Department of Water and Sanitation

NATIONAL WATER RESOURCE INFRASTRUCTURE (NWRI)

Resource Management Plan
DORINGRIVIER DAM

REPORT – Volume 4 of 5 | **September 2018**

WATER IS LIFE - SANITATION IS DIGNITY

water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

2030 NDP

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- Department of Water and Sanitation;
- Eastern Cape Department of Transport: Maritime Safety;
- Department of Rural Development and Agrarian Reform;
- Department of Economic Development, Environmental Affairs and Tourism;
- Emalahleni Local Municipality;
- Chris Hani District Municipality;
- Cooperative Governance and Traditional Affairs;
- Ward Councillor; and
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Acknowledgement is also extended to all other stakeholders who attended and participated in the various engagements during the development of this plan.

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Review Period	Month	Year				
Annual Review of Business Plan (BP)	December	2020[1]	2021	2022	2023	2024
Five (5) Yearly Review of Resource Management Plan (RMP)	December	2024				

[1]The implementation of the RMP and BP requires one financial year planning ahead.

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AMENDMENTS PAGE

Revision No	Description	Date
1	Draft RMP for DWS Review	29/11/2017
2	Draft RMP for DWS Review	14/02/2018
3	Draft RMP for DWS Review	20/02/2018
4	Draft RMP for Public Review	20/02/2018
5	Final Draft RMP for DWS Approval	28/03/2018
6	Final RMP Report for DWS Sign Off	21/09/2018

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LIST OF ACRONYMS

ADU	Animal Demographic Unit
AtoN	Aids to Navigation
BBBEE	Broad Based Black Economic Empowerment
BID	Background Information Document
BP	Business Plan
CATHSSETA	Culture, Arts, Tourism, Hospitality, Sports Sector, Education and Training Authority
CD: IO MANCO	Chief Directorate: Infrastructure Operations Management Committee
CHDM	Chris Hani District Municipality
CIWSP	Cooperative Inland Waterways Safety Programme
CoGTA	Cooperative Governance and Traditional Affairs
CPSI	Centre for Public Service Innovation
DAFF	Department of Agriculture, Forestry and Fisheries
DALA	Department of Agriculture and Land Affairs
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 Sports and Recreation
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
ECC	Effective Carrying Capacity
EIA	Environmental Impact Assessment
ELM	Emalahleni Local Municipality
FP	Financial Plan
FSL	Full Supply Level
GIAMA	Government Immovable Asset Management Act, 2007 (Act No.19 of 2007)
GP	Guideline Programme
GPS	Global Positioning System
GWWs	Government Waterworks
I&APs	Interested and Affected Parties
IA	Implementing Agency
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IDP	Integrated Development Plan
IEE	Integrated Environmental Engineering
IRMP	Integrated Resource Management Planning
KPA	Key Performance Areas
LAAP	Local Accountable Aton Parties
MOA	Memorandum of Agreement
NDT	National Department of Tourism
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management Biodiversity Act, 2004 (Act No.10 of 2004)
NEMPAA	National Environmental Management Protected Areas Act, 2003 (Act No.56 of 2003)
NPSC	National Project Steering Committee
NT	National Treasury

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NWA	National Water Act, 1998 (Act No. 36 of 1998)
NWRI	National Water Resource Infrastructure
OMC	Operations Management Committee
PFMA	Public Finance Management Act, 1999 (Act No. 29 of 1999)
PP	Public Participation
PPP	Public Private Partnership
RCC	Real Carrying Capacity
SAMSA	South African Maritime Safety Authority
SAPS	South African Police Service
SASCOC	South African Sports Confederations and Olympic Committee
SDF	Spatial Development Framework
SWOT	Strengths, Weaknesses, Opportunities and Threats
ToR	Terms of Reference

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EXECUTIVE SUMMARY

Purpose of the Resource Management Plan: A Resource Management Plan (RMP) provides the principles and guidance within which the dams must be used for recreational purposes. The principles and guidelines seek to promote community participation and beneficiation, environmental conservation and unlocking socio-economic opportunities associated with the recreational use of the dam. This RMP is for Doringrivier Dam, herein after referred to as the Dam, which is part of the National Water Resources Infrastructure (NWRI) Southern Operations.

This RMP was developed in accordance with the Guidelines for the Compilation of Resource Management Plans (DWAF, 2006), to attain the objectives underlying sustainability in Section 2 of the National Water Act, 1998 (Act No. 36 of 1998) [NWA], with particular relevance to Section 26 and 113 relating to the use of water and access and use of government waterworks for recreational purposes.

Mandate of Department of Water and Sanitation: The Department of Water and Sanitation (DWS), through the National Water Act (NWA), 1998 (Act No. 36 of 1998), mandates the minister as the custodian of the nation's water resources to ensure that the government waterworks (GWWs), including Doringrivier Dam, are protected, used, developed, managed and controlled in a sustainable manner, to the benefit of all, as contemplated in Section 2 of the NWA.

A number of factors have prompted the need to compile a Resource Management Plan (RMP) for GWWs which amongst others, include the following:

Resource Management:

- The water resource located within or outside a protected area and if subject to protection by legislation.
- Invasive Alien species.
- Water quality issues.

Recreational Industry Involvement:

- Conflict between users in terms of Schedule (1) of the NWA due to no management tool in place.
- Public safety with regards to the use of inland vessels.
- Uncontrolled developments within the dam basin.

Community Participation and Beneficiation:

- Challenges of communities regarding physical access and access to the water-based economy of the resource.
- Participation and beneficiation of surrounding communities remains a challenge.
- Unlocking the economic potential of the dam through the establishment of effective Public Private Partnerships (PPPs).
- Equitable and sustainable benefit flow into the community through the creation of appropriate institutional arrangements.

Public Policy:

- The water resource should be identified as a local development objective in terms of an Integrated Development Plan (IDP) or Strategic Development Framework (SDF) for the relevant local and/or district municipalities. The zoning plan for the water resource must either be developed or updated.

To assist the Minister in fulfilling this mandate, the DWS initiated and commissioned the development of the RMP for the Dam.

Description and Location of the Dam: The Dam is an earth-fill dam that impounds Doring River. The surface area of the Dam is 367 hectares with a capacity of 17.9 million cubic meters. It falls under Ward 14 and 16 of Emalahleni Local

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Municipality (ELM) within Chris Hani District Municipality (CHDM) in the Eastern Cape Province of South Africa. Its GPS coordinates are: 31°30'45.43"**S** 27°20'3.11"**E.**

Purpose of the Dam: The primary purpose of the Dam is to provide bulk raw water for domestic and industrial use. The Dam currently offers subsistence fishing.

Dam Ownership and Management: DWS owns and operates the Dam for its primary purpose. Currently there is no institutional structure managing the Dam. Through the development of the RMP process, an appropriate Implementing Agency (IA), such as ELM, shall be appointed by DWS to facilitate the implementation of the objectives and identified action projects in line with the requirements of the Doringrivier Dam RMP on behalf of DWS. The IA will sign a Memorandum of Agreement (MOA) with DWS, which shall be a legal binding document outlining the roles, responsibilities and conditions that must be followed by both parties for the management of the water resource for recreational use.

Stakeholder Engagement: The success of the development and implementation of the RMP depends on the cooperation of all stakeholders [Authorities and Interested and Affected Parties (I&APs)]. Authority and public meetings were conducted to obtain inputs (challenges and objectives) regarding the Dam. These meetings were conducted in accordance with the DWAF Guidelines for Public Participation (2001) that outlines three broad phases for public participation namely the Planning, Participation and Exit phase.

Identified Objectives and Vision: During the authority and public meetings, issues of concerns were raised from which common objectives were identified and a vision for the dam, for a period of 20 years, were formulated by the stakeholders.

The identified common objectives are:

- To fence the Dam in order to control access and ensure safety of the people and animals;
- To introduce aquaculture at the Dam;
- To promote sustainable subsistence fishing and fisheries at the Dam;
- To refurbish the boat house;
- To refurbish the Indwe Resort to host events;
- To address the issue of exclusive Dam use;
- To establish more tourism facilities such as information and resource centres;
- To construct water ponds near the Dam to supply water for irrigation and to promote farming and livestock watering; and
- To uplift the local economy and increase benefit flows to the surrounding communities through community empowerment.

A 20-year vision for the Dam, formulated from the objectives identified by stakeholders, is as follows:

"To create a safe environment at the Dam by conducting public awareness in-order to uplift community participation, beneficiation, empowerment and local economy through potential tourism developments".

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

- Refurbishment of the Indwe Resort; and
- Developments of resource centers.

The key challenges identified comprise:

- Lack of access control which leads to the issues of vandalism on the existing recreational facilities as well as the infrastructure of the Dam;
- There are reports of recurring drowning incidents of livestock and people;

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- There is an existing Indwe Resort adjacent to the Dam with a potential for promoting community beneficiation and tourist attraction;
- Livestock drink water from the Dam and graze on the banks of the Dam. There is a risk that they may drown as they try to reach for water in deeper areas;
- DWS confirmed that ELM does not have access and use agreement or lease agreements with them to utilise the Dam for recreational purposes;
- The Dam is not entirely fenced which results to inadequate access control which makes the existing recreational facilities at the Dam to be prone to vandalism;
- Lack of community beneficiation;
- Appointment of a management structure to oversee the management of recreational activities at the Dam;
- Implementation of Skills Development Programmes;
- Exclusive use of the Dam for recreational activities; and
- It is inconclusive if the water is fit for recreational use owing to the absence of test samples for all water quality constituents, DWAF (1996).

Recommendations:

This RMP recommends the following immediate actions:

- Appoint ELM as an IA to manage recreational use of the dam on behalf of DWS;
- Establishment of a Dam Management Committee (DMC) to serve as an advisory committee to the proposed IA;
- To fence the Dam in-order to control access to the Dam and ensure safety of the people and animals;
- Water quality reporting and monitoring;
- To introduce aquaculture at the Dam;
- To promote subsistence fishing and fisheries at the Dam;
- To establish more tourism facilities (B&Bs, resource centres, etc.) and recreational activities (boating, swimming and other water sports);
- To construct water ponds near the dam to supply water for irrigation and to promote farming and livestock watering; and
- Uplift the local economy and increase benefit flows to the surrounding communities through community empowerment.

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CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

The Department of Water and Sanitation (DWS), through the National Water Act (NWA), 1998 (Act No. 36 of 1998), mandates the Minister as the custodian of the nation's water resources to ensure that the government waterworks (GWWs), including the Doringrivier Dam, are protected, used, developed, managed and controlled in a sustainable manner and to the benefit of all as contemplated in Section 2 of the NWA.

A number of factors have prompted the need to compile Resource Management Plans (RMP) for GWWs, which *inter alia* include the following:

Resource Management:

- Whether the water resource is located within or outside of a protected area and if subject to protection by legislation.
- Invasive Alien species.
- Water quality issues.

Recreational Industry Involvement:

- Conflict between users in terms of Schedule (1) of the NWA due to no management tool in place.
- Public safety with regards to the use of inland vessels.
- Uncontrolled developments within dam basin.

Community Participation and Beneficiation:

- Challenges of communities regarding physical access and access to the water-based economy of the resource.
- Participation and beneficiation of surrounding communities remains a challenge.
- Unlocking the economic potential of the dam through the establishment of effective Public Private Partnerships (PPPs).
- Equitable and sustainable benefit flow into the community through the creation of appropriate institutional arrangements.

Public Policy:

- The water resource should be identified as a local development objective in terms of an Integrated Development Plan (IDP) or Strategic Development Framework (SDF) for the relevant local and/or district municipalities. The zoning plan for the water resource must either be developed or updated.

To assist the Minister in fulfilling this mandate, the DWS initiated and commissioned the development of the RMP and its Business Plan (BP) for Doringrivier Dam, hereafter referred to as the Dam.

1.2 PURPOSE OF THIS RMP

A Resource Management Plan (RMP) provides the principles and guidance within which the dams must be used for recreational purposes. The principles and guidelines seek to promote community participation and beneficiation, environmental conservation and unlocking socio-economic opportunities associated with the recreational use of the dam. This RMP is for Doringrivier Dam, herein after referred to as the Dam, which is part of the National Water Resources Infrastructure (NWRI) Southern Operations.

This RMP is developed in accordance with the Guidelines for the Compilation of Resource Management Plans (DWAF, 2006) for the Doringrivier Dam, and to attain the objectives underlying sustainability in Section 2 of the NWA, with particular relevance to Section 26 and 113 relating to the use of water and access and use of government waterworks for recreational purposes.

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1.3 DESCRIPTION AND LOCATION OF THE DAM

The Doringrivier Dam is an earth-fill dam that impounds Doring River. **Table 1** shows the Dam profile. It falls under Ward 14 and 16 of Emalahleni Local Municipality (ELM) Chris Hani District Municipality (CHDM) in the Eastern Cape Province of South Africa, as shown in **Figure 1.** Its GPS coordinates are: 31°30'45.43"**S** 27°20'3.11"**E**.

1.4 PURPOSE OF THE DAM

The primary purpose of the Dam is to provide bulk raw water for domestic and industrial use. The dam currently offers subsistence fishing.

1.5 DAM OWNERSHIP AND MANAGEMENT

DWS owns and operates the Dam for its primary use. Currently there is no institutional structure managing the Dam. Through the development of the RMP, ELM is proposed as the Implementing Agency (IA) for the management of recreational use for this Dam.

Table 1: Doringrivier Dam Profile

Doringrivier Dam Profile	
Location	South Africa
Province	Eastern Cape
District Municipality	Chris Hani
Local Municipality	Emalahleni
Nearest Town	Indwe
Completion Year	1970
GPS Coordinates	31°30"45.43'**S**27°20"3.11'E
Purpose	Domestic Supply and Industrial Use
Owner	DWS
Quartenary Catchment	S20B
Water Management Area	Mzimvubu to Tsitsikamma
River	Doring
Capacity (Mm^3)	17 933 000
Surface area (ha)	367
Wall type	Earth Fill
Wall Height (m)	27.5
Crest Length (m)	512.3

Source: Adapted from Department of Water and Sanitation (2016)

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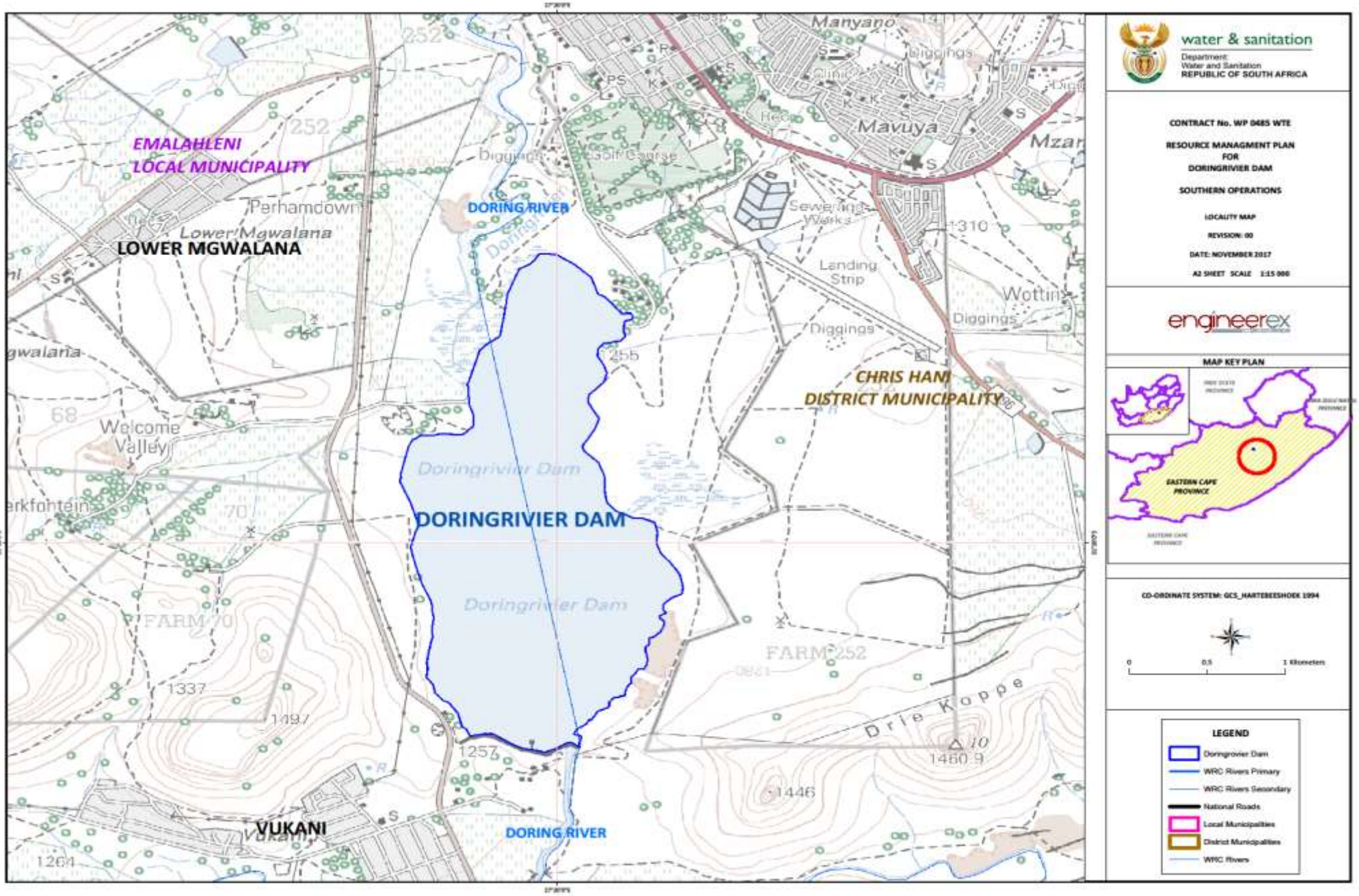

Figure 1: Locality Map for Doringrivier Dam

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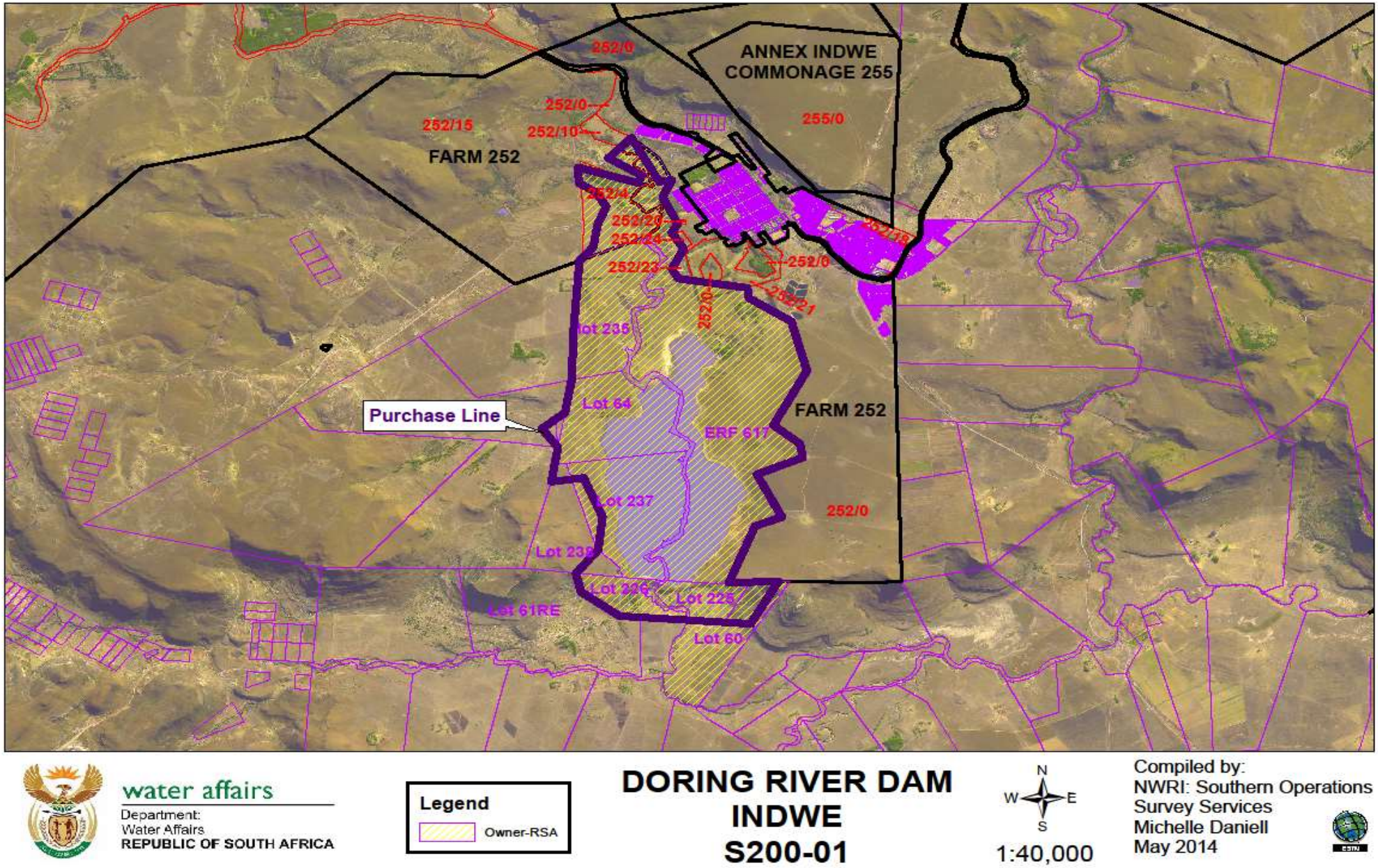

Figure 2: DWS Purchased Boundary Map for Doringrivier Dam

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1.6 LEGISLATIVE FRAMEWORK

The table below list the key data sources used to develop the RMP.

Table 2: Key Data Sources Used to Develop the RMP:

Guidelines	Description
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.
1st Draft National Inland Fisheries Policy Framework for South Africa. Department of Agriculture, Forestry and Fisheries, 2018	The Policy seeks to create an efficient regulatory regime for the inland fisheries sector in order to create an enabling environment to promote sustainable growth and transformation of the sector.
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.
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.
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.
Guidelines for Compilation of Zoning Plans for Government Waterworks (DWAF, 1999)	It provides direction on the compilation of zoning plans for government waterworks (within DWS purchased boundary).
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.
National Treasury Public Private Partnership (PPP) Toolkit for Tourism, 2005,	This toolkit assists 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.
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.

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The legislative framework applicable to the management and use of the Dam for recreational purposes is summarised in the table below.

Table 3: Legislative Framework Applicable to the Management and Use of the Dam for Recreational Purposes

Legislation: Acts, ordinances, bylaws	Relevance: Description
Constitution	**Relevance:**
Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996), Environmental Rights (Section 24)	Section 24 - Everyone has the right: 1. to an environment that is not harmful to their health or wellbeing, 2. to have an environment protected for the benefit of present and future generations, through reasonable legislative and other measures that- a. prevent pollution and ecological degradation b. promote conservation and secure ecologically sustainable development and use natural resources while promoting justifiable economic and social development.
National Legislation	**Significance to the RMP:**
Conservation of Agricultural Resource Act, 1983 (Act No. 43 of 1983) [CARA]	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.
National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA]	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.
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) [NEMBA]	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.
National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) [NEMPAA]	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.
National Environmental Management: Waste Act, 2014 (Act No. 59 of 2008) **[NEWA]**	Provides for the national domestic waste collection standards and national norms and standards for the storage of waste.

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Legislation: Acts, ordinances, bylaws	Relevance: Description
National Heritage Resources Act, 1999 (Act No. 25 of 1999) [NHRA]	To nurture and conserve their heritage resources so that they may be hand down to future generation. To introduce an integrated system for the identification, assessment and management of the heritage resources of South Africa. All heritage sites and cultural artefact must be protected and should be demarcated in the RMP zoning map.
National Water Act, 1998 (Act No. 36 of 1998) [NWA]	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.
Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003)	It aims to address inequities resulting from the systematic exclusion of black people from meaningful participation in the economy.
Communal Land Rights Act, 2004 (Act No. 11 of 2004)	To provide legal security by transferring communal land to communities or by granting comparable compensation. Based on South Africa's complex history most communities who used to reside in the vicinity of the dams have been forcefully removed. During the implementation of the RMP it is essential to comply with the act where necessary.
Government Immovable Asset Management Act, 2007 (Act No. 19 of 2007) (GIAMA)	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.
Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000)	To provide for the manner in which municipal powers and functions are exercised and performed; to provide for community participation; to establish a simple and enabling framework for the core processes of planning, performance management, resource mobilisation and organisational change which underpin the notion of developmental local government.
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

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Legislation: Acts, ordinances, bylaws	Relevance: Description
	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.
Occupational Health and Safety Amendment ActAct181 of 1993G.15369GoN 2471	It requires the employer to bring about and maintain, as far as reasonably practicable, a work environment that is safe and without risk to the health of the workers. The workers and the employer must share the responsibility for health and safety in the workplace.
Public Finance Management Act, 1999 (Act No. 29 of 1999) [PFMA]	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.
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 *inter alia* responsibility for safety and security at the events, risk categorization of events and safety certificates.
South African Maritime Safety Authority Act, 1998 (Act No. 5 of 1998) [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.
Water Services Act, 1997 (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.
Municipal Policy, By-Laws, Reports & Guidelines	**Significance to the RMP:**
Eastern Cape Inland Waters Strategy Final Draft (2017).	In developing an integrated strategy for inland waters, the Eastern Cape Department of Transport (EC DOT) seeks to facilitate greater use of its inland water infrastructure in order to contribute to socio-economic growth, thus reducing poverty and remedying the socio-economic ills that prevented communities from playing an active role in the economy in the past. Doringrivier Dam has been identified in the latter mentioned strategy.
Emalahleni Local Municipality Approved IDP (2017 – 2022).	A municipal planning approach that involves the entire municipality and its citizens in finding the best solutions to achieve good long-term development and promote tourism. ELM has identified Doringrivier Dam for the development opportunities of water sports and fishing in their approved draft IDP (2017-2022)

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CHAPTER 2: ENVIRONMENTAL ANALYSIS

2.1 BIOPHYSICAL ENVIRONMENT

2.1.1 Climate

According to ELM IDP (2017-2022), the Indwe Town which is closer to the Dam (approximately 4km) falls within the arid and semi-arid cold high lying land. Whilst the rest of ELM is situated on the arid and semi-arid moderate midlands. The area is warmer in summer during which the average temperatures ranges between 19 – 22°C and it can be cold in winter during which the average temperature ranges between 7 – 10°C. The temperatures in the Lady Frere District ranges between 18 – 22°C in summer and then drops to between 10 – 14°C in winter (ELM IDP, 2017-2022).

The ELM IDP review (2010-2011) describes the rainfall on the high plateau areas such as Indwe Town ranges between 600 – 700 mm per annum. Furthermore the rainfall distribution in ELM is poor and dry spells are a frequent occurrence. The ELM is a summer rainfall area with 70 % - 80 % of the precipitation occurring during the summer months in the form of thunderstorms. These storms are often of high intensity and are sometimes accompanied by hail. Only 20 % - 30 % of the rainfall occurs during the winter months (ELM IDP Review, 2010-2011).

2.1.2 Topography

The topography of the area within which the Dam is situated is characterized by flat or gently undulating lowland plains intersected by mountains (Mucina and Rutherford, 2006).

2.1.3 Geology and Soil

The area surrounding the Dam consists of Mudstones of the Tarkastad Subgroup in the Karoo Supergroup overlain mostly by soils of moderate depth (Mucina and Rutherford, 2006). The Geology of Emalahleni Local Municipality consists mainly of Beaufort sediments intruded by dolerite. These comprise shale, mudstone and sandstone.

2.1.4 Hydrology

Surface Water

The Dam lies within the S20B quaternary drainage which forms part of the Mzimvubu-Tsitsikamma Water Management Area (WMA) and it impounds the Doring River. **Figure 3** shows the fluctuations of water level over a year.

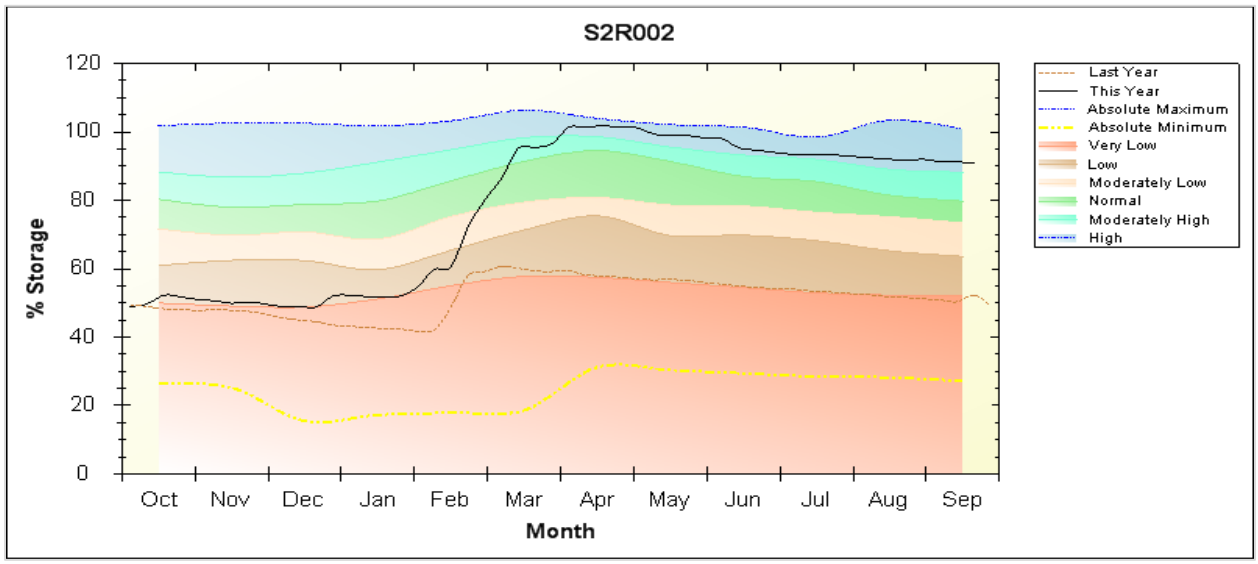

Figure 3: Fluctuations of Doringrivier Dam water level over a year
Source: DWS (2018)

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Water Quality

According DWAF (1996), the following constituents are the indicators of the water quality to determine its suitability for recreational use; pH, algae, odour, turbidity, floating matter and indicator organisms (*E.coli*, faecal coliforms, total coliforms).

At the time of developing this report, there were no indicator results available. Owing to the absence of test samples for water quality constituents in the Water Management System (WMS), it is inconclusive if the water is fit for recreational use. As such, DWS should conduct tests of those indicators including pH, algae, odour, turbidity, floating matter and indicator organisms (*E.coli*, faecal coliforms, and total coliforms) in order to make a conclusive decision on the suitability of the water for recreational use. Hence, precautionary measures should be exercised for contact sports at the Dam.

According to the DWS Capacity determination Report (2010), the siltation percentage in the Dam was 27.42% and the siltation rate per annum was 0.67%.

2.1.5 Flora

The Dam falls within the Tsomo Grassland where the vegetation is a grassland or open thornveld, often grazed short or replaced by dwarf shrub land dominated by species of Europys (Mucina and Rutherford, 2006). The shoreline vegetation around the Dam is threatened by overgrazing from the domestic livestock which may cause soil erosion. Soil erosion may lead to siltation problems in the Dam.

2.1.6 Fauna

The Dam is situated close to Indwe, Vukani, Lower and Upper Mgwalwana communities where domestic livestock such as cattle, goats and sheep graze and drink water from the Dam as shown in **Figure 4**. During seasons of draught there is a risk of livestock getting stuck into the mud while trying to reach for water in deeper parts of the Dam.

Figure 4: Domestic Livestock grazing near the banks of the Dam

2.2 BUILT ENVIRONMENT

The aspects that have been investigated consist of and are present under the following sub headings:

- Roads and land based transportation;
- Other on site facilities;
- Fencing;
- Management and operations; and
- Safety.

2.2.1 Roads and Land Based Transportation

Internal Road and Circulation: There are several internal gravel roads that leads to the Doringrivier Dam and Indwe Resort and picnic area.

Parking: There is no demarcated area for parking, however, there is sufficient undeveloped space to provide parking.

2.2.2 Other On-site Facilities

The existing facilities at the Dam includes:

- DWS offices;
- Deteriorated boat house;
- Two (2) existing slipways; and
- Indwe Resort.

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2.2.3 Fencing

The Dam is not entirely fenced (i.e. at the inlets of the Dam). As a result, livestock and some of the community members have direct access to the Dam in an uncontrolled manner. This leads to vandalism of the existing facilities at the Dam (i.e. boat house).

2.2.4 Management and Operation

The management and operation of the Dam is done by the DWS. Currently there is no institutional structure managing the Dam for recreational use. Through the development of this RMP process, ELM is proposed as an IA for the management of recreational use for this Dam.

There are currently no fixed and floating Aids to Navigation (AtoN) and demarcation markers in place. 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 the DWS and thereafter the permission by South African Maritime Safety Authority (SAMSA).

2.2.5 Safety

There is currently no specific incident management system in place to ensure that incidents are recorded and responded to in a co-ordinated manner. However, as part of the RMP process, the Incident Management Plan will be implemented to ensure that incidents are recorded and responded to.

As a result of uncontrolled access at the Dam, there are reports of recurring drowning incidents of livestock and people.

2.3 LEGAL

2.3.1 Access and Use Agreements

There is an Indwe Resort build adjacent to the Dam, the resort has a slipway built extending to the Dam. The resort is owned and operated by

2.4 SOCIO- ECONOMIC ENVIRONMENT

The purpose of assessing the socio-economic conditions is to determine matters that need to be addressed through the implementation of the RMP to uplift the standard of living of the communities. The study area falls within ELM under Ward 14 and 16 as shown in **Figure 5**. However, practically Ward 15 is the closest ward to the Dam compared to Ward 14.

A social audit was conducted for Ward 15 and 16 of ELM with the data from Stats SA Community Survey (2016) that focus on the socio-economic conditions of the area.

The socio-economic conditions within Ward 15 and 16 of ELM is summarised in the sub-sections as follows:

- Population size;
- Education level;
- Employment status;
- Monthly income;
- Tourism potential; and
- Community beneficiation.

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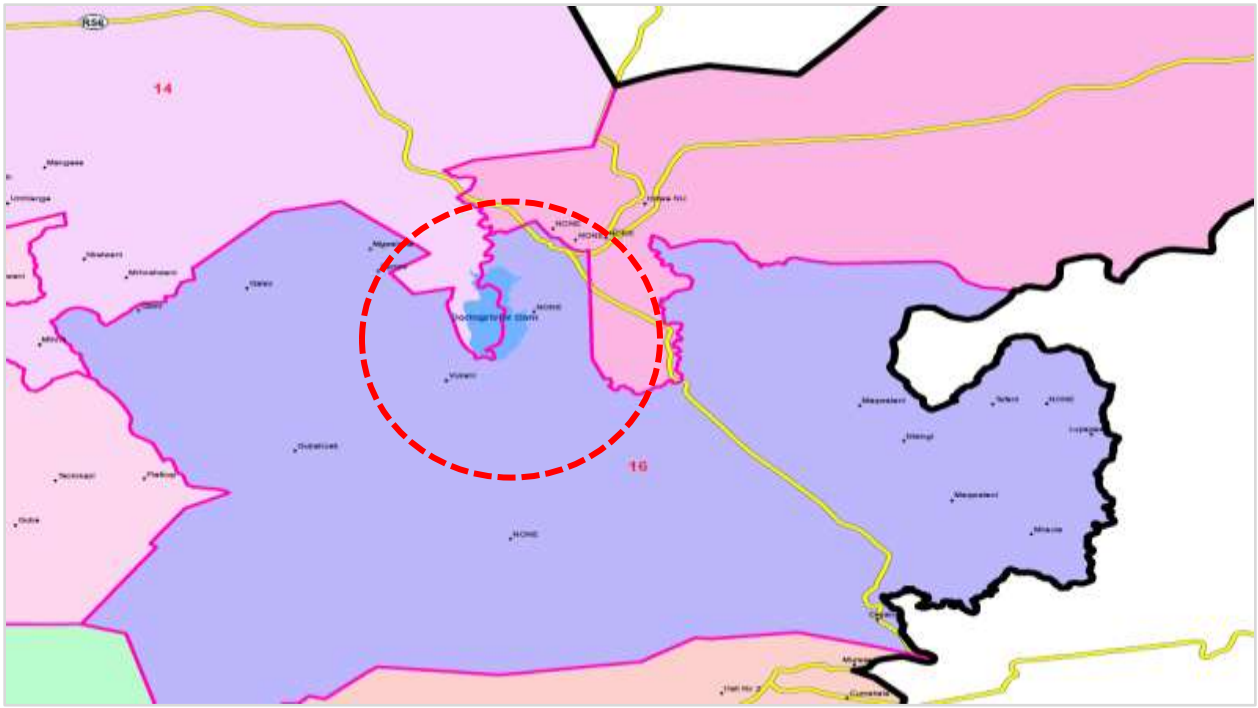

Figure 5: ELM Ward 14 and 16 Delimitation
Source: Municipal Demarcation Board (2016)

Population Size

Ward 15 has a total of 6 900 individuals and Ward 16 has 6 306 individuals representing about 5% of the ELM.

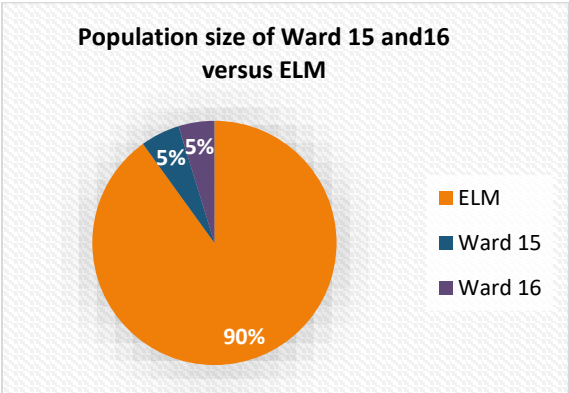

Figure 6: Population size of Ward 15 and 16 versus ELM
Source: Stats SA Community Survey (2016)

Educational Level

Seven percent (7%) of residents in Ward 15 and six percent (6%) in Ward 16 have received education up to secondary level, and only five (5%) in Ward 15 and ten percent (10%) of the population has attained higher education.

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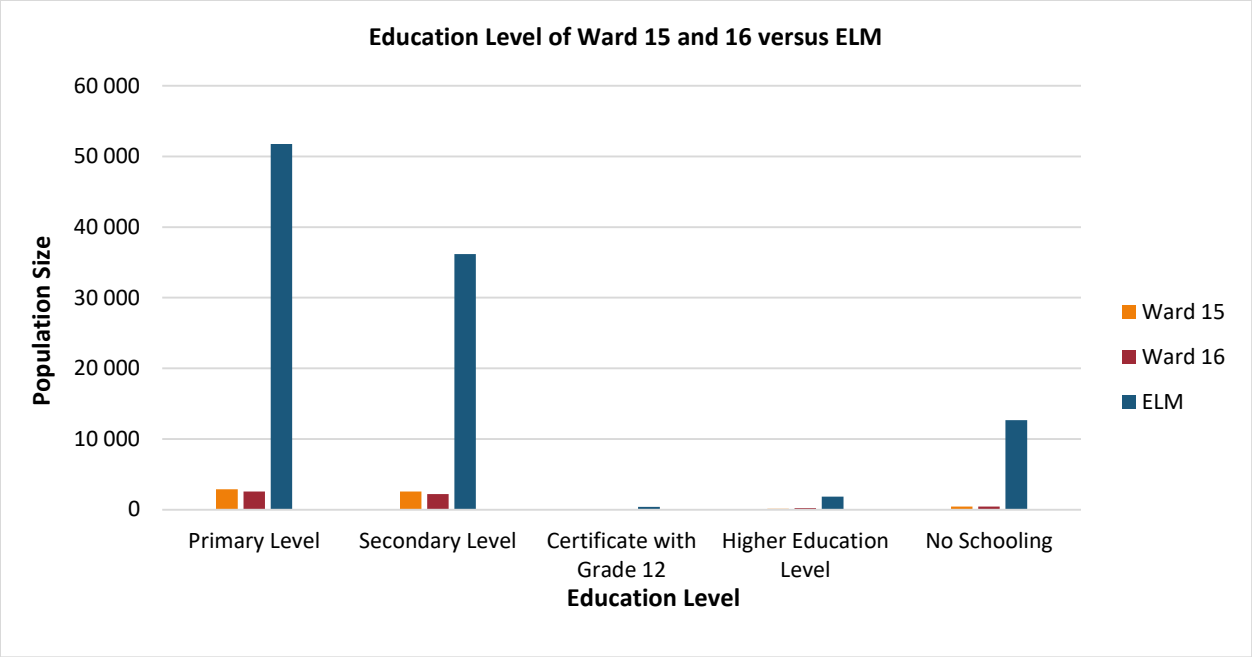

Figure 7: Education Level of Ward 15 and 16 versus ELM
Source: Stats SA Community Survey (2016)

Monthly Income

Ward 15 has 2 826 people representing 6% of the population in ELM and Ward 16 has 2 478 people representing 5% of the residents in ELM without a source of income.

The Local Economic Development and Social Development unit within ELM primary focus is to improve the business (formal and informal) and tourism sector.

The implementation of the RMP can contribute to the growth of the municipal economic sectors, and this can be in the form of fishing, finance, business services, catering and accommodation, transport and communication.

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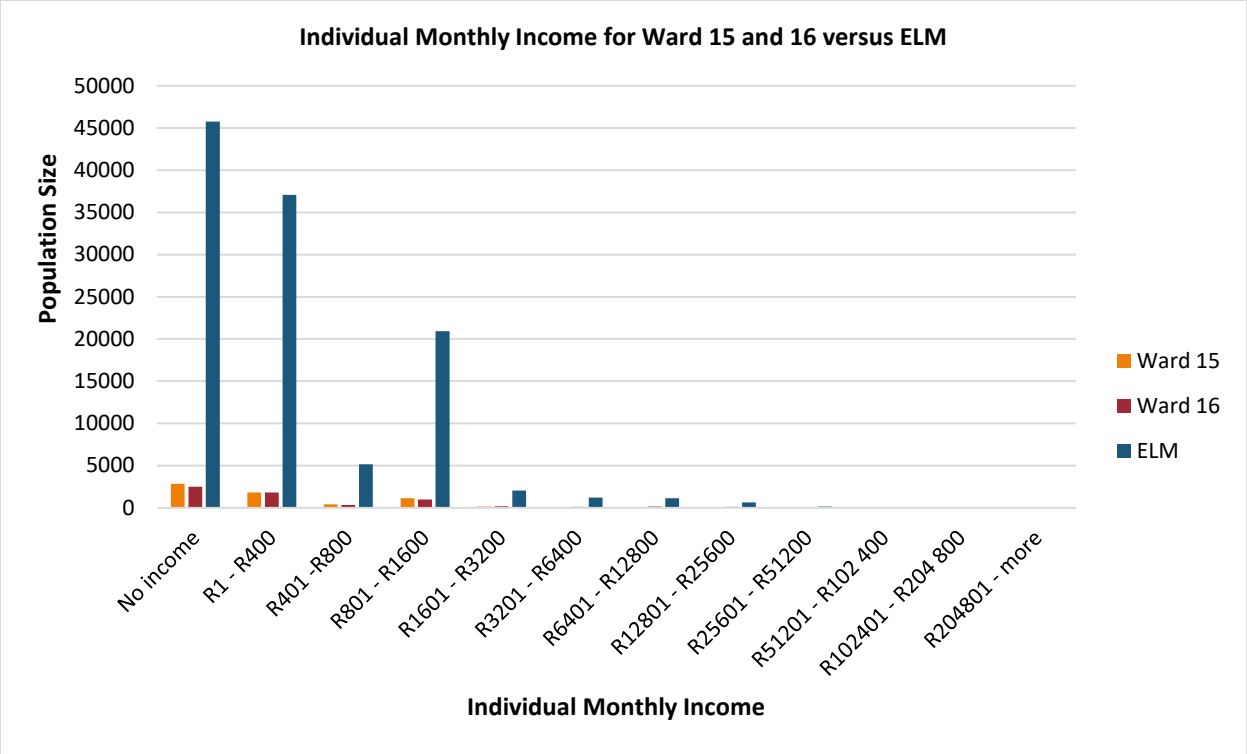

Figure 8: Individual Monthly Income for Ward 15 and 16 in ELM
Source: Stats SA Community Survey (2016)

2.4.1 Community Beneficiation

It is the DWS's policy that local communities should equally share the benefits emanating from the utilisation of the Dam for recreational purposes.

According to DWAF (2006), it is important to ensure that communities have physical access to the resource, as well as access to the water-based recreation economy. This will ensure that water resource remain protected for future generations.

Involving the communities in the utilisation and management of the Dam will ensure that communities benefit through:

- Equitable access to the Dam;
- Safety while accessing and using the Dam;
- Being given first preference when there are employment opportunities and skills development through the Public Private Partnership (PPP); and
- Participating in decision-making with respect to major developments planned or proposed for the Dam [through the Dam Management Committee (DMC)].

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CHAPTER 3: RESOURCE MANAGEMENT PLAN PROCESS

3.1 DEFINITION OF A RMP

A Resource Management Plan (RMP) is a tool which regulates access to and the recreational utilisation (secondary use) of a water resource and the surrounding state land, in ways that promote community participation and beneficiation, environmental conservation and the unlocking of socio-economic potential of the water resource.

Secondary use includes leisure, culture and religious activities. Although recreational use does not involve consumption of water, it is still a major water use and needs to be managed effectively with minimal detrimental environmental impacts.

3.2 PROCESS TRIGGERS

Process triggers are factors based on the principles underlying the integrated resource planning procedure for recreational waters.

Process triggers are used to initiate the planning and public participation process in which stakeholder and potential Interested and Affected Parties (I&AP) are given an opportunity to comment or raise issues of concern that are relevant and site specific in line with the process triggers and potential challenges presented in **Table 4.**

The resource management planning process aims to achieve a common goal, identify site specific challenges and establish a set of objectives and action projects to attain community participation and beneficiation, environmental conservation and the unlocking of socio-economic potential of the water resource.

Table 4: Summary of triggers and potential challenges for Doringrivier Dam

Trigger Factors	Potential Challenge (s)
Resource Management	**Access Control** • Lack of access control which leads to the issues of vandalism on the existing recreational facilities as well as the infrastructure of the Dam.
Resource Utilisation	**Public Safety** • There are reports of recurring drowning incidents of livestock and people.
Community participation and beneficiation	**Community Participation and Beneficiation** • Local Communities should be involved in managing and utilising the Dam for recreational purposes. This will assist in ensuring that the Dam is utilised in a sustainable manner and in a way that fulfills the interests of the community. • There is an existing Indwe Resort adjacent to the Dam.
Public Policy	**Local Planning Initiative** • The Dam has been identified as a leisure area which could be better utilised in the Integrated Development Plan (IDP) for Emalahleni Local Municipality.

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3.3 RMP DEVELOPMENT PROCESS

The RMP is developed in accordance with the RMP guideline procedure (DWAF, 2006) as illustrated in **Figure 9.**

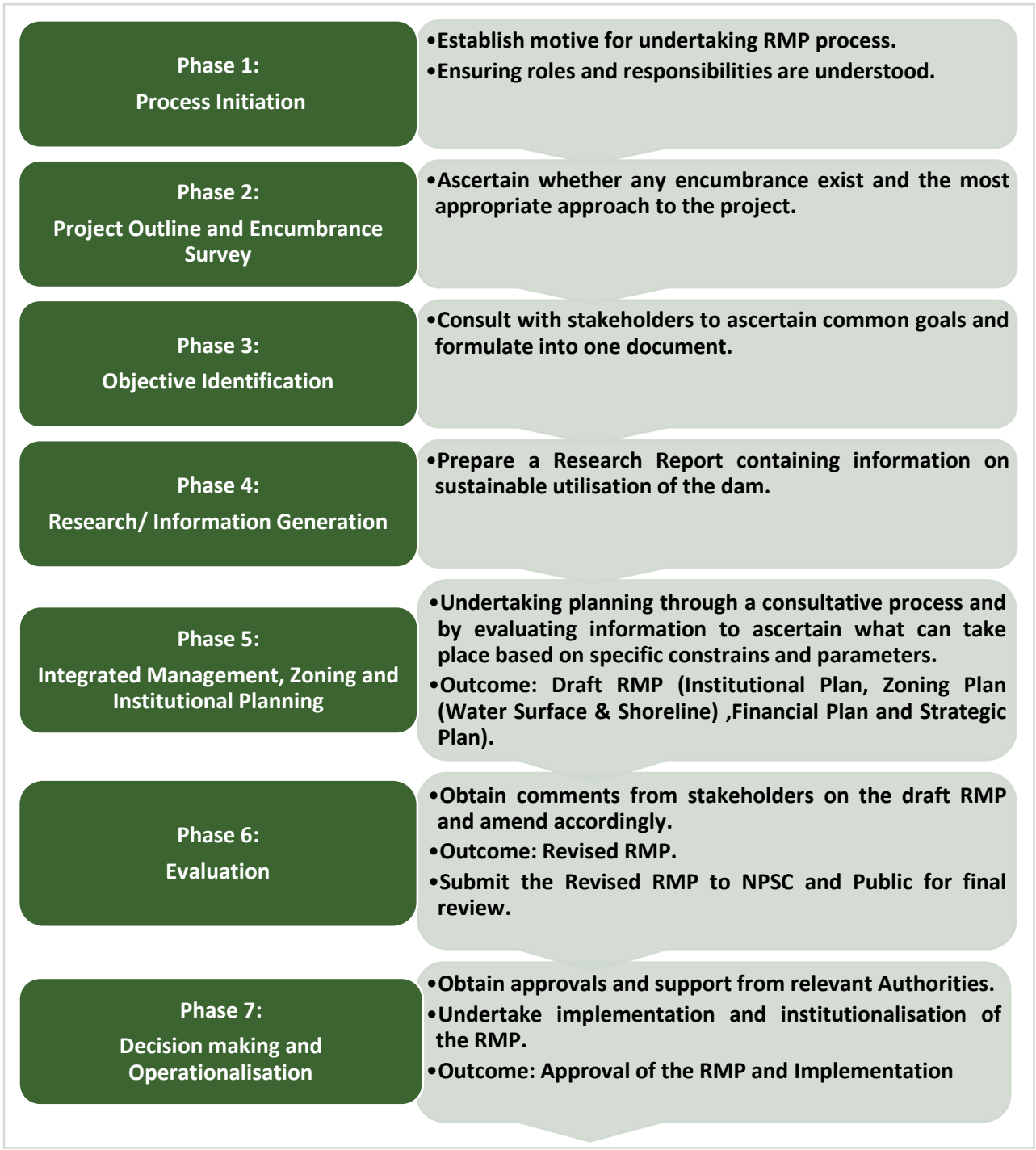

Figure 9: RMP Procedure
Source: Adapted from DWAF (2006)

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3.4 RMP PLANNING STAGES

3.4.1 Desktop Study

A desktop study was conducted with the aim of acquiring background information about the Dam, such as the review of legislative and regulatory framework, decision-support tools, specialist reports, policies and guidelines, local and district municipal plans, biodiversity sector plans and integrated water information systems.

3.4.2 Site Inspection

A site inspection was conducted with the DWS officials (DWS IEE, Southern Operations Champion and Dam Control Officer) on **25 November 2015.**

During the site inspection the following were observed: Lack of access control which leads to issues of vandalism on the existing recreational facilities as well as the infrastructure of the Dam. Additional background information was collated from consultation with different stakeholders. Some interested and affected parties were identified during site inspection through liaison

3.4.3 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 PP process was conducted in order to obtain information for **Phase 2 (Encumbrance Survey), Phase 3 (Objective Identification)** and **Phase 4 (Research/ Information Generation)** from stakeholders authorities and I&AP, which was used to complete **Phase 5 (Integrated Management, Zoning and Institutional Planning)**.

Stakeholder Database Register

Various stakeholders were identified and invited to participate in an open and consultative process. The stakeholder database was updated on a continuous basis throughout the RMP process (refer to **Appendix A**).

Advertising Process

The purpose of advertising is to notify the public about the proposed RMP project and to give the public an opportunity to register as I&APs.

The following advertising methods were used:

- **Newspaper Advert:** Initial public meetings were advertised on **Vryheid Herald** Newspaper in English on 11 **August 2017** (refer to **Appendix B**).
- **Flyers and Onsite Notices:** The Flyers and Onsite Notices were compiled in Afrikaans, English and IsiXhosa and were distributed on **09 June 2017.** For the draft RMP presentation, flyers were distributed on **20 February 2018**. (Refer to **Appendix D**).

Consultation and Engagement

Consultation with stakeholders shall continue until the approval of the RMP.

The following consultation and engagement methods were used:

- **E-mails:** Initial meeting invitations were sent to stakeholders on **09 June 2017,** notifying them about the scheduled consultative meetings. The draft RMP presentation was sent on **20 February 2018** (refer to **Appendix E**).
- **Background Information Document (BID):** The BID was sent to stakeholders *via* email with background information about the proposed RMP project (refer to **Appendix B**).
- **Authority Meeting:** The initial authority meeting was held on **27 June 2017** at the **Chris Hani District Municipality: Boardroom.** The draft RMP was

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presented on **07 March 2018** at **Chris Hani District Municipality: Boardroom**.
The purpose of the meeting was:

- To present the RMP, 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.

- **Public Meeting:** The initial public meetings were held on **29 March 2018** at **Indwe Town Hall**. The Draft RMP was presented on **09 March 2018** at **Indwe Town Hall**.
- **Comments and Responses Register:** A copy of the draft RMP report was circulated on **20 February 2018** for commenting. The initial commenting period lapsed on **08 March 2018.** On the day of the meeting, the commenting period was extended to **22 March 2018.** The comments received were documented in the Comments and Responses Register (refer to **Appendix F**).

3.4.4 Planning Partners

In order to successfully complete the RMP, it is essential that the information obtained in the previous phases is utilised as planning input.

The RMP provides for coordination between different government departments and agencies as shown in **Table 5.** This is to ensure that not only the objectives of DWS are achieved but also that the functions/ objectives of the planning partners (relating to the recreational use of the Dam) are taken into consideration when developing the RMP.

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Table 5: Planning Partners and their Respective Mandates

Department	Functions / objections
Emalahleni Local Municipality	The Dam is within the jurisdiction of the ELM which is proposed to be the IA for the Doringrivier Dam RMP on behalf of DWS. The Local Economic Development (LED) unit within Emalahleni Local Municipality primary focus is to improve *inter alia* the tourism sector. The main purpose for LED is to support economic development initiatives that will empower the community, create job opportunities, minimise income leakages and growth by building partnerships within relevant stakeholders in order to create a conducive environment for job creation.
Department of Agriculture, Forestry and Fisheries (DAFF)	The purpose of the DAFF includes sustainable development and management of resources to maximise the economic potential of the fisheries sector while protecting the integrity and quality of the country's aquatic ecosystems. Operation Phakisa's expansion to inland dams is one of the DAFF's initiatives aimed at unlocking the economic potential of the fisheries sector of inland water. The latter programme will be used as a benchmark for the implementation of conservation policies, while implementing job creation in the fishery and fish processing market.
Department of Environmental Affairs (DEA)	The 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 DEA is responsible for biodiversity management within the GWWs, including invasive alien species. In addition, the Department should ensure that Environmental Impact Assessments (EIAs) is undertaken for all activities that triggers EIA Regulations. The DEA through the WfW programme, can assist in eradicating alien invasive plants species (blue gums and parrot furthers) and alien invasive fish species.
Department of Public Works (DPW)	DPW is tasked with the function to regulate and control the use of state land outside the GWWs.
Department of Rural Development and Land Reform (DRDLR)	The Department will assist in terms of land claims/ ownership issues (i.e. land under traditional authorities). The Department are also involved in rural development by improving both economic infrastructure (such as roads) and social infrastructure (e.g. communal sanitation and non-farming activities).
Department of Transport (DoT)	Responsible for legislation, policy and regulations for all transportation in South Africa, including shipping and other transport by water, and inland waterways. For the purpose of Inland Waterways, DoT has established an agency called the South African Maritime Safety Authority (SAMSA). SAMSA has been charged with the responsibility of executing the administration of the Merchant Shipping (National Small Vessel Safety) Regulation, 2007 (as amended). The Regulations extends SAMSA's core mandate to include inland waterways accessible to the public within the Republic, to ensure boating safety on our waters.
National Treasury (NT)	The use of state assets is governed by National Treasury Regulations, requiring the DWS to plan concessions in compliance or association with the National Treasury, guided by the Tourism Public Private Partnership (PPP) Toolkit of 2005.

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Department	Functions / objections
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 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 the 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 the culture, hospitality, tourism and sport sectors.
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. Another function of the Department is to support provinces and local government in fulfilling their constitutional and legal obligations
Department of Basic Education (DBE):	The function of the DBE is to develop, maintain and support a South African school education system. In this regard, the DBE can collaborate with nature reserves that encompasses GWWs, in order to provide an opportunity for school environmental tours, as this can also have influence on career options.
Department of Sports and Recreation (DSR)	The Department is mandated to promote and develop sport and recreation activities and also to co-ordinate the relationships between the sports commission, national and recreational 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.
South African Police Service (SAPS)	The South African Police Service has been entrusted with the responsibility of creating a safe and secure environment for all people in South Africa, as well as preventing anything that may threaten the safety or security of any community.

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Department	Functions / objections
South African Sports Confederation and Olympic Committee (SASCOC)	SASCOC is mandated to promote and develop high performance in sports, as well as to act as a controlling body for sports in South Africa. It can also assist in coordinating organised events at the Dam.

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3.5 RMP DATA ANALYSIS

3.5.1 Encumbrance Survey (Phase 2)

The purpose of the encumbrance survey is to investigate/ascertain whether any encumbrances exist around the Dam and other factors that may influence the development and implementation of the RMP.

The survey also identifies the information that is required for effective decision-making regarding the RMP (DWAF, 2006).

The identified encumbrances are categorized into **Biophysical, Legal** and **Social**.

Tables 6 summarises the identified biophysical and social-cultural encumbrances/ limitations, respectively that might affect the development or implementation of the RMP for the Dam.

Table 6: Summary of Biophysical, Legal and Social Encumbrances

Item	Description
Climate	• Climate change affects the possibilities of rainfall which negatively impacts on the availability of water in the Dam. If the drought persist it will be impossible to implement the RMP for the Dam. • Activities such as camping in summer months will be subjected to good weather conditions, however thunderstorms with severe intensity accompanied by hail are experienced in the area where the Dam is located. This might negatively impact on the marketing of the dam in terms of recreation. • The dam may remain under utilised for recreational activities due to bad climatic conditions occurring in summer. • In winter people are mostly reluctant to engage in water sports due to cold temperatures.
Flora	• The shoreline vegetation around the Dam is threatened by overgrazing from the domestic livestock which may cause soil erosion. Soil erosion may lead to siltation problems in the dam.
Fauna	• Livestock drink water from the Dam and graze on the banks of the Dam. There is a risk that they may drown as they try to reach for water in deeper areas (currently the local community member raised the issue of livestock drowning during the public meetings). • There are no records of detailed fauna found in the dam.
Geology and Soil	• The ELM IDP Review (2010 -2011), describes soil erosion as a huge problem within the municipality which requires effort to address overgrazing and to rehabilitate existing dongas.
Hydrology	• According to DWS (2017), the Dam level is very low and this may prevent the implementation of potential recreational activities on the water surface by the time the RMP is approved for implementation. The demand to use water for recreational activities will depend on the dam being on full supply level.
Access and Use Agreements	• DWS confirmed that ELM does not have access and use agreement or lease agreements with them to utilise the Dam for recreational purposes.
Education Level	• In ward 15, 96 people representing 5% of the population in ELM who have furthered their studies up to higher education level. In ward 16 there are 189 people representing 10% of the residents in ELM who have received higher education level. The implication in the project is that the majority of residents in the aforementioned wards will not have received training to become active participants in the tourism sector.
Monthly Income	• A large number of the population in Ward 15 & 16 have no income which will result to a lack of community participation in the tourism developments at the Dam. • The majority of residents are living below the poverty datum line, representing a standard of living attained by a person to be deemed poor.

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3.5.2 SWOT Analysis and Objective Identification

Engineerex Pty Ltd as the process facilitator conducted the Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis to determine the **Strengths** and **Opportunities** that define the potential of the Dam whereas the challenges regarding the Dam where identified through **Weaknesses** and **Threats**. Refer to **Table 7** for the SWOT analysis.

Table 7: SWOT Analysis for Doringrivier Dam

Strengths	Weaknesses
• The scenery of the Dam is attractive. • It is easily accessible as it is located near Indwe Town. • There is an existing Indwe Resort near the Dam. • Day visits to the chalets. • The Dam is closer to a golf course. • The water yield is high.	• Unlawful water use. • Siltation visible when the water level decreases to low. • Vandalism. • Recurring drowning incidents.
Opportunities	**Threats**
• Tourism Potential. • Introduction of recreational activities such as swimming, fishing and boating. • Expand recreational activities. • Tourism development opportunity.	• Safety and security of people visiting the Dam. • Possible pollution from the coal mine closer to the Dam. • Vicinity of cemeteries and wastewater treatment works.

Key objectives were formulated from the identified **Strengths** and **Opportunities** of the Dam.

The vision and key performance areas (KPA) for the Dam for a period of 20-years was formulated from the key objectives, discussed in the paragraphs to follow.

Objective Identification (Phase 3)

The key objectives were evaluated and identified based on the following questions:

- **Objective** (What is envisaged for the Dam?)
- **Priority** (How significant is the objective?)
- **Motivation** (Why is it important to achieve this?)
- **Management support** (Who will be involved?)
- **Guidelines and Policies** (How to get there?)
- **Action Projects** (How to achieve this?).
- **Monitoring Guideline** (How will the action projects be monitored?)

The set of key objectives acknowledged were then categorised into three (3) Key Performance Areas (KPAs) as follow:

KPA 1: Resource Management

- To fence the Dam in order to control access to the Dam and ensure safety of the people and animals.

KPA 2: Resource Utilisation

- To introduce aquaculture at the Dam;
- To promote subsistence fishing and fisheries at the Dam;
- To refurbish the boat house at the Dam;

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- To refurbish the Indwe Resort so as to attract tourists to the Dam;
- To address issues of exclusive Dam use; and
- To establish more tourism facilities such as information and resource centres.

KPA 3: Benefit Flow Management

- To construct water ponds near the Dam to supply water for irrigation and to promote farming and livestock watering; and
- Uplift the Local Economy and increase Benefit Flows to the surrounding communities through community empowerment.

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

A 20 year vision for the Dam formulated from the objective identified by the stakeholder is as follow:

"To create a safe environment at the Dam by conducting public awareness in-order to uplift community participation, beneficiation, empowerment and local economy through potential tourism developments".

3.5.3 Research/ Information Generation (**Phase 4**)

The main aim of the research was to identify the Dam tourism development potential and to evaluate the practicality/ feasibility of the identified objectives.

Tourism Development Potential

According to ELM IDP (2017-2022), there are areas where Bushmen paintings exist which have the potential to be developed into tourist attractions. The municipal area has cultural groups that are performing locally, nationally and internationally, selling authentic culture of Emalahleni. The municipality has an arts and craft center that has been established for purposes of manufacturing and marketing of bead work and Xhosa traditional attire to local and national tourists. The center is located along Indwe Road in Lady Frere town.

Where the Dam is located there is an Indwe Resort with a slipway extending to the Dam from the resort. If the resort is well marketed it will bring in more day visitors to the Dam to partake in water sports and also land activities. In the past, events such as weddings were hosted at the resort and the pictures would be taken at the Dam.

There are currently no recreational activities taking place at the Doringrivier Dam, however it has a potential for fishing (subsistence and fish farming) boating, swimming activities and day visiting (braai and picnicking).

Practicability/ Feasibility of Potential Objectives:

According to the DWAF (2006), the feasibility of the proposed objectives needs to be determined prior to the RMP implementation. Based on the desktop study done for the Dam, all identified objectives are considered to be practical/ feasible during the implementation stage, others will be subjected to a feasibility study, refer to the Strategic Plan in **Section 4.3** of this RMP.

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CHAPTER 4: INTEGRATED RESOURCE MANAGEMENT PLANNING

The purpose of the Integrated Resource Management Planning (IRMP) is to evaluate the information obtained from preceding phases (Process Triggers, Encumbrance Survey, Objective Identification and Research/ Information Generation) to ascertain what could be achieved based on specific constraints and parameters of the water resource and surrounding State land.

The IRMP consists of four (4) plans namely the **Institutional Plan**, **Zoning Plan, Strategic Plan** and **Financial Plan. Figure 10** shows the plans and their components.

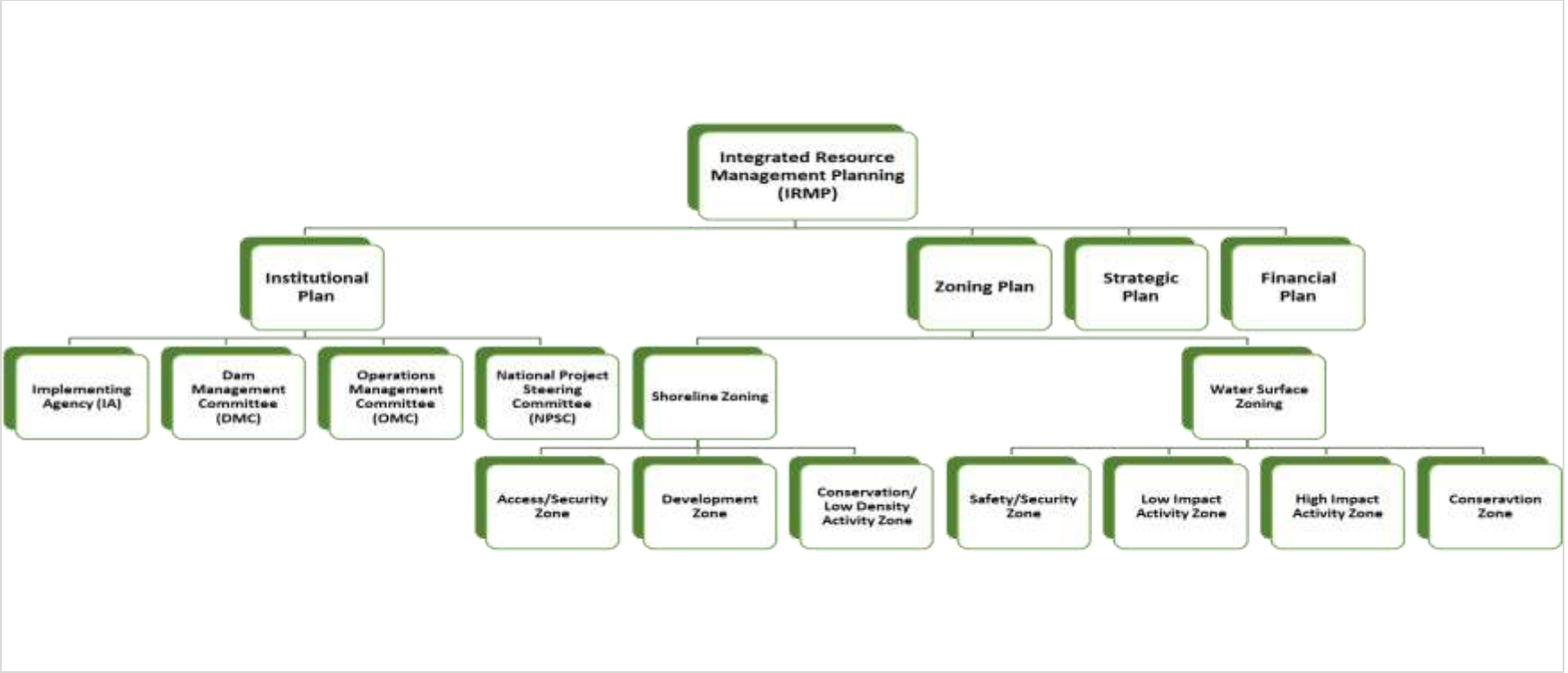

Figure 10: Integrated Resource Management Planning

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4.1 INSTITUTIONAL PLAN

The Institutional Plan provides a framework for the institutional arrangements at the Dam. The proposed management systems include four (4) committees namely; the Implementing Agency (IA), Dam Management Committee (DMC), Operations Management Committee (OMC); and National Project Steering Committee (NPSC).

The management authorities appointed by the Department at the Dam, also form part of the institutional structure.

4.1.1 Implementing Agency (IA)

The IA is an institution that implements a programme or project on behalf of DWS.

According to DWS, the minimum requirements of an IA include the following:

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

The IA shall facilitate the implementation of programmes or action projects identified in the RMP for Doringrivier Dam. The IA and DWS will sign a Memorandum of Agreement (MOA), which is a legal binding document that outlines the roles and responsibilities and conditions to be followed by both parties when entering into agreement(s) and/or when in terms of managing the Dam/ water resource for recreational use.

Some of the functions/ responsibilities of the IA include:

- Management of public access area;
- Management of recreational and tourism related activities;
- Management of agreements entered between DWS and third parties;
- Management of incident management system;
- Management of community skills and training programmes;
- Management of commercial activities (in line with Treasury Requirements); and
- Management of AtoN and demarcation markers.

4.1.2 Dam Management Committee (DMC)

The DMC comprises of user groups representatives that are interested or affected by the Dam and will assist in raising and addressing issues relating to the Dam. Any unresolved issues relating to the Dam are escalated to OMC (described in detailed in **4.1.3**). The DMC is required to meet quarterly.

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

- To give support to Implementing Agency (IA);
- To assess commercial opportunities at the Dam;
- 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 that the floating AtoN and demarcation markers are in place and setting times for use of the Dam;
- 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 11 shows the proposed parties to form part of the DMC for Doringrivier Dam.

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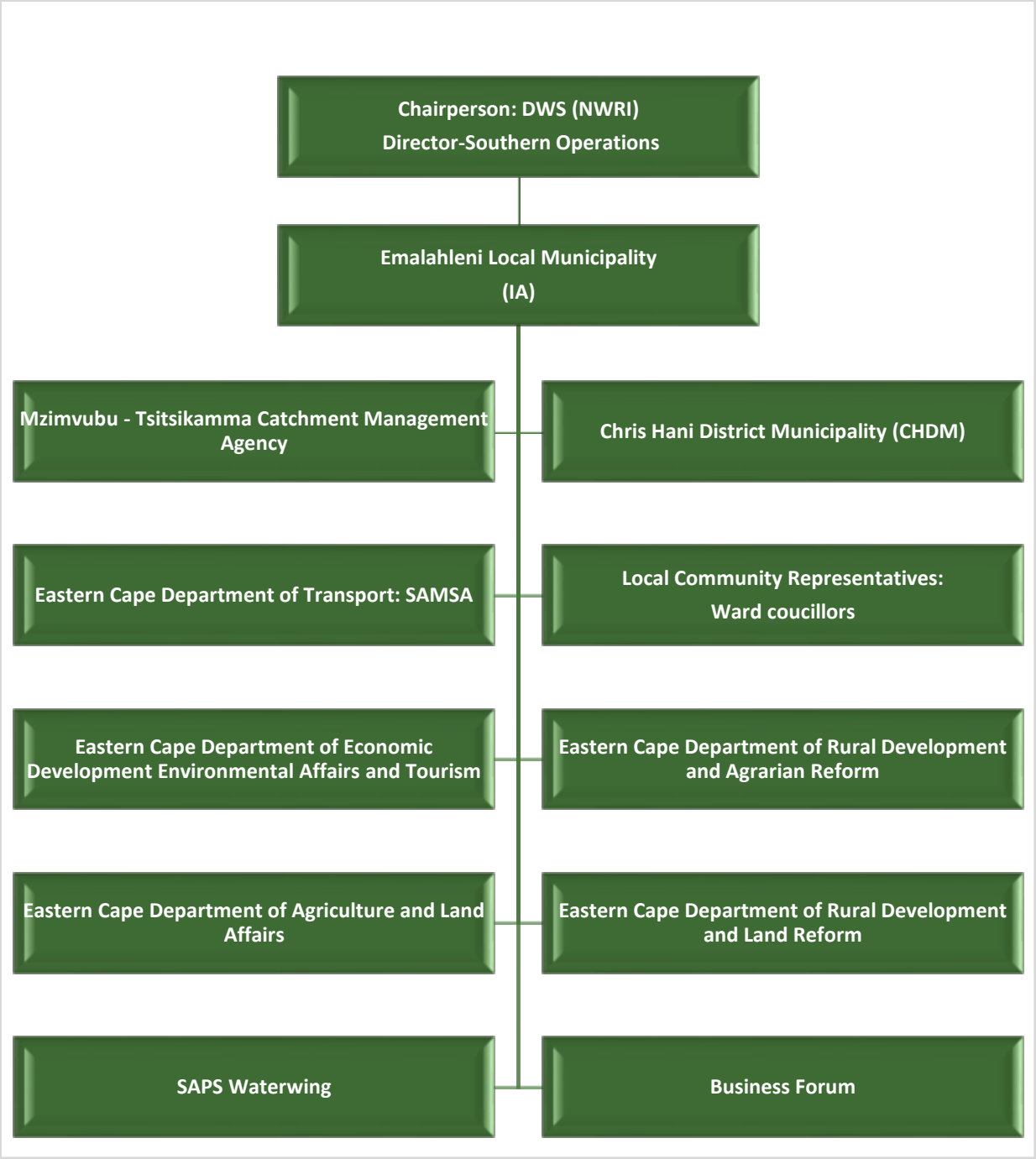

Figure 11: Proposed DMC

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Management Tools:
The DMC will have a number of management tools which will enable proper management of the Dam in line with legislative requirements. Some of the management tools includes the *Terms of Reference.*

Terms of Reference (ToR) defines the purpose and structure of the DMC and its management aspect for the implementation of the RMP. The management aspects that will be guided by the ToR includes:

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

4.1.3 Agreements and Permits

The purpose of agreements is to ensure proper use of the Dam in line with the RMP requirements and the relevant acts and regulations.

The applicable agreements for the implementation of RMP are as follows:

Memorandum of Agreement (MOA)[2]:
MOA is a legally binding document that outlines the roles, responsibilities and conditions to be followed for the management of the water resource for recreational use. An MOA will be signed in an event where the DWS is tasking another organization with its function of managing the Dam for recreational purposes.

Safety of Navigation Agreements:
The purpose of this agreement is to allow access of boating vessel to government waterworks. This agreement to be concluded between SAMSA, the DWS and other relevant parties or bodies to allow them to:

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

Access Agreements:
All access points to the Dam and surrounding State Land must be authorised. Accessing the Dam through unauthorised access points is an illegal activity unless a formal agreement with the DWS is concluded. Therefore, a formal agreement with DWS will be required for all adjacent landowners and recreational clubs that have direct access to the Dam and surrounding State Land.

A formal agreement on building, management and maintenance of the wash bay is necessary between the DWS and DEA. A wash bay must be built on State Property as part of the Centre for Inland Waterways Safety Programme (CIWSP).

Event Applications:
All events at the Dam and surrounding state land must be managed through an event application process. The events application will be submitted to DWS for approval through the IA. These applications must follow a specific template and will include amongst others the following:

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

[2] The Department of the Water and Sanitation reserves the right to appoint the Implementing Agency at their own discretion.

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- Access points to be used.

4.1.4 Operations Management Committee (OMC)

There is an existing Chief Directorate: 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 12**.

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

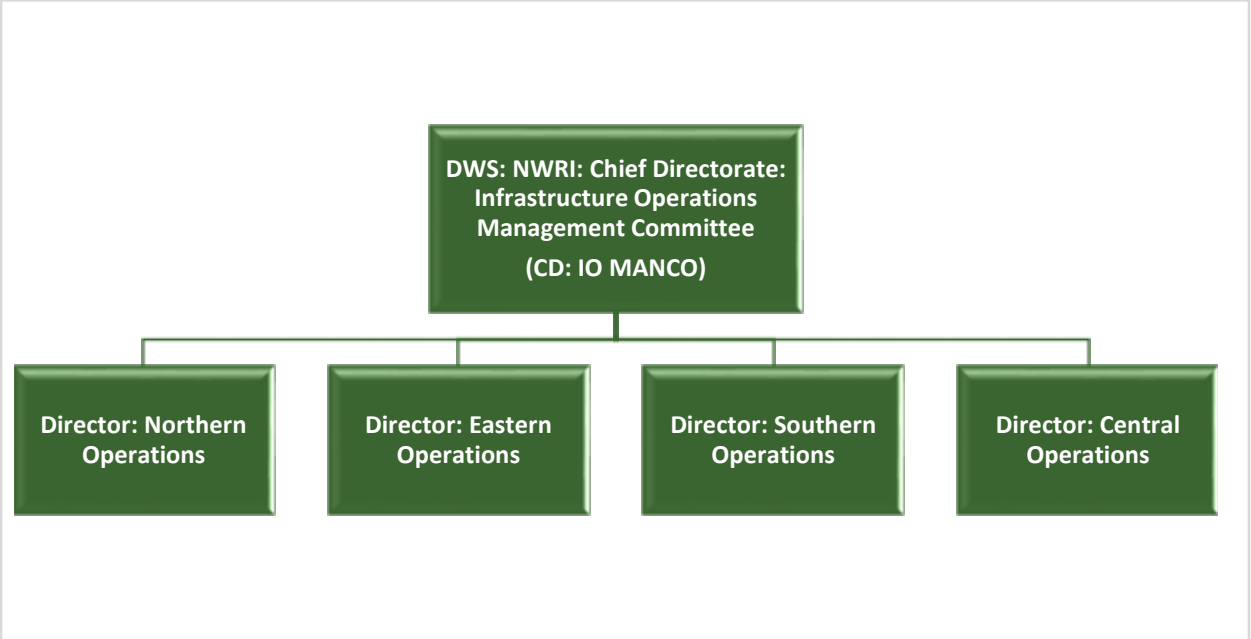

Figure 12: Existing CD: IO MANCO

4.1.5 National Project Steering Committee (NPSC)

The NPSC is formed by the DWS and is made up of representatives from national government departments and their agencies (also referred to as planning partners) that have direct and/or indirect mandate in managing the water resource. The function of the NPSC is to provide guidance and support to DWS on recreational water use in terms of their respective mandates with the aim of achieving sustainable utilisation of the Dam. The NPSC shall meet twice a year. **Figure 13** shows government departments (also referred to as planning partners and/ or authorities) and agencies that will form part of the NPSC:

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Figure 13: Proposed NPSC

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4.2 ZONING PLAN

The purpose of the zoning plan is to demarcate permissible and non-permissible activities on the water surface and the shoreline to avoid conflict amongst users, uncontrolled development and to protect the water resource. In order to determine the extent of possible recreational use on the water surface, the carrying capacity of the water surface was calculated.

The proposed zoning plan integrates 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:
This zone covers a minimum area of 100m from the wall and outlet works indicated by demarcation markers and AtoN. This area is reserved for the 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 Zone:
The aim of this zone is to conserve and protect sensitive aquatic habitation at the inlet(s) of the Dam. Access to this area 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 acts as a buffer between high impact activity zones and conservation zones. The 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[3] and small-scale fisheries.

High Impact Activity Zone:
This zone is demarcated where the Dam is at its deepest level. 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.

Table 8 and **Figure 14** shows the proposed water surface zoning for Doringrivier Dam.

[3] The final location of the aquaculture will be dependent on the outcome of a feasibility study.

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Table 8: Proposed Water Surface Zoning Description

Zone Description	Permissible Activities	Non Permissible Activities	Recommendation
• Safety and Security Zone.	• Alien invasive species clearing • Management of Dam infrastructure • Management and maintenance activities by DWS and authorised personnel	• Public access	• Area should be demarcated by dermacation makers and AtoN.
• Conservation Zone.	• None	• Public activities (to prevent disturbance of aquatic habitats disturbance)	• Area should be demarcated by demarcation makers and AtoN. • Strict management and control of these areas.
• Low Impact Activity Zone.	• Activities associated with no or little water wakes such as: ○ Angling ○ Rowing ○ Canoeing ○ Kayaking ○ Paddling boat ○ Float tubes ○ Swimming • Slipway • Floating Jetty • Aquaculture facilities	• Motorised boating • Water skiing • House boats • Para-sailing • Kite-surfing • Jet Skis	• Area should be demarcated by demarcation markers and AtoN. • No private slipways/ floating jetties to be built without approval from DWS. • Launching and mooring of vessels should take place at this zone. • Motorised boating are allowed to launch at this zone but no water wake should be formed until the designated area for motorised recreational boating is reached.
• High Impact Activity Zone.	• Activities associated with water wakes such as: ○ Motorised boating ○ Water skiing ○ House boats ○ Jet skis • Aquaculture facilities	• Angling • Sailing • Rowing • Canoeing • Wind surfing • Paddling boat • Float tubes • Kite surfing • Wind surfing • Para 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.

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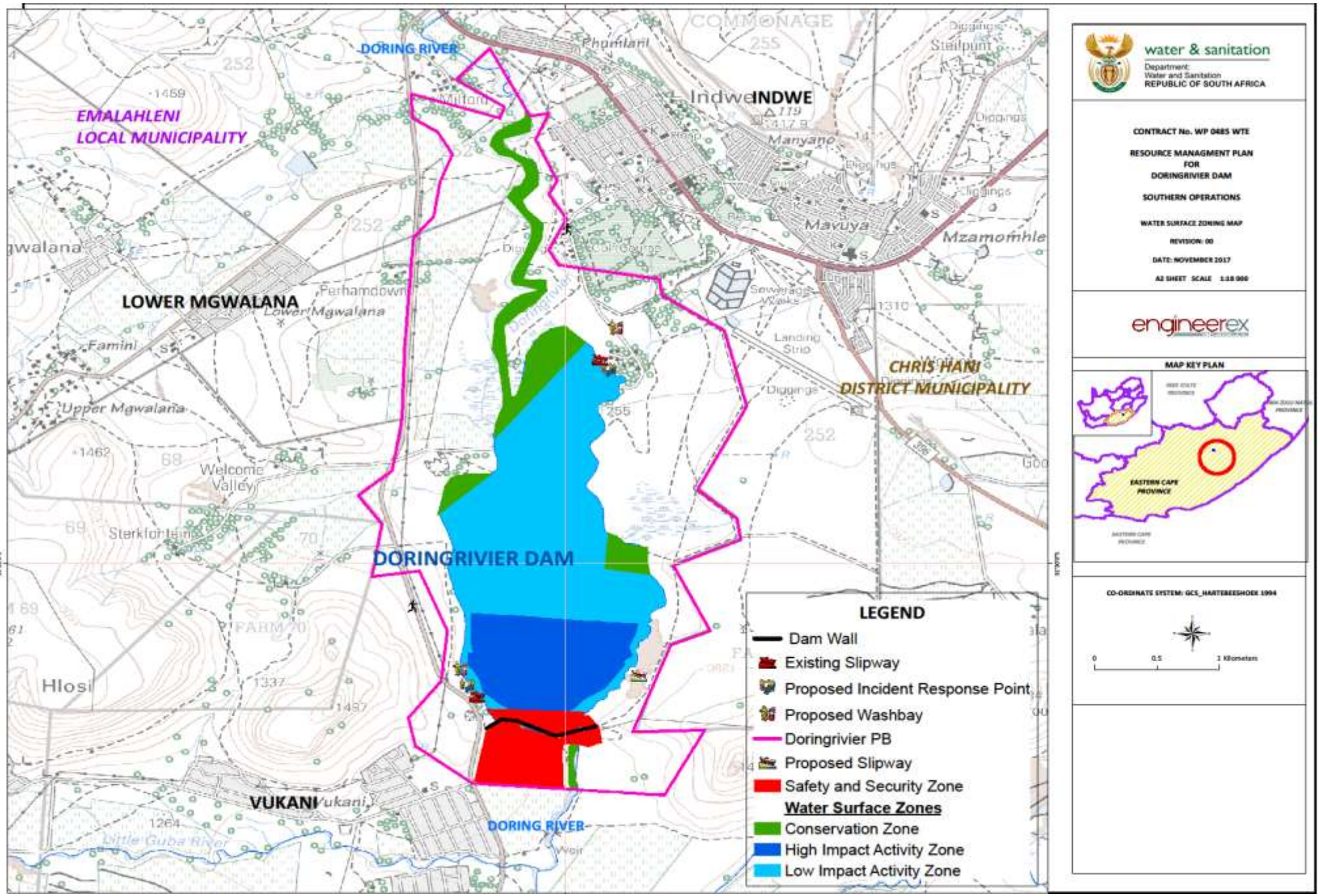

Figure 14: Proposed Water Surface Zoning Map

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4.2.2 Shoreline Zoning[4]

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 or not permissible on the land adjacent to the Dam (DWS purchased boundary). The shoreline zones include:

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

This zone is applicable to the area surrounding the Dam wall and the outlet works. The extent of this zone is determined by the 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 ensuring 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, and bird watching. This area is demarcated to prevent ecological Damage due to high density development activities.

Medium Density Activity Zone:

This zone is demarcated for small-scale activities such as day visiting, picnic areas, shoreline fishing, camping (tent and caravan), braai facilities, swimming pools, ablution facilities and infrastructure for services.

High Density Activity Zone:

This zone is demarcated 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 livelihoods are maintained and improved. Activities include subsistence fishing, livestock watering points, and small-scale community gardens.

Table 9 and **Figure 15** and **16** shows the proposed shoreline and overall zoning for Doringrivier Dam.

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

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Table 9: Proposed Shoreline Zoning Description

Zone Description	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	• These zone should control access to ecological sensitive areas.

• Medium Density Activity Zone.	• Day visitors
	• Picnic
	• Shoreline fishing
	• Braai facilities
	• Swimming pools
	• Ablution facilities
	• Camping (tent and/or caravan)
	• Aquaculture facilities
		• Accommodation facilities such as:
		  ○ Chalets,
		  ○ Recreational club houses
		• Infrastructure for services
		• Permanent Structures
			• The management of this area should follow the PPP process in terms of National Treasury.
			• All developments must be approved by IA and DWS.
			• Requirements of NWA and NEMA must be taken into account in all developments.
			• Noise levels to be kept at a minimum.
			• Camping, picnicking, bank angling and access to the water must be done in accordance to access agreements.
			• Camping and picnicking is allowed only in designated areas.
			• Noise levels to be kept at a minimum.

• 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 IA and DWS. • No private slipways to be built without approval from DWS.
• Community Resource Zone	• Subsistence fishing • Livestock watering points • Small scale community gardens	• Chalets • Recreational club houses • Hiking • Braai facilities • Camping	• Demarcation of the area by fence and provision of an access control.

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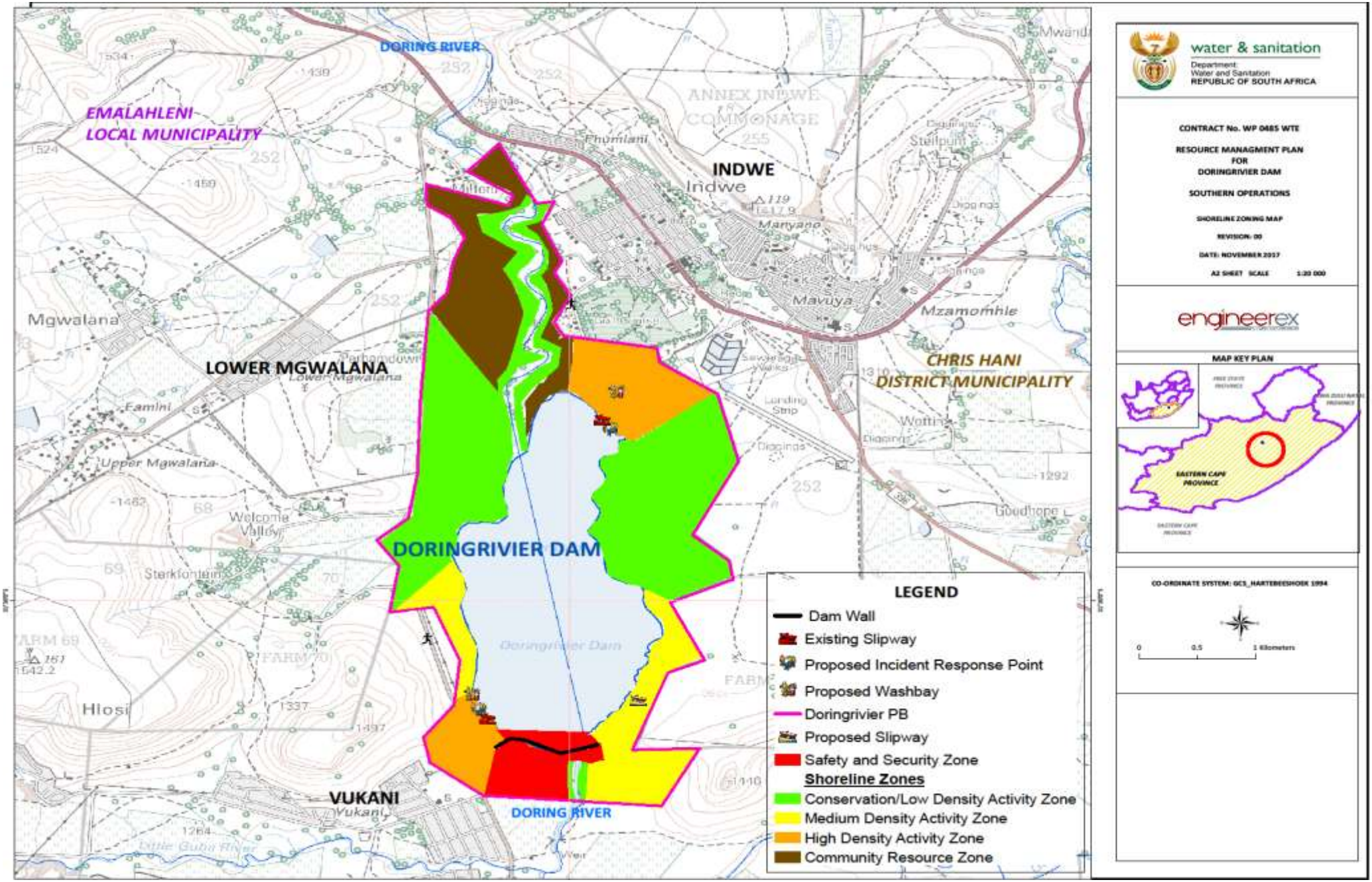

Figure 15: Proposed Shoreline Zoning Map

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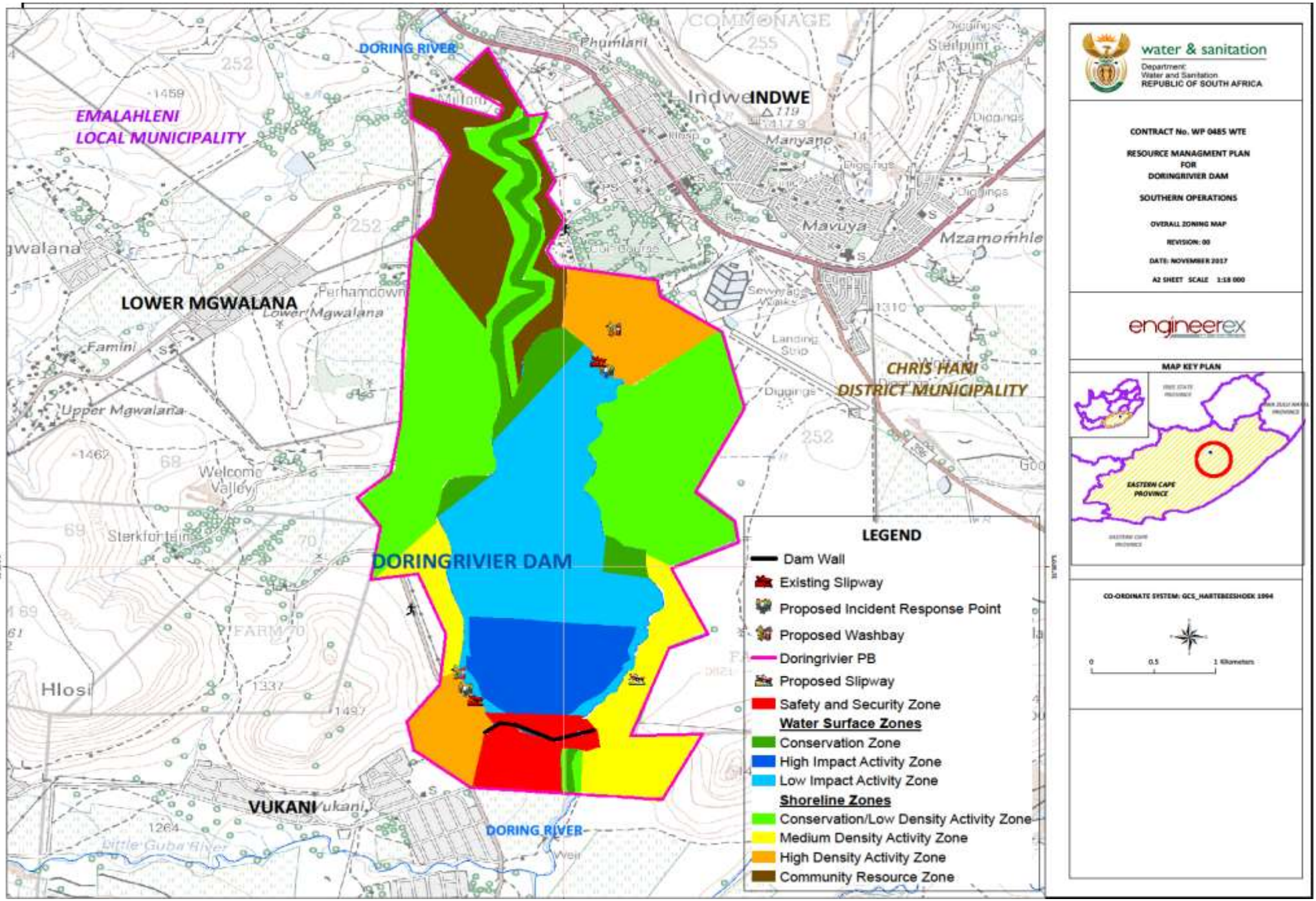

Figure 16: Proposed Overall Zoning Map

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4.2.3 Carrying Capacity

The carrying capacity provides a guideline for recreation to ensure that the Dam is safe, that users do not feel crowded and that they enjoy the use of the Dam.

The Methodology for Carrying Capacity Assessment for the use of water for Recreational purposes was used as a guideline to determine the maximum level of visitor/recreational use and related infrastructure that the water resource and surrounding area can accommodate (DWAF, 2003).

There are three levels of carrying capacity:

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

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, i.e.: **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)

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)

Table 10 shows the type of craft and the required area for use.

Table 10: Area required per user

Craft	U/A (ha/craft)
Rowing	0.5
Canoe	1.0
Dinghies	1.0
Water-Skiing	2.0
Fishing	3.0
Powerboats	4.0
Sailing	5.0
Average	**2.4**

Based on the table above the average hectare per user is 2.4 ha (24 000 m^2), the value of 5.0 ha (50 000 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.

The available surface area for Doringrivier Dam is **367 ha** whereas ***U/a*** is assumed to be the average which was calculated as 1 craft/3 ha. And again the rotation factor (*Rf*) is assumed as 1 visit per day.

Therefore: **PCC =** A ÷ U/a x Rf
=367 x 1/5 x 1
= 73 crafts on the Dam

Real Carrying Capacity (RCC)

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

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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 Doringrivier Dam, these factors includes sensitive areas, such as conservation areas (53 ha) as well as aspects regarding the safe operation and management of the Dam (6 ha).

These factors accounts for 59 ha, that is 16% of the area that is not available for recreational use.

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

=73 x (100 – 16) %

=61 crafts

Effective Carrying Capacity (ECC)

ECC = [Infrastructure Capacity x Management Capacity] x 100/ RCC

Given that the Dam currently offers no recreational activities and the recreational facilities are in a bad condition. Also, there is no management structure in place. Hence the ECC is currently 0. Once there is an Institutional structure for the management of infrastructure capacity, then the ECC can be calculated to verify if the RCC can be possible.

4.3 STRATEGIC PLAN

The strategic plan is informed by the objectives identified by stakeholders and through research on 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.

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Table 11: Strategic Plan for KPA 1: Resource Management

KPA 1: Resource Management			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
Access Control: • To fence the Dam in-order to control access to the Dam and ensure safety of the people and animals.	• There is no controlled access to the Dam as the entire Dam is not fenced. As a result, neighboring community members have direct access to the Dam wall and water surface. • Lack of access control leads to vandalism on the existing recreational facilities as well as the infrastructure of the Dam. • There are also reports of recurring drowning incidents of livestock and people. • When security guards are appointed at other DWS dams to monitor safety, they get murdered.	• Erect a fence at hotspots where the community deems dangerous for drowning incidents to the children as well as livestock. • Appoint and train safety officers from within the communities to monitor access to the Dam and to ensure that the dam safety rules are adhered to at all times. • Raise awareness amongst the local communities about the importance of having a water resources and associated infrastructure to prevent vandalism at the Dam. • DWS to revive partnership with Swim SA to train local community members to become life guards to curb drownings at the Dam. • The objective will be incorporated in a Business Plan to determine projected costs for the implementation of the action projects.	• DWS • Swim SA • IA (ELM) with the support of the DMC • SAPS

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Table 12: Strategic Plan for KPA 2: Resource Utilisation

KPA 2: Resource Utilisation			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
Fishing: • To introduce aquaculture at the Dam. • To promote subsistence fishing and fisheries at the Dam.	• The local community members indicated in the public meeting (held 29 June 2017) their interest in aquaculture at the Dam and the opportunities it might bring to uplift the community members • Currently, the communities do practice subsistence fishing at the Dam, however there are no permitting systems in place. Moreover, there is an interest to explore the potential of commercial fish harvesting.	• Identify range of farming activities that can be pursued at subsistence level (such as aquaculture) and encourage potential linkages between aquaculture and the tourism industry. • Facilitate access to farming inputs for small-scale farmers and acquire the necessary technical advice. • To conduct a feasibility study to get comprehensive information on the viability of the project e.g the soil type for its stability in case ponds are to be constructed; water quality parameters; size to be demarcated for aquaculture, targeted production etc. Terms of reference for such a study would be defined clearly closer to the time. • Generate key partnerships with farmers' organisations, CBO's and NGO's. • In consultation with Department of Agriculture, set up and implement a farmer's support and advice programme (especially for subsistence farmers). • Promote co-operative arrangements for supply and distribution networks. • Develop a business plan for the aquaculture project. • Provide training to workers.	• DRDAR • Department of Agriculture and Land Affairs (DALA) • DAFF • IA (ELM) with the support of the DMC

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KPA 2: Resource Utilisation			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
		• Permits (fishing licence) must be acquired and the use of gill nets must be prevented, as it has significant negative impact on fish population within the Dam. • Educate and train community on fishing methods that are safe and sustainable. • Preserve the core habitats for nesting, resting, feeding and breeding of fish within the inlets, by demarcating areas for subsistence fishing. • Management authority or DWS must develop a communication signage in order to effectively inform different angling groups about the Dam fishing rules. • Appoint and train safety officers within the communities to monitor compliance of the Dam fishing rules. • Generate the necessary infrastructure, such as banks to fish from in order to support the sustainable fishing. • Incorporate the objective in a Business Plan for a feasibility study to evaluate the fish population in the Dam and a possiblity of a fisheries project.	

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KPA 2: Resource Utilisation			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
Refurbishment: • To refurbish the boat house at the Dam.	• The existing facility (boat house) is vandalised and needs to be refurbished inorder to use it to store a boat for incident response management system at the Dam.	• To conduct a feasibility study to check the practicability of refurbishing the boat house.	• IA (ELM) with the support of the DMC.
Tourism Facility: • To refurbish the Indwe Resort so as to attract tourists to the Dam. • To establish more tourism facilities such as information and resource centres.	• The Indwe Resort is built next to the Dam with a slipway extending to the Dam from the resort. If the resort is well marketed it will bring in more day visitors to the Dam to partake in water sports and also land activities. • In the past, events such as weddings were hosted at the resort and the pictures would be taken at the Dam. • Currently there are no information or resources centres at the Dam.	• The ELM requires to have a lease agreement with DWS since the Resort is within the DWS purchased boundary. Therefore, ELM to incorporate the budget to refurbish the resort in their IDP. • Tourism information (flyers, brochures, magazines etc.) regarding the Dam can be placed at the access points for the security personnel to hand out to every patron accessing the Dam for leisure activities. Moreover, communities can bring their stalls to the Dam where they can display their arts and craft so that visitors to the Dam can buy.	• IA (ELM) with the support of the DMC.
Utilisation: • To address the issue of exclusive use of the Dam.	• Currently it is alleged that only a certain racial group is allowed to use the Dam for recreational purposes.	• The zoning plan within the RMP will address the issue where permissible activities will be demarcated.	• IA (ELM) with the support of the DMC.

Table 13: Strategic Plan for KPA 3: Benefit Flow Management

KPA 3:Benefit Flow Management			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
Agricultural Use: • To construct water ponds near the Dam to supply water for irrigation and to promote	• Livestock drink water from the Dam and risk easily drowning in deeper areas (currently the local community members raised the issue of livestock drowning at the public meetings).	• Schedule 1: Permissible Water Use states that a person may use water in or from a water resource for purposes such as reasonable domestic use, domestic gardening,	• DRDAR • DALA • DAFF • DWS

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KPA 3:Benefit Flow Management			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
farming and livestock watering.		animal watering, fire fighting and recreational use. DWS to engage DRDAR on the way forward regarding this matter.	• IA (ELM) with the support of the DMC.
<u>Skills Development Programmes:</u> • Uplift the Local Economy and increase Benefit Flows to the surrounding communities through community empowerment.	• Tourism sector has been identified as a vehicle for skills development, job creation, Broad-based Black Economic Empowerment (BBBEE), etc. it is imperative that the local communities derive benefits from recreational activities conducted at the Dam. • The level of unemployment in the area is high.	• Implement skills development programmes where opportunities exist. • Implementation of environmental awareness to the local communities and ensure that they are always updated with environmental information. • Educate and train the community on how to utilise the Dam for other recreational activities besides fishing. This will assist in terms of uplifting the surrounding local community. • Extend awareness to the communities on project management skills. • Prioritise the local community if any job opportunities arises.	• IA (ELM) with the support of DMC • CHDM

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4.4 FINANCIAL PLAN

A Financial Plan provides guidance on how revenue generated through recreational use of the Dam should be used to ensure community participation and beneficiation, as well as to ensure the sustained and improved management of the Dam.

Access or entry fees to the Dam must be reasonable and cannot be used to generate profit. Access or entry fees must take cognizance of the socio-economic conditions of the area and its local communities to ensure that the Dam remains an affordable destination for all.

The charges for recreational use of the Dam (i.e. events and/or advertising) can be used to generate income for Dam operations and management.

There are also opportunities for PPPs which could further unlock the economic potential of the Dam in respect of recreation and tourism. PPPs are commercial in nature where a private party make use of state owned property to generate profit. PPPs should therefore contribute to the socio-economic growth and empowerment of local communities through job creation and upliftment of local Small, Medium and Micro-sized Enterprises (SMMEs).

Co-funding is also viable where an IA is appointed to manage recreational use of the Dam. DWS and/or other relevant Government Departments can fund the IA, to supplement operational costs and other scenarios by co-funding identified objectives that are related to their mandate. It is recommended that ELM be appointed as an IA to manage recreational use of the Dam on behalf of DWS.

A more detailed Financial Plan (FP) is contained in the Business Plan (refer to Appendix G), which will facilitate the implementation of the RMP by providing an implementation program and cost estimate for all possible economic recreational activities.

The information acquired from the RMP will be used to produce the Business Plan (BP) 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 the Doringrivier Dam RMP. It also describes the financial management and operational requirements to implement the objectives of the RMP.

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CONCLUSION AND WAY FORWARD

This RMP comprehensively covered *inter alia* the environmental analysis (biophysical, built and socio-economic environment) of the Dam, RMP data analysis (encumbrance survey, objective identification and research/ information generation) and the integrated resource management planning which consists of the institutional plan, zoning plan, strategic plan and the financial plan.

The key challenges identified comprise:

- Lack of access control which leads to the issues of vandalism on the existing recreational facilities as well as the infrastructure of the Dam;
- There are reports of recurring drowning incidents of livestock and people;
- There is an existing Indwe Resort adjacent to the Dam with a potential for promoting community beneficiation and tourist attraction;
- Livestock drink water from the Dam and graze on the banks of the Dam. There is a risk that they may drown as they try to reach for water in deeper areas;
- DWS confirmed that ELM does not have access and use agreement or lease agreements with them to utilise the Dam for recreational purposes;
- The Dam is not entirely fenced which results to inadequate access control which makes the existing recreational facilities at the Dam to be prone to vandalism;
- Lack of community beneficiation;
- Appointment of a management structure to oversee the management of recreational activities at the Dam;
- Implementation of Skills Development Programmes;
- Exclusive use of the Dam for recreational activities; and
- It is inconclusive if the water is fit for recreational use owing to the absence of test samples for all water quality constituents, DWAF (1996).

Recommendations:

This RMP recommends the following immediate actions:

- Appoint ELM as an IA to manage recreational use of the dam on behalf of DWS;
- Establishment of a Dam Management Committee (DMC) to serve as an advisory committee to the proposed IA;
- To fence the Dam in-order to control access to the Dam and ensure safety of the people and animals;
- Water quality reporting and monitoring;
- To introduce aquaculture at the Dam;
- To promote subsistence fishing and fisheries at the Dam;
- To establish more tourism facilities (B&Bs, resource centres, etc.) and recreational activities (boating, swimming and other water sports);
- To construct water ponds near the dam to supply water for irrigation and to promote farming and livestock watering; and
- Uplift the local economy and increase benefit flows to the surrounding communities through community empowerment.

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 may be 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 17** illustrates the RMP & BP review framework.

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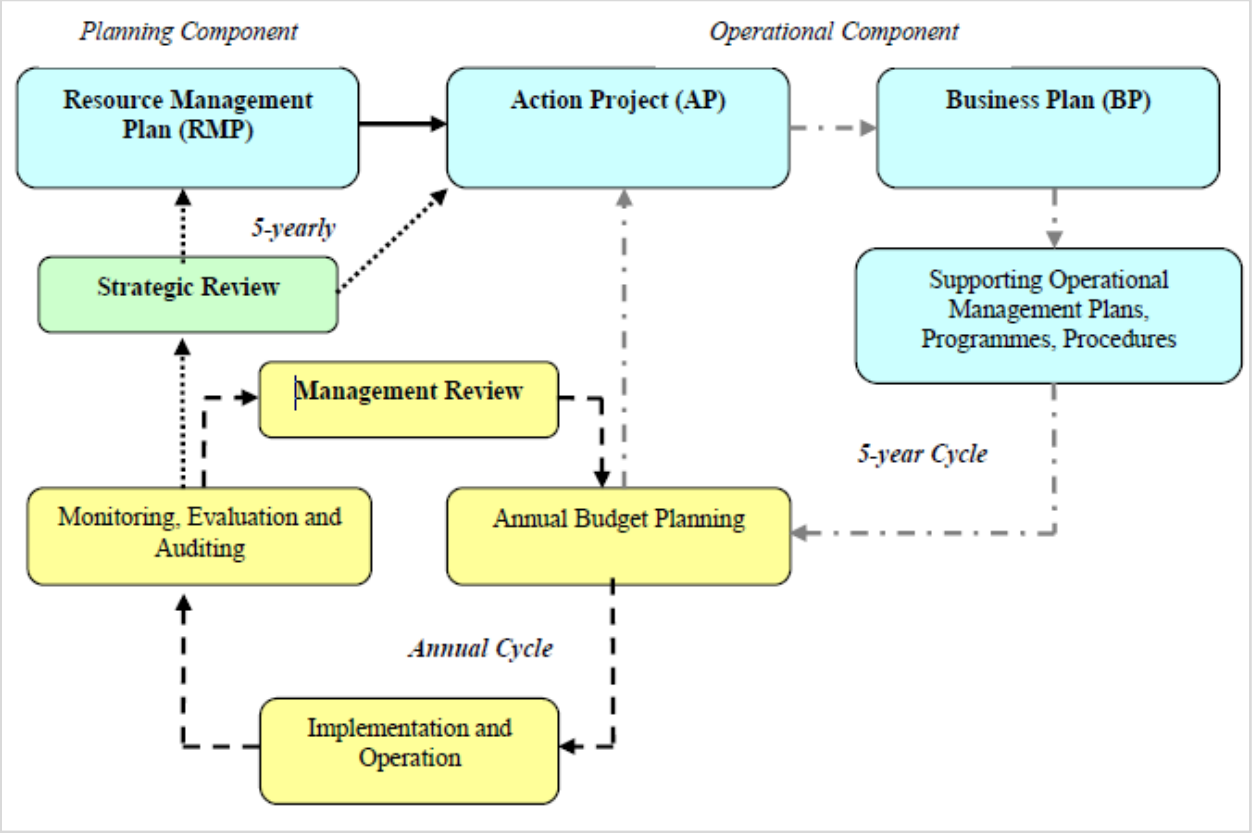

Figure 17: RMP and BP Review Framework

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APPENDICES

APPENDIX A : STAKEHOLDER DATA BASE REGISTER

APPENDIX B : BACKGROUND INFORMATION DOCUMENT (BID)

APPENDIX C : RADIO ADVERT

APPENDIX D : FLYERS

APPENDIX E : EMAILS

APPENDIX F : COMMENTS AND RESPONSES REGISTER

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