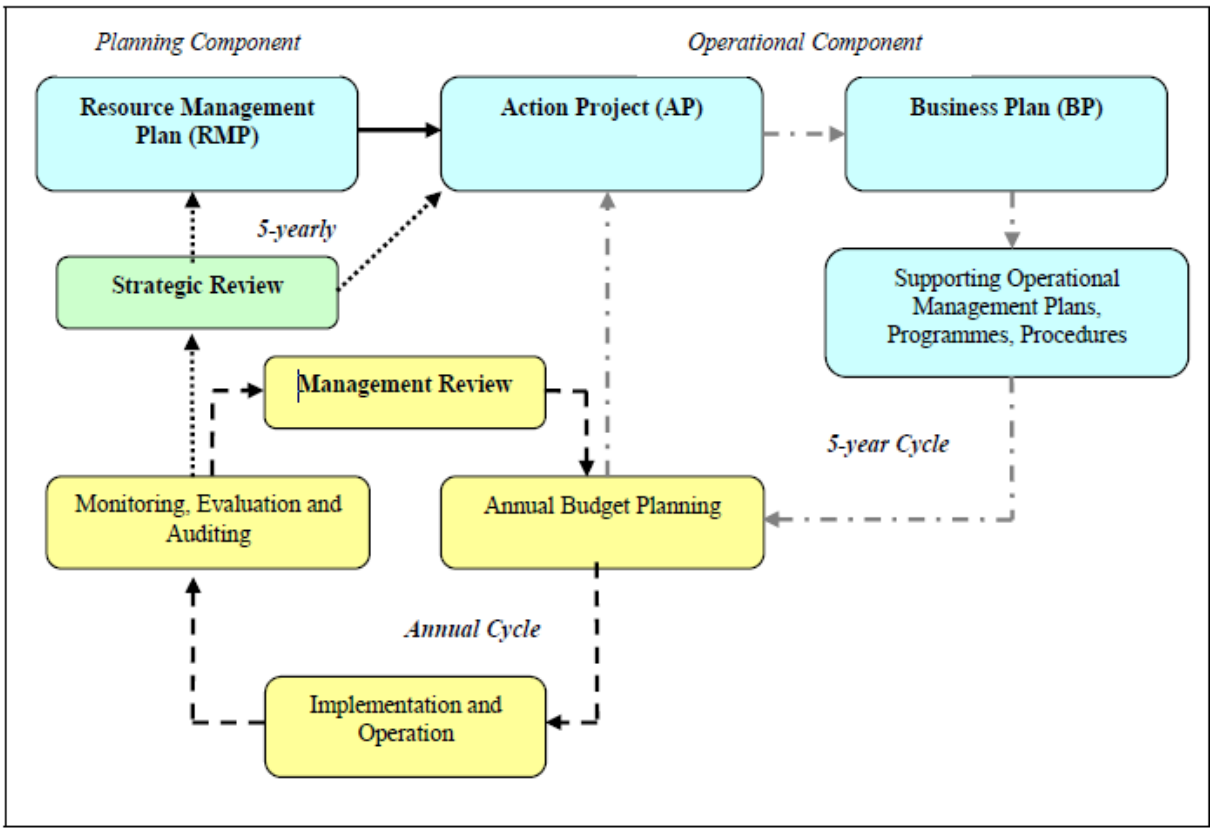

Figure 4: RMP Review Framework

3.5. RMP PLANNING STAGES

3.5.1. Desktop Study

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

3.5.2. Site Inspection

A site inspection was conducted at Hartbeespoort Dam on **26 June 2014** to gather baseline information using a checklist questionnaire. The site inspection was undertaken with the DWS delegates (DWS IEE and the Dam Manager). Photos of the study area were also taken during site inspection.

Additional background information was collated from consultation with different Stakeholders. Other Interested and Affected Parties (I&APs) were identified during site inspection through liaison with representative from the DWS Harties Metsi A Me Remediation programme.

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; and
- 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 **The Planning Phase**

Planning phase entails three (3) important aspects namely:

- Decision analysis;
- Participation planning; and
- Implementation planning.

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

3.5.3.1.1. The Role Players

It is recognized that different roles and responsibilities of the stakeholders (Authorities and I&APs), and their relationship towards each other and the steps in the planning procedure are imperative in the successful development of the RMP. It is also important that proper consultation with the public is done in order to produce a credible RMP. As such, the success of the RMP is dependent on the level of involvement of 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 continuous 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.

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 RMP process.

During this phase, a draft RMP was 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 to 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

A newspaper advert regarding the RMP project was placed in the **Kormorant Newspaper** on **24 July 2014**. The advert invited the public to attend the Public Participation Meeting. The advert was published in English. (See attached **Appendix C**). . Furthermore, an advert for the draft RMP review was advertised on **Kormorant Newspaper** on **24 November 2016**.

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. The flyers were compiled in English and were distributed on **21 July 2014**

The flyers for the draft RMP were distributed on **11 November 2016 2015** (See attached **Appendix D**).

3.5.3.4.4. 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 **21 July 2014** (see Attached **Appendix E**). Email invitations for the second meeting were sent out on **08 April 2016.** The Draft RMP review email invitation was sent on **15 November 2016.**

3.5.3.4.5. Authority Meeting

The initial Authority meeting took place on **14 August 2014** at Harties Metsi A Me Communication Centre.

The purpose of the meeting was:

- To present the RMP Review, its goal and the 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 **30 November 2016.**

3.5.3.4.6. Public Meeting

The initial Public meeting was held on **14 July 2014** at Harties Metsi A Me Communication Centre. A platform was also given to I&APs to identify other challenges and objectives that were not incorporated in the existing RMP. The follow-up public meeting was conducted on **18 April 2016.**

The draft RMP was presented to the Public on **30 November 2016.**

3.5.3.5. **Comments and Responses Register**

At the initial Stakeholder (Authorities and I&APs) meeting, it was agreed that a copy of the existing RMP and a document containing previous Issues and Responses will be circulated to all Stakeholders so that they can add their current issues and objectives that will be incorporated in the updated RMP. (See **Appendix F**)

A copy was circulated on **18 August 2014** given a period of 3 weeks to respond.

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 5**.

Table 5: RMP Planning Partners and their respective Mandates

Department/ Agency	Mandate
Madibeng Local Municipality (SLM)	The dam is within the jurisdiction of the Municipality.
Department of Agriculture, Forestry and Fisheries (DAFF)	The purpose of DAFF includes sustainable development and management of resources to maximizing the economic potential of the fisheries sector while protecting the integrity and quality of the country's aquatic ecosystems. Operation Phakisa expansion to inland dams is one of DAFF initiative aimed at unlocking economic potential of fisheries sector within the inland water. The latter programme will be used as benchmark for implementation of conservation policies while implementing job creation within fishery and fish processing market.
Department of Rural Development and Land Reform (DRDLR)	The department will assist in terms of Land Claims/Ownership issues.
Department of Environmental Affairs (DEA).	Responsible for Biodiversity Management within the dam including Invasive Alien Species.
Department of Public Works (DPW)	Has the power to regulate and control the use of state land outside the GWWs. In this regard, lease agreements or permits will be required from the department as some of the recreational activities will overlap into the state land.
Department of Transport (DoT)	Responsible for legislation, policy and regulations for all transportation in South Africa, including shipping and other transport by water or sea also inland waterways.
National Treasury (NT)	The use of State assets is governed by National Treasury Regulations, requiring DWS to plan concessions in compliance or association with National Treasury, guided by the Tourism Public Private Partnership (PPP) Toolkit of 2005.
South African Maritime Safety Authority (SAMSA)	One of SAMSA's three legislative mandates is "to ensure safety of life and property at sea". The Act enables SAMSA to administer and execute the relevant maritime legislation.

3.6. RMP DATA ANALYSIS

3.6.1. Encumbrance Survey (Phase 2)

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

The 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.

Provided below are the previous and current encumbrances:

Previous Encumbrances:

The previous encumbrances are broken down into **Biophysical, Legal** and **Social.** Refer to **Tables 6** to **8.**

Table 6: Summary of Biophysical Encumbrances

Item	Description
Water Quality	• The Crocodile River drains a large, highly industrialized and urbanized area. The return flows are largely of treated sewage and industrial effluents and subject to high levels of pollution.
Water-based use	• The Water-Use is based in terms of S21 of the National Water Act, 1998 (Act No. 36 of 1998) which includes the use of water for recreational purposes. However most of the activities tend to violate this act as well as some of the local rules of the Hartbeespoort Dam. This includes the illegal use of the dam, encroaching by building permanent structures on the flood line, illegal net fishing, operating boats without licenses and unauthorized access into the dam.

Table 7: Summary of Social Encumbrances

Item	Description
Population	• Population density around the Hartbeespoort Dam has caused illegal occupation of land next to the dam in the form of informal settlements.

Table 8: Summary of Legal Encumbrances

Item	Description
Lease Agreements	• The applicants who are in possession of expired lease agreements have raised concerns during public meetings. However it was explained that their agreements will be taken into consideration when the RMP review is completed.
Illegal Activities	• Reported illegal activities around the dam includes: net-fishing, operating boats without required licenses as well as giving access into the dam to the public by local residents. These activities are considered to be illegal at the dam and they disrupt some proceedings of the remediation programmes.

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 Hartbeespoort Dam RMP in order to establish common goals among the user groups. Some of the identified objectives were achieved whereas some of them were not achieved.

No new objectives were put forward by the Stakeholders as the previously identified objectives are still relevant. However, the action projects have been updated by including other relevant programmes or actions that will assist in achieving the identified objectives.

Furthermore, the management support has also been expanded to include other relevant Stakeholders to assist in undertaking the identified action projects.

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:

KPA 1: Resource Management

- Establishment of wash bays;
- Proper management of recreational activities to avoid conflicts at the dam;
- The water quality should be maintained, for the benefit of all people; and
- Addressing illegal land uses at the dam.

KPA 2: Resource Utilisation

- Equitable access to the dam;
- Establishment of a research centre at the dam; and
- Sufficient water supply to the Hartbeespoort Dam communities.

KPA 3: Benefit Flow Management

- Building a public swimming pool for the local community; and
- Improvement of the access roads around the dam.

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

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

"To make the Hartbeespoort Dam more accessible to all the people, while improving the state of the water quality. Making the dam and its surrounding environment more usable and improving its economic potential".

CHAPTER 4: INTERGRATED 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 5**.

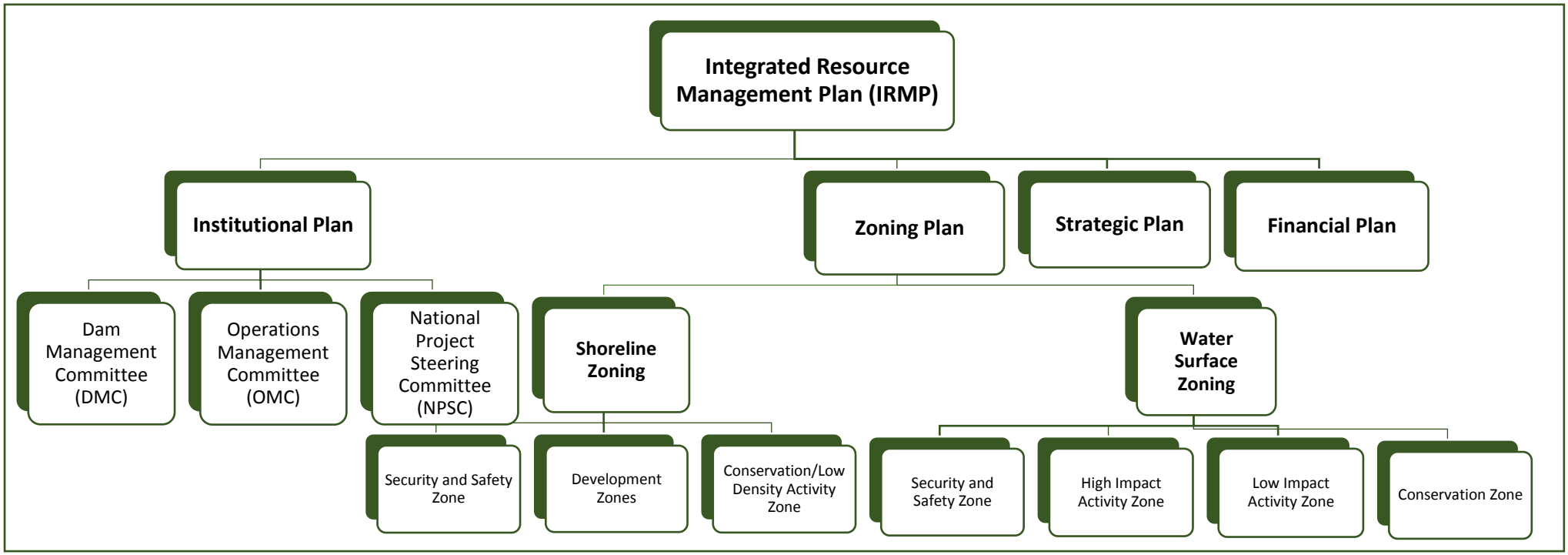

Figure 5: Integrated Resource Management Plan

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

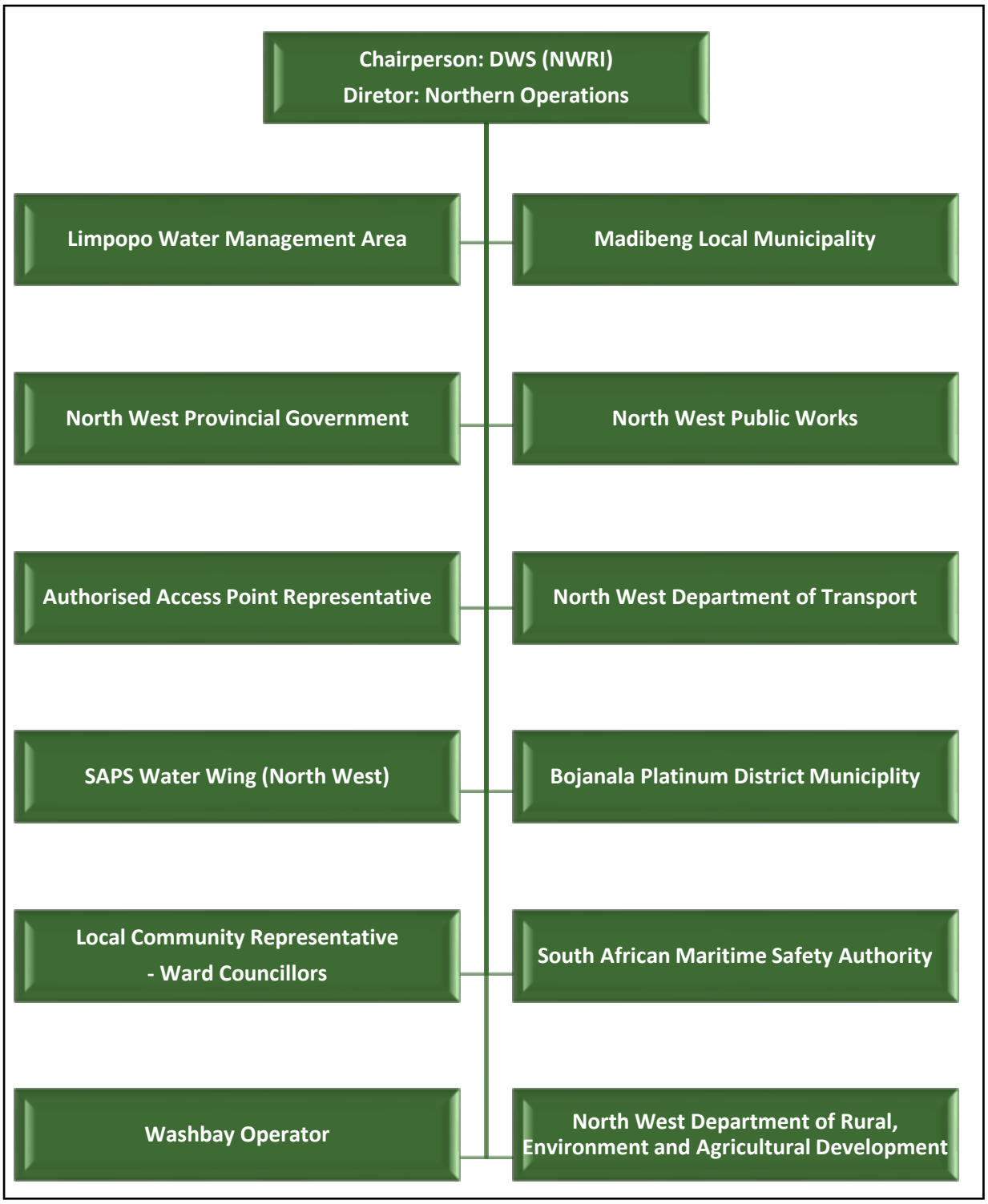

Figure 6: Proposed DMC

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 are not required for the OMC as this is an existing reporting structure. The ToR provides 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.

Recreational Use Agreements

Recreational Clubs must enter into an agreement with the DWS 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 and the recreational clubs. All agreements must be finalised within twelve (12) months of the RMP being approved.

Safety of Navigation Agreements

In addition to its common law responsibility, DWS is, in terms of the requirements described in the National Water Act, 1998 (Act No. 36 of 1998), amongst others, responsible for the safety of GWWs and watercourses, including its dams. DWS, its delegated public sector partner, or a delegated water management institution, has therefore the responsibility to provide the required fixed and/ or floating AtoN[2] for general navigation.

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

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

Access Agreements

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

All adjacent landowners and clubs must be made aware that access to the surface water as well as shoreline should only be through authorised access points. Accessing the surface water through unauthorised access points is an illegal activity unless they enter into a formal agreement with 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

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

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. All events must be managed through an event application process. The application must be made to DWS. 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 7.**

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

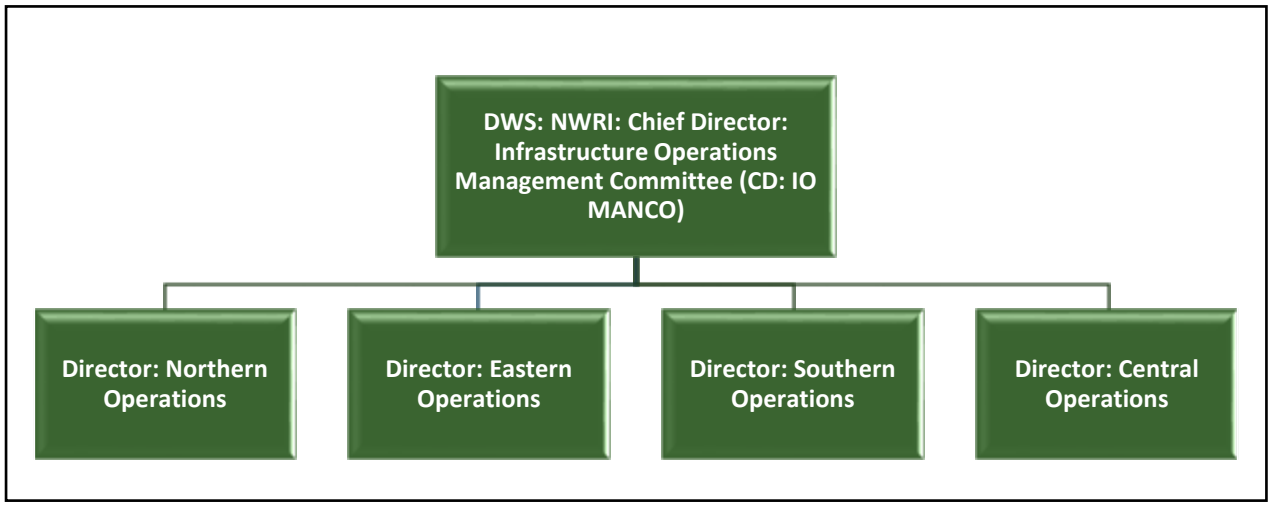

Figure 7: Existing CD: IO MANCO

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 8** illustrates a typical example of Governmental Departments that will form part of the NPSC:

Figure 8: Proposed NPSC

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

4.2 ZONING PLAN

According to DWAF (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, angling, yachting, aquaculture and small scale fisheries.

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, house boating, water skiing, and para-sailing.

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 9: Proposed Water Surface Zoning Descriptions

Zone Name	Permissible Activities	Non Permissible Activities	Recommendation
• Safety and Security Zone	• Alien invasive species clearing • Management of dam infrastructure • Management and maintenance activities by DWS and authorised personnel	• Public access	• Area should be demarcated by dermacation makers and AtoN.
• Conservation Zones	• None	• Public activities	• 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: ○ Angling ○ Swimming ○ Canoeing ○ Rowing ○ Paddle boating ○ Kayaks ○ Float tubes ○ Rafting ○ Sailing	• High impact activities such as: ○ Motorised boating ○ Water Skiing ○ House boats ○ Para-sailing ○ Kite-surfing ○ Jet skiis • Swimming	• Area should be demarcated by demarcation makers and AtoN.
• High Impact Activity Zone	• Motorised boating • Water Skiing • House boats • Para-sailing • Kite-surfing • Jet skiis	• Low impact activities such as: ○ Swimming ○ Boat angling ○ canoeing ○ Sailing	• 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.

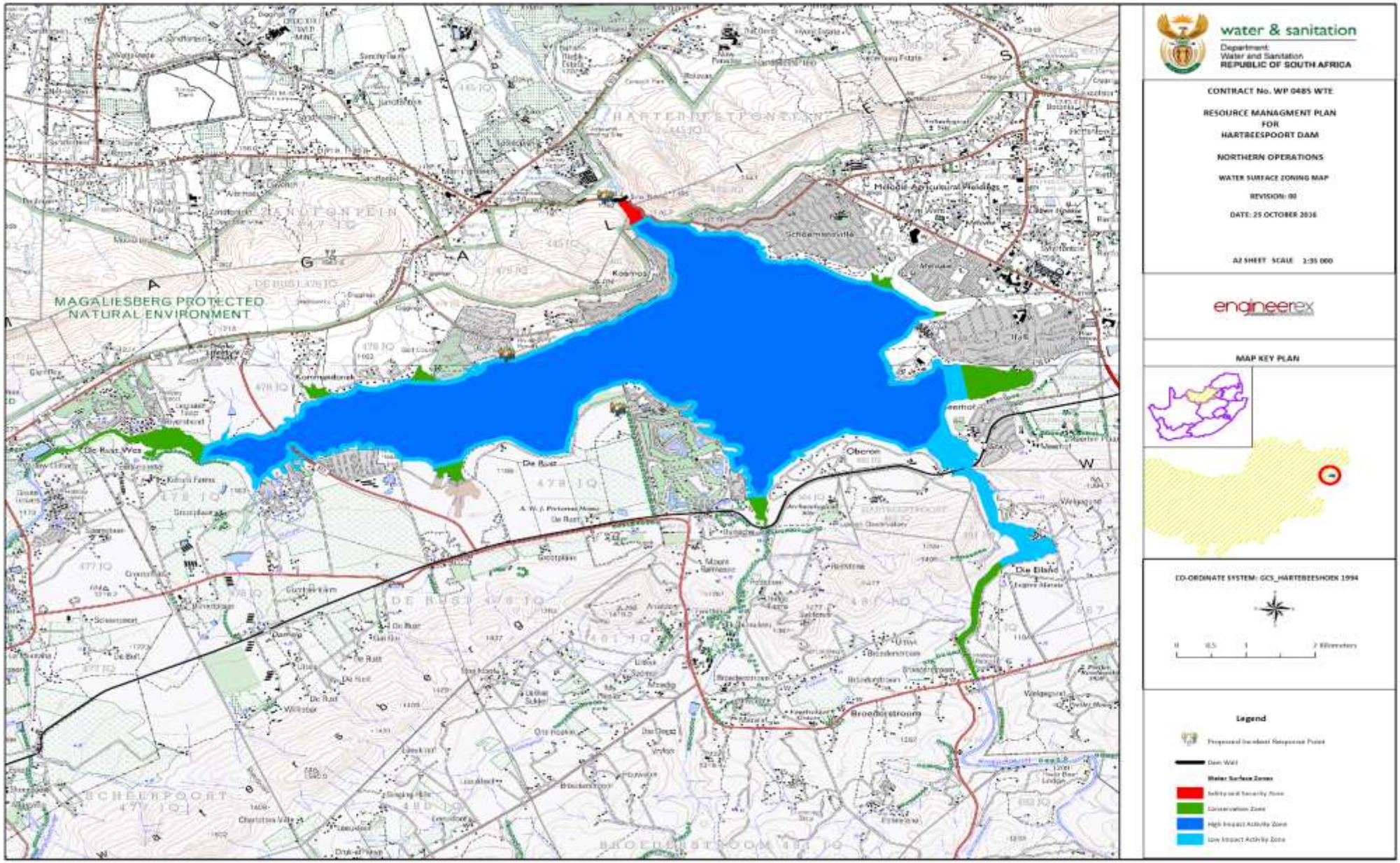

Figure 9: Proposed Water Surface Zoning Map

4.2.2 Shoreline Zoning[3]

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 include:

Safety and Security Zone (dam wall and associated DWS infrastructure):

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 and infrastructure for services.

High Density Activity Zone:

This area is reserved for large scale activities including chalets, recreational club houses, infrastructure for services, and Land Based Aquaculture.

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

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

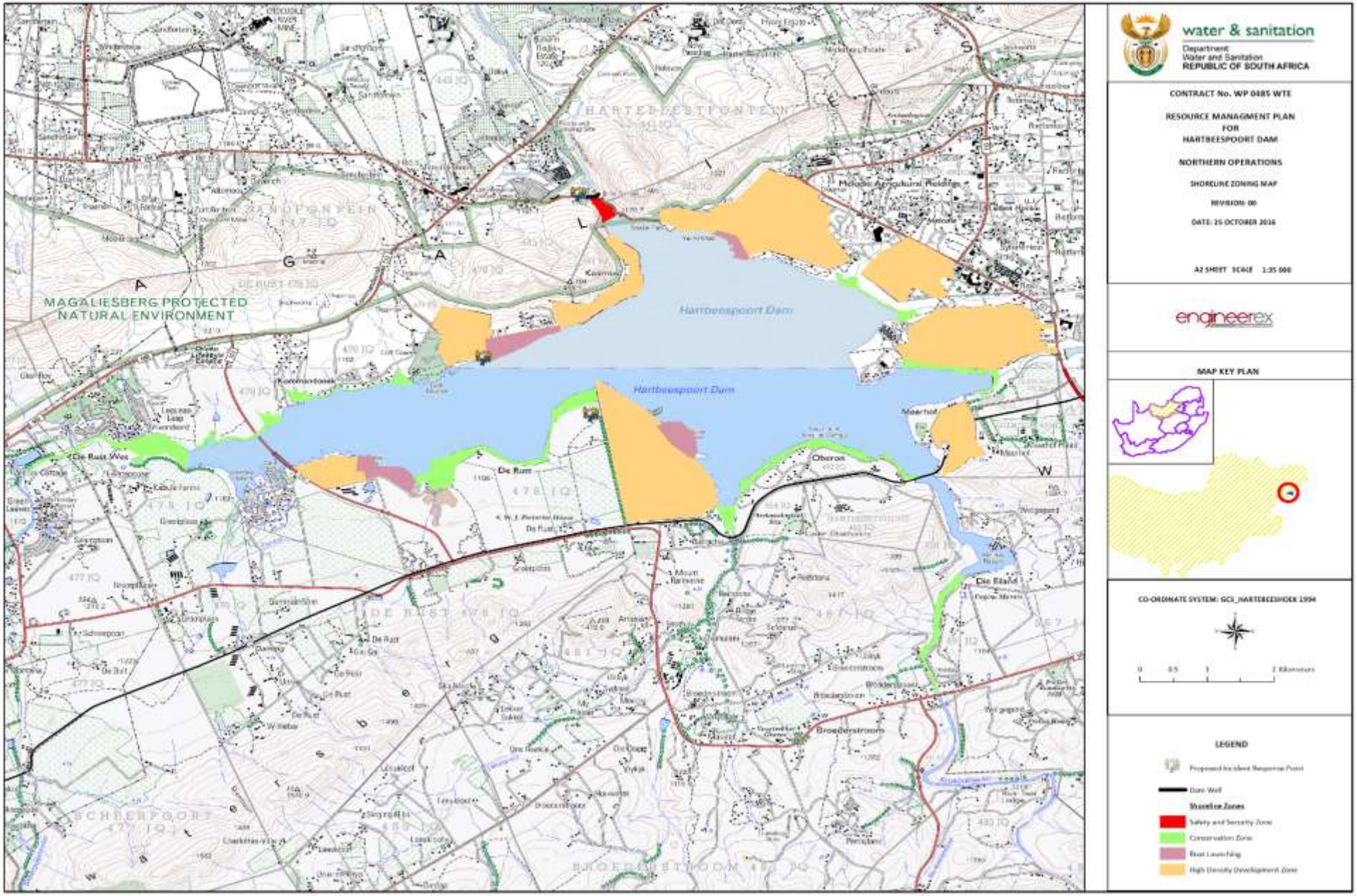

Figure 10: Proposed Shoreline Zoning Map

Table 10: 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 management activities:
	  ○ Bird watching
	  ○ Hiking
		• Development	• Permissible activities may only be permitted provided that they are approved by relevant Authorities and they are conduct as per the relevant Legislations or Regulations, such as National Hiking Way Rules.

• Medium Density Activity Zone.	• Camping
	• Day visitors
	• Picnic
	• Shoreline fishing
	• Allowed facilities:
	  ○ Braai facilities
	  ○ Ablution facilities
		• Accommodation facilities such as:
		  ○ Chalets
		  ○ Recreational club houses
			• 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 recreational activities.
			• All developments must be approved by DWS.
			• No private slipways to be built without approval from DWS.

• High Density Activity Zone.	• Recreational club house	• Picnic • Hiking	• The management of this area should be submitted for PPP in terms of National Treasury. • Requirements of NWA and NEMA must be taken into account in all recreational activities. • All developments must be approved by DWS. • No private slipways to be built without approval from DWS.
• Community Resource Zone	• Subsistence fishing • Access to the water resource by private land owners on the eastern side of the dam.	• Chalets • Recreational club houses • Braai facilities • Camping • Non-motorised vessels.	• No private slipways to be built without approval from DWS. • Requirements of NWA must be taken into account in all recreational activities.

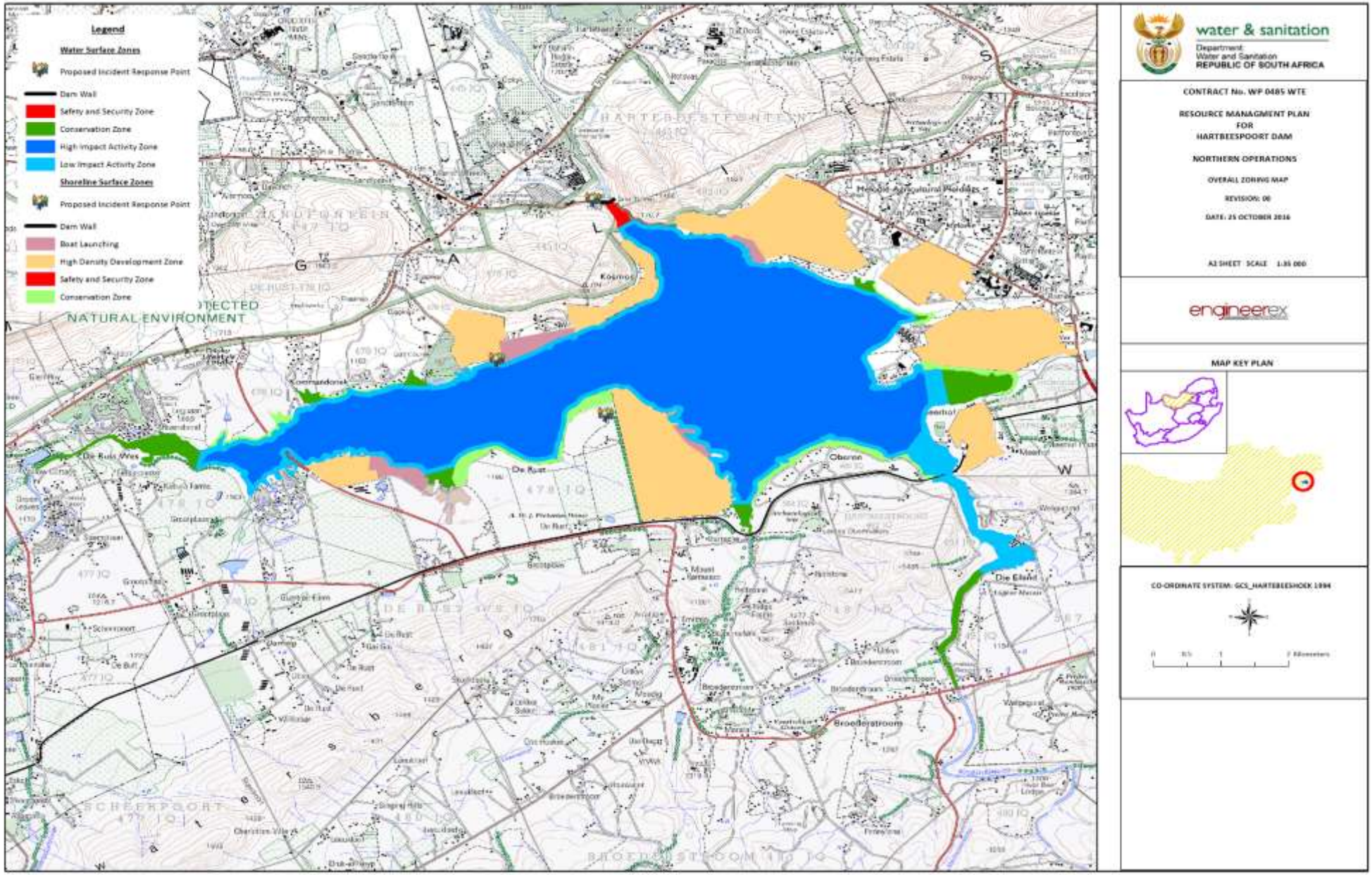

Figure 11: Proposed Overall Zoning Map

4.2.3 Carrying Capacity

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 Hartbeespoort 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.

Physical Carrying Capacity (PCC)

PCC refers to the maximum number of users that can physically fit into or onto a defined water resource, over a particular time.

Formula: PCC = A x U/a x Rf

Where:

- **A** = Available Surface area for public use
- **U/a** = Area required per user
- **Rf** = Rotation factor (number of visits/day)

A is calculated as the area of the water surface available for public use: **2062.8 Ha**

The **U/a** is assumed to be the average which was calculated as 1 craft/4.25 ha. And again the rotation factor (Rf) is assumed as 1 visit per day.

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

Craft	U/A (ha/craft)
Craft	**U/A (ha/craft)**
Power boats	5.0
Angling	3.0
Sailing	5.0
House Boat	4.0
Average	**4.25**

Based on the table above, the average hectare per user is 4.25 ha (42500 m^2), the value of 6 ha (60 000 M^2) can be acceptable area per user. This has been chosen in order to ensure that the dam is not overcrowded, as such impacting on the sense of the area.

Therefore: **PCC** = A x U/a x Rf
= 2062.8 ha x (1 craft/6 ha) x 1
= 344 crafts

Real Carrying Capacity (RCC)

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

- Safety Areas/ No go Zones **(281.20 ha)**

RCC for Hartbeespoort Dam: **RCC** = **PCC** x (100 – Cf1) % x (100 – Cf2) % x (100 – Cfn) %

Where:
Cf = a corrective factor expressed as a percentage.
The RCC takes into account factors that limit recreation use (craft based) of the dam. For Hartbeespoort Dam these factors includes sensitive areas, such as conservation areas and safety zones (**281.20 ha**).
These factors accounts for 281.20 ha, which is 13.6%
RCC = PCC x (100 – Cf1) % x (100 – Cf2) % x … (100 – Cfn) %
= 344 x (100 –13.6) %/100
= 297 Crafts

Effective Carrying Capacity (ECC)
Effective Carrying Capacity is the maximum number of visitors that a site can sustain, given the management capacity available. Given that Hartbeespoort Dam has no institutional structure in place, the effective carrying capacity is thus estimated to be 0. Once a management system and details for infrastructure capacity is in place, the ECC can be recalculated.

What must be emphasised is that the carrying capacity of 297 Crafts on the dam is very large and thus the management budget and staff must be clarified and formalised before large scale recreational endeavours are promoted. As discussed in the section above, formalised institutional arrangements must be in place before there is a planned increase in tourism and recreational use.

4.3 STRATEGIC PLAN

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

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

In **Tables 11 – 13**, the Strategic Plan on how to achieve the identified objectives identified regarding the dam is outlined:

Table 11: Strategic Plan for KPA 1: Resource Management

KPA 1: Resource Management			
Objectives (what do we want)	**Motivation (why do we want to achieve this)**	**Action Projects (how do we achieve this)**	**Management and support (who should be involved)**
Access to the Dam • Equitable access to the dam.	• This objective forms part of the RMP general process triggers.	• Regulations can be used to promote equitable access to the dam.	• DWS, DPW and other governmental departments should work together for a common goal of ensuring equitable access to the dam.
Water Supply • Sufficient water supply to the Hartbeespoort Dam communities.	• When the water level of the dam is lower, the water supply around the Hartbeespoort Dam becomes negatively affected.	• Frequent monitoring of the water supply should be done around the dam. This will detect shortages before they become worse.	• DWS, Madibeng Local Municipality, local residents of Hartbeespoort should manage the water supply at the area. All the weak links should be addressed as soon as they are found.
Research Centre • Establishment of a research Centre at the dam.	• The dam has had a lot of research done on it, some of it is still on-going. The establishment of a research center will give researches and other students a head start. Information that is readily available should be kept in this center.	• Feasibility studies will be required to motivate the viability and possibility of developing this establishment.	• DWS, DPW, DEA, NWPG, Universities and other entities should come together to achieve this objective.

Table 12: Strategic Plan for KPA 2: Resource Utilisation

KPA 2: Resource Utilisation			
Objective (what do we want)	**Motivation (why do we want this)**	**Action Projects (how do we achieve this)**	**Management and support (who should be involved)**
Wash bays • Establishment of wash bays.	• Boats that are used in more dams must always be washed at a wash bay in order to wash away all traces of alien invasive species. Boats that are only used in Hartbeespoort Dam should go through a wash bay at least once every two (2) months.	• Studies should be conducted on the viability and accessibility of a wash bay at the dam. • The wash bay should be situated within the DWS purchase boundary to avoid conflict with private land owners. • Specific areas should be allocated for wash bays around the dam.	• SAMSA, DWS, DEA, local community should have an agreement on where the wash bay should be located. The wash bay should be convenient for all users to access.

KPA 2: Resource Utilisation			
Objective (what do we want)	**Motivation (why do we want this)**	**Action Projects (how do we achieve this)**	**Management and support (who should be involved)**
Management of Recreational activities • Proper management of recreational activities to avoid conflicts at the dam.	• The RMP review has a zoning map which shows how recreational activities should be demarcated in the dam. This plan ensures that users do not have conflicts.	• The institutional structure that accompanies the RMP should be functional and work together in managing secondary activities at the dam. • The information sign at the dam wall should be maintained and kept up to date.	• DWS regulations and local rules should be enforced so that conflicts are avoided at all times.
Water Quality • The water quality should be maintained, for the benefit of all people.	• The dam has been known to be hypertrophic. The state of the water quality is not conducive for recreational activities. Various methods of remediation have been conducted at the dam and they are currently in place. As part of the RMP, water quality should be taken into consideration whenever the secondary activities are to be undertaken at the dam.	• Harties Metsi a Me is one of the remediation programmes aiming at improving the state of the water quality of the dam. Remediation programmes requires financial support in order to be fully functional.	• DWS Resource quality section ensures constant monitoring of the water quality. The discharge of raw sewage into the dam should be prevented at all times.
Illegal Activities • Addressing illegal land uses at the dam.	• During the stakeholder engagements, the local community mentioned the existence of illegal activities at the dam, these includes amongst others net fishing, DWS land encroachment etc. these issues affect the use of the dam.	• Community policing forums, neighborhood watch and other initiatives should be used to monitor if illegal activities are taking place at the dam.	• SAMSA, DWS, SAPS water wing, DEA and the RMP institutional structures can work together to prevent the illegal activities at the dam.

Table 13: Benefit Flow Management Strategic Plan

KPA 3: Benefit Flow Management			
Objective (what do we want)	**Motivation (why do we want this)**	**Action Projects (how do we achieve this)**	**Management and support (who should be involved)**
Access Roads • Improvement of the access roads around the dam.	• Some roads around the dam are no longer in a good state and they need improvement. Local businesses will also benefit from it because they will be easily accessible.	• The process of improving the roads has currently been started.	• SANRAL, DPW are working together in the process of improving the road conditions.

4.4 FINANCIAL PLAN

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

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

The information acquired from the 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 Hartbeespoort 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 12** shows the RMP & BP review framework.

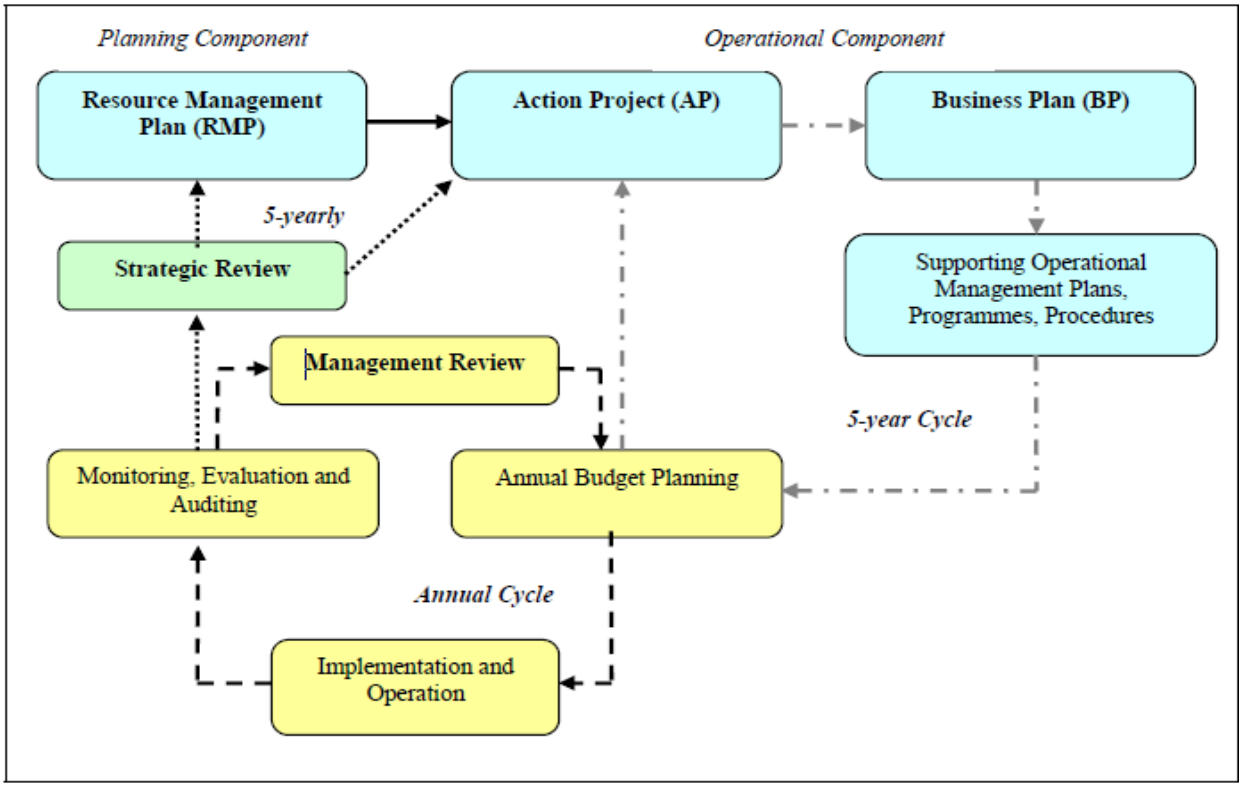

Figure 12: RMP and BP Review Framework

CONCLUSIONS

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

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

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 Hartbeespoort Dam, a BP has been developed to describe a manner in which the potential recreational activities are to be financially resourced.

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