

Resource Management Plan

JERICHO DAM

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Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA



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- Department of Environmental Affairs: Working for Water;
- Department of Water and Sanitation;
- Gert Sibande District Municipality;
- Inkomati-Usuthu Catchment Management Agency;
- Mkhondo Local Municipality;
- Msukaligwa Local Municipality;
- Surrounding Farm Owners;
- Ward councilor for Ward 18 of Msukaligwa Local Municipality, Ward councilors for Ward 5 and 19 of Mkhondo Local Municipality ; and
- Community members of Amsterdam, DB Forbes, Glen Eland, Kalambazo, Matayteleni and Swelihle.

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

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

AMENDMENTS PAGE

Revision No	Description	Date
1	Draft RMP for DWS Review	23/03/2018
2	Draft RMP for DWS Review	04/05/2018
3	Draft RMP for Public Review	15/05/2018
4	Final Draft RMP for DWS Approval	27/09/2018
5	Final Draft RMP for DWS Approval	28/02/2019
6	RMP for DWS Approval	03/12/2019

LIST OF ACRONYMS

AIPs	Alien Invasive Plants
AtoN	Aids to Navigation
BBBEE	Broad Based Black Economic Empowerment
BID	Background Information Document
BP	Business Plan
CATHSSETA	Culture, Arts, Tourism, Hospitality, Sports Sector, Education and Training Authority
CD: IO MANCO	Chief Directorate: Infrastructure Operations Management Committee
CIWSP	Cooperative Inland Watercourse Safety Programme
CoGTA	Cooperative Governance and Traditional Affairs
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DHS	Department of Human Settlement
DMC	Dam Management Committee
DoT	Department of Transport
DPW	Department of Public Works
DRDLR	Department of Rural Development and Land Reform
DSR	Department of Sports and Recreation
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
ECC	Effective Carrying Capacity
FP	Financial Plan
FSL	Full Supply Level
GIAMA	Government Immovable Asset Management Act, 2007 (Act No. 19 of 2007)
GP	Guideline Programme
GSDM	Gert Sibande District Municipality
GWWS	Government Waterworks
I&APs	Interested and Affected Parties
IA	Implementing Agency
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IBOM	Infrastructure Build, Operate and Maintenance
IDP	Integrated Development Plan
IEE	Integrated Environmental Engineering
IRMP	Integrated Resource Management Planning
IUCMA	Inkomati-Usuthu Catchment Management Agency
KPAs	Key Performance Areas
LAAP	Local Accountable AtoN Parties
LED	Local Economic Development
MDARDLEA	Mpumalanga Department: Agriculture, Rural Development, Land and Environmental Affairs
MkLM	Mkhondo Local Municipality
MLM	Msukaligwa Local Municipality
MOA	Memorandum of Agreement
NDT	National Department of Tourism
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004)

NPSC	National Project Steering Committee
NT	National Treasury
NWA	National Water Act, 1998 (Act No. 36 of 1998)
OMC	Operations Management Committee
PB	Purchased Boundary
PCC	Physical Carrying Capacity
PFMA	Public Finance Management Act, 1999 (Act No. 29 of 1999)
PP	Public Participation
PPP	Public Private Partnership
RCC	Real Carrying Capacity
RMP	Resource Management Plan
SAMSA	South African Maritime Safety Authority
SAPS	South African Police Service
SASCOC	South African Sports Confederations and Olympic Committee
SDF	Spatial Development Framework
SMMEs	Small, Medium and Micro Enterprises
SWOT	Strengths, Weaknesses, Opportunities and Threats
ToR	Terms of Reference
WMA	Water Management Area

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 Jericho Dam, herein after referred to as the Dam, which is part of the Infrastructure Build, Operate and Maintenance (IBOM) Central Operations.

This RMP was developed in accordance with the Guideline on Integrated Resource Planning for the Use of Water for Recreational Purposes (DWAF, 2004), and in accordance with the requirements in Section 2, 26 and 113 of the National Water Act, 1998 (Act No. 36 of 1998) [NWA].

Mandate of Department of Water and Sanitation: The Department of Water and Sanitation (DWS), through the NWA, mandates the Minister as the custodian of the nation's water resources to ensure that government waterworks (GWWs), including Jericho 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; and
- 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; and
- 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); and
- 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 and gravity dam that impounds the Mpama River. The construction of the Dam was completed in 1966. At full supply capacity the water surface area of the Dam is 982.5 hectares with a capacity of 59.5 million cubic meters.

The Dam is situated on the municipal boundary of Msukaligwa Local Municipality (MLM). The

MLM forms part of the Gert Sibande District Municipality (GSDM), within the Mpumalanga Province of South Africa. The Dam is adjacent to communities in Ward 5 and Ward 19 of Mkhondo Local Municipality (MkLM) who utilize the Dam for subsistence fishing. The centre point coordinates are 26°38'49.09"S and 30°28'26.06"E.

Purpose of the Dam: The primary purpose of Dam is to provide water for irrigation use. The secondary use of the Dam offers recreational activities such as camping, boating, fishing (recreational and subsistence), 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, an appropriate Implementing Agency (IA) such as MLM, shall be appointed by DWS to facilitate the implementation of the objectives and identified action projects in line with the requirements of this Jericho 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. The community members within Ward 18 in the MLM and Ward 5 and 19 in the MkLM were engaged during the stakeholder engagement meetings. 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 formulated:

- To find a lasting solution in dealing with the graves under water;
- To eradicate and have Jericho Dam free of Alien Invasive Plants on the shoreline threatening the ecological function of the area and consume large water quantities of water which will greatly impact the water level;
- To establish an effective and functional institutional structure inclusive of surrounding stakeholders to manage the use of water resource for recreational activities;
- To ensure the provision of potable drinking water for domestic use to downstream and surrounding communities;
- To establish and formalise recreational facilities around the Dam;
- To formalise and expand existing recreational activities;
- To formalise and control the existing access and evaluate alternative access point at the Dam;
- To promote sustainable subsistence fishing at the Dam;
- To ensure public safety and security around the Dam; and
- To construct a recreational boat slipway and wash bay.

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

“A well-controlled and managed Dam which empowers the livelihood of surrounding stakeholders”.

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

- Formalization and expansion of current recreational activities.
- Establishment of adequate recreational facilities such as ablution facilities, vessel slipway, water and electrical points to support the activities that takes place at Jericho Dam (e.g. boating, recreational fishing and subsistence fishing; as well as camping).
- To put recreational facilities support services in camping areas to avoid issues of littering, and water pollution.

The key challenges identified comprise:

- Graves under water;
- Presence of Alien Invasive Vegetation (Black wattle) on the shoreline threatening the ecological function of the area;
- No institutional structure to oversee the management of recreational activities;
- Lack of potable water supply;
- No formalization of recreational facilities around the Dam;
- Lack of access control;
- Inadequate measures in place for public safety;
- Lack of slipway and wash bay facilities;
- Presence of mole snakes around the Dam which poses threats to visitors to the Dam;
- No camping facilities;
- Inadequate waste management;
- No records of grazing agreements; and
- Lack of community beneficiation.
- Unauthorised sand mining and wood harvesting;

- 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);
- The Dam is land locked by private farm properties which makes it difficult for communities to access the Dam. Access areas/ points are thus limited;
- Poaching of fish; and
- Fishing at areas considered safety and security zone.

Recommendations:

This RMP recommends the following immediate actions:

- Appoint MLM 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;
- Develop waste management plan for the Dam and surrounding areas to curb littering;
- Water quality reporting and monitoring;
- Removal of alien invasive plants (i.e. Black wattle); and
- Appointment of adequate security personnel to control access.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	ii
TITLE AND APPROVAL PAGE.....	iii
AMENDMENTS PAGE	iv
LIST OF ACRONYMS	v
EXECUTIVE SUMMARY	vii
CHAPTER 1: INTRODUCTION	1
1.1 BACKGROUND.....	1
1.2 PURPOSE OF THIS RMP	1
1.3 DESCRIPTION AND LOCATION OF THE DAM	1
1.4 PURPOSE OF THE DAM	2
1.5 DAM OWNERSHIP AND MANAGEMENT	2
1.6 LEGISLATIVE FRAMEWORK.....	4
CHAPTER 2: ENVIRONMENTAL ANALYSIS.....	8
2.1 BIOPHYSICAL ENVIRONMENT.....	8
2.1.1 Climate	8
2.1.2 Topography.....	8
2.1.3 Geology and Soil	8
2.1.4 Hydrology	8
2.1.5 Protected Areas	9
2.1.6 Sensitive Biodiversity Areas	9
2.1.7 Threatened Ecosystem.....	9
2.1.8 Flora.....	9
2.1.9 Fauna	11
2.2 BUILT ENVIRONMENT	11
2.2.1 Roads and Land Based Transportation	11
2.2.2 Bulk service.....	11
2.2.3 On-site Facilities.....	11
2.2.4 Fencing	11
2.2.5 Management and Operation.....	11
2.2.6 Safety.....	12
2.3 SOCIO-ECONOMIC ENVIRONMENT	12
2.3.1 Cultural Aspects	15
2.3.2 Community Beneficiation	15
CHAPTER 3: RESOURCE MANAGEMENT PLAN PROCESS.....	17
3.1 DEFINITION OF RMP.....	17
3.2 PROCESS TRIGGERS	17
3.3 RMP DEVELOPMENT PROCESS	18
3.4 RMP PLANNING STAGES.....	19
3.4.1 Desktop Study.....	19
3.4.2 Site Inspection	19
3.4.3 Public Participation	19
3.4.4 Planning Partners.....	20
3.5 RMP DATA ANALYSIS	23
3.5.1 Encumbrance Survey (Phase 2)	23
3.5.2 SWOT Analysis and Objective Identification	23
3.5.3 Research / Information Generation (Phase 4)	25
CHAPTER 4: INTEGRATED RESOURCE MANAGEMENT PLANNING	26
4.1 INSTITUTIONAL PLAN	27

4.1.1	Implementing Agency (IA).....	27
4.1.2	Dam Management Committee (DMC).....	27
4.1.3	Operations Management Committee (OMC)	30
4.1.4	National Project Steering Committee (NPSC)	30
4.2	ZONING PLAN.....	32
4.2.1	Water Surface Zoning	32
4.2.2	Shoreline Zoning	35
4.2.3	Carrying Capacity	39
4.3	STRATEGIC PLAN	40
4.4	FINANCIAL PLAN	46
4.4.1	Potential Sources of Revenue	46
4.4.2	Target Market	46
4.4.3	Co-Funding.....	46
CONCLUSION AND WAY FORWARD		48
REFERENCES.....		50
APPENDICES.....		51
APPENDIX A	: STAKEHOLDER DATABASE REGISTER.....	51
APPENDIX B	: BACKGROUND INFORMATION DOCUMENT (BID)	51
APPENDIX C	: NEWSPAPER ADVERT.....	51
APPENDIX D	: FLYERS	51
APPENDIX E	: EMAILS	51
APPENDIX F	: COMMENT AND RESPONSES REGISTER.....	51
APPENDIX G:	EXAMPLES OF SUCCESSFULLY CO-FUNDED PROJECTS	51
APPENDIX H:	POTENTIAL CO-FUNDERS	51
APPENDIX I:	BUSINESS PLAN	51

LIST OF FIGURES

Figure 1: Locality Map for Jericho Dam	3
Figure 2: Fluctuations of Jericho Dam water level over a year	8
Figure 3: Vegetation type around the Dam.....	9
Figure 4: 2014 Mpumalanga Biodiversity Sector Plan	10
Figure 5: Livestock grazing near the water surface	11
Figure 6: MLM Ward 18 Delimitation	13
Figure 7: Education Level of Msukaligwa LM Ward 18.....	14
Figure 8: Income Status of Ward 18 MLM.....	15
Figure 9: RMP Procedure.....	18
Figure 10: Integrated Resource Management Planning.....	26
Figure 11: Proposed DMC.....	28
Figure 12: Existing CD: IO MANCO.....	30
Figure 13: Proposed NSPC	31
Figure 14: Proposed Water Surface Zoning Map	34
Figure 15: Proposed Shoreline Zoning Map	37
Figure 16: Proposed Overall Zoning Map	38
Figure 17: RMP and BP Review Framework	49

LIST OF TABLES

Table 1: Jericho Dam Profile	2
Table 2: Key Data Sources Used to Develop the RMP:	4
Table 3: Legislative Framework Applicable to the Management and Use of the Dam for Recreational Purposes	5
Table 4: Summary of triggers and potential challenges for Jericho Dam	17
Table 5: Planning Partners.....	21
Table 6: Summary of Biophysical and Socio-cultural Encumbrances	23
Table 7: SWOT Analysis for Jericho Dam	24
Table 8: Proposed Water Surface Zoning Description.....	33
Table 9: Proposed Shoreline Zoning Description	36
Table 10: Area required per user	39
Table 11: Strategic Plan for KPA 1: Resource Management.....	41
Table 12: Strategic Plan for KPA 2: Resource Utilisation	42
Table 13: Strategic Plan for KPA 3: Benefit Flow Management	44

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

The Department of Water and Sanitation (DWS), through the National Water Act, 1998 (Act No. 36 of 1998) [NWA], mandates the Minister as the custodian of the nation's water resources to ensure that the government waterworks (GWWs), including the Jericho 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 Jericho Dam, 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;
- Public safety with regards to the use of inland vessels; and
- Uncontrolled developments within Dam basin.

Community Participation and Beneficiation:

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

Public Policy:

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

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

This RMP was developed in accordance with the Guideline on Integrated Resource Planning for the Use of Water for Recreational Purposes (DWAF, 2004), 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 the use of government waterworks for recreational purposes.

1.3 DESCRIPTION AND LOCATION OF THE DAM

The Dam is an earth-fill and gravity dam that impounds the Mpama River. The construction of

the Dam was completed in 1966. At full supply capacity the water surface area of the Dam is 982.5 hectares with a capacity of 59.5 million cubic meters.

The Dam is situated on the municipal boundary of Msukaligwa Local Municipality (MLM). The MLM forms part of the Gert Sibande District Municipality (GSDM), within the Mpumalanga Province of South Africa. The Dam is adjacent to communities in Ward 5 and Ward 19 of Mkhondo Local Municipality (MkLM) who utilize the Dam for subsistence fishing. The centre point coordinates are 26°38'49.09"S and 30°28'26.06"E.

1.4 PURPOSE OF THE DAM

The primary purpose of Dam is to provide water for irrigation. The Dam offers recreational activities such as camping, boating, fishing (recreational and subsistence), 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 purpose. Currently there is no institutional structure managing the Dam for recreational purposes (secondary use). Through the development of the RMP, an appropriate Implementing Agency (IA) such as MLM, shall be appointed by DWS to facilitate the implementation of the objectives and identified action projects in line with the requirements of this Jericho 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.

Table 1: Jericho Dam Profile

Jericho Dam Profile	
Location	South Africa
Province	Mpumalanga
District Municipality	Gert Sibande
Local Municipalities	Msukaligwa
Nearest Town	Amsterdam
Completion Year	1966
GPS Coordinates	26°38'49.09"S 30°28'26.06"E
Primary Purpose	Irrigation
Owner	DWS
Quaternary Catchment	W53B
Water Management Area	Inkomati-Usuthu CMA
River	Mpama River
Capacity (Mm³)	59.5
Surface area (ha)	982.5
Wall type	Earthfill and Gravity
Wall Height (m)	21.3
Crest Length (m)	1167.8

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

JERICO DAM RESOURCE MANAGEMENT PLAN

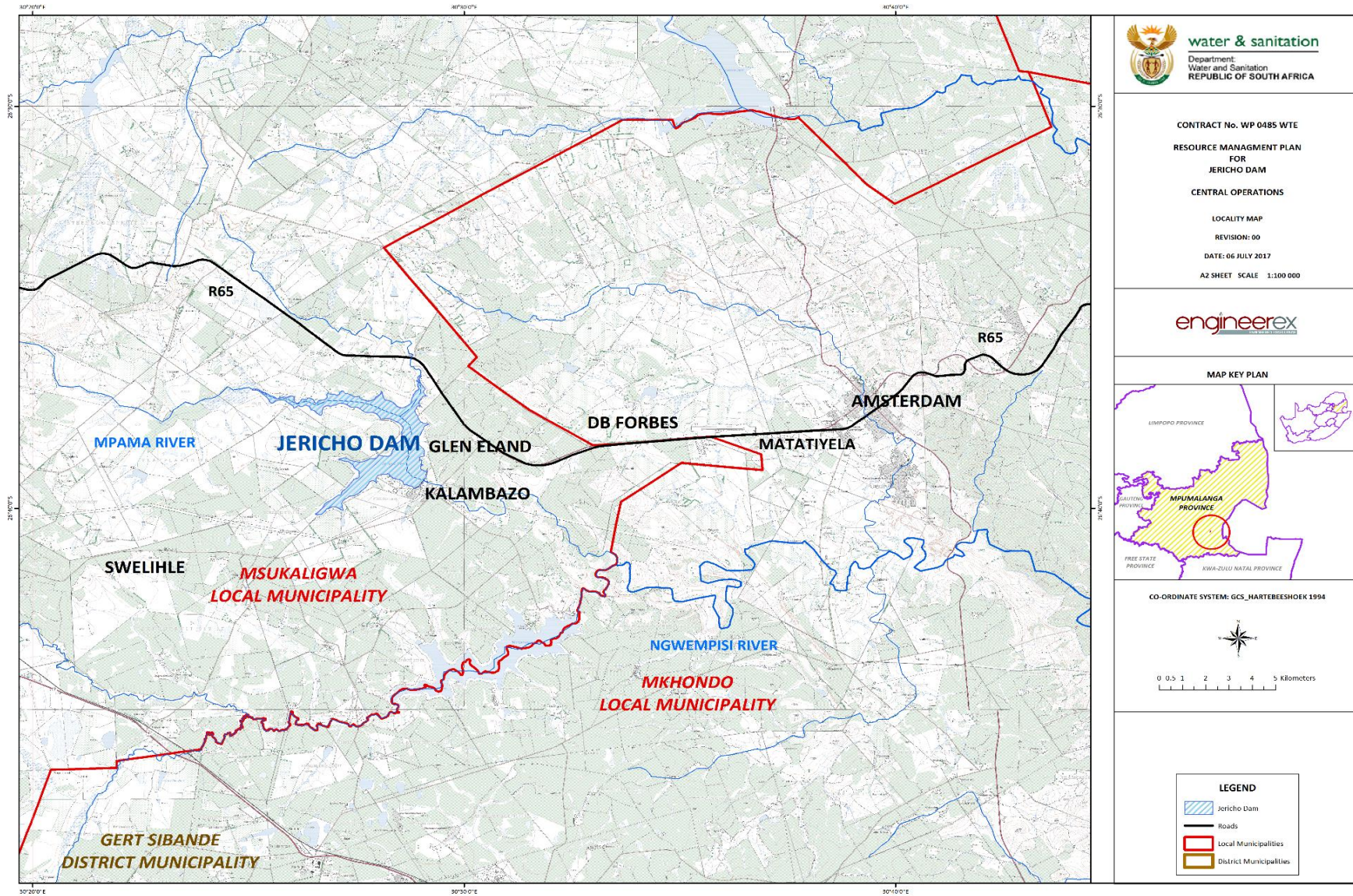


Figure 1: Locality Map for Jericho Dam

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)	<p>Section 24 - Everyone has the right:</p> <ol style="list-style-type: none"> 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- <ol style="list-style-type: none"> a. prevent pollution and ecological degradation b. promote conservation and secure ecologically sustainable development and use natural resources while promoting justifiable economic and social development.
National Legislation	Significance to the RMP:
Conservation of Agricultural Resource Act, 1983 (Act No. 43 of 1983) [CARA]	<p>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.</p> <p>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.</p>
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]	<p>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.</p> <p>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.</p>
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)	Provides for the national domestic waste collection standards and national norms and standards for the storage of waste.

JERICHO DAM RESOURCE MANAGEMENT PLAN

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

JERICHO DAM RESOURCE MANAGEMENT PLAN

Legislation: Acts, ordinances, bylaws	Relevance: Description
Merchant Shipping (National Small Vessel Safety) Regulations (2007)	These Regulations provide <i>inter alia</i> 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.
Occupational Health and Safety Amendment Act 181 of 1993 (G.O.N. 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 <i>inter alia</i> 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:
Mpumalanga Biodiversity Sector Plan (2014)	It is a spatial tool (maps) with land-use guidelines to inform permissible land-uses that support biodiversity pattern and ecological processes that also allow for species to adapt to climate change.
Municipal Policy, By-Laws, Reports & Guidelines	Significance to the RMP:
Msukaligwa Local Municipality Final IDP (2017 – 2022)	A municipal planning approach that involves the entire municipality and its citizens in finding the best solutions to achieve good long-term development and promote tourism.

CHAPTER 2: ENVIRONMENTAL ANALYSIS

2.1 BIOPHYSICAL ENVIRONMENT

2.1.1 Climate

According to MLM (2017/22), the area falls under the central Mpumalanga climatic zone characterised by warm, rainy summers and dry winters with sharp frosts. Rain storms are often violent (up to 80mm p/day) with severe lightning and strong winds, sometimes accompanied by hail. The winter months are droughty with the combined rainfall in June – August making only 3.9% of the annual rainfall (734mm).

The average daily maximum temperature in January (the hottest month) is 25.2°C and in July (the coldest month) is 16.7°C. Due to the Municipality's position near escarpment, the area is somewhat windy than is typical for the south-eastern Mpumalanga Highveld, although the majority of winds are light and their direction is controlled by topography (MLM IDP, 2017/2022).

2.1.2 Topography

According to MLM (2017/22), the area is characterised by the gentle undulating

topography with fairly broad to narrowly incised valleys of headwater drainages. The rural areas also characterised by typical Highveld Landscapes in the western and central parts and more undulating terrain with dense commercial forests in the eastern parts.

2.1.3 Geology and Soil

MLM is underlain predominantly by arenite and dolerite intrusions of the Karoo Supergroup. These are Red to yellow sandy soils found on shales and sandstones of the Madzaringwe Formation (Karoo Supergroup) (MLM 2017/22).

2.1.4 Hydrology

The Dam lies within the W53B quaternary drainage which forms part of Inkomati-Usuthu Catchment Management Agency (IUCMA). The Dam impounds the Mpama River that is categorized as a National Freshwater Ecosystems Priority Area (NFEPA) in terms of the Mpumalanga Biodiversity Sector Plan (2014). The Present Ecological State (PES, 1999) of Mpama River is categorised as Class D: Largely Modified.

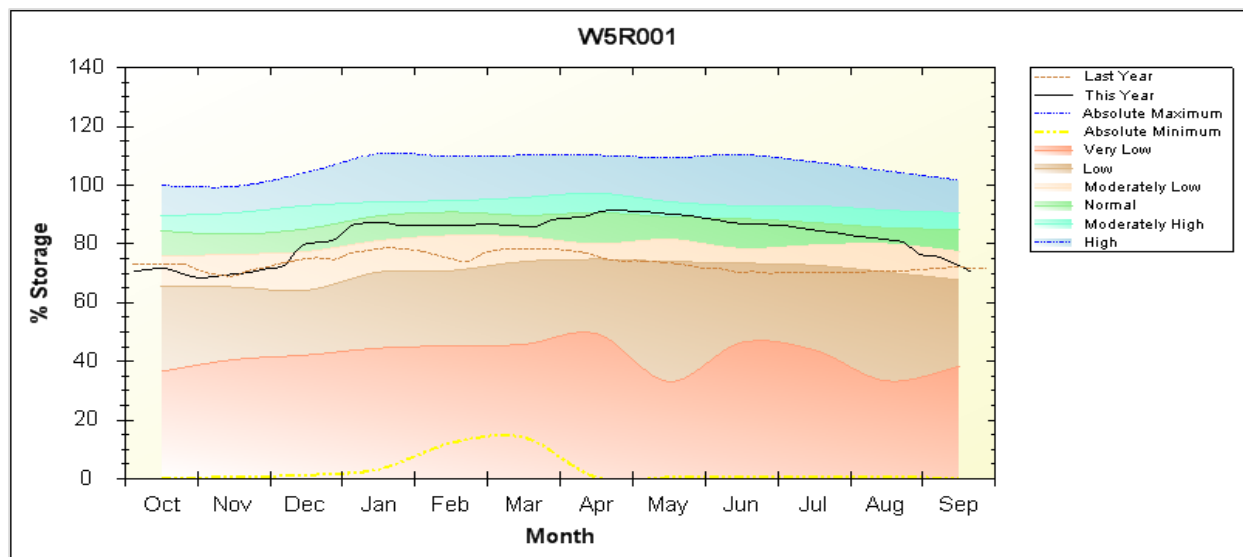


Figure 2: Fluctuations of Jericho Dam water level over a year

Source: DWS (2017)

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).

Consequently, water quality can be defined by a range of variables which limit water use. Human health is affected directly by the proximity, availability and quality of water resources.

At the time of developing this report, the only indicator results available were for pH, which was found to be within the acceptable Target Water Quality Range (TWQR) (6.5-8.5), indicating that minimal eye irritation might occur once in contact with water.

However, owing to the absence of test samples for water quality constituents (not only pH) in the Water Management System (WMS), it is inconclusive if the water is fit for recreational use. As such, DWS should conduct tests of those other indicators including algae, odour, turbidity, floating matter and indicator organisms (*E.coli*, faecal coliforms, and total coliforms) in order to make a conclusive decision on the suitability of the water for recreational use. Hence, precautionary measures should be exercised for contact sports at the Dam.

2.1.5 Protected Areas

The formal land based protected areas within the region of the Dam includes: Morgenstond Dam Nature Reserve (19.2 km East-south-East) (Mpumalanga Biodiversity Sector Plan, 2014).

2.1.6 Sensitive Biodiversity Areas

Based on the Mpumalanga Biodiversity Sector Plan (2014), land adjoining the Dam on the north-west and south-west side is classified as Critical Biodiversity Areas (CBAs), refer to **Figure 6**. CBAs require to meet the region's biodiversity targets and need to be maintained in the appropriate condition for their category.

2.1.7 Threatened Ecosystem

The Dam falls within the eastern highveld grassland. The threat status of the terrestrial ecosystem is classified as Vulnerable (VU) in terms of the Mpumalanga Biodiversity Sector Plan, 2014.

2.1.8 Flora

The Dam is situated on the Eastern Highveld Grassland. The vegetation is short dense grassland dominated by the usual highveld grass composition (*Aristida*, *Digitaria*, *Eragrostis*, *Themeda*, *Tristachya* etc.) with small, scattered rocky outcrops with wiry, sour grasses and some woody species (*Acacia caffra*, *Celtis africana*, *Diospyros lycioides* subsp *lycioides*, *Parinari capensis*, *Protea caffra*, *P. welwitschii* and *Rhus magalismontanum*) (Mucina and Rutherford, 2006).

Only very small fraction conserved in statutory reserves and in private reserves. Some 44% transformed primarily by cultivation, plantations, mines, urbanization and by building of dams (Mucina and Rutherford, 2006).

The area also has Blackwattle (*Acacia mearnsii*) Alien Invasive Plant species (AIPs) on the shoreline threatening the ecological function of the area. These AIPs compete with and replaces indigenous grassland and riverine species. **Figure 2** shows the vegetation around the dam, while **Figure 3** shows the Vegetation Map of Jericho Dam.



Figure 3: Vegetation type around the Dam

JERICHO DAM RESOURCE MANAGEMENT PLAN

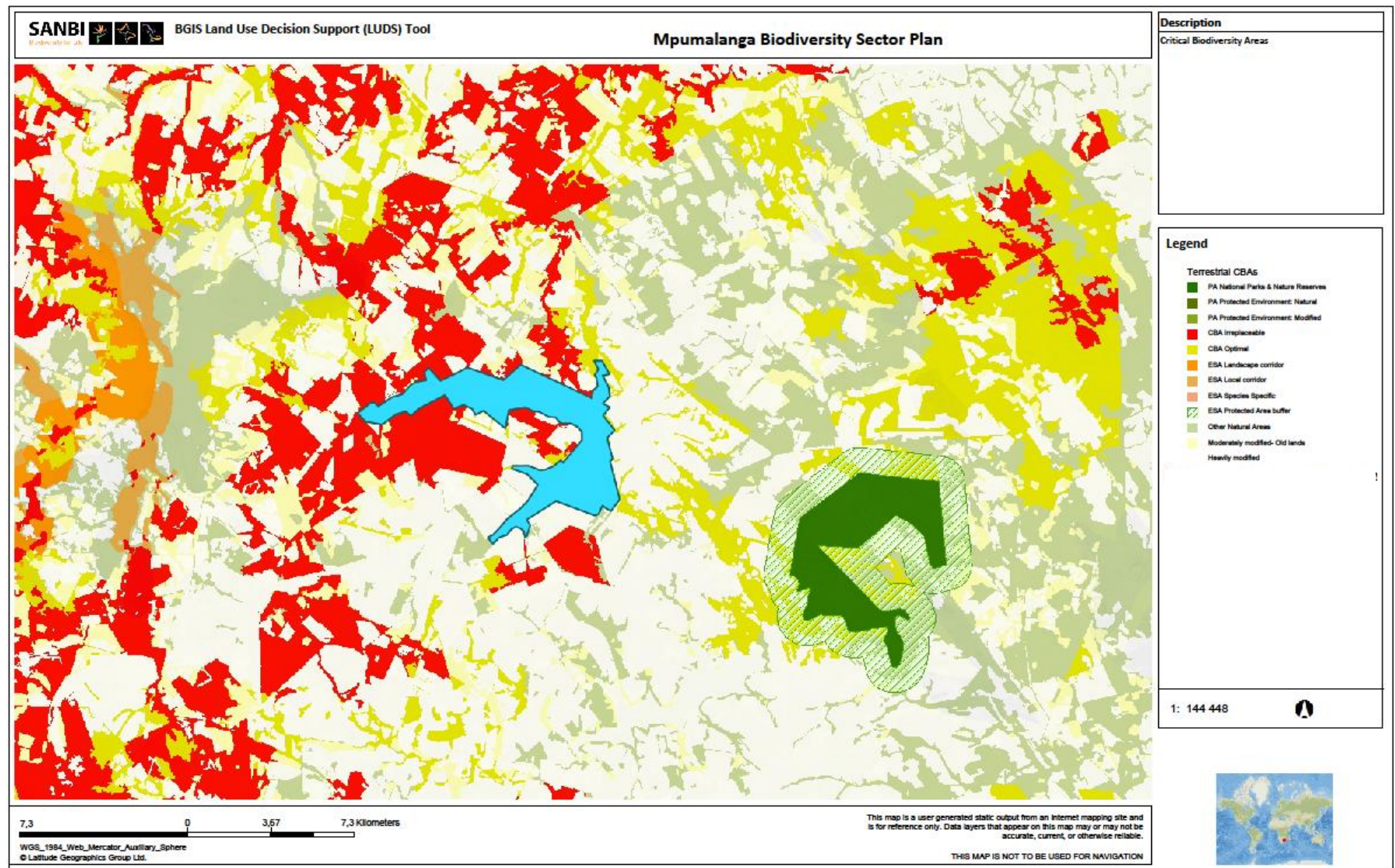


Figure 4: 2014 Mpumalanga Biodiversity Sector Plan

Source: Adopted from SANBI BGIS Map Viewer

2.1.9 Fauna

The Dam is surrounded by communities whose livestock (cattle, goats, etc.) graze and drink water from the Dam. **Figure 5** depicts the livestock grazing on the banks of the Dam.



Figure 5: Livestock grazing near the water surface

Reptiles

It has been reported that during summer times, the dam is infested with snakes such as mole snake. This poses a danger to surrounding communities and visitors to the dam.

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;
- On-site facilities;
- Fencing;
- Management and operation; and
- Safety.

2.2.1 Roads and Land Based Transportation

Surrounding Road: The Dam is situated along the provincial road R65 to Amsterdam. It has internal paved and gravel road for easy access to the dam.

Internal Road and Circulation: There are several internal gravel roads that leads to the DWS offices, camping site and staff houses.

2.2.2 Bulk service

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 plastics, papers littered in areas used for camping. As part of the DWS intervention, waste bins were provided to address the issue in the interim.

2.2.3 On-site Facilities

The existing facilities at the Dam includes:

- DWS offices;
- Dam wall; and
- Staff house.

2.2.4 Fencing

The Dam is not fenced entirely, which results to uncontrolled access, and illegal activities including:

- Illegal sand mining;
- Unauthorised fishing at the dam wall, a safety and security zone, where public access and recreational activities are not allowed; and
- Cutting down of trees for firewood.

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 process, MLM is proposed as an IA for the management of recreational use for this Dam.

There are currently no fixed and floating Aids to Navigation (AtoN) and demarcation markers in place. Local Accountable AtoN Parties (LAAP) and other bodies providing access to government waterways and watercourses have a responsibility to ensure that the required fixed and/or floating AtoN are provided after obtaining the necessary support from the DWS

and thereafter the permission by South African Maritime Safety Authority (SAMSA).

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

2.2.7 Legal

Grazing Agreements:

During the compilation of this report, there were no records found of grazing agreements within the purchased boundary between DWS and livestock owners. Schedule 1 Section 1(b)(iii) of the NWA, 1998 states that “a person may take water for use on land owned or occupied by that person for the watering of animals (excluding feedlots) which graze on that land within the grazing capacity of that land, from any water resource which is situated on or forms a boundary of that land, if the use is not excessive in relation to the capacity of the water resource and the needs of other users”.

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 to uplift the standard of living of the communities. The study area falls within MLM under Ward 18, refer to **Figure 6** for the municipal ward boundary.

A social audit was conducted for Ward 18 of MLM with the data from Statistics South Africa Community Survey (2016) that focus on the socio-economic conditions of the area.

The socio-economic conditions within Ward 18 of MLM is summarised in the sub-sections as follows:

- Population size;
- Education level;
- Monthly income;
- Cultural aspects; and
- Community beneficiation.

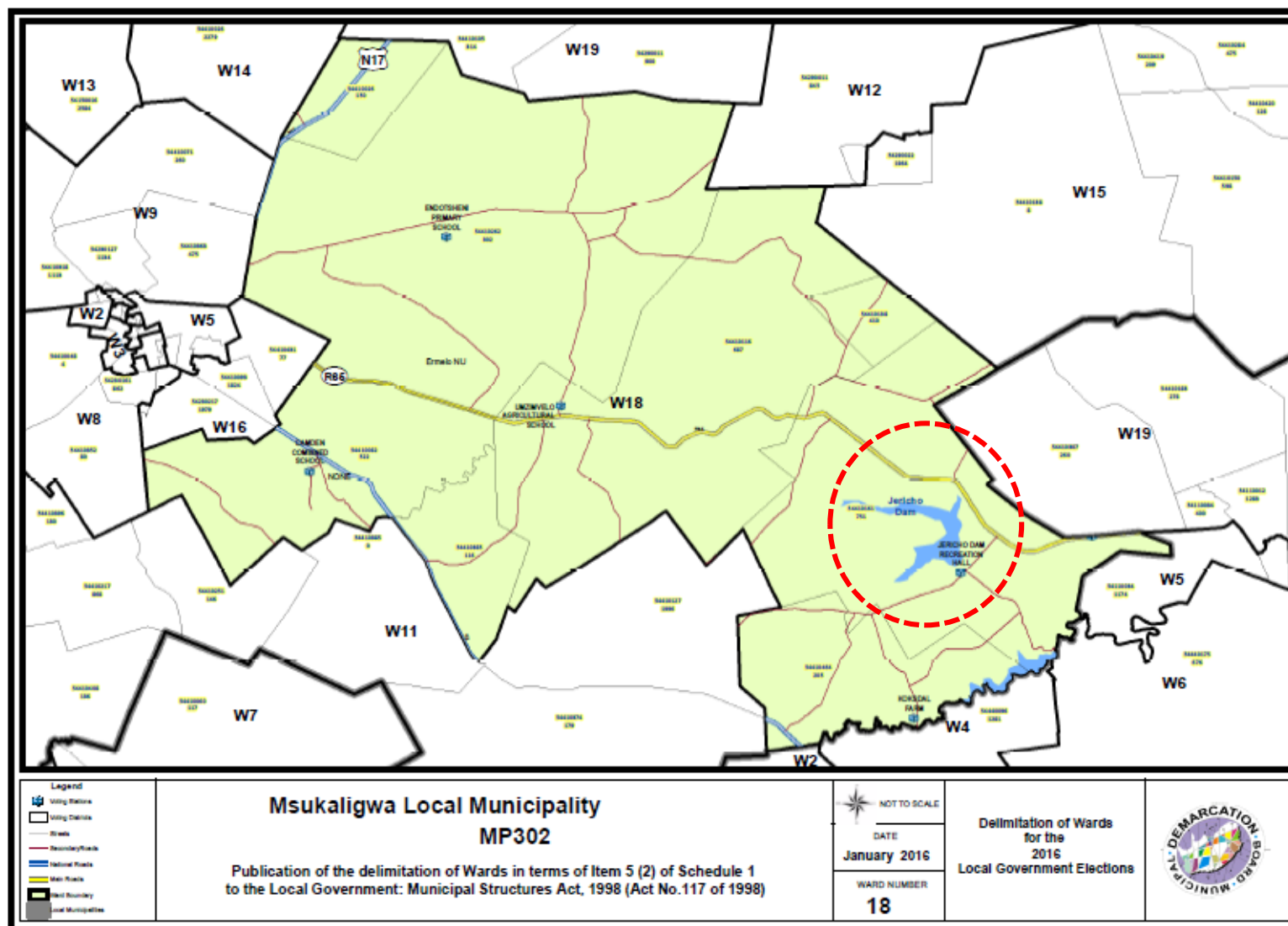


Figure 6: MLM Ward 18 Delimitation

Source: Municipal Demarcation Board (2016)

Population Size

According to MLM IDP (2017/22), there are approximately 164 608 people in 51 089 households as per the community survey conducted in 2016. Census 2011, shows that the population has increased by 149 377 with 40 932 households. The population size has grown with approximately 1.1% in 5 years (2011 – 2016).

Education Level

Thirty four percent (34%) of residents in Ward 18 have received education up to the secondary level, and only 2% of the population has attained higher education.

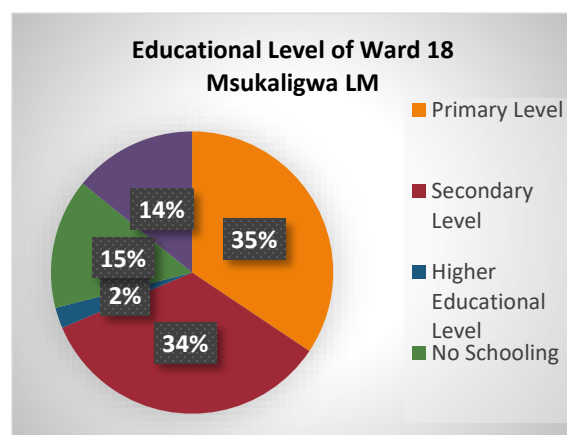


Figure 7: Education Level of Msukaligwa LM Ward 18

Source: Stats SA Community Survey (2016)

Monthly Income

Ward 18 has 2 960 individuals without a source of income representing 1.8% of the MLM population (refer to **Figure 8**). 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 MLM 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.

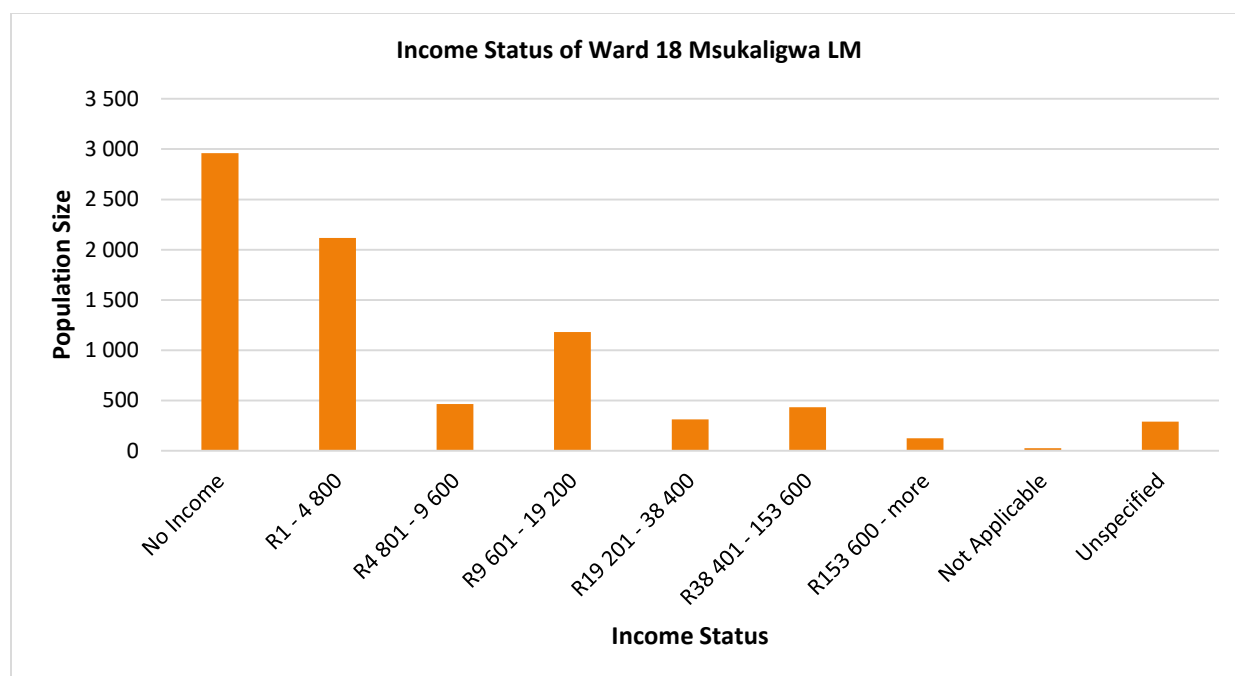


Figure 8: Income Status of Ward 18 MLM

Source: Stats SA Community Survey (2016)

2.3.1 Cultural Aspects

Graves are underwater and the affected families cannot perform rituals. DWS needs to find a lasting solution to deal with graves under water.

2.3.2 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. Hence, 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)].

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 site specific in line with the process triggers and potential challenges presented in **Table 4**.

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

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

Trigger(s)	Challenges
Resource Management	<ul style="list-style-type: none"> • There is no formal structure for recreational activities; • The dam is land locked by private farm properties which makes it difficult for communities to access the dam. Access areas/ points are thus limited; • Presence of alien invasive plants such as black wattle; and • Poaching of fish.
Resource Utilisation	<ul style="list-style-type: none"> • Unauthorised fishing at the dam wall which is considered as a safety and security zone, where public access and recreational activities are not allowed.
Community participation and beneficiation	<ul style="list-style-type: none"> • 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.
Public Policy	<ul style="list-style-type: none"> • Jericho Dam should be identified for development opportunities of recreational and tourism node in the Integrated Development Plans (IDPs) for Msukaligwa Local Municipality (MLM) and Gert Sibande District Municipality (GSDM).

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 9**.

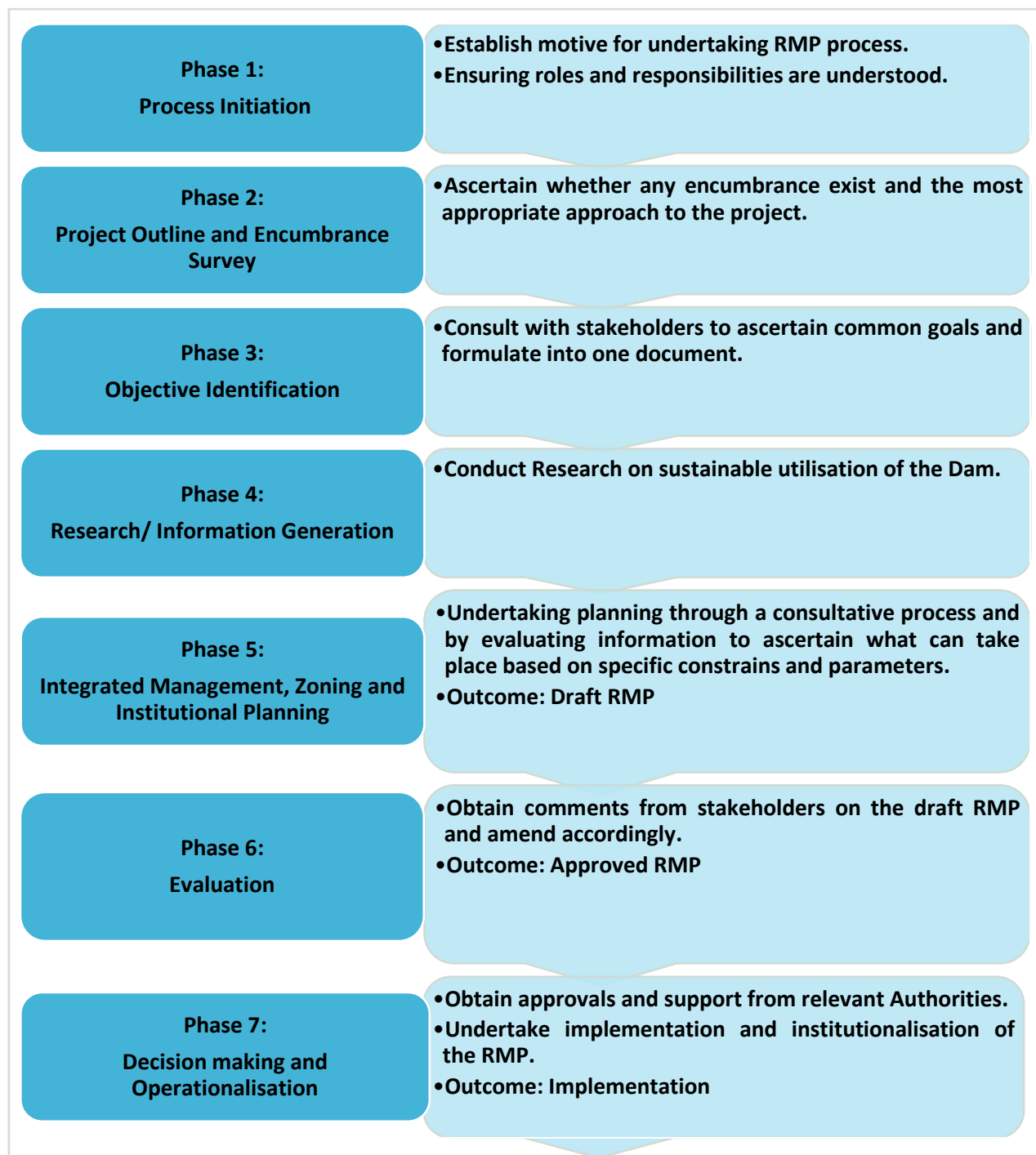


Figure 9: RMP Procedure

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 **13 July 2017**.

During the site inspection the following were observed: unauthorised fishing at the Dam wall which is considered a safety and security zone, where public access and recreational activities are not allowed; Lack of access control which leads to issues of vandalism on the existing recreational facilities as well as the infrastructure of the dam. Additional background information was collated from consultation with different stakeholders. Potential 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 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 **Highveld Tribune Newspaper** in English on **12 September 2017**. The meetings for the draft RMP presentation were advertised on **03 June 2018** (refer to **Appendix B**).
- **Flyers and Onsite Notices:** The Flyers and Onsite Notices were compiled in English and IsiZulu and were distributed on **12 September 2017**. For the draft RMP presentation, flyers were distributed on **29 June 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 **11 September 2017**, notifying them about the scheduled consultative meetings. The invitations for the draft RMP presentation were sent on **11 July 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 **29 September 2017** at **Msukaligwa Local Municipality, Council Chamber Boardroom**. The draft RMP was presented on **02 August 2018** at **Msukaligwa Local Municipality, Council Chamber Boardroom**.

The purpose of the meeting was:

- To present the RMP, its goal and the objectives of the project to the authorities; and
 - To allow the authorities an opportunity to participate in the project by sharing information on their respective mandates.
- **Public Meeting:** The initial public meetings were held on **30 September 2017, 01 October 2017** and **10 February 2018** at **DWS Offices, Amsterdam France Community Hall, DB Forbes, Glen Eland & Khalambazo Sports Ground, Swelihle and Matayiteleni**. The draft RMP was presented on **20 to 22 July 2018** at **DWS Offices, Matayiteleni Amsterdam France Community Hall, DB Forbes, Glen Eland and Khalambazo Sports Ground, and Swelihle**.
 - **Comment and Responses Register:** A copy of the draft RMP report was circulated on **11 July 2018** for commenting. The commenting period lapsed on **20 July 2018**. The comments received were documented in the Comments and Responses Register (refer to **Appendix F**).

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 5**. This is to ensure that not only the objectives of DWS are achieved but also that the functions/ objectives of the planning partners (relating to the recreational use of the Dam) are taken into consideration when developing the RMP

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

JERICHO DAM RESOURCE MANAGEMENT PLAN

Table 5: Planning Partners

Department	Functions / objections
Msukaligwa Local Municipality	<p>The Dam is within the jurisdiction of the MLM which is proposed to be the Implementing Agency (IA) for the Jericho Dam RMP on behalf of DWS.</p> <p>The Local Economic Development (LED) unit within Msukaligwa Local Municipality primary focus is to improve <i>inter alia</i> 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.</p>
Department of Agriculture, Forestry and Fisheries (DAFF)	<p>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.</p> <p>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.</p>
Department of Environmental Affairs (DEA)	<p>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.</p> <p>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.</p>
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.

JERICHO DAM RESOURCE MANAGEMENT PLAN

Department	Functions / objections
Cooperative Inland Watercourse Safety Programme (CIWSP)	<p>The CIWSP is the programme under DWS and 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 watercourses and to implement responsible water use within the broader socio-economic context of the country.</p> <p>The CIWSP 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.</p>
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. Hosting of recreational events must comply with the Safety at Sports and Recreational Events Act, 2010 (Act No. 2 of 2010).
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**. **Table 6** summarises the identified biophysical and social-cultural encumbrances/ limitations, respectively that might affect the development or implementation of the RMP for the Dam.

Table 6: Summary of Biophysical and Socio-cultural Encumbrances

Item	Description
Flora	<ul style="list-style-type: none"> The presence of Blackwattle (<i>Acacia mearnsii</i>) AIPs on the shoreline threatening the ecological function of the area. AIPs compete with and replaces indigenous grassland and riverine species. Grasslands are invaded by dense thickets of black wattle, which reduced the grazing area for domestic and wild animals. Potential of soil erosion when this AIPs are being removed.
Fauna	<ul style="list-style-type: none"> Presence of snakes during summer season which might pose danger to communities and visitors. Non-existence of written agreements with livestock owners for grazing within the purchase boundary of the dam.
Hydrology	<ul style="list-style-type: none"> Many species of AIPs, especially trees and shrubs, have higher evaporation rates than indigenous species do and, therefore, use more water than the vegetation they replace. The increased evaporation results in reductions in river flows and reduced groundwater reserves. Water pollution as a result of littering and lack of ablution facilities.
Educational level	<ul style="list-style-type: none"> Approximately 29% of Ward 18 Population do not have any form of education and may not be able to be active participants in the tourism sector.
Monthly income	<ul style="list-style-type: none"> Approximately 40% of Ward 18 population does not have a source of income which may results in lack of participation in the tourism developments. The majority of population are living below the poverty line, representing a standard of living attained by a person to be deemed poor.
Access	<ul style="list-style-type: none"> The dam is land locked by private farm properties which makes it difficult for communities to access the dam. Only one informal access point exists on the southern side of the dam near DWS employee residential area.
Cultural Aspects	<ul style="list-style-type: none"> Graves are underwater and the affected families cannot perform rituals.

3.5.2 SWOT Analysis and Objective Identification

Engineerex Pty Ltd as the process facilitator conducted the Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis to determine the **Strengths** and **Opportunities** that define the potential of the Dam whereas the

challenges regarding the Dam where identified through **Weaknesses** and **Threats**. Refer to **Table 7** for the SWOT analysis.

Table 7: SWOT Analysis for Jericho Dam

Strengths	Weaknesses
<ul style="list-style-type: none"> • Good water quality and the Dam is always full. • Value of Biodiversity (Fish Eagle and Oribo). • Ample land for livestock grazing and watering. • The Dam serves as a reservoir for industrial use. 	<ul style="list-style-type: none"> • Lack of access control for recreational use and public safety. • The Dam is land locked by private farm properties which makes it difficult for communities to access the Dam. • Only one informal access point exists on the southern side of the Dam near DWS employee residential area. • Communities do not have access to drinking water.
Opportunities	Threats
<ul style="list-style-type: none"> • Tourism development potential. • Formalise and expand the existing recreational activities, subsistence fishing and livestock watering and grazing. • Economic hub of the area. • Surrounding schools can expand their curriculum on water and tourism related practical activities. 	<ul style="list-style-type: none"> • Installed snares by community members to catch fish. • Local communities do not benefit at the Dam either for employment and business opportunities. • Presence of Blackwattle, an alien invasive plant. • Safety and security of people visiting 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, and is 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 find a lasting solution in dealing with the graves under water; and
- To eradicate and have Jericho Dam free of Alien Invasive Plants on the shoreline threatening the ecological function of the area and consume large water quantities of water which will greatly impact the water level.

KPA 2: Resource Utilisation

- To establish recreational facilities around the Dam;
- To formalise and expand existing recreational activities;
- To formalise and control the existing access point at the Dam;

- To promote sustainable subsistence fishing at the Dam;
- To establish aquaculture project;
- To ensure public safety and security around the Dam; and
- To construct a recreational boat slipway and wash bay.

KPA 3: Benefit Flow Management

- To ensure the provision of potable drinking water for domestic use to downstream and surrounding communities;
- Uplift the local economy and increase benefit flows to the surrounding communities through community empowerment; and
- To establish an effective and functional institutional structure inclusive of surrounding stakeholders to manage the use of water for recreational activities.

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:

“A well-controlled and managed Dam which empowers the livelihood of surrounding stakeholders”.

3.5.3 Research / Information Generation (Phase 4)

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

Tourism Development Potential:

According to MLM (2017/22), the Msukaligwa Local Economic Development (LED) is aiming at identifying and providing an enabling environment for economic development of the municipality. The main focus will be on job creation, promoting and supporting the small, medium and micro-enterprises (SMME's), sustaining of existing business, promotion of tourism, increasing local beneficiation and shared growth.

In terms of the recommendations of the LED summit held in December 2011, GSDM should jointly with other stakeholders and the municipality conduct a community skills audit to determine skills available and gaps thereof for matching with job opportunities as well as skills development purposes.

There are currently no recreational facilities such as ablution facilities, vessel slipway, to support the activities that takes place at Jericho Dam such as boating, recreational fishing and subsistence fishing; as well as camping.

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.

CHAPTER 4: INTEGRATED RESOURCE MANAGEMENT PLANNING

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

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

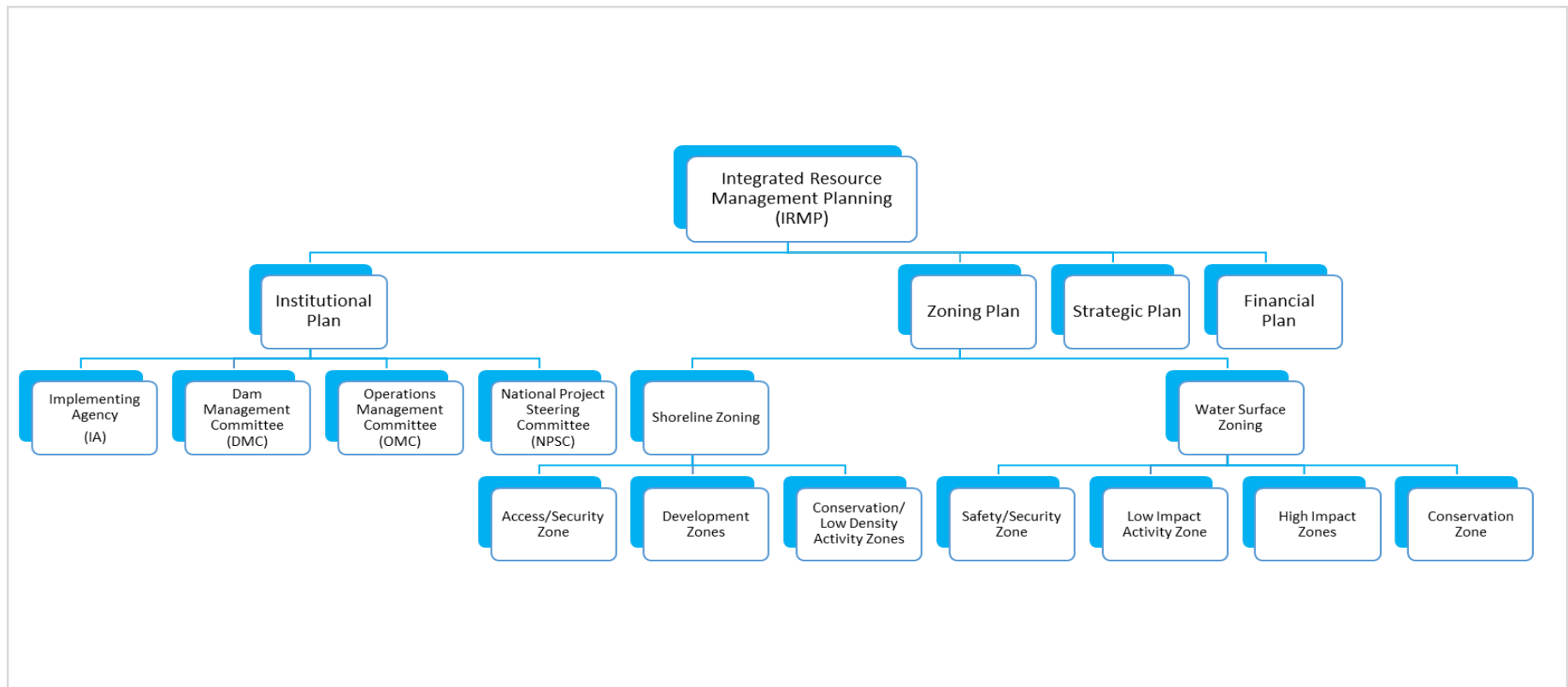


Figure 10: Integrated Resource Management Planning

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 Jericho 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 and wash bays;
- 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;
- Assist in conveying the management objectives and decisions pertaining to the Dam to the relevant stakeholders; and
- Assist in the management of the incident management system and wash bays.

Figure 11 shows the proposed parties to form part of the DMC for Jericho Dam.

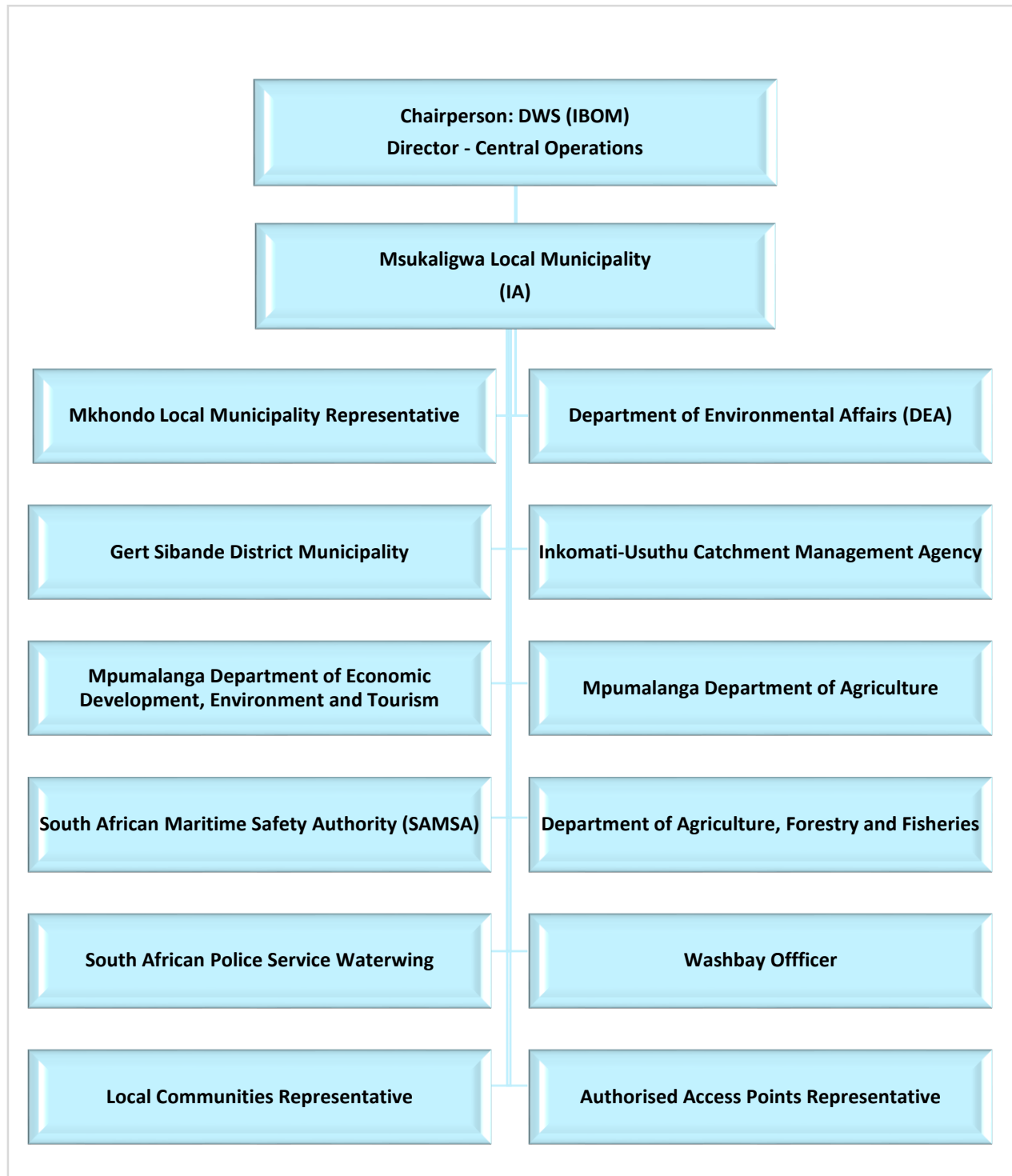


Figure 11: Proposed DMC

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)²:

MOA is a legally binding document that outlines the roles, responsibilities and conditions to be followed for the management of the water resource for recreational use. An MOA will be signed in an event where the DWS is tasking

another organization with its function of managing the Dam for recreational purposes.

Safety of Navigation Agreements:

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

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

Access Agreements:

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

A formal agreement on building, management and maintenance of the wash bay is necessary between the DWS and DEA. A wash bay must be built on State Property as part of the Cooperative Inland Watercourse 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
- Access points to be used.

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

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 all 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 12**.

The committee should meet quarterly discussing 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 DWS will be escalated to the NPSC.



Figure 12: 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** shows government departments (also referred to as planning partners and/ or authorities) and agencies that will form part of the NPSC:



Figure 13: Proposed NSPC

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 plan does not legitimise nor does it authorise any existing built structures, infrastructure or services within the government waterworks (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 for 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, aquaculture³ and small-scale fisheries.

High Impact Activity Zone:

This zone is demarcated where the Dam is at its deepest level. It caters for high impact activities associated with high speed, wake and noise activities such as motorised boating, house-boating, water-skiing, and para-sailing.

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

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

JERICHO DAM RESOURCE MANAGEMENT PLAN

Table 8: Proposed Water Surface Zoning Description

Zone Description	Permissible Activities	Non Permissible Activities	Recommendation
<ul style="list-style-type: none"> Safety and Security Zone. 	<ul style="list-style-type: none"> Alien invasive species clearing Management of Dam infrastructure Management and maintenance activities by DWS and authorised personnel 	<ul style="list-style-type: none"> Public access 	<ul style="list-style-type: none"> Area should be demarcated by demarcation makers and AtoN.
<ul style="list-style-type: none"> Conservation Zone. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Public activities (to prevent disturbance of aquatic habitats disturbance) 	<ul style="list-style-type: none"> Area should be demarcated by demarcation makers and AtoN. Strict management and control of these areas.
<ul style="list-style-type: none"> Low Impact Activity Zone. 	<ul style="list-style-type: none"> Activities associated with no or little water wakes such as: <ul style="list-style-type: none"> Angling Rowing Canoeing Kayaking Paddling boat Float tubes Swimming Slipway Floating Jetty 	<ul style="list-style-type: none"> Motorised boating Water skiing House boats Para-sailing Kite-surfing Jet Skis Wind surfing Kite surfing 	<ul style="list-style-type: none"> Area should be demarcated by demarcation markers and AtoN. No private slipways/ floating jetties to be built without approval from DWS. Launching and mooring of vessels should take place at this zone. Motorised boating is allowed to launch at this zone but no water wake should be formed until the designated area for motorised recreational boating is reached.
<ul style="list-style-type: none"> High Impact Activity Zone 	<ul style="list-style-type: none"> Aquaculture facilities⁴ Motorised boating Water Skiing Para-sailing Kite-surfing Jet ski 	<ul style="list-style-type: none"> No low impact activities such as: <ul style="list-style-type: none"> Swimming canoeing Sailing 	<ul style="list-style-type: none"> 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.

⁴ The final location of the aquaculture will be subjected to a feasibility study.

JERICO DAM RESOURCE MANAGEMENT PLAN

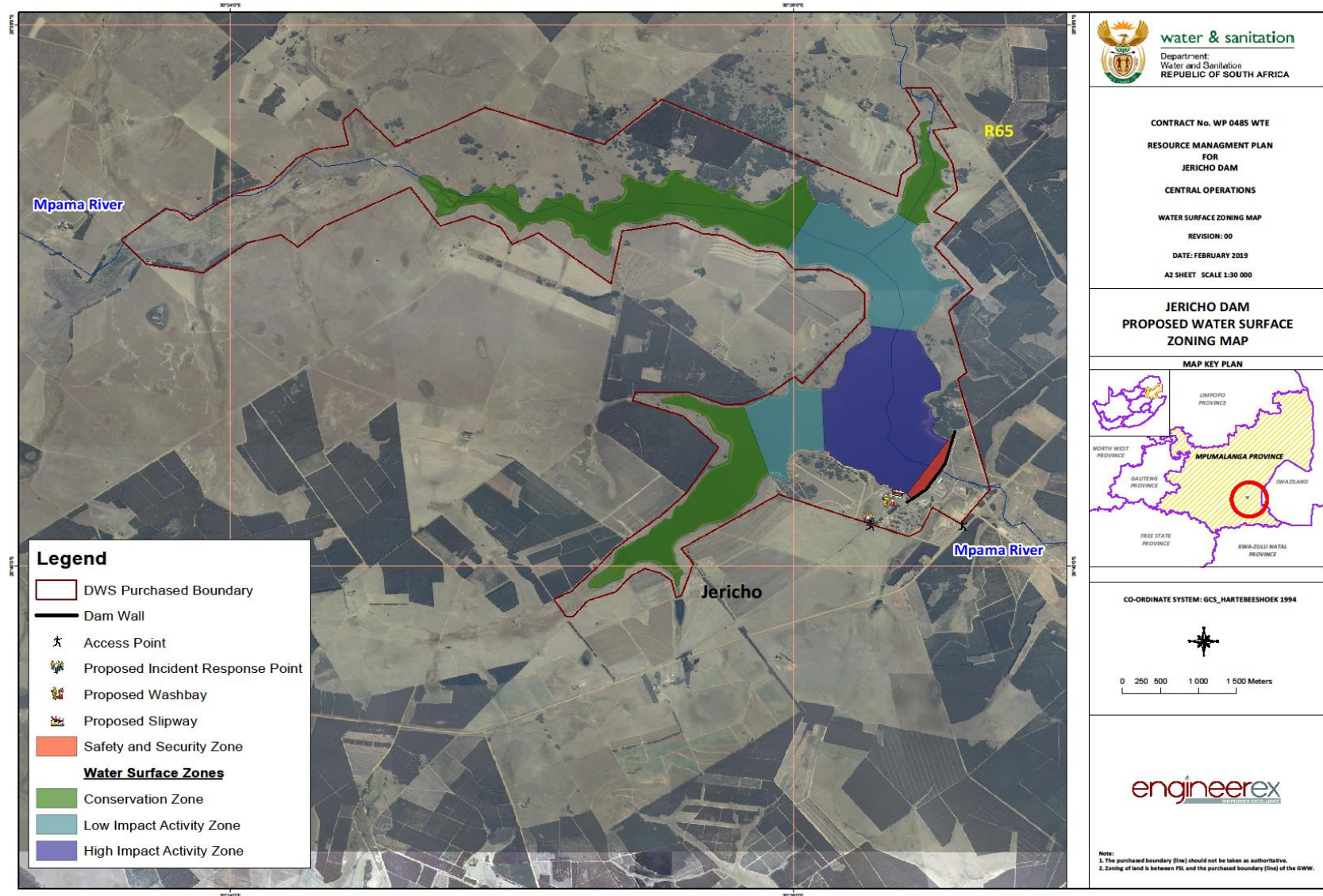


Figure 14: Proposed Water Surface Zoning Map

4.2.2 Shoreline Zoning⁵

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

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

This zone is applicable to the area surrounding the Dam wall and the outlet works. The extent of this zone is determined by the DWS and shall not be less than 100m from the Dam wall and downstream. This area is reserved for DWS management purposes.

Management of this zone is aimed at protecting the Dam wall and outlet works, as well as ensuring the safety of the public and surrounding areas. This is a no-go zone to the public unless authorised.

Conservation / Low Density Activity Zone:

This zone consists of ecologically sensitive areas and areas with high biodiversity. It also includes the area around the inlets of the Dam. Access to

this area is limited to low impact activities such as hiking, and bird watching. This area is demarcated to prevent ecological Damage due to high density development activities.

Medium Density Activity Zone:

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

High Density Activity Zone:

This zone is demarcated for large-scale activities including chalets, recreational club houses, infrastructure for services, and land based aquaculture.

Community Resource Zone:

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

Table 9 and **Figure 15** and **Figure 16** show the proposed shoreline and overall zoning for Jericho Dam.

⁵ Permanent structures within the purchase line are not allowed. All developments should be outside 1:100 year floodline.

JERICHO DAM RESOURCE MANAGEMENT PLAN

Table 9: Proposed Shoreline Zoning Description

Zone Description	Permissible activities	Non-Permissible Activities	Recommendation
<ul style="list-style-type: none"> Safety and Security Zone. 	<ul style="list-style-type: none"> Fire management Alien invasive species clearing Management of Dam infrastructure Management and maintenance activities by DWS and authorised personnel 	<ul style="list-style-type: none"> Public access 	<ul style="list-style-type: none"> A minimum area of 100m wide downstream the Dam wall should be demarcated preventing public access and use.
<ul style="list-style-type: none"> Conservation/ Low Density Activity Zone. 	<ul style="list-style-type: none"> Conservation management activities: <ul style="list-style-type: none"> Bird watching Hiking 	<ul style="list-style-type: none"> Development 	<ul style="list-style-type: none"> This zone should control access to ecological sensitive areas.
<ul style="list-style-type: none"> Medium Density Activity Zone. 	<ul style="list-style-type: none"> Camping (tent and/or caravan) Day visitors Picnic Shoreline fishing Braai facilities Ablution facilities Infrastructure for services 	<ul style="list-style-type: none"> Permanent structures Accommodation facilities such as: <ul style="list-style-type: none"> Chalets Recreational club houses 	<ul style="list-style-type: none"> The management of this area should follow PPP process in terms of National Treasury. All developments must be approved by IA and DWS. Requirements of NWA and NEMA must be taken into account in all developments. Camping, birding, hiking, picnicking, bank angling and access to the water must be done in accordance to access agreements. Camping and picnicking is allowed only in designated areas. Noise levels to be kept at a minimum. No littering at Camping and Picnic spots.
<ul style="list-style-type: none"> High Density Activity Zone. 	<ul style="list-style-type: none"> Accommodation facilities: <ul style="list-style-type: none"> Chalets Guesthouse Recreational Boat House Infrastructure for services 	<ul style="list-style-type: none"> Canoeing Hiking Camping Picnicking caravan park Permanent structures 	<ul style="list-style-type: none"> The management of this area should follow PPP process in terms of the National Treasury. All developments must be approved by IA and DWS. Requirements of NWA and NEMA must be taken into account in all developments.
<ul style="list-style-type: none"> Community Resource Zone 	<ul style="list-style-type: none"> Subsistence fishing Livestock grazing and watering points 	<ul style="list-style-type: none"> Chalets Braai facilities Camping 	<ul style="list-style-type: none"> Demarcation of the area by fence and provision of an access control. The Community Resource Zone is for surrounding communities around the Dam for subsistence fishing.

JERICO DAM RESOURCE MANAGEMENT PLAN

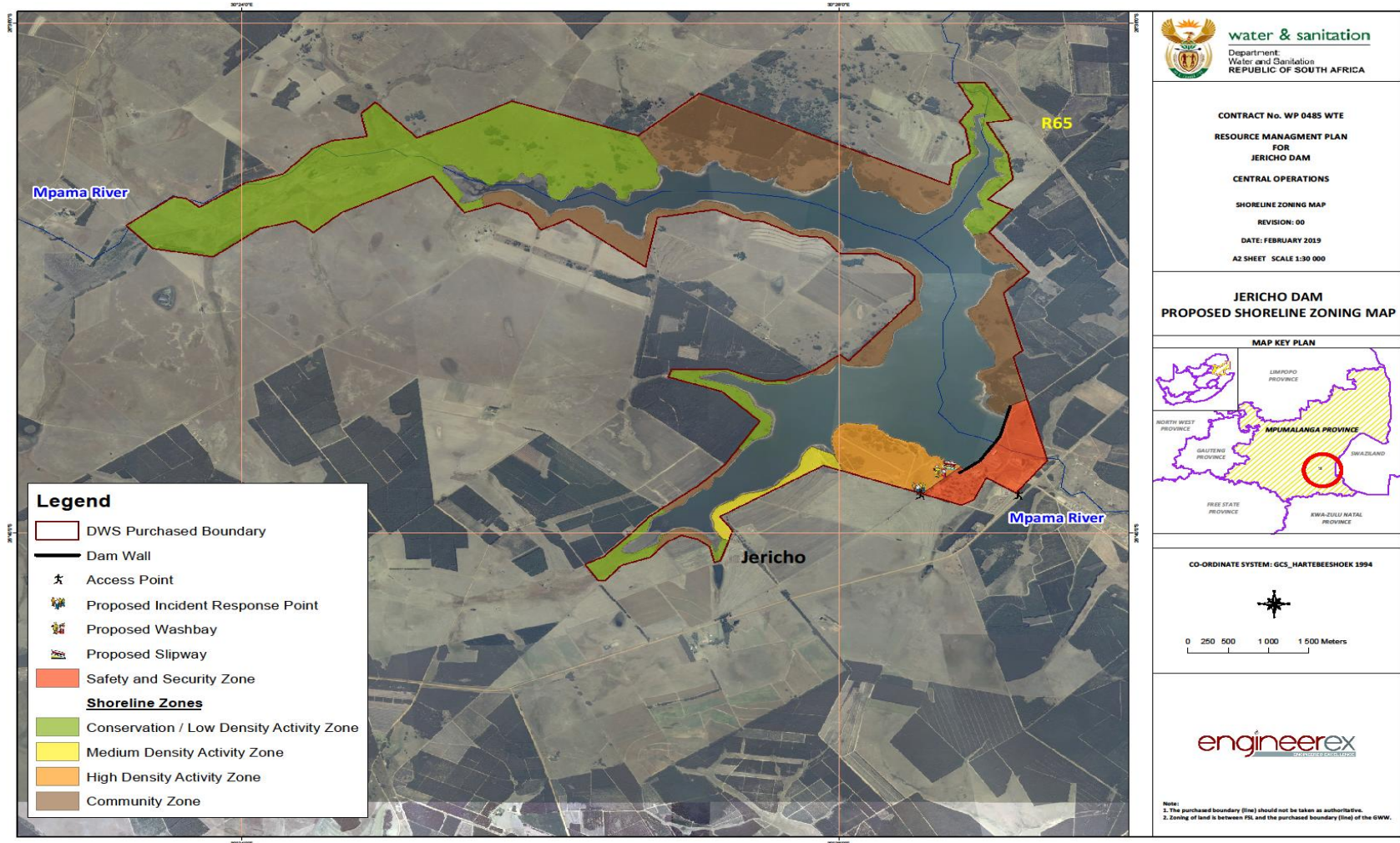


Figure 15: Proposed Shoreline Zoning Map

JERICO DAM RESOURCE MANAGEMENT PLAN

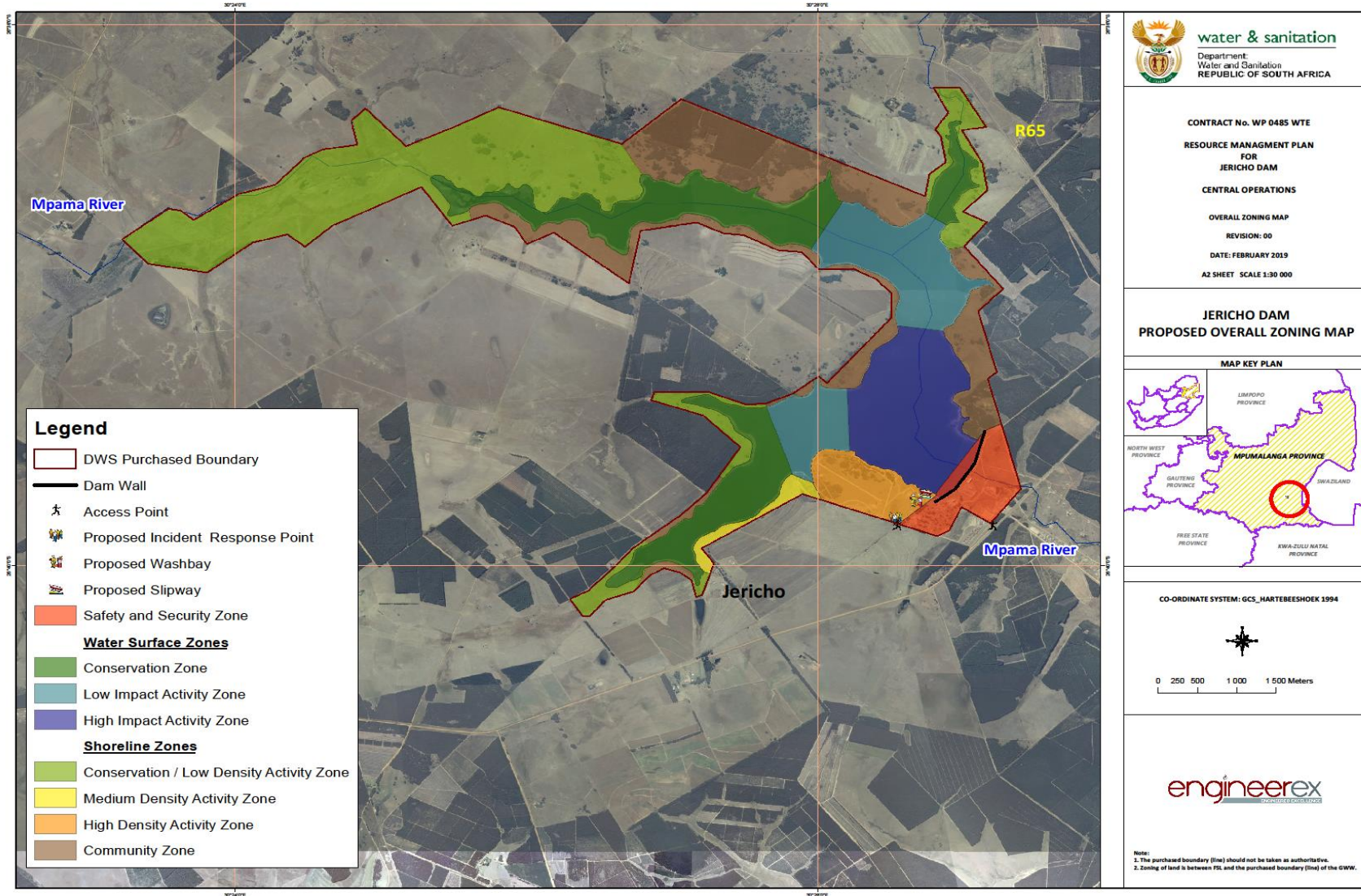


Figure 16: Proposed Overall Zoning Map

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 $RCC \geq ECC$** .

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)

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

Where:

A = Available Surface area for public use

U/a = Area required per user

Rf = Rotation factor (number of visits/day)

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

Table 10: Area required per user

Craft	U/A (ha/craft)
Rowing	0.5
Canoe	1.0
Fishing	3.0
Paddle boating	1.0
Float tubes	1.0
Average	1.3

Based on the table above the average hectare per user is 1.3 ha (13 000 m²), the value of 5.0 ha (50 000 m²) 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 Jericho Dam is **982.5 ha** whereas **U/a** is assumed to be the average which was calculated as 1 craft/5 ha. And again the rotation factor (**Rf**) is assumed as 1 visit per day.

$$\begin{aligned} \text{Therefore: } PCC &= A \div U/a \times Rf \\ &= 982.5 \times 1/5 \times 1 \\ &= 196.5 \text{ crafts on the Dam} \end{aligned}$$

Real Carrying Capacity (RCC)

$$RCC = PCC \times (100 - Cf1) \% \times (100 - Cf2) \% \times (100 - Cfn) \%$$

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 Jericho Dam, these factors includes sensitive areas, such as conservation areas (250 ha) as well as aspects regarding the safe operation and management of the Dam (9.5 ha).

These factors accounts for 259.5 ha, that is 26.4% of the area that is not available for recreational use.

Therefore: $RCC = PCC \times (100 - cf1)\% \times (100 - cf1)\%$

$$= 196.5 \times (100 - 26.4) \%$$

$$= 145 \text{ crafts.}$$

Effective Carrying Capacity (ECC)

$ECC = [Infrastructure \text{ Capacity} \times Management \text{ Capacity}] \times 100 / RCC$

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?);
- Motivation (Why is it important to achieve this?);
- Management support (Who will be involved?); and
- Action Projects (How to achieve this?).

In **Tables 11 to 13**, the strategic plan on how to achieve the objectives identified for the Dam is outlined.

Table 11: Strategic Plan for KPA 1: Resource Management

Objective (What do we want)	Motivation (Why do we want to achieve this)	Action Projects (How do we achieve this)	Management Support (Who will be involved)
<u>Submerged Graves:</u> <ul style="list-style-type: none"> To find a lasting solution in dealing with the graves under water. 	<ul style="list-style-type: none"> There are graves within the GWW boundary submerged under water. The graves become visible when the water level decreases. 	<ul style="list-style-type: none"> DWS to engage with the affected families to determine a way forward in dealing with graves underwater. Ensure that the affected families have access to the graves to perform rituals for now. 	<ul style="list-style-type: none"> DWS IA (MLM) with the support of DMC
<u>Alien Invasive Plants Control:</u> <ul style="list-style-type: none"> To eradicate and have Jericho Dam free of AIPs on the shoreline threatening the ecological function of the area and consume large water volume of water which will greatly impact the water level. 	<ul style="list-style-type: none"> The presence of Blackwattle (Acacia mearnsii) AIPs on the shoreline threatens the ecological function of the area. AIPs compete with and replaces indigenous grassland and riverine species. 	<ul style="list-style-type: none"> Remove all alien invasive vegetation within the purchased boundary and the surrounding adjacent area. Manual removal is more environmental friendly and can create employment opportunities for local community members. Rehabilitate areas infested with alien invasive alien plants with suitable species that are indigenous to the area. Develop an inspection and cleaning mechanism (Wash bay) to ensure that vessels entering the Dam do not contaminate it with alien vegetation. 	<ul style="list-style-type: none"> DEA [Working for Water (WfW) programmes] Expanded Public Works Programme (EPWP) IA (MLM) with the support of DMC

JERICHO DAM RESOURCE MANAGEMENT PLAN

Table 12: 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)
Recreational Facilities: <ul style="list-style-type: none"> To establish and formalize facilities around the Dam. 	<ul style="list-style-type: none"> The Dam currently offers recreational activities such as camping, boating and fishing. There are no services such as water and electrical points, ablution facilities, etc. to supports the current recreational activities. 	<ul style="list-style-type: none"> To put recreational facilities support services in camping areas to avoid issues of littering, water pollution, etc. IA to conduct a feasibility study to ascertain feasible and sustainable recreational activities in accordance to the carrying capacity, zoning as well as relevant authorisation. 	<ul style="list-style-type: none"> IA (MLM) with the support of DMC DWS
Access Control: <ul style="list-style-type: none"> To formalise and control the existing access point at the Dam. 	<ul style="list-style-type: none"> Only one informal access point exists on the southern side of the Dam near DWS employee residential area. The Dam is land locked by private farm properties which makes it difficult for surrounding communities to access the Dam. 	<ul style="list-style-type: none"> Access to the Dam must be equitable to all users. Entry fees can be levied for public access and use; however these need to be reasonable to surrounding communities to ensure the Dam remains an affordable destination. Appoint local security personnel to monitor and control access to the Dam. 	<ul style="list-style-type: none"> IA (MLM) with the support of DMC DWS
Sustainable Subsistence Fishing: <ul style="list-style-type: none"> To promote sustainable subsistence fishing at the Dam. 	<ul style="list-style-type: none"> Surrounding communities fish at the Dam to sustain their livelihood. Currently, communities are fishing in an area considered safety and security zone (Dam wall) where public access and recreational activities are prohibited. 	<ul style="list-style-type: none"> Permits (fishing licence) must be acquired and the use of gill nets must be prevented, as it has significant negative impact on fish population within the Dam. Educate and train 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. 	<ul style="list-style-type: none"> DAFF IA (MLM) with the support of DMC Mpumalanga Department: Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA)

JERICHO DAM RESOURCE MANAGEMENT PLAN

		<ul style="list-style-type: none"> • Management authority or DWS must develop a communication signage in order to effectively inform different angling groups about the Dam fishing rules. • Appoint and train safety officers within the communities to monitor compliance of the Dam fishing rules. • Generate the necessary infrastructure, such as banks to fish from in order to support the sustainable fishing. • Incorporate the objective in a Business Plan for a feasibility study to evaluate the fish population in the Dam and a possibility of a fisheries project. 	
<u>Aquaculture:</u> <ul style="list-style-type: none"> • To establish aquaculture project at the Dam. 	<ul style="list-style-type: none"> • Sustainable fishing is threatened by illegal fishing. • Surrounding communities might be interested in fish farming for job opportunities and sustaining their livelihood. 	<ul style="list-style-type: none"> • MDARDLEA to conduct a feasibility study to get a comprehensive information on the viability of the project e.g. the soil type for its stability in cases ponds are to be constructed, water quality parameters, size to be demarcated for aquaculture, targeted production etc. in the Mpumalanga Province. • Incorporate the objective in a Business Plan to determine projected costs for the implementation of the action projects required to introduce aquaculture at the Dam. 	<ul style="list-style-type: none"> • DAFF • MDARDLEA • IA (MLM) with the support of DMC
<u>Public Safety:</u> <ul style="list-style-type: none"> • To ensure public safety and security around the Dam. 	<ul style="list-style-type: none"> • There is no specific incident management system in place to ensure that incidents are responded to in a coordinated manner. 	<ul style="list-style-type: none"> • Appoint and train safety officers from within the communities to monitor access to the Dam and to ensure that the Dam safety rules are adhered to at all times. 	<ul style="list-style-type: none"> • IA (MLM) with the support of DMC • DWS

JERICHO DAM RESOURCE MANAGEMENT PLAN

	<ul style="list-style-type: none"> The infestation of Mole and Puff Adder Snakes. 	<ul style="list-style-type: none"> Raise awareness amongst the local communities about the importance of having a water resources and associated infrastructure to prevent vandalism at the Dam. 	
Construction of Slipway and Wash bay: <ul style="list-style-type: none"> To construct a recreational boat slipway and wash bay. 	<ul style="list-style-type: none"> Boating is currently taking place at the Dam despite the non-existence of slipway and wash-bay. Boats are not currently inspected for safety and not washed prior to launching to prevent alien invasive contamination. 	<ul style="list-style-type: none"> Construct wash bay and slipway according to DWS specifications. 	<ul style="list-style-type: none"> DWS IA (MLM) with the support of DMC

Table 13: 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)
Domestic Water Supply: <ul style="list-style-type: none"> To ensure the provision of potable drinking water for domestic use to downstream and surrounding communities. 	<ul style="list-style-type: none"> The communities adjacent to the Dam do not have access to potable drinking water. 	<ul style="list-style-type: none"> Msukaligwa LM to implement water provision targets documented in the Msukaligwa LM 2016/17 Integrated Development Plan (IDP). 	<ul style="list-style-type: none"> IA (MLM) as a water service provider has a mandate through the Water Services Act, 1997 (Act No. 108 of 1997) to purify and distribute the water communities. DWS
Community Participation and Beneficiation: <ul style="list-style-type: none"> Uplift the local economy and increase benefit flows to the surrounding communities through community empowerment. 	<ul style="list-style-type: none"> Tourism sector have been identified as a vehicle for skills development, job creation, BBBEE, etc. 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. 	<ul style="list-style-type: none"> Implement skills development programmes where opportunities exist. Implementation 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. 	<ul style="list-style-type: none"> IA (MLM) with the support of DMC Sector Education and Training Authority (SETA) DWS

JERICHO DAM RESOURCE MANAGEMENT PLAN

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)
		<ul style="list-style-type: none"> Establish community resource zones for subsistence fishing and for watering and grazing of livestock. Prioritise the local community if any job opportunities arise. 	
Recreational Institutional Structure: <ul style="list-style-type: none"> To establish an effective and functional institutional structure inclusive of surrounding stakeholders to manage the use of water for recreational activities. 	<ul style="list-style-type: none"> Currently, there is no organisation or appointed institutional structure that is managing the Dam for recreational use. 	<ul style="list-style-type: none"> An effective recreational institutional structure must be appointed at the Dam. DWS to compile MOA for the appointment of MLM as IA. DWS to implement the management structure representing all relevant stakeholders for the effective management of the recreational use of Jericho Dam. The roles and responsibilities of the role players must be clearly defined and understood. 	<ul style="list-style-type: none"> DWS

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 (MLM) 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 communities. The access fees cannot be used for rent seeking or to make profit.

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;
 - Functions (festivals, weddings, conferences 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, *inter alia*, 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 lessee.

Leasing of DWS property will be concluded based on market related rental fee.

4.4.2 Target Market

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

- Amsterdam 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 infrastructure as well as setting up of new facilities. The proposed IA can consider the following sub-sections 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. Examples of projects of similar nature which were successfully co-funded are Roodeplaat Dam Nature Reserve and Nonoti Beach Resort Development (Coastal Marine Tourism Project), details 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 MLM be appointed as an IA to manage recreational use of the Dam on behalf of DWS. Examples of potential co-funders are:

- 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 Jericho Dam RMP. It also describes the financial management and operational requirements to implement the objectives of the RMP.

CONCLUSION AND WAY FORWARD

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

The key challenges:

- Graves under water;
- Presence of Alien Invasive Vegetation (Black wattle) on the shoreline threatening the ecological function of the area;
- No institutional structure to oversee the management of recreational activities;
- Lack of potable water supply;
- No formalization of recreational facilities around the Dam;
- Lack of access control;
- Inadequate measures in place for public safety;
- Lack of slipway and wash bay facilities;
- Presence of mole snakes around the Dam which poses threats to visitors to the Dam;
- No camping facilities;
- Inadequate waste management;
- No records of grazing agreements;
- Lack of community beneficiation;
- Unauthorised sand mining and wood harvesting;
- 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);

- The Dam is land locked by private farm properties which makes it difficult for communities to access the dam. Access areas/ points are thus limited;
- Poaching of fish; and
- Fishing at areas considered safety and security zone.

Recommendations:

This RMP recommends the following immediate actions:

- Appoint MLM 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;
- Develop waste management plan for the Dam and surrounding areas to curb littering;
- Water quality reporting and monitoring.
- Removal of alien invasive plants (i.e. Black wattle); and
- Appointment of adequate security personnel to control access.

Review:

According to DWAF (2006), the RMP may be reviewed and updated every five (5) years to ensure that the management objectives remains relevant and management actions are continually improved. The BP is updated annually. **Figure 17** illustrates the RMP & BP review framework.

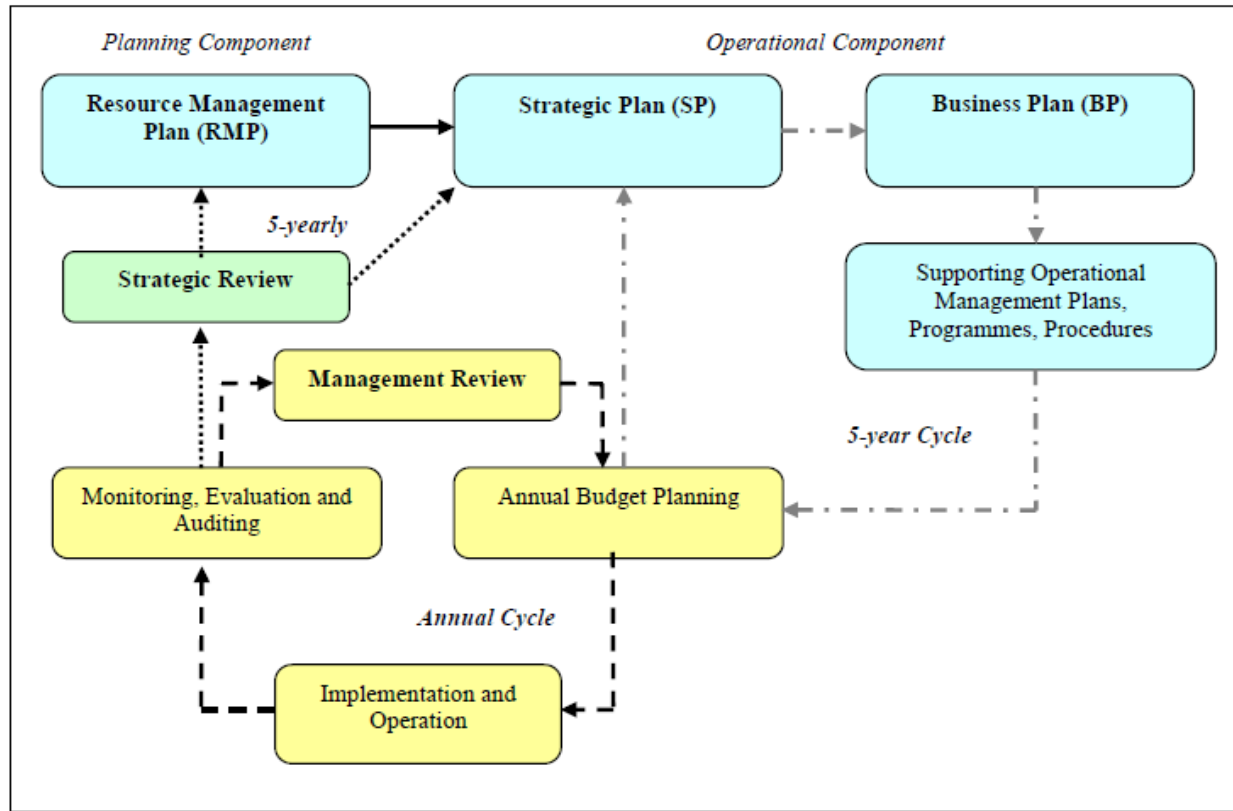


Figure 17: RMP and BP Review Framework

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APPENDICES

APPENDIX A : STAKEHOLDER DATABASE REGISTER

APPENDIX B : BACKGROUND INFORMATION DOCUMENT (BID)

APPENDIX C : NEWSPAPER ADVERT

APPENDIX D : FLYERS

APPENDIX E : EMAILS

APPENDIX F : COMMENT AND RESPONSES REGISTER

APPENDIX G: EXAMPLES OF SUCCESSFULLY CO-FUNDED PROJECTS

APPENDIX H: POTENTIAL CO-FUNDERS

APPENDIX I: BUSINESS PLAN