INFRASTUCTURE BUILD, OPERATE AND MAINTENANCE (IBOM)

Resource Management Plan

KLIPFONTEIN DAM

REPORT – Volume 4 of 5

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WATER IS LIFE - SANITATION IS DIGNITY

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water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

2030 NDP

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- Abaqulusi Local Municipality;
- Department of Agriculture and Rural Development;
- Department of Economic Development, Tourism and Environmental Affairs;
- Department of Rural Development and Land Reform;
- Department of Transport;
- Department of Water and Sanitation;
- KwaZulu-Natal Trade and Investment;
- KwaZulu-Natal Department of Co-operative Governance and Traditional Affairs;
- The community members of Ward 13;
- Traditional Authorities; and
- Zululand District Municipality.

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:

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.

AMENDMENTS PAGE

Revision No	Description	Date
1	Draft RMP for DWS Review	11/12/2017
2	Amended Draft RMP for DWS Review	02/02/2018
3	Draft RMP for Abaqulusi LM Review	20/02/2018
4	Draft RMP for Public Review	15/03/2018
5	Final Draft RMP for DWS Approval	17/04/2018
6	Final RMP for DWS Approval	09/05/2018
7	RMP for DWS Approval	03/12/2019

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 Klipfontein Dam, herein after referred to as the Dam, which is part of the Infrastructure Build, Operate and Maintenance (IBOM) Eastern 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 Klipfontein 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 whether is subject to protection by legislation;
- Invasive Alien species.
- Water quality issues.

Recreational Industry Involvement:

- Conflict between users 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 the White uMfolozi River.

The surface area of the Dam is 296 hectares with a capacity of 18 million cubic meters. It falls

under Ward 13 of Abaqulusi Local Municipality (ALM) within the Zululand District Municipality (ZDM) in the KwaZulu-Natal Province of South Africa. Its GPS coordinates are 27°49'44.10"S 30°40'41.78"E.

Purpose of the Dam: The primary purpose of the Dam is to provide bulk raw water for irrigation and domestic use. The secondary use of the Dam offers recreational activities such as camping, boating, fishing, canoeing and swimming.

Dam Ownership and Management: DWS owns the Dam and surrounding state land. It also operates the Dam for its primary purpose. Currently there is no institutional structure managing the Dam for recreational purposes (secondary use). Through the development of the RMP process, an appropriate Implementing Agency (IA), such as ALM, shall be appointed by DWS to facilitate the implementation of the objectives and identified action projects in line with the requirements of the Klipfontein 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 and concerns were raised from which the following objectives were identified:

- Desilting of the Dam to increase the capacity;
- To improve the water quality of the Dam;
- To remove alien invasive plants species to support recreational activities and to protect the terrestrial and freshwater aquatic natural resource;
- To put in place adequate access control measures, such as fencing to ensure the safety of people and livestock;
- To introduce aquaculture at the Dam;
- To Promote small scale fishery at the Dam that contributes to transformation and equitable socio-economic benefit from inland fish resources;
- To construct swimming pools with the necessary supervision to prevent children and elderly people, who cannot swim, from drowning;
- To refurbish the cultural rondavels to be utilised by day visitors and/or tourists who visit the Dam and when attending host events;
- To uplift the local economy and increase benefit flows to the surrounding communities through community development programmes;
- To unlock the socio-economic potential of the Dam by creating employment and entrepreneurship opportunities for community groups; and
- To establish an effective institutional structure that can manage the recreational use of the Dam in an acceptable manner, and which is also representative of all the Stakeholders.

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

"To have a sustainable tourism destination, which is safe and free from pollution, where events are hosted for the benefit of the community".

Tourism Potential: The potential recreational developments identified to enhance tourist attraction includes:

- Refurbishment of cultural rondavels;
- Construction of swimming pools; and
- Refurbishment of facilities i.e. braai stands and ablution facilities.

The key challenges identified comprise:

- Due to the area's high soil erodibility, sparse grass cover and steep slopes the Dam and its tributaries is susceptible to sediment built-up.
- It is inconclusive if the water is fit for recreational use owing to the absence of test samples for all water quality constituents (not only pH), DWAF (1996).
- Lack of solid waste management around the Dam (i.e. disposable nappies dumped into the upstream rivers or potentially owing to pump failures at the nearby wastewater treatment plant. ALM collects refuse in urban areas only (i.e. Vryheid) and not all wards are covered by the municipality. This poses a threat to the water quality in the Dam.
- The Dam is infested with alien invasive plants (i.e. Themeda triandra and Hyparrhenia hirta), which makes the area prone to fire, as theses invasive plants are highly flammable throughout the year. This can pose a fire risk to existing facilities and Dam users
- The region (district and local) has tourism potential, which has not been properly exploited (environmentally or otherwise).
- There is a lack of environmental and tourism awareness for the community.
- The local community is not involved in the management and utilization of the Dam for recreational purpose, hence they are not benefiting from the Dam.
- Ward 13 has 5 908 individuals without a source of income representing 41% of the ALM population.
- Fixed and floating Aids to Navigation (AtoN) and demarcation markers are not in place.
- There is currently no specific incident management system in place to ensure that incidents are recorded and responded to in a co-ordinated manner.
- Existing cultural rondavels are vandalized and not optimal utilised for the intended purpose.
- The Dam is not entirely fenced (i.e. at the inlets of the Dam). As a result, some of the community members have direct access to the Dam in an uncontrolled manner which leads to theft and vandalism of the existing recreational facilities at the Dam (i.e. cultural rondavels, ablution facilities and braai stands).
- The Dam is situated close to Tholithemba community where domestic livestock such as goats, cattle and sheep graze and drink water from the Dam. During seasons of drought there is a risk of livestock getting stuck into the mud while trying to reach for water in deeper parts of the Dam.

Recommendations:

This RMP recommends the following immediate actions:

- Appoint ALM 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.
- Removal of silt from the Dam in order to increase the water quantity.
- Develop waste management plan for the Dam and surrounding areas to prevent pollution.
- Water quality reporting and monitoring.
- Removal of alien invasive plants (i.e. Themeda triandra and Hyparrhenia hirta).

- Put in place adequate access control measures, such as fencing, in order to ensure the safety of people and livestock.
- Refurbishment of the cultural rondavels in order to attract more tourists as well as to provide job opportunities to local communities (i.e. cleaners, security and catering).
- Promotion of small-scale fishery at the Dam that contributes to transformation and equitable socio-economic benefit from inland fish resources.

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LIST OF ACRONYMS

ADU	Animal Demographics Unit
ALM	Abaqulusi Local Municipality
AtoN	Aid(s) to Navigation
BBBEE	Broad-based Black Economic Empowerment
BID	Background Information Document
BP	Business Plan
CATHSSETA	Culture, Arts, Tourism, Hospitality, Sport Sector, Education and Training Authority
CD: IO MANCO	Chief Directorate: Infrastructure Operations Management Committee
CIWSP	Co-operative Inland Waterways Safety Programme
CoGTA	Department of Corporative Governance and Traditional Affairs
CPSI	Centre for Public Service Innovation
DAFF	Department of Agriculture, Forestry and Fisheries
DARD	Department of Agriculture, Environmental Affairs and Rural Development
DBE	Department of Basic Education
DEA	Department of Environmental Affairs
DHS	Department of Human Settlements
DMC	Dam Management Committee
DMR	Department of Mineral Resources
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
EDTEA	Department of Economic Development, Tourism and Environmental Affairs
EPWP	Expanded Public Works Programme
FP	Financial Plan
GIAMA	Government Immovable Asset Management Act, 2007 (Act No.19 of 2007)
GPS	Global Positioning System
GVA	Gross Value Added
GWWs	Government Waterworks
I&APs	Interested and Affected Parties
IA	Implementing Agency
IBOM	Infrastructure Build, Operate and Maintenance
IDP	Integrated Development Plan
IEE	Integrated Environmental Engineering
IRMP	Integrated Resource Management Planning
KPA	Key Performance Area
LAAP	Local Accountable AtoN Parties
LED	Local Economic Development
MC	Management Capacity
MOA	Memorandum of Agreement
NDT	National Department of Tourism
NEMA	National Environment Management Act, 1998 (Act No. 108 of 1998)

NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEMPAA	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
NGO	Non-Governmental Organisation
NPSC	National Project Steering Committee
NT	National Treasury
NWA	National Water Act, 1998 (Act No. 36 of 1998)
NWRS	National Water Resource Strategy
OMC	Operations Management Committee
PCC	Physical Carrying Capacity
PFMA	Public Finance Management Act, 1999 (Act No. 29 of 1999)
PP	Public Participation Process
PPP	Public Private Partnership
PSP	Professional Service Provider
QDS	Quarter Degree Square
RCC	Real Carrying Capacity
RMP	Resource Management Plan
RQS	Resource Quality Services
SAMSA	South African Maritime Safety Authority
SANBI	South African National Biodiversity Institute
SAPS	South African Police Service
SASCOC	South African Sports Confederation and Olympic Committee
SETA	Sector Education and Training Authority
SWOT	Strengths, Weaknesses, Opportunities and Threats
ToR	Terms of Reference
WfW	Working for Water
WMA	Water Management Area
WWTWs	Waste Water Treatment Works
ZDM	Zululand District Municipality

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 Klipfontein 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:

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

Recreational Industry Involvement:

- Conflict between users due to no management tool in place;
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Community Participation and Beneficiation:

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To assist the Minister in fulfilling this mandate, the DWS initiated and commissioned the development of the RMP and its Business Plan (BP) for Klipfontein 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 Klipfontein Dam, herein after referred to as the Dam, which is part of the Infrastructure Build, Operate and Maintenance (IBOM) Eastern Operations.

This RMP is developed in accordance with the Guidelines for the Compilation of Resource Management Plans (DWAF, 2006) for the Klipfontein 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.

1.3 DESCRIPTION AND LOCATION OF THE DAM

The Klipfontein Dam is an earthfill dam which impounds the White uMfolozi River. The surface area of the Dam is 296 hectares with a capacity of 18 million cubic meters. **Table 1** shows the Dam profile. The Dam falls under Ward 13 of Abaqulusi Local Municipality (ALM) within the Zululand District Municipality (ZDM) in the KwaZulu-Natal Province of South Africa, as shown in **Figure 1**. Its GPS coordinates are 27°49'44.10"S 30°40'41.78"E.

1.4 PURPOSE OF THE DAM

The primary purpose of the Dam is to provide bulk water for irrigation and domestic use. The Dam offers recreational activities such as camping, boating, fishing, canoeing and swimming.

1.5 DAM OWNERSHIP AND MANAGEMENT

DWS owns the Dam and surrounding state land. It also operates the Dam for its primary use. Currently there is no institutional structure managing the Dam. Through the development of the RMP process, an appropriate Implementing Agency (IA), such as ALM, shall be appointed by DWS to facilitate the implementation of the objectives and identified action projects in line with the requirements of the Klipfontein Dam RMP on behalf of DWS.

The proposed institutional structure and arrangements for the management of the Dam for recreational use is presented in Section 4 of the RMP.

Table 1: Klipfontein Dam Profile

Klipfontein Dam Profile	
Location	South Africa
Province	KwaZulu-Natal
District Municipality	Zululand
Local Municipality	Abaqulusi
Nearest Town	Vryheid
Completion Year	1983
Coordinates	27°49'44.10"S 30°40'41.78"E
Primary Purpose	Irrigation and domestic use
Owner	DWS
Quaternary Catchment	W21A and W21B
Water Management Area	Pongola-Mzimkulu
River	White uMfolozi
Capacity (Mm^3)	18.1
Surface Area (ha)	295.9
Wall Type	Earthfill
Wall Height (m)	28
Crest Length (m)	970

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

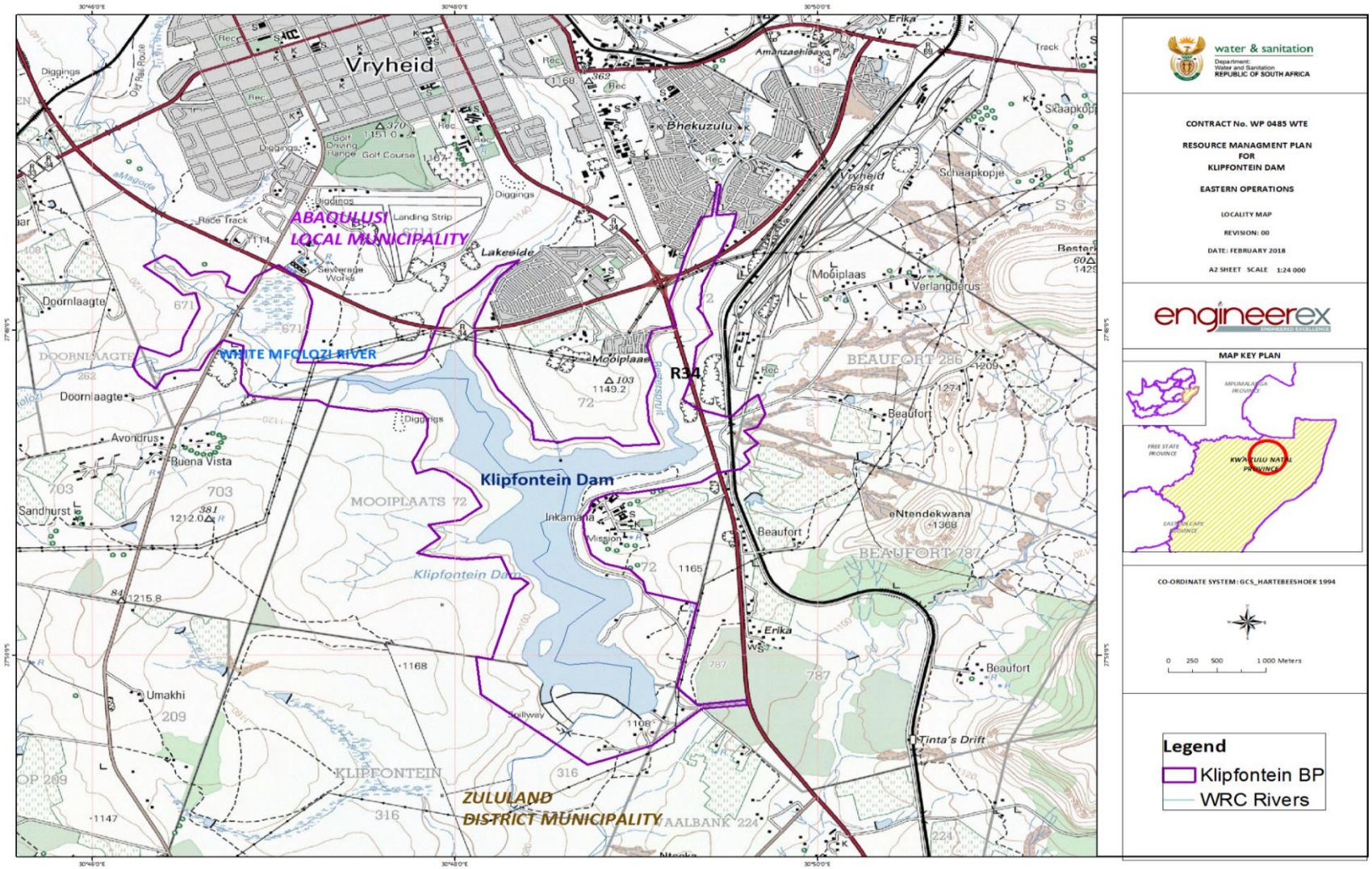

Figure 1: Locality Map for Klipfontein Dam

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:

Policy and 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.

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:**
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.
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.
1st Draft National Inland Fisheries Policy Framework for South Africa. Department of Agriculture, Forestry and Fisheries, 2018	In terms of the National Water Act (Act 36 of 1998), the Department of Water Affairs and Sanitation (DWS) is the custodian of South Africa's water resources and is responsible for access to and the control of activities on public water works (dams) under its jurisdiction. As such, access to DWS public water works land and water for fishing activities is subject to DWS control. A system of RMPs is being implemented by the DWS to manage the activities of multiple user groups on public water works.
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

Legislation: Acts, ordinances, bylaws	Relevance: Description
	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 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.
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.
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.

Legislation: Acts, ordinances, bylaws	Relevance: Description
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.
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.
Provincial Legislation	**Significance to the RMP:**
KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997)	The functions of the Board are *inter alia* area and from time to time to make recommendations to the Minister in relation to policy formation for the coordination of ecotourism projects involving both government and private initiatives, including community-linked projects associated with protected areas.
Municipal Policy, By-Laws, Reports & Guidelines	**Significance to the RMP:**

Legislation: Acts, ordinances, bylaws	Relevance: Description
Abaqulusi Local Municipality. KZ 263. 2018-2019 Final Integrated Development Plan Review	At present the Abaqulusi LED Unit is busy with the development/review of the Tourism Strategy. The strategic documents will open up an avenue of investment, reduce poverty alleviation, job opportunities, increase entrepreneurial opportunities, promote business interaction and promote local business.
Abaqulusi Local Municipality Final Annual Report (2015-2016)	Provide the framework within which tourism in the municipality will be implemented.
Abaqulusi Local Municipality Tourism Plan (2017)	It provides a detailed plan on the rehabilitation of the existing cultural rondavels at the Dam.
Abaqulusi Municipality: Pollution Control By-Laws, 2009.	The use of the Dam for recreational use shall be subject to the provisions of these By-laws to control pollution of water courses, noise pollution and littering and dumping amongst other.
Abaqulusi Municipality: Water By-Laws, 2009	Water services rendered to a consumer are subject to the provisions of these By-laws and the conditions should be contained in the relevant agreement.

CHAPTER 2: ENVIRONMENTAL ANALYSIS

2.1 BIOPHYSICAL ENVIRONMENT

2.1.1 Climate

The Dam is located near the town of Vryheid. According to Climate-Data. ORG (2016), the area experiences good rainfall in summer, while winter months are characterized by very little rainfall. As shown in **Figure 2**, the driest months of the year are June and July, with an average of about 11 mm. Most of the rainfall is received during December and January with an average rainfall of about 149 mm.

The average annual temperatures for the Vryheid area is 19°C. As shown in **Figure 2**, the warmest months include January, February, March and December, with an average temperature of about 21°C. The months with the lowest temperatures include May, June, July and August with an average temperature of 4°C.

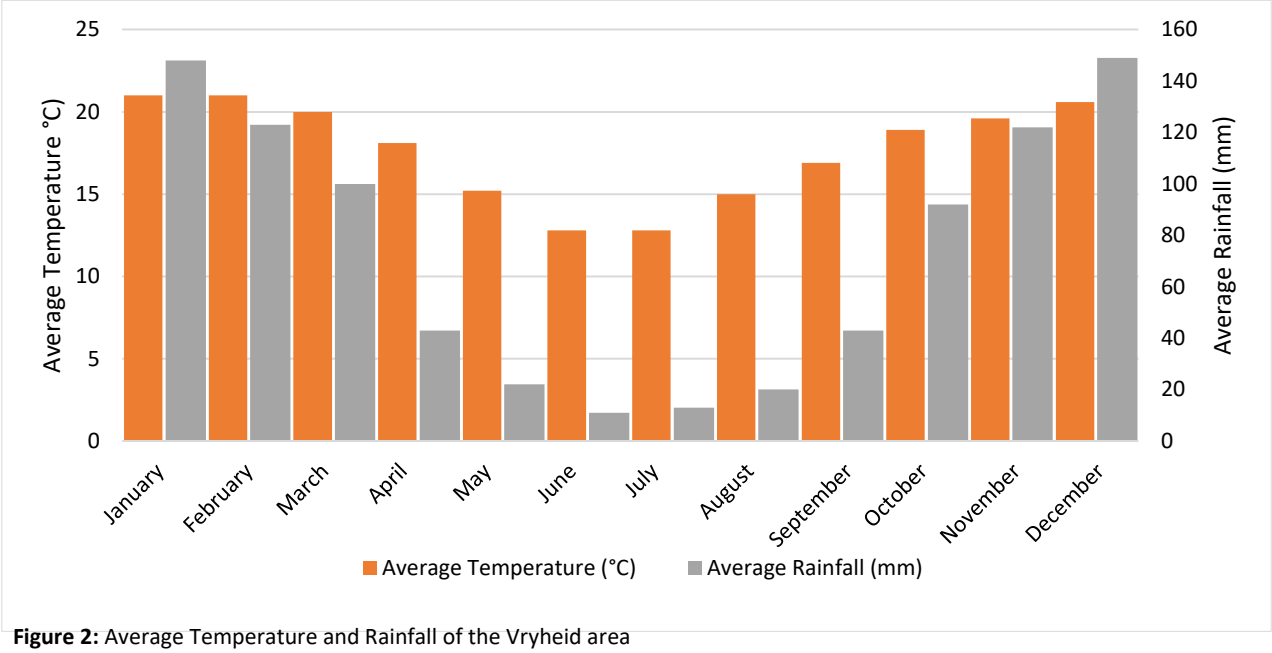

Figure 2: Average Temperature and Rainfall of the Vryheid area
Source: Adapted from Climate Data. ORG, 2016

2.1.2 Topography

According to Mucina and Rutherford (2006), the area within which the Dam is situated is characterised by slopes with sparse grass cover.

The elevation profile produced using Google Earth (2018), indicates that the average slope, in a north to south direction, varies between 0.6 % to 3.2 % and the maximum slope varying between 3.7 % and -8.3 %. The minimum, average and maximum elevation in a north to south direction varies between 1083 m, 1102 m and 1136 m.

The average slope in a west to east direction varies from 2.5 % to 2.6 % and the maximum slope varying between 10.0 % and -5.8 %. The minimum, average and maximum elevation in a west to east direction varies between 1093 m, 1097 m and 1112 m.

The drainage in relation to the topography of the area is characterised by slopes with sparse grass cover. Soil can therefore easily be eroded and deposited into the Dam, thereby increasing silt within the Dam.

The presence of silt could have an impact on the Dam's water capacity which may hinder the implementation of recreational activities, such as boating.

2.1.3 Geology and Soil

According to Mucina and Rutherford (2006), the area is underlain by mudstones, sandstones and shales of the Beaufort and Ecca Group. It is characterized by soils with minimal development capability, usually shallow on hard or weathering rock with or without intermittent diverse soils.

2.1.4 Hydrology

Water Surface

The Dam lies within the quaternary drainage regions W21A and W21B that forms part of the Pongola-Mzimkulu Water Management Area (WMA). The Dam impounds the White UMfolozi River that is categorized as a National Freshwater Ecosystems Priority Area (NFEPA) – River in terms of the KZN Biodiversity Sector Plan (2014). The Present Ecological State (PES, 1999) of White UMfolozi River is categorised as Class C: Moderately Modified.

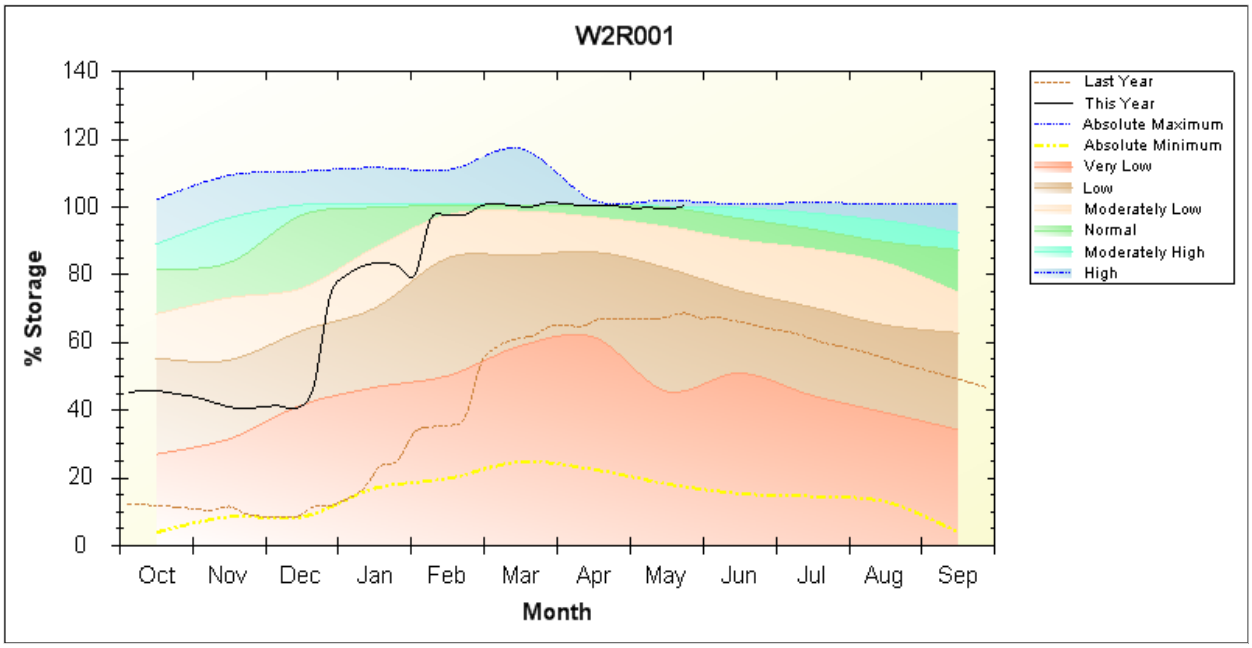

Figure 3: Fluctuations of Klipfontein Dam water level over a year

Source: DWS, 2018

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, the only indicator results for pH was available, and it was found to be within the acceptable Target Water Quality Range (TWQR), between 6.5-8.5, indicating that minimal eye irritation might occur once in contact with water.

Test results for other indicator samples in the Water Management System (WMS) should be recorded and documented (i.e. algae, odour, turbidity, floating matter, *E.coli*, faecal coliforms, and total coliforms) to determine if the water is fit for recreational use. Hence, precautionary

measures should be exercised for contact sports within or around the Dam.

2.1.5 Protected Areas

The Vryheid Mountain Nature Reserve is located further than five kilometers north of the Dam, which is a formal land-based protected area (NBA 2011).

2.1.6 Sensitive Biodiversity Areas

Based on the KZN Biodiversity Sector Plan (2014) the sensitive portions of land adjoining the Dam on the south-west and south-east side is classified as Critical Biodiversity Areas (CBA): Optimal, refer to **Figure 6 (**area depicted in light blue). CBA: Optimal areas are crucial for supporting biodiversity features and ecosystem functioning and are required to meet conservation targets.

According to the Biodiversity Sector Plan - Zululand District Municipality (2015) the recommended land use management compatible with CBA: Optimal areas include activities such as:

- Extensive animal production (agriculture);
- Conservation management and stewardship; and
- Ecological infrastructure.

Other potential activities include, depending on the existing land-use, current ecological state, and the sustainable nature of the development type:

- Low impact/eco- tourism;
- Utilities and services;
- Roads; and
- Sewerage works.

2.1.7 Threatened Ecosystem Status

The Dam falls within the grassland biome that is characterised by the Northern KwaZulu-Natal Moist Grassland. According to the KZN Biodiversity Sector Plan (2014), the threat status of the terrestrial ecosystem is classified as Vulnerable (VU).

2.1.8 Flora

The Northern KwaZulu-Natal Moist Grassland biome is generally dominated by alien invasive plants such as *Themeda triandra* and *Hyparrhenia hirta* (Mucina and Rutherford, 2006). The dominant grasses makes the area prone to fire, as they are highly flammable throughout the year, which can pose a fire risk to existing facilities and visitors at the Dam.

The vegetation around the Dam is also under threat from overgrazing by the domestic livestock in the area. Overgrazing can lead to the spread of alien invasive plants and cause soil erosion, which in turn may contribute to sediment transport.

Figure 4: 2014 KZN Biodiversity Sector Plan

Source: Adopted from SANBI BGIS Map Viewer

2.1.9 Fauna

The Dam is situated close to Tholithemba community where domestic livestock such as goats, cattle and sheep graze and drink water from the Dam. 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 7** shows livestock at the Dam.

Figure 5: *Livestock at the Dam*

The mammal species of special concern listed in the table below have previously been recorded within 2730dd QDS (ADU, 2015). These species were most likely recorded in the nearby Vryheid Mountain Nature Reserve, however these species could be present at the Dam.

Table 4: *Mammal Species of Special Concern Identified within 2730dd QDS*

Scientific Names	Common name	Red list category
Dasymys incomtus	Common Dasymys	Near Threatened
Rhinolophus swinnyi	Swinny's Horseshoe Bat	Endangered

2.2 BUILT ENVIRONMENT

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

- Roads and land-based transportation;
- Non-land-based transportation;
- Bulk services;
- Other on-site facilities;
- Fencing;
- Management and operation; and
- Safety.

2.2.1 Roads and Land-Based Transportation

Surrounding Roads: The Dam is situated along provincial road networks (R33, R34 and R69). The unnamed/gravel road (south east of the Dam) provides direct access to the Dam.

Internal Road and Circulation: There are several internal gravel roads that leads to the DWS offices, clubhouse, picnic areas and the cultural rondavels.

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

2.2.2 Non-Land Based Transportation

Rail Transport: The KwaZulu-Natal railway passes on the north east side of the Dam. Refer to **Figure 7**.

Air Transport: Vryheid Airport is a small airport located in the town of Vryheid, north of Klipfontein Dam, as shown in **Figure 8**. The airport offers no scheduled flights, but private jet charters are available to and from the airport.

Figure 6: Google Maps - Klipfontein Dam

In terms of the Final Zululand District Municipality IDP (2017/18), this "Airport" facility should be seen as an opportunity for the development of the agricultural and tourism sectors.

2.2.3 Bulk Services

Solid Waste: There is lack of solid waste management and infrastructure around the Dam. Typical waste observed around the Dam includes solid waste such as disposable nappies, dumped into the river upstream of the Dam. This poses a threat to the quality of the water in the Dam. According to the Abaqulusi Local Municipality IDP (2016), most of the surrounding communities do not receive proper solid waste services (i.e. not collected by the municipality, burnt in pit, bury in vicinity, no removal).

According to the Final IDP Review (2018-2019), the Constitution states in section 156(1) that a municipality has executive authority in respect of, and has the right to administer the local government matters listed in Part B of Schedule 4 and Part B of Schedule 5. These functions inter alia include refuse removal, refuse dumps and solid waste disposal, however, the ALM collects refuse in urban areas only (i.e. Vryheid), and not all Wards are covered by the municipality. Refuse removal is currently outsourced. However, Vryheid has been granted a licence for a landfill site.

2.2.4 Other on-site Facilities

The existing facilities at the Dam includes:

- DWS offices;
- Ablution facility and braai stands;
- Cultural rondavels; and
- Four existing slipways.

Figure 7: Existing Cultural Rondavels

2.2.5 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. cultural rondavels, ablution facilities and braai stands) as shown in **Figure 10**.

Figure 8: Vandalised Ablution Facilities and Rondavels

2.2.5 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, ALM 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 watercourse 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).

2.2.6 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, the Incident Management Plan will be implemented to ensure that incidents are recorded and responded to.

2.3 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 process to uplift the standard of living of the communities. The study area falls within ALM under Ward 13, refer to **Figure 9** for the municipal ward boundary.

A social audit was conducted for Ward 13 of ALM 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 13 of ALM is summarised in the sub-sections as follows:

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

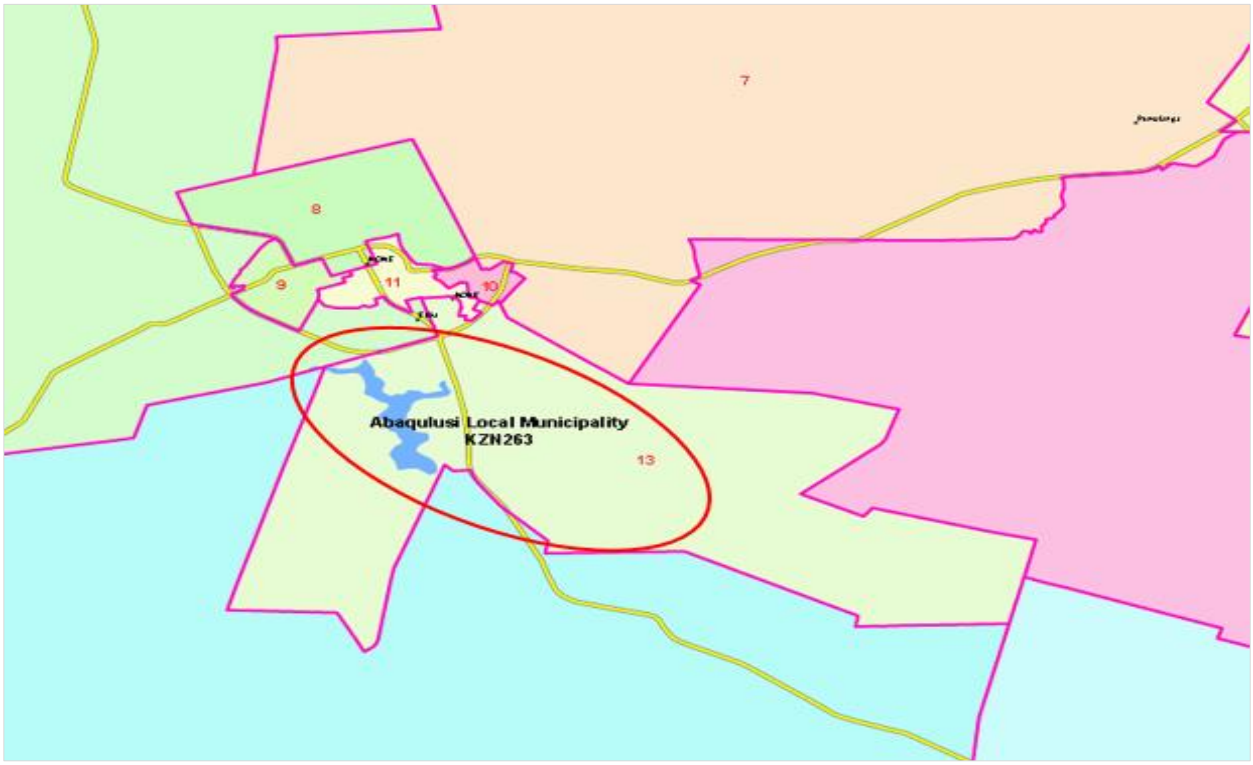

Figure 9: ALM Ward 13 Delimitation

Source: Municipal Demarcation Board (2016)

Population Size

Ward 13 has a total of 14 255 individuals representing about 6% of the ALM population.

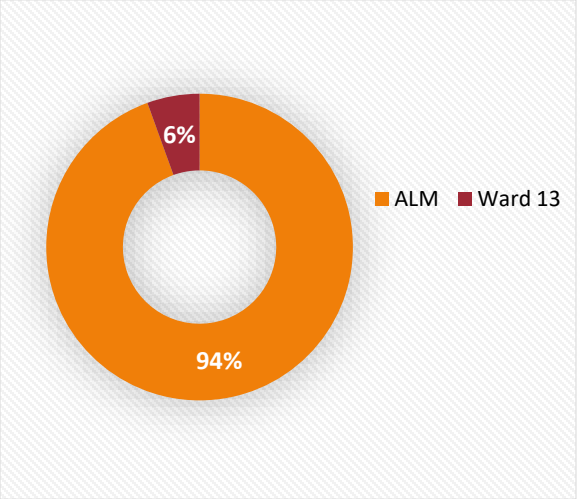

Figure 10: Population size of Ward 13 ALM
Source: Stats SA Community Survey (2016)

Educational Level

Thirty percent (30%) of residents in Ward 13 have matriculated, and only 4% of the population has attained higher education.

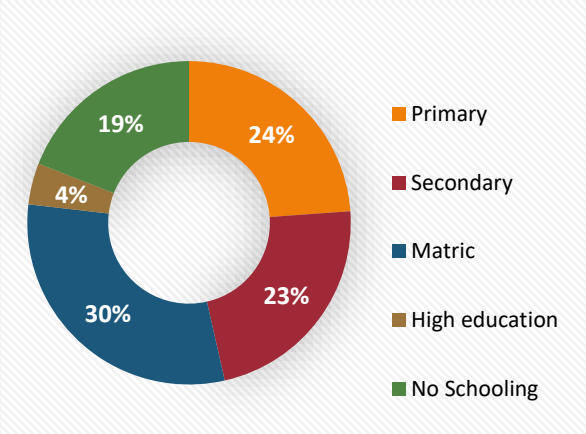

Figure 11: Education Level of Ward 13
Source: Stats SA Community Survey (2016)

Employment status

Two percent (2%) of the residents are employed, 12% are unemployed. The residents not actively contributing to the economy accounts to 28% of which 3% are discouraged work-seekers, suggesting that they no longer seek to become employed.

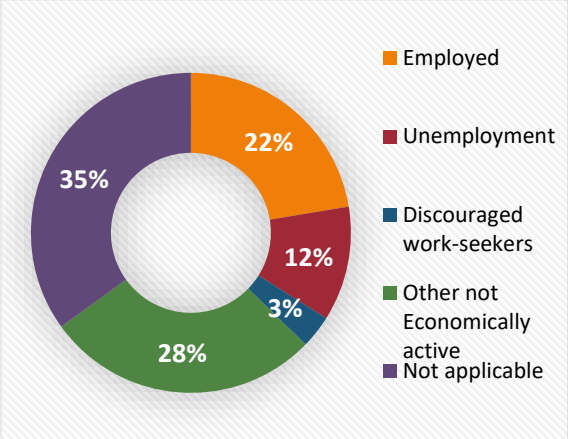

Figure 12: Employment Status of Ward 13
Source: Stats SA Community Survey (2016)

Monthly Income

Ward 13 has 5 908 individuals without a source of income representing 41% of the ALM population (refer to **Figure 14**). Rigorous and integrated efforts are required by municipalities to create work opportunities and sustainable livelihoods for the people.

The Local Economic Development and Social Development unit within ALM 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.

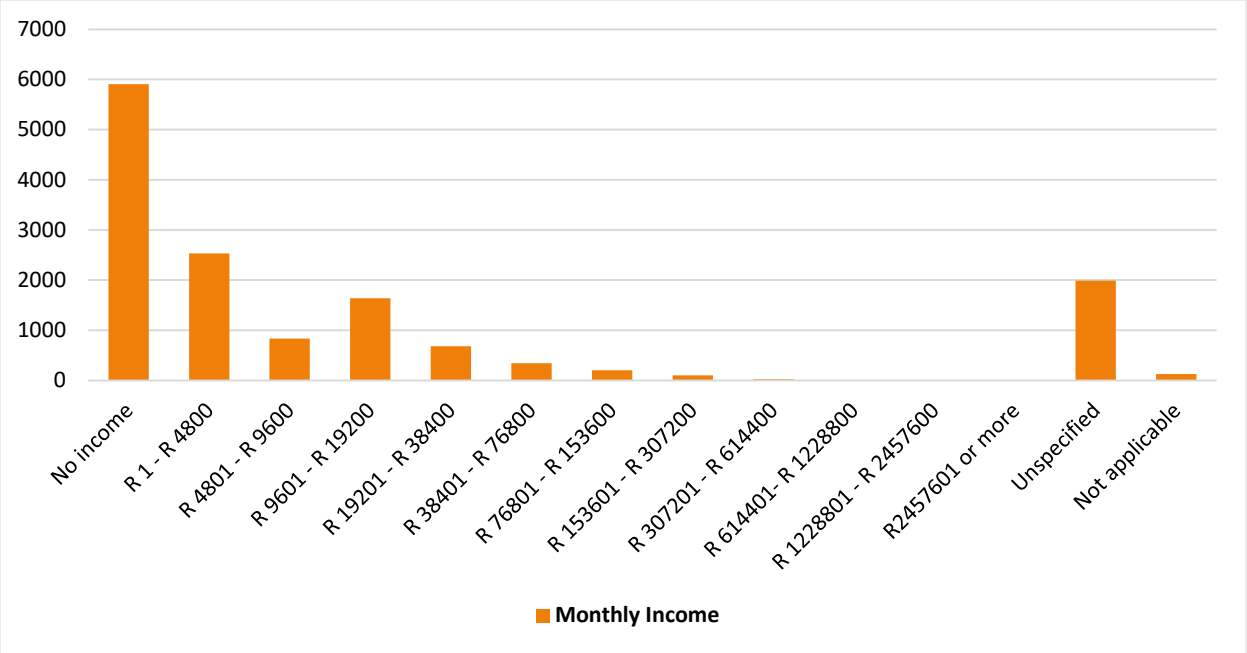

Figure 13: Monthly Income for Ward 13

Source: Stats SA Community Survey (2016)

2.3.1 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 use.

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.

In terms of recreational angling, this sector has a substantial participation rate and a significant economic impact through the tourism sector and angling supply value chains. It is therefore important that recreational anglers are recognised as important stakeholders in South African inland fisheries and that their interests are recognised in future fisheries development initiatives.

The value chain associated with the recreational fishing sector has the potential to support rural food security through decent jobs, entrepreneurship and participation in the fishing linked tourism service sector.

In addition to the above, subsistence fishing is widely practiced by rural community members to sustain their livelihoods. Appropriate policies to promote greater participation by rural community members in the recreational angling value chain have the potential to create opportunities such as decent jobs and food security in rural areas. In terms of the 1ST Draft of the National Inland Fisheries Policy Framework for South Africa. Department of Agriculture, Forestry and Fisheries (2018), more can be done to ensure that this economic sector contributes to transformation and equitable socio-economic benefit from inland fish resources

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 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 in line with the process triggers and potential challenges presented in **Table 5.**

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 5: Summary of triggers and potential challenges for Klipfontein Dam

Triggers (s)	Potential Challenges
Resource Management:	• The Dam is silted and this poses a threat to water quantity and quality of the Dam. • There is lack of solid waste management around the dam (i.e. solid waste such as disposable nappies are dumped into the rivers that are upstream of the dam), this poses a threat to the quality of water in the Dam.
Recreational Industry Involvement:	• Lack of access control leads to vandalism and theft of the existing recreational facilities. • There is currently no management structure in place to oversee the use of the Dam for recreational purposes. This is evident when looking at the existing cultural roundavels that are damaged and not utilised for their purpose.
Community Participation and Beneficiation	• Local Communities should be involved in managing and utilising the Dam for recreational purpose. 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 a lack of community awareness regarding environmental and tourism education.
Public Policy	• Klipfontein Dam has been identified as an area with tourism potential in the Abaqulusi Local Municipality (ALM) Tourism Development Plan.

3.3 RMP DEVELOPMENT PROCESS

The RMP is developed in accordance with the RMP guideline procedure (DWAF, 2006) which stipulates the stages that needs to be adhered to as shown in **Figure 14.**

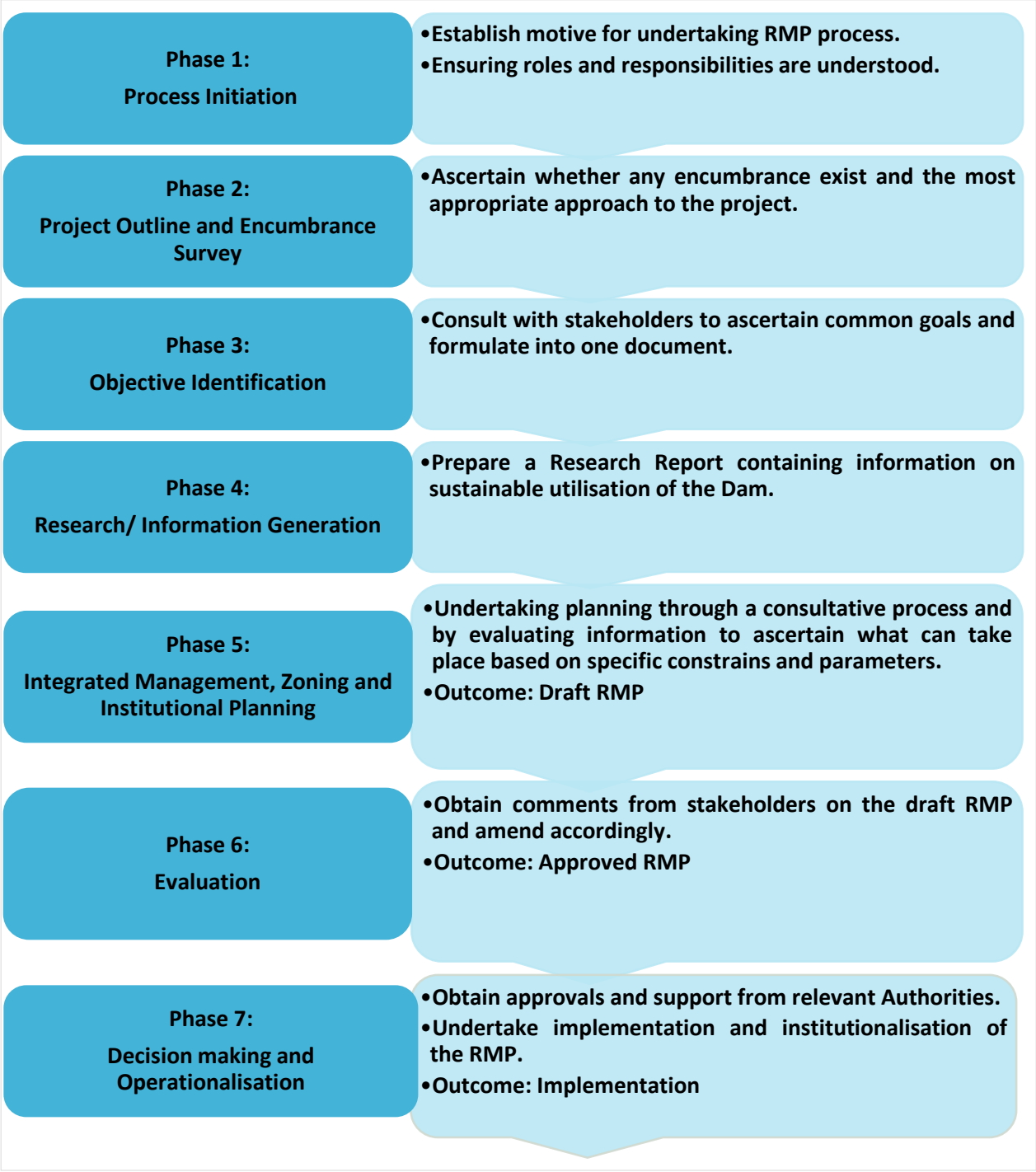

Figure 14: RMP Procedure
Source: Adapted from DWAF (2006)

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 and Dam Control Officer) on **3 May 2016.**

During the site inspection the following were observed: vandalism of facilities i.e. braai stands, showers and ablution facilities; damage to cultural rondavels; siltation in the Dam and lack of access control on the other sides of the Dam. Additional background information was collated from consultation with different stakeholders. Potential Interested and Affected Parties (I&APs) were identified during the site inspection through liaison with the Dam Control Officer.

3.4.3 Public Participation

The Public Participation (PP) process is a process in which potential Interested and Affected Parties (I&AP) are given an opportunity to comment or raise issues of concern on specific matters. The three (3) fundamental and theoretical objectives of the 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&AP.

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, that 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 English and IsiZulu and were distributed on **11 August 2017.** For the draft RMP presentation, flyers were distributed on **16 March 2018**. (Refer to **Appendix C**).

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 04 August 2017, notifying them about the scheduled consultative meetings. The draft RMP presentation was sent on **15 March 2018** (refer to **Appendix D**).
- **Background Information Document (BID):** The BID was sent to stakeholders *via* email with background information about the proposed RMP project (refer to **Appendix E**).
- **Authority Meeting:** The initial authority meeting was held on **23 August 2017** at

the **Abaqulusi Local Municipality: Mayor's Office.** The draft RMP was presented on **27 March 2018** at Abaqulusi Local 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 meeting was held on **23 August 2017** at Ward 13, Tholithemba. The Draft RMP was presented on **27 March 2018** at Tholithemba.
- **Comments and Responses Register:** A copy of the draft RMP report was circulated on **15 February 2018** for commenting. The initial commenting period lapsed on **30 March 2018.** On the day of the meeting, the commenting period was extended to **09 April 2018.** The comments received were documented in the Comments and Responses Register (refer to **Appendix F**).

3.4.4 Planning Partners

As an integrated planning procedure, the RMP Process addresses both the institutional structure required to effectively manage the water resource, as well as the site planning parameters (environment, community and visitor) resulting in a management plan specific to the Dam. Both the proposal regarding the institutional structure and the management plan are consolidated into a RMP, which will serve as guide for the development and management of the water resource for recreational use.

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 6.** 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

Table 6: Planning Partners

Department	Functions / objections
Abaqulusi Local Municipality	The Dam is within the jurisdiction of the ALM which is proposed to be the Implementing Agency (IA) for the Klipfontein Dam RMP on behalf of DWS. The Local Economic Development (LED) unit within Abaqulusi 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.
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

Department	Functions / objections
	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.
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.

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** and **Socio-Cultural**.

Tables 7 summarises the identified biophysical and social-cultural encumbrances/ limitations, respectively that might affect the development or implementation of the RMP for the Dam.

Table 7: Summary of Biophysical and Social-Cultural Encumbrances

Item	Description
Climate	• The area experiences high rainfall during summer season which is the best time for sightseeing and participating in recreational activities. This will affect some of the recreational activities such as camping and picnicking.
Flora	• The shoreline vegetation around the Dam is threatened by overgrazing from the domestic livestock which cause soil erosion issues. Soil erosion is also contributing to Dam siltation. • The dominant grasses make the area to be prone to fire, as grass is highly flammable throughout the year.
Fauna	• Threats of livestock drowning while trying to reach for water in deeper areas.
Geology and Soils	• Soil can be easily deposited into the Dam due the topography and the high erodibility characteristics of the soils.
Hydrology	• The presence of silt in the Dam will have an impact on the Dam's water capacity. • Siltation will negatively affect the water quality of the Dam by increasing turbidity.
Waste	• There is lack of solid waste management around the Dam (i.e. disposable nappies, dumped into the upstream rivers of the Dam).
Geology and Soils	• The ownership of the cultural rondavels should be confirmed prior to the RMP implementation. • No proper management of the cultural centre at the Dam hence its current deteriorating state. • Tourists are not attracted by Klipfontein Dam due to the deteriorated recreational value. • Lack of proper recreational management.
Education Level	• Due to lack of educational, it is unlikely that the majority of the residents in Ward 13 will have received any kind of training to become active participants in the tourism sector.
Employment Status	• Discouraged work seekers may not be interested in the RMP implementation, thereby affecting the level of community participation in the implementation of the RMP.

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 8** for the SWOT analysis.

Table 8: SWOT Analysis for Klipfontein Dam

Strengths	Weaknesses
• The Dam is easily accessible and has the potential to attract tourists. • The Dam has relatively large surface area which could allow variety of events. • The community showed an interest in conducting some activities that can even generate income for them around the Dam (i.e. traditional dancing and catering).	• The Dam is silted. • There is lack of solid waste management around the Dam. • There is no adequate access control to the Dam (i.e. the Dam is not fenced entirely and this provides an opportunity for livestock and illegal fishing). • There is lack of proper recreational management. • Braai stands, toilets and showers have been vandalised.
Opportunities	**Threats**
• The refurbishment of the cultural centre at the Dam can attract more tourists as well provide job opportunities to local communities (i.e. cleaners, security and catering). • The Dam has the potential for the development of camping sites. • The community can be educated on how to utilise the Dam for other recreational activities such as camping, swimming and boating. This will assist in uplifting the surrounding local community. • Small-scale fishery is an opportunity for young people within the community. • The Dam may be utilised to host events. • Swimming pools could be constructed to cater for younger people and those who cannot swim in the Dam because of safety concerns. • A possibility of overnight accommodation that can also generate income.	• There could be drowning incidents if there is no proper supervision. • Land based and water resource pollution upstream. • There could be depletion of the fish population, if fishing within the Dam is not controlled through measures such as permits. • Further siltation at the Dam. • Lack of solid waste management around the Dam (i.e. disposable nappies are dumped into the rivers that are upstream of the Dam).

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

KPA 1: Resource Management

- To remove silt from the Dam in order to increase the water quantity;
- To improve the water quality of the Dam; and
- To remove alien invasive plants species at the Dam in order to support the proposed recreational activities and to maintain the native ecological aspect of the area.

KPA 2: Resource Utilisation

- To put in place adequate access control measures such as fencing, in order to ensure the safety of people and livestock;
- To introduce aquaculture at the Dam;
- To promote sustainable subsistence fishing at the Dam;
- To construct swimming pools in order to prevent children and elderly people, who cannot swim, from drowning; and
- To refurbish the cultural rondavels to be utilised by overnight visitors and for hosting events.

KPA 3: Benefit Flow Management

- To uplift the local economy and increase benefit flows to the surrounding communities through community empowerment; and
- To establish an effective institutional structure that can manage recreational use of the Dam in an acceptable manner, which is also representative of all the stakeholders.

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 have a sustainable tourism destination, which is safe and free from pollution, where events are hosted for the benefit of the community".

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 Potential:

Klipfontein Dam is well known as the top fresh-water fishing Dams in South Africa, and this has in the past-attracted angling competitions to be hosted at the Dam[2].

According to the Zululand Coordinated Local Economic Development Framework (2003), the area has tourism development potential that will assist in unlocking the socio-economic potential of the Dam. For example, the refurbishment of the Zulu Cultural Village that sits on a hill overlooking Klipfontein Dam, can add strong attraction to the Dam.

In terms of the ALM Final Integrated Development Plan Review (2018/2019), the municipality host the Grootgewacht, Bloemveld, **Klipfontein** and Bivane dams which are major tourism destinations because they offer a variety of leisure and accommodation facilities, all centred on water sports.

To enhance tourism within the Abaqulusi area, the municipality has budgeted R500 000.00 for future projects and events for the 2018/2019 financial year. Although no budget is allocated specifically for the Dam, the identified objectives for the Dam have potential to assist the municipality to allocate funds for Klipfontein Dam.

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.

[2] https://vryheidherald.co.za/8969/klipfontein-Dam-can-guests-expect/

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 17** shows the plans and their components.

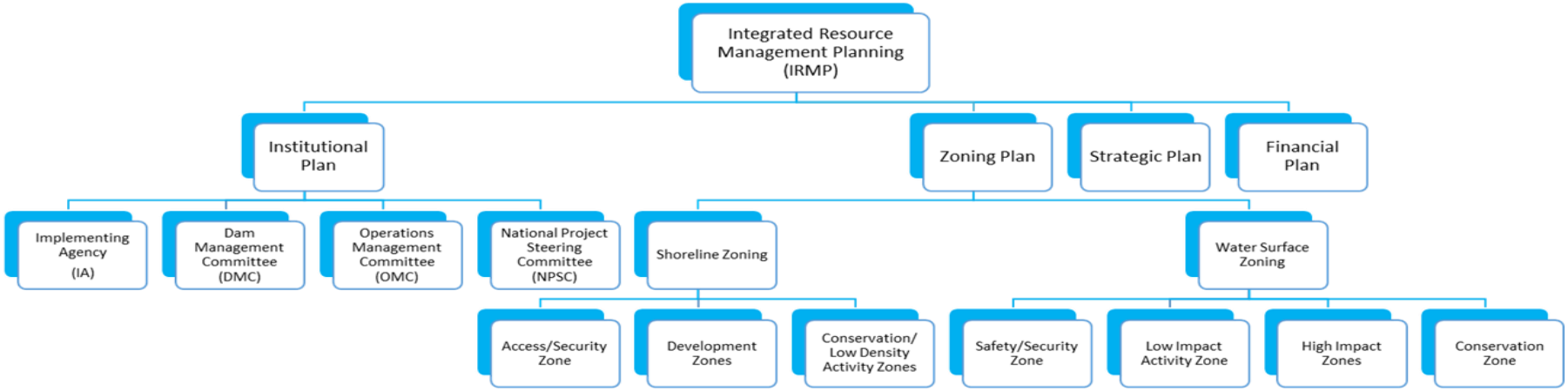

Figure 15: Integrated Resource Management Planning

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 Implementing Agency (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 Klipfontein 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 16 shows the proposed parties to form part of the DMC for Klipfontein Dam.

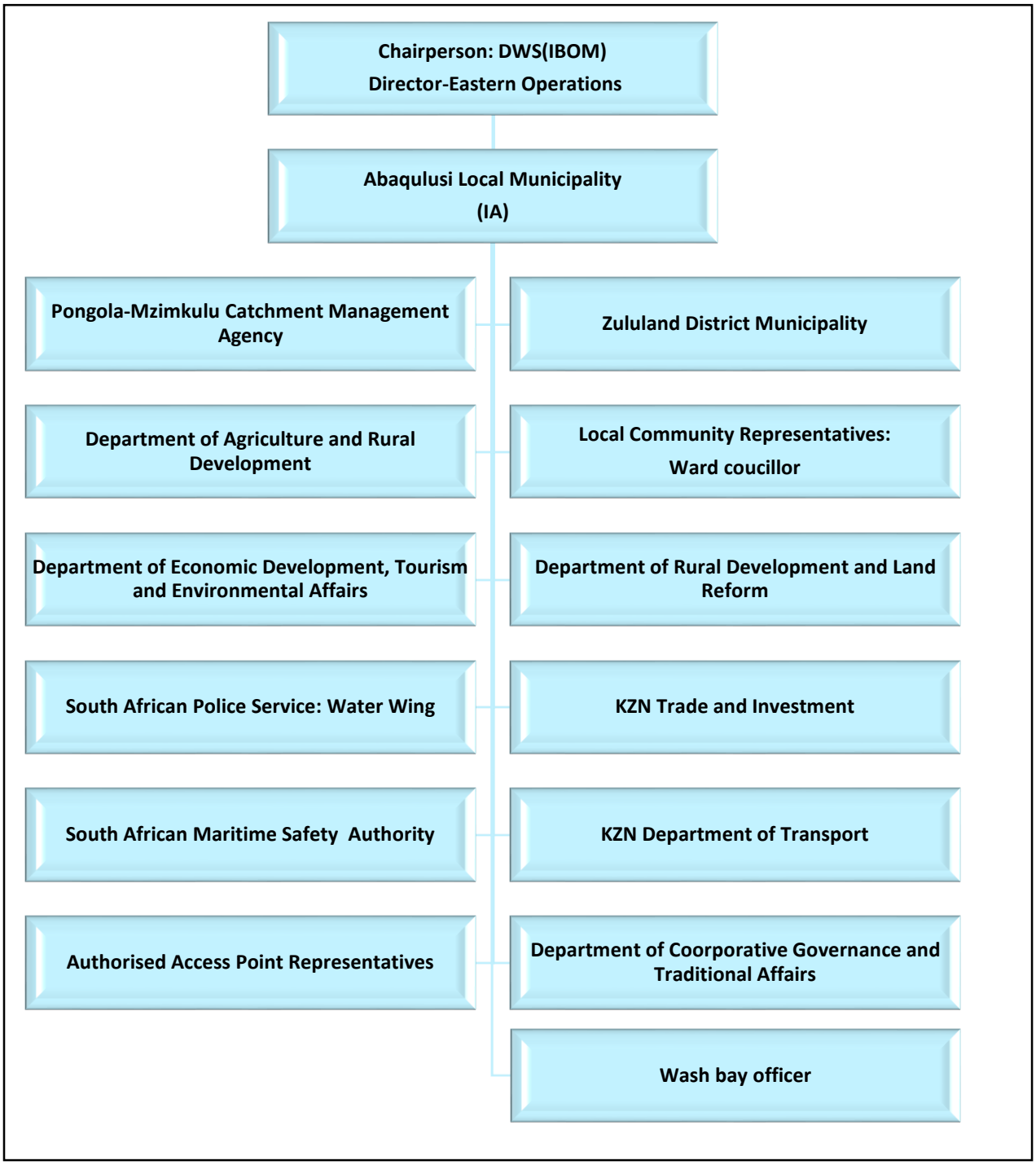

Figure 16: Proposed DMC

Management Tools:
The DMC will have 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)[3]:
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 Cooperative 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

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

- Access points to be used.

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

National Affiliations:
All recreational clubs (i.e canoeing and fishing) must be affiliated to a South African Sports Confederation and Olympic Committee (SASCOC) affiliated organisation.

4.1.3 Operations Management Committee (OMC)

There is an existing Chief Directorate: Infrastructure Operations Management Committee (CD: IO MANCO) within Infrastructure Operations which comprises of directors of four (4) operations (Northern, Southern, Eastern and Central) and is chaired by the Chief Director: Infrastructure Operations within IBOM as illustrated in **Figure 17**.

The committee shall meet quarterly to discuss matters relating to operations and maintenance of all GWWs. An RMP must be a standard agenda item. Any matters relating to the RMP that are outside the scope of the DWS will be escalated to the NPSC (described in detail in **4.1.4**).

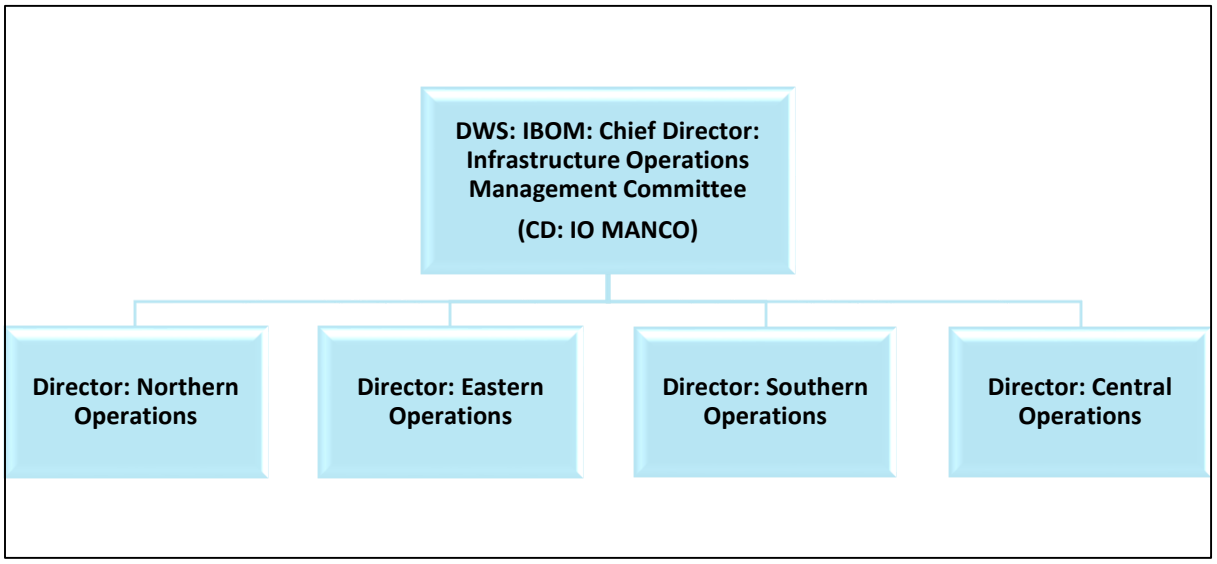

Figure 17: Existing CD: IO MANCO

4.1.4 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 18 shows government departments (also referred to as planning partners and/ or authorities) and agencies that will form part of the NPSC:

Figure 18: Proposed NPSC

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. This RMP and/ or zonation does not legitimise nor does it authorise any existing built structures, infrastructure or services within the Government Water Work (in both the water surface and shoreline).

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. This zonation map is a desktop exercise and must not be used as navigational purposes. DWS and SAMSA will update the zonation map to be used for navigational purposes. 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[4] 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 9 and **Figure 19** shows the proposed water surface zoning for Klipfontein Dam

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

Table 9: 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 the DWS and authorised personnel	• Public access	• Area should be demarcated by demarcation makers and AtoN.
• Conservation Zones.	• None	• Public activities (to prevent aquatic habitats disturbance)	• Area should be demarcated by demarcation makers and AtoN. • Strict management and control of these areas, especially with regards to illegal fishing and dumping.
• Low Impact Activity Zone.	• Angling • Rowing • Paddle boating • Float tubes • Canoeing • Aquaculture facilities	• Swimming • Motorised boating • Water skiing	• Area should be demarcated by demarcation makers and AtoN. • No private slipways/ floating jetties to be built without approval from the DWS. • Launching and mooring of vessels should take place at this zone. • Motorised boats 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	• Motorised boating • Water Skiing • Aquaculture facilities	• Swimming • Angling • Rowing • Paddle boating • Float tubes • Yachting • Canoeing	• Area should be demarcated by demarcation makers and AtoN. • All activities within the high impact zone shall take place beyond 70m from the shoreline. • Activities within this zone must be evaluated to determine their impact on the water resources and other Dam users before they are allowed into the Dam.

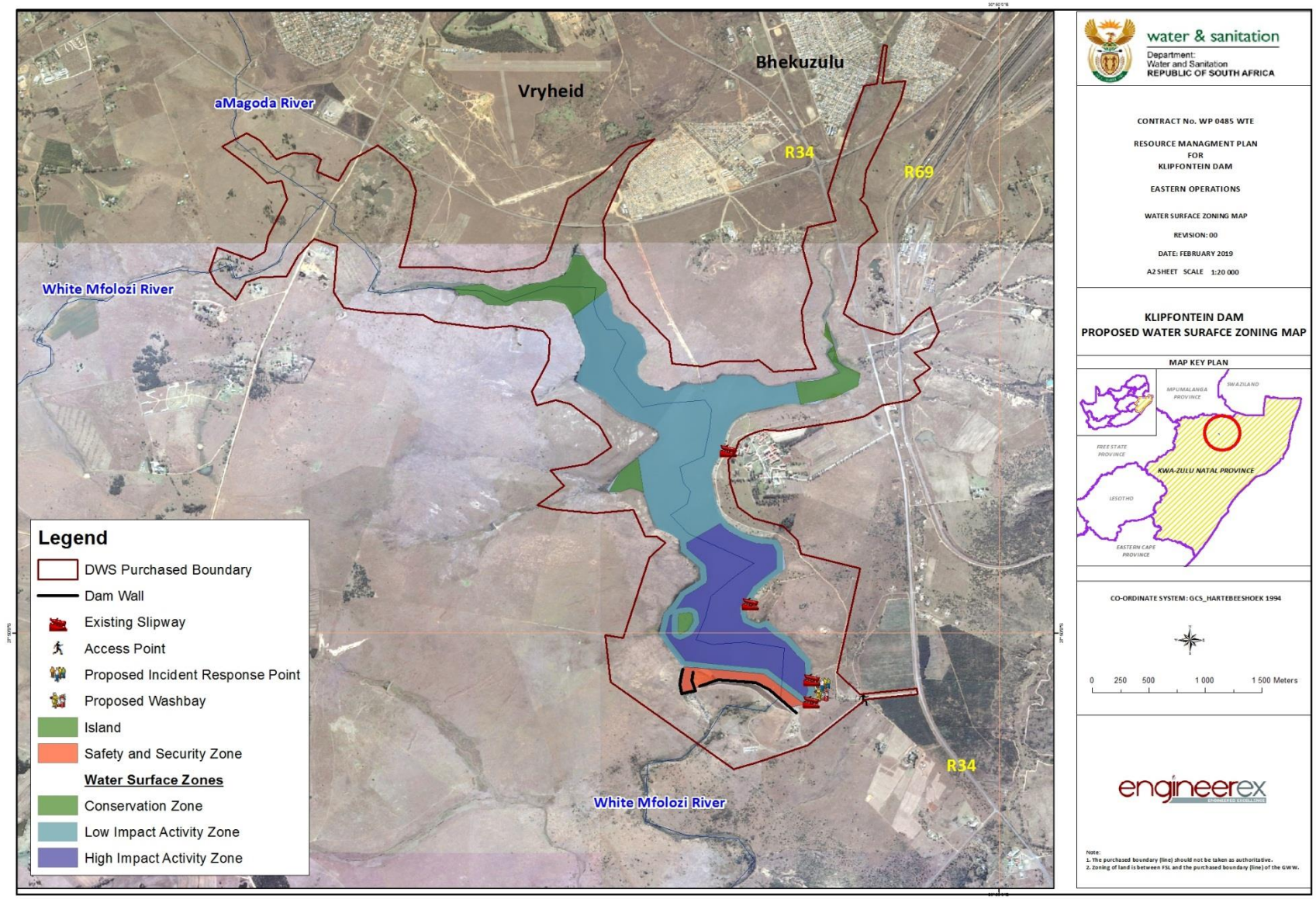

Figure 19: Proposed Water Surface Zoning

4.2.2 Shoreline Zoning[5]

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 10 and **Figure 20** shows the proposed shoreline zoning for Klipfontein Dam

[5] Permanent structures within the purchased boundary are not allowed. All developments should be outside 1:100 year floodline.

Table 10: 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	• Unauthorised public access	• A minimum area of 100m wide downstream of the Dam wall should be demarcated preventing public access and use.
• Conservation/ Low Density Activity Zone	• Conservation management activities	• Development	• Permissible activities may only be permitted provided that they are approved by the relevant Authorities and they are conduct as per the relevant legislations. • These zones should control access to ecological sensitive areas.
• Medium Density Activity Zone	• Shoreline fishing • Day visitors • Picnic areas • Braai facilities • Camping site (tents and caravans) • Swimming pools • Ablution facilities and infrastructure for services	• Accommodation facilities such as • Chalets • Recreational club houses • Permanent structures	• The management of this area should follow PPP process in terms of the National Treasury. • Requirements of the NWA and NEMA must be taken into account in all recreational activities. • All developments must be approved by the DWS. • No private slipways to be built without approval from DWS.
• High Density Activity Zone.	• Recreational clubs • Chalets • Ablution facilities • Infrastructure for services	• Permanent Structures	• The management of this area should follow PPP process in terms of the National Treasury. • Requirements of the NWA and NEMA must be taken into account in all recreational activities. • Noise level to be kept at a minimum. • All developments must be approved by the DWS. • No private slipways to be built without approval from the DWS.
• Community Zone	• Subsistence fishing; and • Livestock watering points.	• Chalets; • Recreational club houses; • Braai facilities; • Camping and picnicking; and • Permanent Structures.	• No private slipways to be built without approval from the DWS. • Requirements of the NWA must be taken into account in all recreational activities.

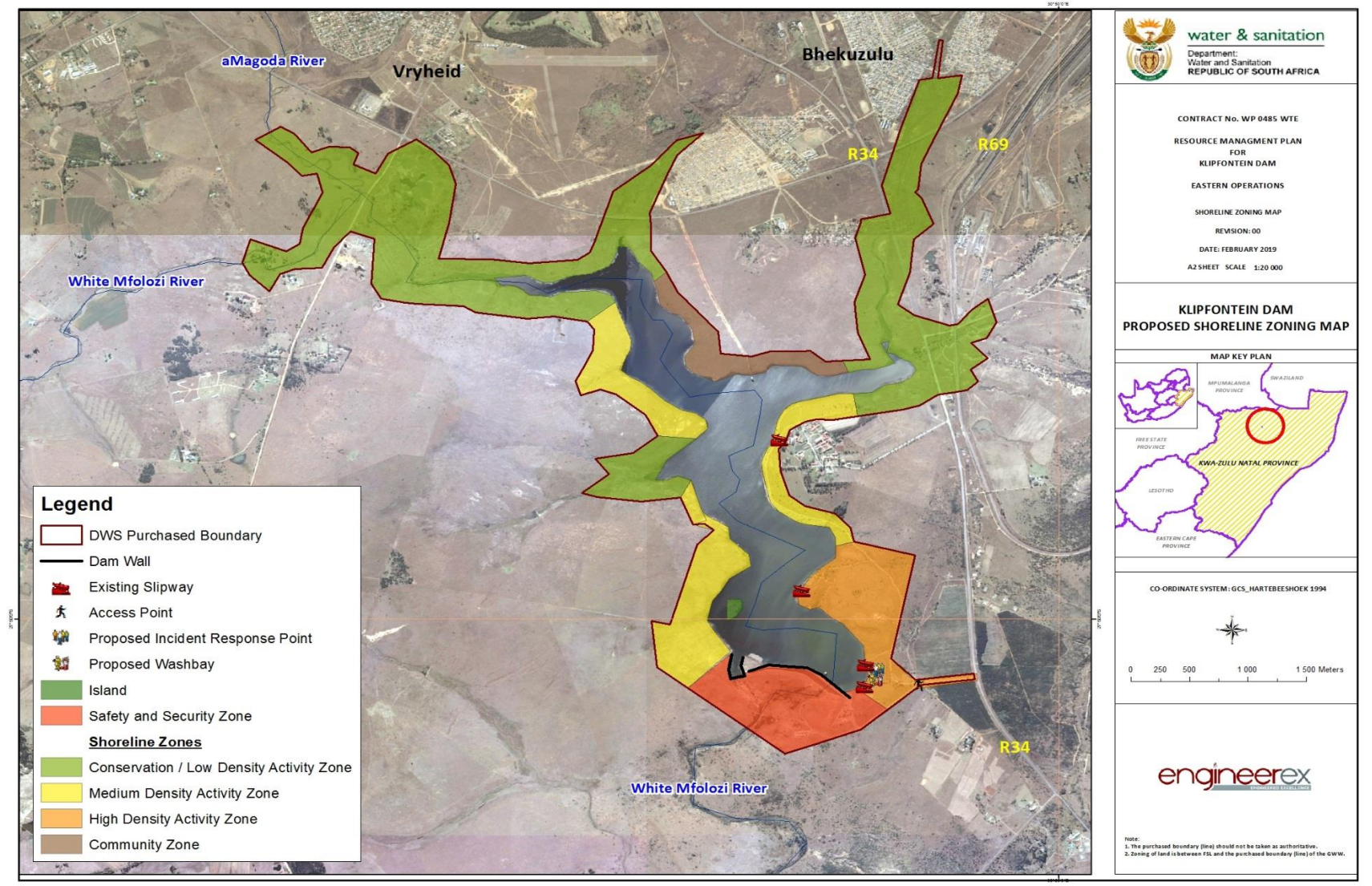

Figure 20: Proposed Shoreline Zoning Map

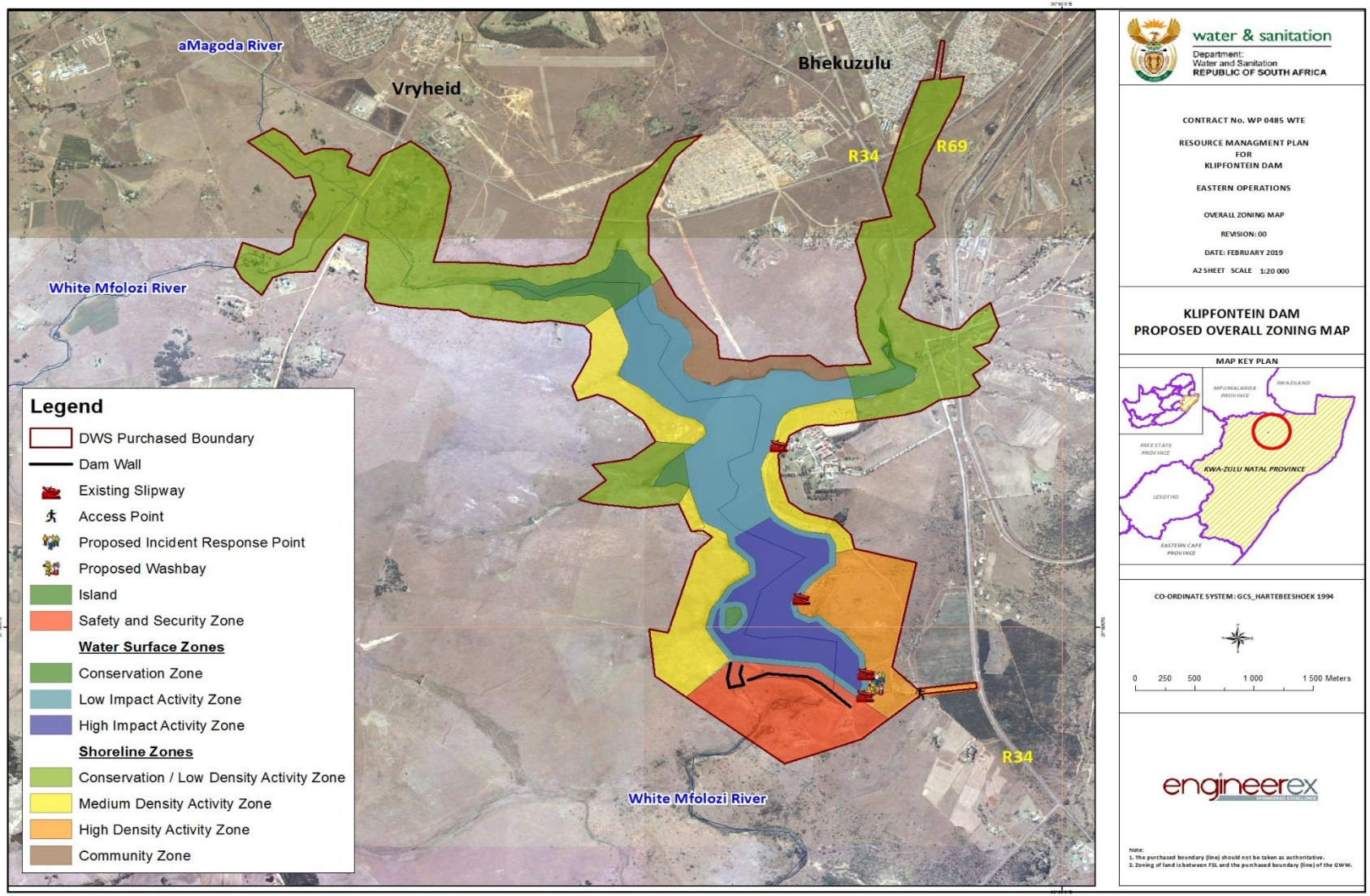

Figure 21: Proposed Overall Zoning Map

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)

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 11 shows the type of craft and the required area for use

Table 11: Area required per user

Craft	U/A (ha/craft)
Canoe	1.0
Angling	3.0
Paddle boating	1.0
Float tubes	1.0
Rowing	0.5
Water-Skiing	2.0
Powerboats	4.0
Average	**1.8**

Based on the **Table 9**, the average hectare per user is 1.8 ha (18 000 m^2), the value of 3.0 ha (30 000 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 Klipfontein Dam is **295.9 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
=295.9 x 1/3 x 1
= 98 crafts on the Dam

Real Carrying Capacity (RCC)

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

Where:

Cf = a corrective factor expressed as a percentage.

The RCC takes into account factors that limit recreation use (craft based) of the Dam. For Klipfontein Dam, these factors includes sensitive areas, such as conservation areas (15.4 ha) as well as aspects regarding the safe operation and management of the Dam (9.5 ha).

These factors accounts for 24.9 ha, that is 8% of the area that is not available for recreational use.

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

= 98 x (100 – 25)%

= 90 crafts

Effective Carrying Capacity (ECC)

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

Given that there is no adequate recreational infrastructure facilities and no management capacity at the Dam, the ECC is currently 0. Once a proposed recreational Institutional Structure and infrastructure capacity is in place, the ECC can be recalculated to verify if the RCC can be possible.

4.3 STRATEGIC PLAN

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

In **Tables 12** to **14**, the strategic plan on how to achieve the objectives identified for the Dam is outlined.

Table 12: Strategic Plan for KPA 1: Resource Management

Objective (What do we want)	Motivation & Strategy (Why do we want to achieve this)	Action Plans (How do we achieve this)	Management Support (Who will be involved)
Siltation: • To remove silt from the Dam in order to increase the water quantity.	• The presence of silt in the Dam has a major negative impact on the Dam's water capacity and this may prevent potential recreational activities, such as boating, from taking place.	• Develop a plan for removing the silt from the Dam.	• DWS • DEA • Department of Mineral Resources (DMR) • IA (ALM) with the support of the DMC
Water Quality: • To improve the water quality of the Dam.	• It has been reported that there is a threat of a high E.coli count in the Dam due to the untreated sewage that is released from upstream WWTW6. Furthermore, disposable nappies are dumped into the upstream rivers. The Dam currently has a large amount of algae.	• To co-ordinate the implementation of the necessary upgrades to the sewage system network in areas surrounding the Dam. • DAFF should assist local famers to rely more on organic fertilizers in order to reduce water pollution from agricultural effluents. • Frequent monitoring of water quality. • Green drop assessment of the Waste Water Treatment Works (WWTWs) near the Dam. • Existing water quality monitoring points must be sampled regularly. • Implement the Cooperative Inland Waterways Safety Programme (CIWSP) in terms of water quality reporting and monitoring.	• ZDM. • ALM Engineering Department • DWS (Water Quality and River Health section) • IA (ALM) with the support of the DMC • Department of Economic Development, Tourism and Environmental Affairs (EDTEA) • Department of Agriculture and Rural Development (DARD) • Other relevant Non-Governmental Organisation (NGOs) that concern themselves with water quality and environmental health
Alien Plants Control:	• The Dam is infested with aquatic weeds, and the further spreading of	• Initiate businesses in the region to 'adopt' sections of the Dam for the clearing of alien	• DWS

[6] Report by Vryheid Herald (2016) https://vryheidherald.co.za/65141/tests-reveal-high-*E.Coli*-count-in-drinking-water/

Objective (What do we want)	Motivation & Strategy (Why do we want to achieve this)	Action Plans (How do we achieve this)	Management Support (Who will be involved)
• To remove alien invasive plants species at the Dam in order to support the proposed recreational activities and to maintain the native ecological aspect of the area.	these species can have a detrimental effect on the ecology of the Dam and the natural aesthetic of the area in general. They can also lower the diversity of aquatic animal species within the Dam, as well as hindering other proposed recreational activities, such as boating.	invasive plants and in return receive advertising and publicity (i.e. road side and/or newspaper advertising). • Co-ordinate a systematic programme for clearing alien plants and vegetation rehabilitation in co-operation with Working for Water (WfW). This programme should begin on all state-owned land. • Removal of alien invasive plants, and replacement by fast growing indigenous plants - job creation. • Prevention of overgrazing / over-utilization. • Put in place a cable to catch the hyacinths at the inflow; this can help to prevent the spreading of the plant into the Dam. • Develop an inspection and cleaning mechanism (wash bay) to ensure that vessels entering the Dam do not contaminate it with alien vegetation.	• DEA [Working for Water (WfW) programmes] • DAFF (Soil Management section) • Expanded Public Works Programme (EPWP) • South African Biodiversity Institute (SANBI) • IA (ALM) with the support of the DMC • Local Businesses • ZDM.
<u>Safety of Navigation:</u> • Improved safety of navigation.	• There are no standardised and harmonised AtoN and demarcation markers available at the Dam.	• Implement standardised and harmonised AtoN and demarcation markers as directed by SAMSA to improve safety of navigation at the Dam.	• DWS to facilitate the process • Agreements between SAMSA, DWS, LAAPs and other relevant parties to be concluded • IA (ALM) with the support of the DMC

Table 13: Strategic Plan for KPA 2: Resource Utilisation

Objective (What do we want)	Motivation (Why do we want to achieve this)	Action Projects (How do we achieve this)	Management Support (Who will be involved)
Access Control: • To put in place adequate access control measures, such as fencing, in order to ensure the safety of people and livestock.	• There is limited access control at the Dam as some parts of the Dam (inlet) are not fenced. As a result, livestock and people have access to the Dam in an uncontrolled manner. • This limited access control leads to vandalism and theft of the existing facilities at the Dam such as the cultural rondavels, ablution facilities and braai stands.	• Ensure that the Dam is fully fenced and that access is only gained through controlled entrances. • Appoint safety officers to monitor Dam access points and to ensure that the Dam safety rules are adhered to at all times. • Raise awareness among the local communities about the importance of having the Dam and facilities to prevent vandalism.	• IA (ALM) with the support of the DMC • DWS
Aquaculture: • To introduce aquaculture at the Dam.	• It was indicated that most of the youth in Vryheid are interest in fishing. • Aquaculture can make an important contribution to nutrition, food security, sustainable livelihoods and poverty alleviation to the local community.	• 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. • 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, and targeted production; • 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.	• DAFF • DARD • DWS • DAEA • ZDM • IA (ALM) with the support of the DMC •

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)
Subsistence Fishing: • To promote sustainable subsistence fishing at the Dam.	• The Dam is rich in fish diversity, which plays a major role in the ecological balance of the aquatic ecosystem and also serves as a food source for local subsistence fishermen. • Subsistence fishing by the local community remains an active use of the Dam, however, this must be regulated by relevant policy to avoid overfishing of the Dam.	• Permits (fishing licences) must be acquired and the use of gill nets must be prevented, as it has significant negative impact on fish population in the Dam. • Educate people 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 communication signage in order to effectively inform different angling groups about the Dam fishing rules. • Appoint safety officers that will monitor compliance with the Dam fishing rules. • Generate the necessary infrastructure, such as banks to fish from, in order to support sustainable fishing.	• DAFF • DARD • EDTEA • IA (ALM) with the support of the DMC • Other relevant conservation NGOs within the Vryheid Area must be involved • DWS
Swimming Pools: • To construct swimming pools in order to prevent children and elderly people, who cannot swim, from drowning.	• It was indicated that the opening of the Dam to the public might pose a threat of children drowning. • The introduction of swimming pools and swimming lessons may be useful in ensuring that lives are not lost in the Dam through drowning. • Swimming pools can also be used for educational purposes (i.e. swimming lessons and lifeguard training) and recreational activities (i.e., pool parties).	• Appoint consultants to conduct a feasibility study for establishing swimming pools at the Dam. • Appoint local contractors to construct swimming pools at the Dam. • Train youth as life guards, sportsman, administrators and facility managers. • DWS to revive partnership with Swim SA to train local community members to become life guards to curb drownings at the Dam.[7]. • The IA to develop the pool rules and safety operating procedures.	• IA (ALM) with the support of the DMC DWS • EDTEA • Swim SA •

[7] Swim SA to be involved in all the DWS Dams where drowning is a problem.

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 of Cultural Rondavels: • To refurbish the cultural rondavels to be utilised by people who visit the Dam and for hosting events.	• The existing cultural rondavels are damaged and are not utilised for their purpose. • The ALM has initiated a project of rehabilitating the existing cultural facilities, access roads, ablution facilities, braai areas and operational plan of the centre, in order to promote tourism and job creation thus ensuring the promotion of Broad-based Black Economic Empowerment (BBBEE).	• Appoint consultants to prepare detailed BP for the rehabilitation plan. • Appoint local contractors to rehabilitate the area. • Train youth as cleaners, guides, administrators and facility managers.	• IA (ALM) with the support of the DMC • Department of Arts and Culture • DWS • Trade and Investmen

Table 14: Strategic Plan for KPA 3: Benefit Flow Management

Objective (What do we want)	Motivation (Why do we want to achieve this)	Action Projects (How do we achieve this)	Management Support (Who will be involved)
Community Participation and Beneficiation: • To uplift the local economy and increase benefit flows to the surrounding communities through community empowerment.	• The tourism sector has been identified as a vehicle for skills development and job creation. It is imperative that the local communities derive benefits from recreational activities conducted at the Dam. • 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.	• Implement skills development programmes where opportunities exist. • Institute a comprehensive alien invasive plant education programme in pilot schools in the region, subsequent to be extended to all the schools. • Implement of environmental awareness programmes for the local communities and ensure that they are always updated with environmental information. • Educate 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. • First preference to be given to the local community members if any job opportunities arise.	• IA (ALM) with the support of the DMC Sector Education and Training Authority (SETA) • DWS
Recreational Institutional Structure: • To establish an effective institutional structure that can manage recreational use of the Dam in an acceptable manner, which is also representative of all the stakeholders.	• There is currently no management structure in place to oversee the use of the Dam for recreational purposes. This is evident when looking at the existing cultural rondavels and other facilities that are Damaged and not utilised for their purpose.	• Put in place recreational institutional structure that is representative of all Stakeholders. • The roles and responsibilities of the role players must be clearly defined and understood in the MOA, which may be entered into between the Department of Water and Sanitation and the Implementing agency.	• DWS • ALM

4.4 FINANCIAL PLAN

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

The proposed IA (ALM) for this Dam can explore the various streams of generating revenue as presented below:

4.4.1 Potential Sources of Revenue

Access Fees:
Potential revenue can be generated from access fees paid by visitors. A standard access fee can be charged per head, differentiated on age. The determination of access fees should take cognisance of the socio-economic profile of the area so as to cater for the local poor. The access fees cannot be used for rent seeking.

Over and above access fees, additional fees can also be charged which includes:

- **Parking Fees:**

Motorists can be charged extra fees for parking.

- **Event and Service Based Fees:**

These are extra fees that can be charged for the following:

  - Fishing (sports);
  - Private boating;
  - Overnight accommodation at the cultural rondavels (applicable upon refurbishing the structure);
  - Functions (festivals, wedding, conference and cultural activities); and
  - Caravan/ outdoor camping.

It is important that the identified events above be established at the Dam for the realisation of the identified fees.

Rental Charges:
Potential source of revenue can also be explored on rental fees but not limited to the following:

- **Boat Clubs:**

Boat clubs operating from the Dam should pay the leasing fees. The terms of payment will be stipulated in the lease agreement between DWS through the IA (leaser) and the leasee.

There is potential rental fees that can be generated from the renting out of the roundavels to private entities provided the IA decides to lease out the facility.

4.4.2 Target Market

To realise the above mentioned revenue the following will be the target:

- Vryheid Town;
- Farmers;
- Churches;
- Schools;
- Institutions;
- Group tourists; and
- Government Departments.

In light of the above mentioned, there should be sources of capital for initial investment for the upgrading of existing infrastructures as well as setting up of new facilities. The proposed IA can consider the following as a source of capital.

4.4.3 Co-Funding

The project can leverage its existence in the local Integrated Development Plan (IDP) to harness funding. Co-funding is also viable where an IA is appointed to manage recreational use of the Dam, and the examples of projects of similar nature which were successfully co-funded are: Roodeplaat Dam Nature Reserve and Nonoti Beach Resort Development (Coastal Marine

Tourism [CMT] Project) the details which are attached as **Appendix G.**

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 ALM be appointed as an IA to manage recreational use of the Dam on behalf of DWS and examples of the co-funders are:

- Trade & Investment KwaZulu-Natal (TIKZN);
- The Department of Tourism;
- Industrial Development Corporation (IDC); and
- InvestSA (One Stop Shop).

More information on the co-funders is attached in **Appendix H.**

A more detailed Financial Plan (FP) is contained in the Business Plan (refer to **Appendix I**), which will facilitate the implementation of the RMP by providing an implementation program and cost estimates 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 Klipfontein Dam RMP. It also describes the financial management and operational requirements to implement the objectives of the RMP.

CONCLUSION AND WAYFORWARD

This RMP comprehensively covered *inter alia* the environmental analysis (biophysical, built environment and socio-economic) 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.

Key Challenges:

The following key challenges were identified for Klipfontein Dam:

- Due to the area's high soil erodibility, sparse grass cover and steep slopes the Dam and its tributaries is susceptible to sediment built-up.
- Owing to the absence of test samples for all water quality constituents (not only for pH) it is inconclusive if the water is fit for recreational use.
- There is lack of solid waste management around the Dam (i.e. disposable nappies dumped into the upstream rivers of the Dam). ALM collects refuse in urban areas only (i.e. Vryheid) and not all wards are covered by the municipality. This poses a threat to the water quality in the Dam.
- The dam is infested with alien invasive plants (i.e. *Themeda triandra* and *Hyparrhenia hirta*), which make the area prone to fire, as these invasive plants are highly flammable throughout the year. This can pose a fire risk to facilities and Dam users.
- The region (local and district) has tourism potential, which has not been properly exploited.
- There is a lack of environmental and tourism awareness for the community.
- The local community is not involved in the management and utilization of the Dam for recreational purpose, hence they are not benefiting from the Dam.
- Ward 13 has 5 908 individuals without a source of income representing 41% of the ALM population.
- Fixed and floating Aids to Navigation (AtoN) and demarcation markers are not in place.
- There is currently no specific incident management system in place to ensure that incidents are recorded and responded to in a co-ordinated manner.
- Existing cultural rondavels are vandalized and not optimal utilised for the intended purpose.
- The Dam is not entirely fenced (i.e. at the inlets of the Dam). As a result, some of the community members have direct access to the Dam in an uncontrolled manner which leads to theft and vandalism of the existing recreational facilities at the Dam i.e. cultural rondavels, ablution facilities and braai stands.
- The Dam is situated close to Tholithemba community where domestic livestock such as goats, cattle and sheep graze and drink water from the Dam. 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.

Recommendations:

This RMP recommends the implementation of the following immediate actions:

- Appoint ALM 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.
- Removal of silt from the Dam in order to increase the water quantity.
- Develop waste management plan for the dam and surrounding areas to prevent pollution.

- Water quality reporting and monitoring.
- Removal of alien invasive plants (i.e. *Themeda triandra* and *Hyparrhenia hirta*).
- Put in place adequate access control measures, such as fencing, in order to ensure the safety of people and livestock.
- Refurbishment of the cultural rondavels in order to attract more tourists as well as to provide job opportunities to local communities (i.e. cleaners, security and catering).

Review:

According to the DWAF (2006), the RMP may be reviewed and updated every five (5) years to ensure that the management objectives are relevant and that management actions are continually improved. The BP needs to be updated annually. **Figure 22** illustrates the RMP and BP review framework.

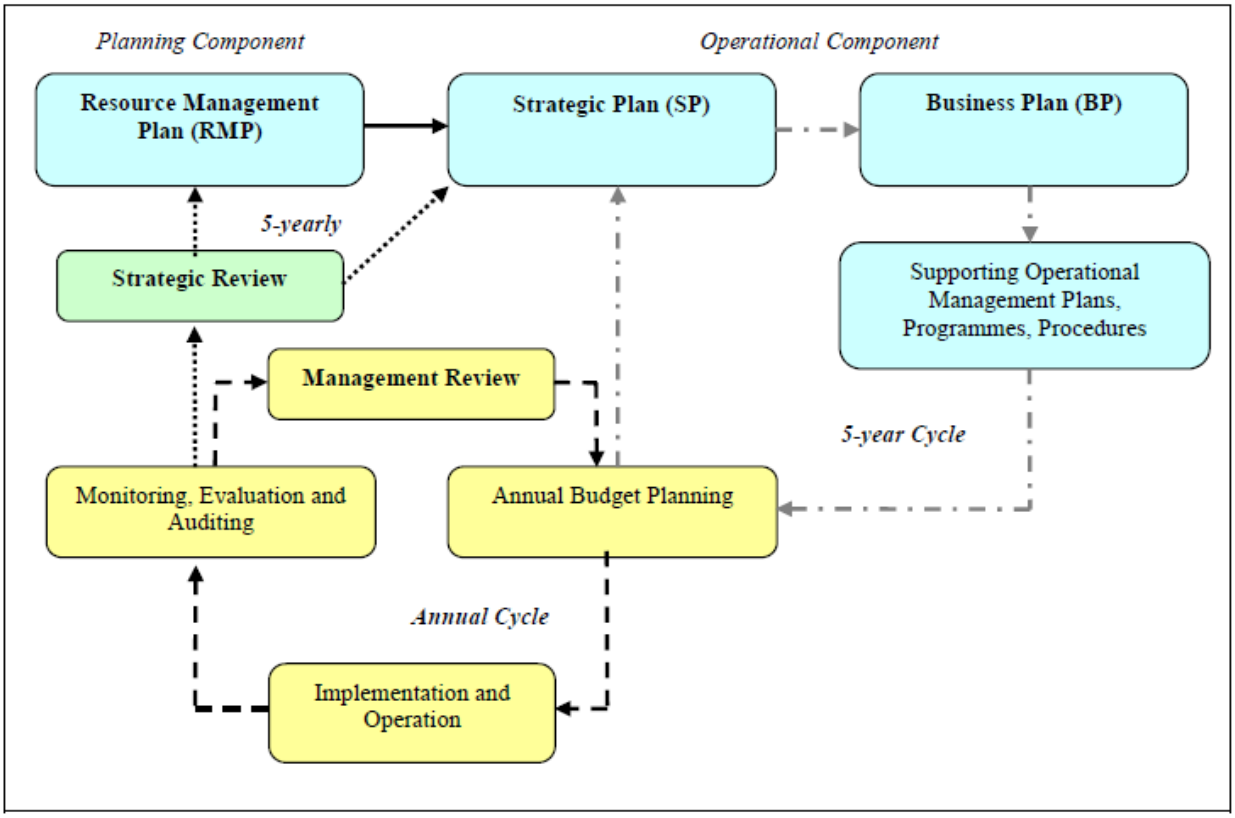

Figure 22: RMP and BP Review Framework

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APPENDICES

APPENDIX A : STAKEHOLDER DATABASE REGISTER

APPENDIX B : NEWSPAPER ADVERT

APPENDIX C : FLYERS

APPENDIX D : EMAILS

APPENDIX E : BACKGROUND INFORMATION DOCUMENT (BID)

APPENDIX F : COMMENTS AND RESPONSES REGISTER

APPENDIX G : EXAMPLES OF SUCCESSFULLY CO-FUNDED PROJECTS

APPENDIX H : POTENTIAL CO-FUNDERS

APPENDIX I : BUSINESS PLAN