

Resource Management Plan **WAGENDRIFT DAM**

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water & sanitation

Department:
Water and Sanitation
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- Adjacent Land Owners;
- Bushman's Boating Club;
- Department of Economic Development, Tourism and Environmental Affairs;
- Department of Water and Sanitation;
- Ezemvelo KwaZulu-Natal Wildlife;
- Inkosi Langalibalele Local Municipality;
- KwaZulu-Natal Department of Agriculture and Rural Development;
- KwaZulu-Natal Department of Transport;
- The community members of Inkosi Langalibalele Local municipality (Ward 3);
- uThukela District Municipality; and
- Wagendrift Nature Reserve.

Acknowledgement is also extended to all other stakeholders who attended and participated in the various engagements during the development of this plan.

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Review:

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

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 | 08/09/2017 |
| 2 | Draft RMP for DWS Review | 27/09/2017 |
| 3 | Draft RMP for Public Review | 06/03/2018 |
| 4 | Final Draft RMP for DWS Approval | 17/04/2018 |
| 5 | Amended Final Draft RMP for DWS Approval | 09/05/2018 |
| 6 | Final RMP for DWS Sign Off | 05/04/2019 |
| 7 | RMP for DWS Sign Off | 03/12/2019 |

EXECUTIVE SUMMARY

Purpose of the Resource Management Plan:

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

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

Mandate of Department of Water and Sanitation: The Department of Water and Sanitation (DWS), through the NWA, mandates the Minister as the custodian of the Nation's water resources to ensure that state dams, including the Wagendrift 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 Resource Management Plans (RMPs), 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 impounds the Bushman's River. The Dam is located, on the demarcation boundary of Ward 3 of Inkosi Langalibalele Local Municipality (ILLM). The ILLM falls under the jurisdiction of the uThukela District Municipality (UDM) in

KwaZulu-Natal Province South Africa. The centre point GPS coordinates of the Dam are 29° 3'35.15"S and 29°49'56.41"E

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

Dam Ownership and Management: DWS owns the Dam and surrounding state land. It also operates the Dam for its primary purpose. The Dam is located within the Wagendrift Nature Reserve (WNR), which is managed by Ezemvelo KwaZulu-Natal Wildlife (EKZNW). The secondary use of the Dam is currently managed by the WNR. Through the development of the RMP, EKZNW is proposed as an Implementing Agency (IA), and shall be appointed by DWS to facilitate the implementation of the objectives and identified action projects in line with the requirements of the Wagendrift Dam RMP. 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 and planning partners. Authority and public meetings were conducted to obtain inputs (challenges and objectives) regarding the Dam. The communities consulted during the stakeholder engagement meetings are situated within Ward 3 of ILLM. These meetings were conducted in accordance with the Guidelines for Public Participation (DWAF, 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 have the Dam and surrounding environment free of alien invasive species;
- To manage and monitor the alien fish population within the Dam;
- To develop a Zoning Plan which will integrate conservation, recreation and development whilst not retarding the primary functions of the Dam;
- To ensure the presence and visibility of game ranger that will ensure there is safety of the users;
- To provide the local communities with an opportunity for subsistence fishing;
- To improve the Dam's tourism marketing strategy as it is not well known amongst local community members;
- To equip the community members with the necessary skills and expertise for the eco-tourism industry;
- To unlock the socio-economic potential of the Dam by creating job opportunities; and
- To establish an effective institutional structure that can manage the recreational use of the Dam in an acceptable manner, and which is also representative of all the Stakeholders.

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

"To manage the Dam in a sustainable manner and ensure safety and security while promoting community participation and beneficiation".

Tourism Potential: The potential tourist attraction within the DWS purchased boundary includes sustainable develop and manage of

WNR to boost eco- cultural tourism and the refurbishment of chalets adjacent to the Dam.

The main challenges identified comprise:

- The slipway at the Dam ends at the water edge; it therefore needs to be extended in order to be operational during times of drought;
- People visit the dam wall for leisure which is dangerous without supervision from the relevant management authority of the Dam;
- 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);
- Certain activities will not be feasible at the dam such as hosting events because the dam is situated within a nature reserve and noise should be avoided so as to not disturb the animals;
- The capacity of the shoreline space available for recreational activities is limited and it will be challenging to include more activities within the Dam;
- There are no rangers patrolling around the reserve or the Dam to ensure that there is safety of the users;
- Fixed and floating Aids to Navigation (AtoN) and demarcation markers are not in place;
- Issue of lack of water supply by municipality to the surrounding communities;
- The Dam is partially infested by alien invasive plant named *Solanum mauritianum*. The species can be harmful to grazing animals and humans because its unripe fruits are poisonous and the hairy leaves and stems can cause allergic dermatitis and asthma;
- There are alien fish species at the Dam such as carp, some trout and large-mouth bass. These fish species will threaten indigenous fish population,

resulting mainly from predation by carp; and

- The Dam is fenced mainly around the Dam wall. As a result, some of the community members have direct access to the Dam which leads to theft and vandalism of the existing recreational facilities as well as drowning.

Recommendations:

This RMP recommends the following immediate actions:

- Appoint EKZNW as an IA to manage recreational use of the Dam on behalf of DWS;
- Establish a Dam Management Committee (DMC);
- Ensure organised development, equitable visitor access, sound resource management and optimal community beneficiation, as per the proposed Zoning Plan in Section 4.2;
- Ensure public safety with regards to the use of inland vessels, as per the Carrying Capacity in Section 4.2.3; and
- Ensure resource management, resource utilisation and benefit flow management, as per the Strategic Plan and Key Performance Areas in Section 4.3.

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LIST OF ACRONYMS

| | |
|---------------------|---|
| ATON | Aid(s) to Navigation |
| BID | Background Information Document |
| BP | Business Plan |
| CATHSSETA | Culture, Arts, Tourism, Hospitality, Sport Sector, Education and Training Authority |
| CD: IO MANCO | Chief Directorate: Infrastructure Operations Management Committee |
| CIWSP | Co-operative Inland Watercourse Safety Programme |
| CoGTA | Department of Corporative Governance and Traditional Affairs |
| CPF | Community Police Forum |
| DAFF | Department of Agriculture, Forestry and Fisheries |
| DEA | Department of Environmental Affairs |
| DHS | Department of Human Settlements |
| DoT | Department of Transport |
| DPW | Department of Public Works |
| DRDLR | Department of Rural Development and Land Reform |
| DSR | Department of Sports and Recreation |
| DWA | Department of Water Affairs |
| DWAF | Department of Water Affairs and Forestry |
| DWS | Department of Water and Sanitation |
| EKZNW | Ezemvelo KwaZulu-Natal Wildlife |
| EMF | Environmental Management Framework |
| FSL | Full Supply Level |
| GIAMA | Government Immovable Asset Management Act, 2007 (Act No.19 of 2007) |
| GP | Guideline Program |
| GWWs | Government Waterworks |
| I&APs | Interested and Affected Parties |
| 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 |
| ILLM | Inkosi Langalibalele Local municipality |
| IRMP | Integrated Resource Management Planning |
| KPA | Key Performance Area |
| KZN | KwaZulu-Natal |
| KZNDARD | KwaZulu-Natal Department of Agriculture and Rural Development |
| KZNDT | KwaZulu-Natal Department of Transport |
| LAAP | Local Accountable AtoN Parties |
| LED | Local Economic Development |
| NDT | National Department of Tourism |
| NEMA | National Environment Management Act, 1998 (Act No. 108 of 1998) |
| NEMPAA | National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) |
| NPSC | National Project Steering Committee |
| NT | National Treasury |
| NWA | National Water Act, 1998 (Act No. 36 of 1998) |
| NWRS | National Water Resource Strategy |
| OMC | Operations Management Committee |

| | |
|---------------|--|
| PP | Public Participation Process |
| PPP | Public Private Partnership |
| PSP | Professional Service Provider |
| RMP | Resource Management Plan |
| SAMSA | South African Maritime Safety Authority |
| SAPS | South African Police Service |
| SASACC | South African Sports Angling and Casting Confederation |
| SASCOC | South African Sports Confederation and Olympic Committee |
| SDF | Spatial Development Framework |
| SWOT | Strengths, Weaknesses, Opportunities and Threats |
| TP | Tourism Potential |
| UDM | uThukela District Municipality |
| WfW | Working for Water |

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

The Department of Water and Sanitation (DWS), through the National Water Act (NWA), 1998 (Act No. 36 of 1998), mandates the Minister as the custodian of the nation's water resources to ensure that the government waterworks (GWWs), including the Wagendrift 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 (RMPs), 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 Business Plan (BP) for the Wagendrift Dam, hereafter referred to as the Dam.

1.2 PURPOSE OF THIS RMP

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

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

1.3 DESCRIPTION AND LOCATION OF THE DAM

The Wagendrift Dam has a multi- arch type dam wall which impounds the Bushman's River. The water surface area of the Dam is approximately

508.4 hectares with a capacity of approximately 559 million cubic meters. **Table 1** shows the Dam profile.

The Dam is located on the demarcation boundary of Ward 3 of Inkosi Langalibalele Local Municipality (ILLM). The ILLM falls under the jurisdiction of uThukela District Municipality (UDM) KwaZulu-Natal Province South Africa, as shown in **Figure 1**. The centre point GPS coordinates of the Dam are 29° 3'35.15"S 29°49'56.41"E

1.4 PURPOSE OF THE DAM

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

The Dam offers recreational activities (secondary use) such as camping, boating, hiking and fishing. The Dam is situated within Wagendrift Nature Reserve (WNR) and is adjacent to Bushman's Boating Club which offers boating activities for club members and non-members.

1.5 DAM OWNERSHIP AND MANAGEMENT

DWS owns the Dam and surrounding state land. It also operates the Dam for its primary purpose. The RMP focus area is mainly on the Dam, comprising the water surface and the DWS Purchased Boundary.

The Dam is situated within the Wagendrift Nature Reserve (WNR), a formal land-based protected area (NBA, 2011). Ezemvelo Kwa-Zulu Natal Wildlife (EKZNW) is mandated to manage the WNR, including the Dam. The recreational facilities within the DWS Purchased Boundary are managed by the WNR.

Through the development of the RMP, EKZNW is proposed as the Implementing Agency (IA) for the management of using water for recreational purposes (secondary use) within the DWS Purchased Boundary.

Table 1: Wagendrift Dam Profile

| Wagendrift Dam Profile | |
|-----------------------------|------------------------------------|
| Location | South Africa |
| Province | KwaZulu-Natal |
| District Municipality | uThukela |
| Local Municipality | Inkosi Langalibalele |
| Nearest Town | Estcourt |
| Completion Year | 1963 |
| Coordinates | 29° 3'35.15"S 29°49'56.41"E |
| Purpose | Irrigation and domestic |
| Owners | Department of Water and Sanitation |
| Quaternary Catchment | V70E |
| Water Management Area | Pongola-Mzimkulu |
| River | Bushman's |
| Capacity (Mm ³) | 55 9 |
| Surface Area (ha) | 508.4 |
| Wall type | Multi-Arch |
| Wall Height (m) | 41.15 |
| Length (m) | 281 |

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

WAGENDRIFT DAM RESOURCE MANAGEMENT PLAN

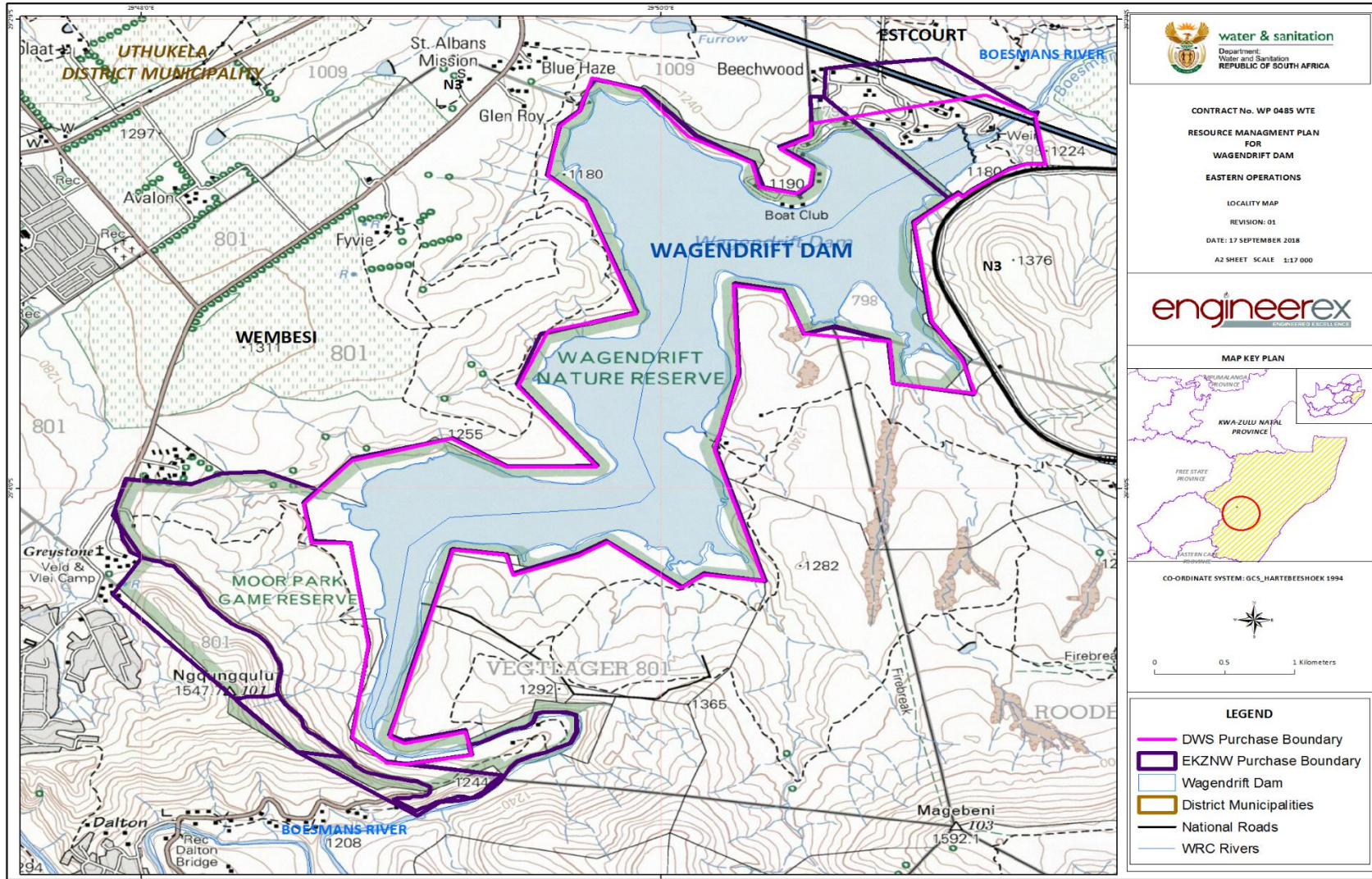


Figure 1: Locality Map for Wagendrift Dam

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 |
|---|---|
| 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. |
| 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. |
| 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. |
| 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. |
| 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. |
| 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). |
| 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. |
| 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. |

WAGENDRIFT DAM RESOURCE MANAGEMENT PLAN

The Legislative framework applicable to the management and use of the Dam for recreational purpose 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 | |
|--|---|
| 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. |

WAGENDRIFT DAM RESOURCE MANAGEMENT PLAN

| Legislation: Acts, ordinances, bylaws | |
|---|--|
| [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. |

WAGENDRIFT DAM RESOURCE MANAGEMENT PLAN

| Legislation: Acts, ordinances, bylaws | |
|--|--|
| 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. 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: |
| KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997) | The functions of the Board are <i>inter alia</i> area and from time to time to make recommendations to the Minister in relation to policy formation for the coordination of ecotourism projects involving both government and private initiatives, including community-linked projects associated with protected areas. |
| KwaZulu-Natal Heritage Act, 2008 (Act No. 4 of 2008) | Provide for the conservation, protection and administration of both the physical and the living or intangible heritage resources of the Province of KwaZulu-Natal. |
| Municipal Policy, By-Laws, Reports & Guidelines | Significance to the RMP: |

WAGENDRIFT DAM RESOURCE MANAGEMENT PLAN

| Legislation: Acts, ordinances, bylaws | |
|--|--|
| uMtshezi Local Municipality IDP final Review (2015/2016) | Provides management tool for local municipality to assist budget for land management system, economic growth, institutional transformation and sound financial management. It also provides guidance in decision making for all proposed activities for budgeted financial year. |
| Inkosi Langalibalele local Municipality IDP 5 year plan (2017/18-2021/22) | Provides management tool for local municipality to assist budget for land management system, economic growth, institutional transformation and sound financial management. It also provides guidance in decision making for all proposed activities for budgeted financial year. |

CHAPTER 2: ENVIRONMENTAL ANALYSIS

2.1 BIOPHYSICAL ENVIRONMENT

2.1.1 Climate

Wagendrift Dam is located near the town of Estcourt. According to Climate-Data.ORG (2017), the area experiences more rainfall in summer, where the least amount of rainfall occurs in June, July and August with an average of 11 mm and the greatest amount of rainfall occurs in January,

February and December with an average of 122 mm. As shown in **Figure 2**.

The average annual temperature for Estcourt area is 16°C. As shown in **Figure 2**, the warmest months are January, February, March and December with an average temperature of about 20°C. The months which experience the lowest temperatures include May, June, July and August with an average of 11°C

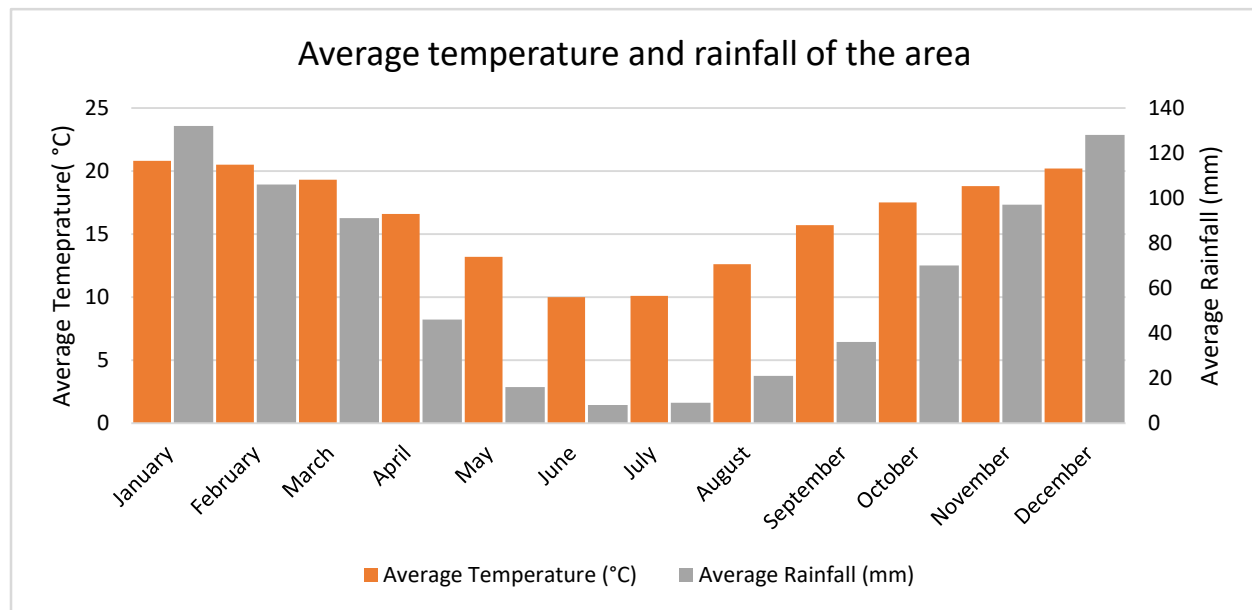


Figure 2: Average Temperature and Rainfall of the Estcourt area

Source: Adapted from Climate Data. ORG, 2017

2.1.2 Topography

According to Mucina and Rutherford (2006), the area within which the Dam is located, is dominated by Hilly and undulating landscape. Makhabeni hill overlooking Moor Park, is one of the oldest Iron Age sites in KwaZulu-Natal dating back to AD 1300 and on the southern side of the Dam are large fossil beds with many fossilised trees lying exposed on the surface of the ground.

The drainage in relation to the topography of the area, characterised by mountains, might cause excessive surface run-off towards the Dam.

2.1.3 Geology and Soil

A variety of Karoo Super group rock occurs in the area, including the Dwyka, Ecca and Beaufort groups and marginally also dolerite intrusions. Yellow-brown soils over Plinthic subsoil and shallow duplex soils are common (Mucina and Rutherford, 2006). Presence of Dolomite might affect structures around as they are prone to sinkholes and have negative impact on drinking water. Refer to **Figure 4** for the Geological Map

WAGENDRIFT DAM RESOURCE MANAGEMENT PLAN

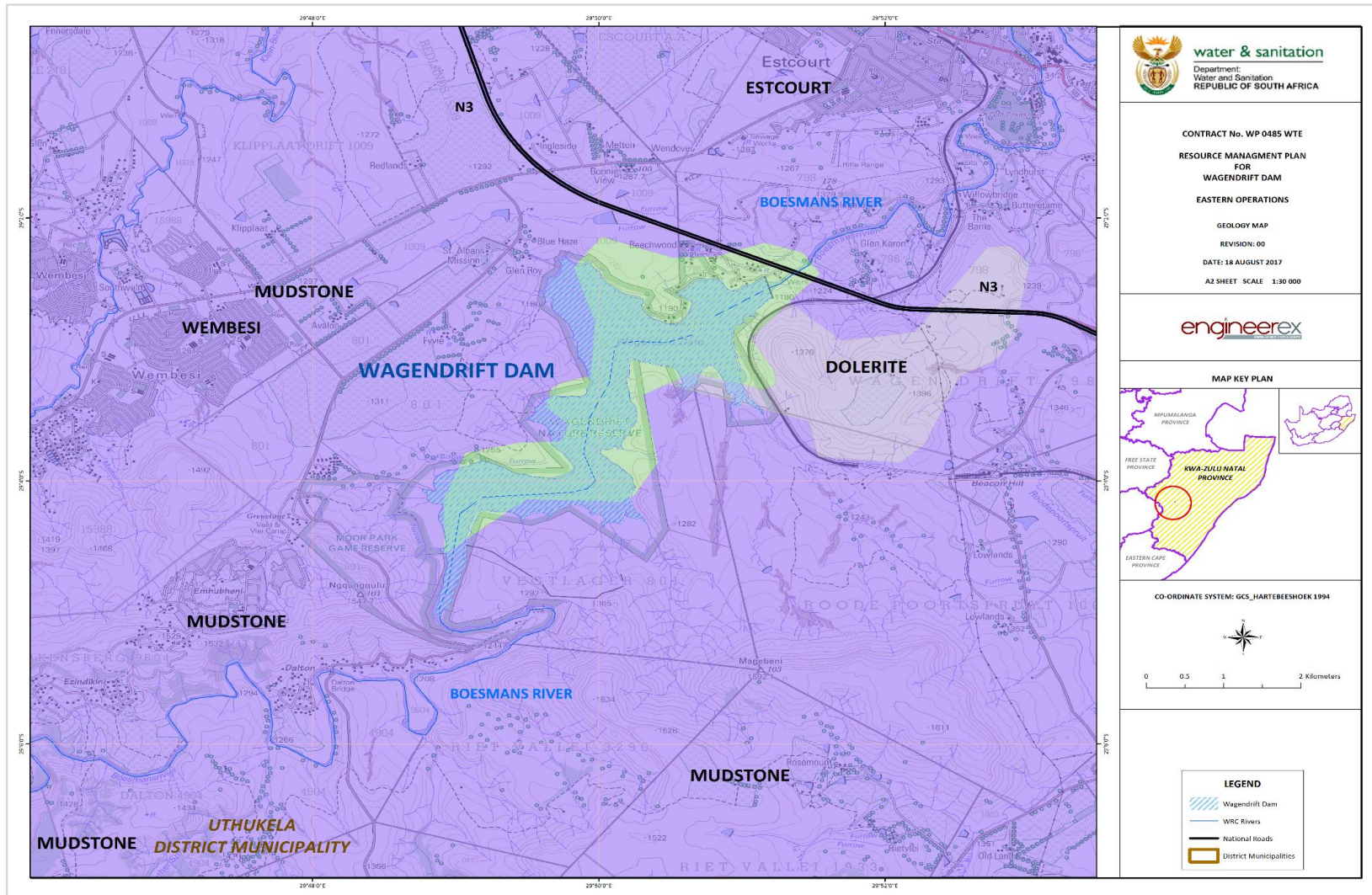


Figure 3: Geological Map for Wagendrift Dam area

2.14 Hydrology

Water Surface

The Dam lies within the V70E quaternary drainage regions which forms part of the Pongola-Mzimkulu Water Management Area

(WMA). The Dam impounds Bushman's River which is categorized as a National Freshwater Ecosystems Priority Area (NFEPA) – River in terms of the BGIS. SANBI.ORG 2018. **Figure 4** shows the fluctuations of water level over a year

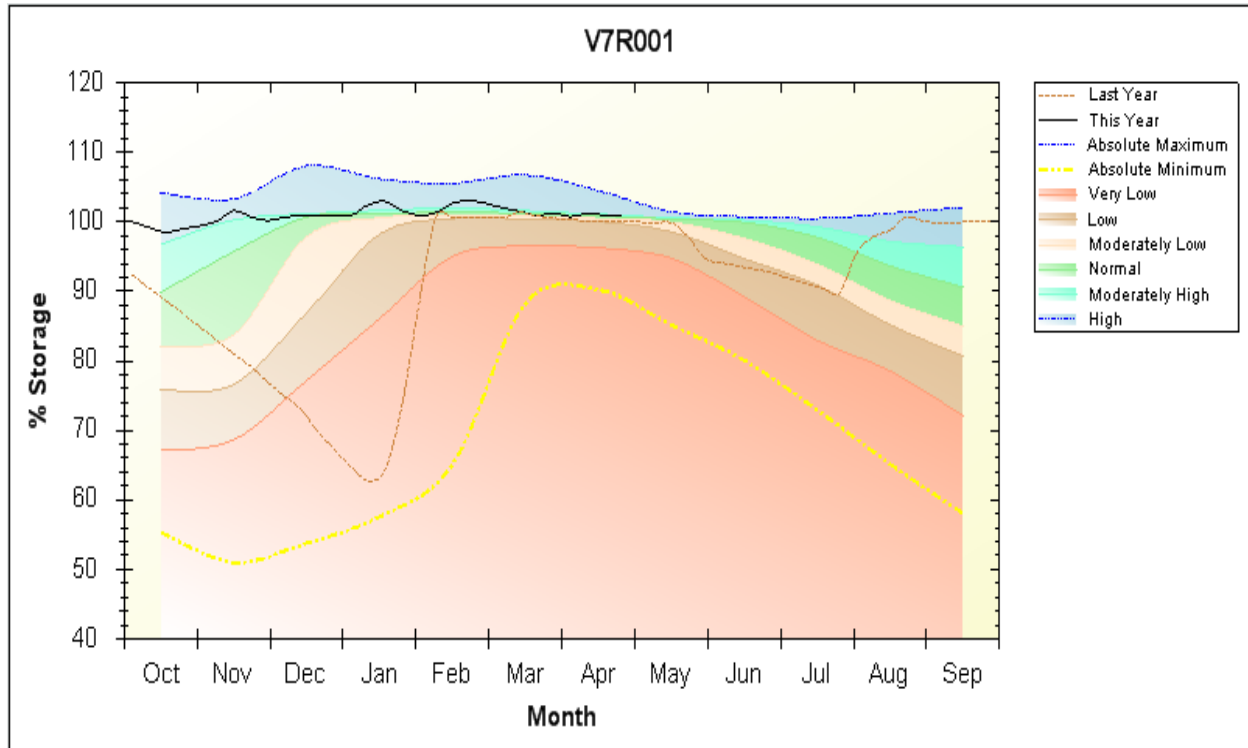


Figure 4: Fluctuations of Wagendrift Dam water level over a year

Source: DWS, 2018

Water Quality

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

At the time of developing this report, the only indicator results 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.

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

2.1.5 Protected Areas

The Dam is situated within the Wagendrift Nature Reserve that is a formal land-based protected areas (NBA 2011). The Moor Park Nature adjoins the Wagendrift Nature Reserve

to the east which is also a formal land-based protected area. Refer to **Figure 5**.

In 1978 the nature reserve was handed over to what was Natal Parks Board and is now under the control of Ezemvelo KZN Wildlife (EKZNW). Moor Park and Wagendrift nature reserves are currently under the management of EKZNW and

was incorporated into the administration of Wagendrift Nature Reserve in 1989.

Therefore, the Dam is situated in an area that is governed by two (2) main Acts, the National Water Act (NWA) and National Environmental Management Protected Area Act (NEMPAA) which needs to be taken into consideration throughout the planning process.

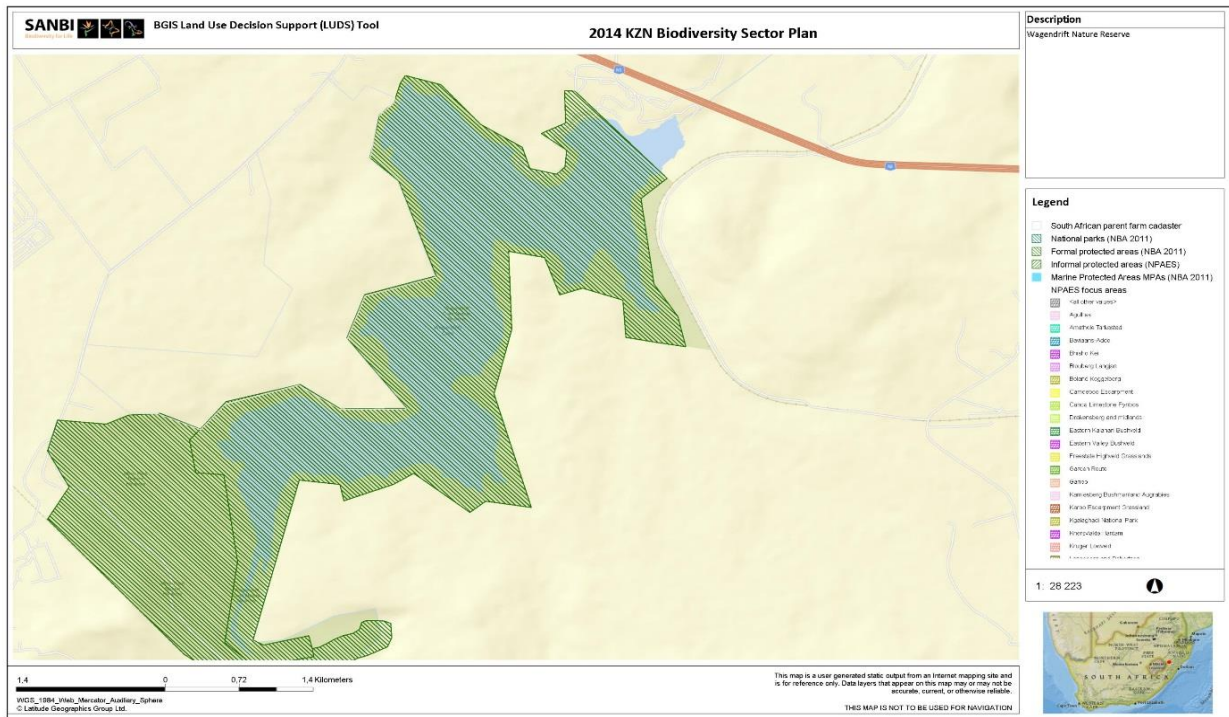


Figure 5: Wagendrift Nature Reserve (dark green) and Focus Area (light green) for the National Protected Area Expansion Strategy (NPAES 2010).

2.1.6 Flora

According to Mucina et al (2006), Dam falls mainly, within the KwaZulu-Natal Highland Thornveld vegetation type Gs 6 as shown in **Figure 6**. The vegetation is characterized by sparse grass cover and typical occurrence of scattered shrubland pockets

The alien invasive plant species that has been identified at the Wagendrift Dam is *Solanum mauritianum*. Their presence may harm native ecosystems or commercial, agricultural, or recreational activities dependent on these ecosystems. They may even harm human health.



Figure 6: Natal Highveld Thornveld vegetation

2.1.7 Fauna

The Dam is a popular fishing venue and the reserve still offers good catches of scaly (Barbus natalensis) even though these fish are under threat from siltation in the rivers.

The Wagendrift Nature Reserve (WNR) boasts several species of mammals, including black wildebeest, impala, blesbuck, plains zebra, mountain reedbuck, bushbuck and grey duiker (EKZNW Biodiversity Database, 2017).

According to EKZNW Biodiversity Database, (2017) the bird species of special concern listed in the **Table 4** have previously been recorded within EKZNW Biodiversity Database. These species were most likely recorded in the Wagendrift Nature Reserve and nearby places.

Table 4: Bird Species of Special Concern Identified within EKZNW Biodiversity Database

| Scientific Names | Common name | Red list category |
|---------------------|-------------|-------------------|
| <i>Oxyra Maccoa</i> | Maccoa Duck | Near Threatened |

WNR offers habitat that could host three potential Palearctic breeding migrants, namely Black-winged Pratincole (Near-threatened), Lesser Kestrel (Vulnerable) and Pallid Harrier (Near-threatened).

2.2 BUILT ENVIRONMENT

The aspects investigated 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 Roads: The Dam is situated along national road network (N3). The

unnamed/gravel road (north-west of the Dam) provides direct access to the Dam.

Internal Road and Circulation: There are several internal gravel roads that lead to the DWS offices, WRN, Moor Park, picnic areas and the ablution facilities.

Parking: Parking is only available at WRN office. There is no demarcated area for parking inside the nature reserve, however, there is sufficient undeveloped space to provide parking.

Access Point: There is currently one (1) existing access point to the Dam (refer to **Figure 20** for the proposed Overall Zoning Plan). The land surrounding the Dam and Nature Reserve comprise mainly of mountainous and cultivated lands which makes the viability for additional access points limited.

2.2.2 Non-Land Based Transportation

Rail Transport: There are two (2) train stations close to the Dam. Beacon Hill train station is situated east of the Dam approximately 14 km while Estcourt Train station is situated north east of the Dam approximately 8 km Refer to **Figure 7**.

Air Transport: King Shaka International Airport is located south east of the Dam and is approximately 202 km away from the Dam.

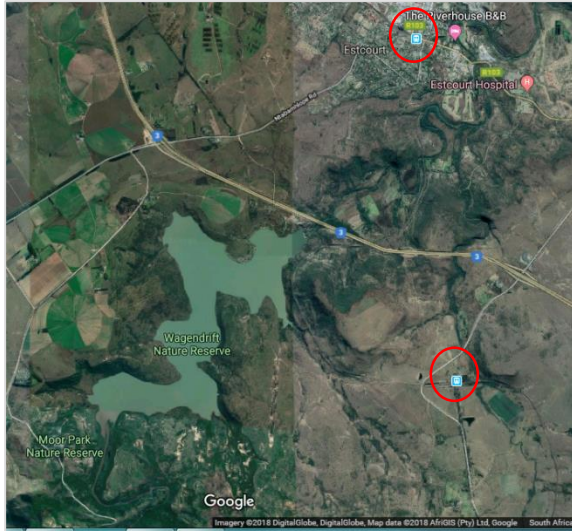


Figure 7: Google Maps – Wagendrift Dam

2.2.3 Bulk Services

Solid Waste: According to uMtshezi Local Municipality (2016), Estcourt, Weenen and Wembezi have limited waste management although there is a need for the identification of a new waste disposal site for Weenen and surrounding rural areas. The majority of people, especially in the farming areas, dispose their waste on-site and diseases emerge because they do not have information on how to manage the situation.

According to Inkosi Langalibalele Local Municipality (2017), Inkosi Langalibalele Municipality has no Integrated Waste Management Plan (IWMP) and legal waste disposal site, but utilise one solid waste disposal site that does not adhere to the requirements of the Department of the Environmental Affairs, hence it illegal. The site is located in close proximity to the Phumlani Township and serves as a scavenging spot for squatter camp community.

2.2.4 On-Site facilities

The on-site facilities at the Dam includes:

- Tourism/ Recreational Facilities:
 - Ablution facility;
 - Braai stands; and

- Four (4) existing slipways.
- Administration and Management Facilities:
 - DWS offices; and
 - WNR offices.

2.2.5 Fencing

The Dam is mainly fenced around the Dam wall and this provides an opportunity for illegal access to the area results to fish poaching.

2.2.6 Management and Operation

The management and primary operation of the Dam is done by the DWS. The RMP focus area is on the water surface and the DWS purchased boundary. Outside factors such as pollution that might have an impact on the Dam are also considered.

The recreational use of the Dam is currently managed by EKZNW. Through the development of this RMP process, EKZNW is proposed as an IA for the management of the Dam for recreational purposes.

2.2.7 Safety

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

2.3 SOCIO-ECONOMIC ENVIRONMENT

The purpose of assessing the socio-economic conditions is to determine matters that need to be addressed through the implementation of the RMP to uplift the standard of living of the communities. The study focuses on the socio-economic conditions of Ward 3, refer to **Figure 8** for the municipal ward boundary.

The socio-economic conditions, according to the Stats SA Community Survey (2016), are summarised in the sub-sections as follows:

- Population size;
- Education level;

- Employment status;
- Monthly income; and
- Community beneficiation.

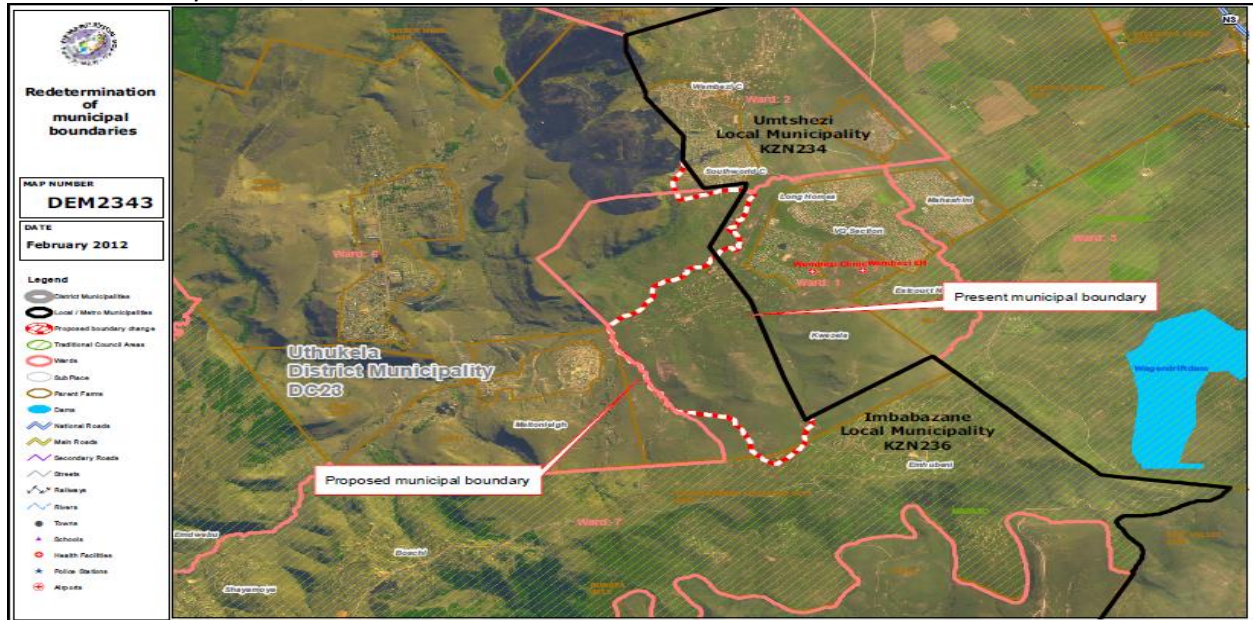


Figure 8: ILLM Ward 3 Delimitation

Source: Municipal Demarcation Board (2016)

Population Size

ILLM has a total population size of 83 154 individuals, whereas Ward 3 has a total of 10 074 individuals representing about 11% of the ILLM population as shown in Figure 9.

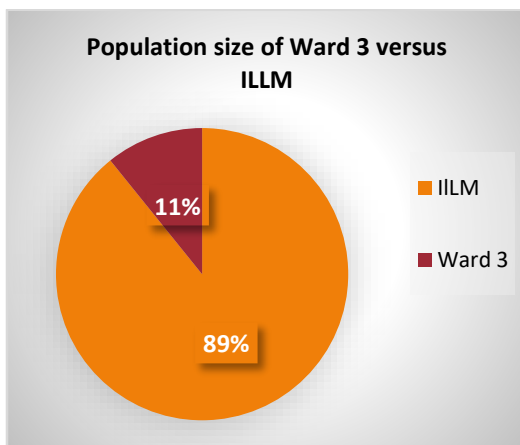


Figure 9: Population size of Ward 3 versus ILLM

Source: Stats SA Community Survey (2016)

Educational Level

As shown in Figure 10, 12% of residents in Ward 3 have completed secondary, and only 1% of the population has attained higher education.

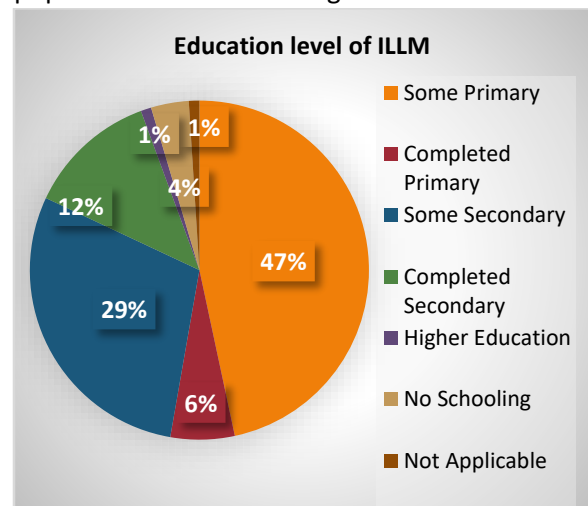


Figure 10: Education Level of Ward 3

Source: Stats SA Community Survey (2016)

Employment status

Within Ward 3, 20% of the residents are employed, 11% of the residents are unemployed. The residents not actively contributing to the economy accounts to 26% of which 43% are discouraged work-seekers, suggesting that they no longer seek to become employed. Refer to **Figure 11**.

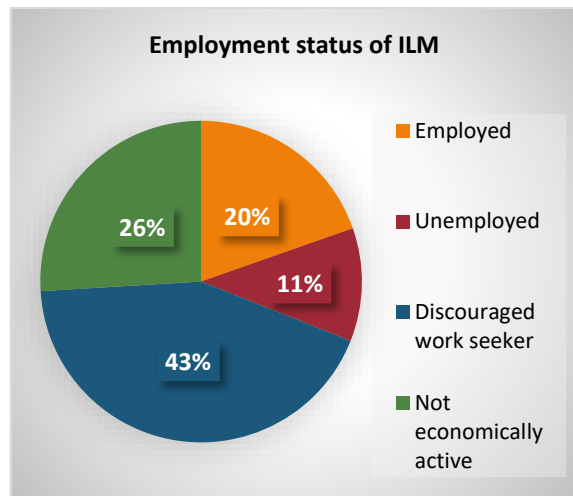


Figure 11: Employment Status of Ward 3

Source: Stats SA Community Survey (2016)

Monthly Income

ILLM has total population size of 83 154 individuals 12.8 % of ILLM population are without a source of income while 20.3% of OLM earn below R20 000 per month. (refer to **Figure 12**). Rigorous and integrated efforts are required by the municipalities to create work opportunities and sustainable livelihoods for the people.

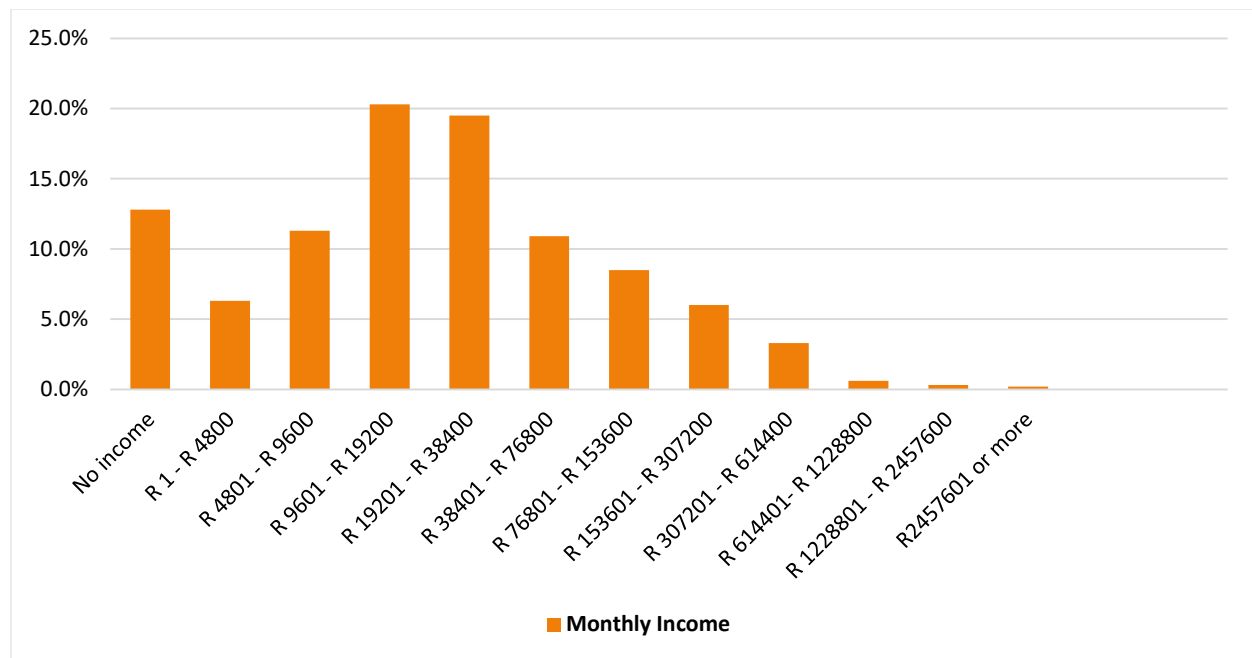


Figure 12: Monthly Income for Ward 3

Source: Stats SA Community Survey (2016)

2.3.1 Community Beneficiation

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

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

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

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

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

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

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

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.

Process triggers are used to initiate the planning and public participation process in which stakeholder and potential Interested and Affected Parties (I&AP) are given an opportunity to comment or raise issues of concern that are relevant and in line with the process triggers and potential challenges presented in **Table 5**.

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

3.2 PROCESS TRIGGERS

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

Table 5: Summary of Triggers and Potential Challenges for Wagendrift Dam

| Triggers (s) | Potential Challenges |
|--|--|
| Resource Management: | <ul style="list-style-type: none"> The water resource within protected area, or is subject to protection legislation. The Dam is part of the Wagendrift Nature Reserve (WNR). The activities that are proposed should not be in conflict with the protected area's objectives. Invasive Alien plant and fish species. |
| Recreational Industry Involvement: | <ul style="list-style-type: none"> People visit the Dam wall for leisure without supervision from the relevant management authority of the Dam. The slipway ends at the water edge; it therefore it needs to be extended in order to be operational during times of drought. Public safety with regards to the use of inland vessels. There is currently no effective Zoning Plan at the Dam. The existing zoning Plan only accommodate portions of the nature reserve not the water surface. Access fees are unaffordable for local communities. The capacity of the shoreline space available for recreational activities is limited and it will be challenging to include more activities within the Dam. |
| Community Participation and Beneficiation | <ul style="list-style-type: none"> Challenges of communities regarding physical access and access to the water-based economy of the resource. Participation and beneficiation of surrounding communities remains a challenge. Unlocking the economic potential of the Dam through the establishment of effective Public Private Partnerships (PPPs). Equitable and sustainable benefit flow into the community through the creation of appropriate institutional arrangements. |

WAGENDRIFT DAM RESOURCE MANAGEMENT PLAN

| Triggers (s) | Potential Challenges |
|---------------|--|
| Public Policy | <ul style="list-style-type: none">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 |

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 13**.

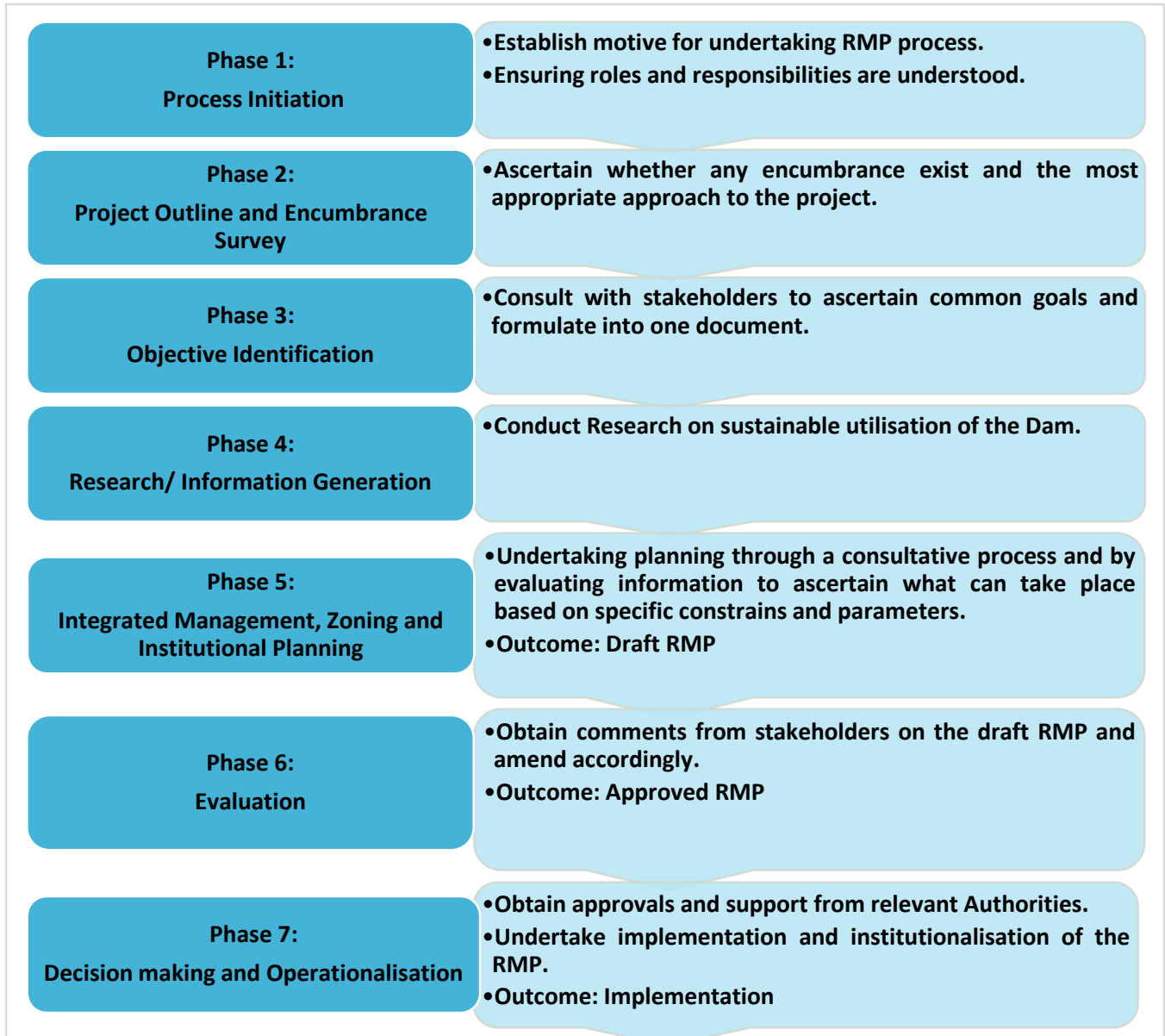


Figure 13: RMP Procedure

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 and studies, policies and guidelines district and local municipal plans, biodiversity sector plans and water information systems.

3.4.2 Site Inspection

A site inspection was conducted with the DWS officials (DWS IEE and Dam Control Officer) on **6 May 2016**. During the site inspection the following were observed: the Dam is mainly fenced around the Dam wall, shortage of patrolling officers, the need to refurbish swimming pools and there is an opportunity for nearby communities to harvest grass (reeds). Additional background information was collated from consultation with different stakeholders. Potential Interested and Affected Parties (I&APs) were identified during the site inspection through liaison with the Dam Control Officer.

3.4.3 Public Participation

The public participation process (PPP) is a process in which potential Interested and Affected Parties (I&APs) are given an opportunity to comment or raise issues of concern on specific matters. The three (3) fundamental and theoretical objectives of the PPP, as stipulated in the Guideline for Public Participation (DWAf, 2001) are:

- To improve decision-making;
- To bring about sustainable development; and
- To normalise the attitudes of stakeholders, authorities and I&AP

The PPP 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&APs in order 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&AP

The following advertising methods were used:

- **Newspaper Advert:** initial public meetings were advertised on **Estcourt News**, Newspaper in English on **23 November 2016**. An advert for the draft RMP project was advertised on the **Estcourt and Midlands news in English**. The advert was published in English on **16 March 2018** (refer to **Appendix B**).
- **Flyers and Onsite Notices:** The Flyers and Onsite Notices were compiled in English and IsiZulu and were distributed on **22 November 2016**. For the draft RMP presentation, flyers were distributed on **08 March 2018**. (Refer to **Appendix C**).

Consultation and Engagement

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

The following consultation and engagement methods were used:

- **E-mails:** initial meeting invitations were sent to stakeholders on **23 November 2016**, notifying them about the scheduled consultative meetings. The draft RMP presentation was sent on **08 March 2018** (refer to **Appendix D**).
- **Background Information Document (BID):** The BID was sent to stakeholders *via* email with background information

about the proposed RMP project (refer to **Appendix E**).

- **Authority Meeting:** The initial authority meeting was held on **28 November 2016** at the **Umtshezi Local Municipality**: (currently known as **Inkosi Langalibalele Municipality**) The draft RMP was presented on **20 March 2018** at **Inkosi Langalibalele Local Municipality: Tourism Offices**.

The purpose of the meeting was:

- To present the RMP, its goal and the objectives of the project to the authorities; and
 - To allow the authorities an opportunity to participate in the project by sharing information on their respective mandates.
- **Public Meeting:** The initial public meeting was held on **27 and 28 November 2018** at Ward 3, Wembesi stadium and Drakenview primary School. The Draft RMP was presented on **20 March 2018** at Dalton Bridge Primary School and Drakensview Primary School.
 - **Comment and Responses Register:** A copy of the draft RMP report was circulated on **08 March 2018** for commenting. The initial commenting period lapsed on **30 March 2018**. The comments received were documented in the Comments and Responses Register (refer to **Appendix F**).

3.4.4 Planning Partners

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

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

The RMP provides for coordination between different government departments and agencies as shown in **Table 6**. This is to ensure that not only the objectives of DWS are achieved but also that the functions/ objectives of the planning partners (relating to the recreational use of the Dam) are taken into consideration when developing the RMP.

WAGENDRIFT DAM RESOURCE MANAGEMENT PLAN

Table 6: Planning Partners for the Wagendrift Dam RMP

| Department | Functions / objections |
|---|--|
| Inkosi Langalibalele Local Municipality (ILLM) | The Dam is within the jurisdiction of the municipality and the municipality is mandated to provide bulk water services. The municipality has further identified the Dam as a tourism attraction centre. |
| uThukela District Municipality (UDM) | ILLM falls under the jurisdiction of UDM. |
| Department of Agriculture, Forestry and Fisheries (DAFF) | The purpose of the DAFF includes sustainable development and management of resources to maximise the economic potential of the fisheries sector while protecting the integrity and quality of the country's aquatic ecosystems. Operation Phakisa's expansion to inland Dams is one of the DAFF's initiatives aimed at unlocking the economic potential of the fisheries sector of inland water. The latter programme will be used as a benchmark for the implementation of conservation policies, while implementing job creation in the fishery and fish processing market. |
| Department of Environmental Affairs (DEA) | The DEA is mandated to give effect to the right of citizens to an environment that is not harmful to their health or wellbeing, and to have the environment protected for the benefit of present and future generations. In relation to the RMP, the DEA is responsible for biodiversity management within the GWWs, including invasive alien species. In addition, the Department should ensure that Environmental Impact Assessments (EIAs) is undertaken for all activities that triggers EIA Regulations. The DEA through the WfW programme, can assist in eradicating alien invasive plants species (blue gums and parrot furthers) and alien invasive fish species. |
| Department of Public Works (DPW) | DPW is tasked with the function to regulate and control the use of state land outside the GWWs. |
| Department of Rural Development and Land Reform (DRDLR) | The Department will assist in terms of land claims/ ownership issues (i.e. land under traditional authorities). The Department are also involved in rural development by improving both economic infrastructure (such as roads) and social infrastructure (e.g. communal sanitation and non-farming activities). |
| Department of Transport (DoT) | Responsible for legislation, policy and regulations for all transportation in South Africa, including shipping and other transport by water, and inland watercourse. For the purpose of Inland Watercourse, DoT has established an agency called the South African Maritime Safety Authority (SAMSA), which is mandated to ensure safety of life and property at sea; to prevent and combat pollution from ships in the marine environment; and to promote the Republic's maritime interests. |
| 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. |
| Cooperative Inland Watercourse Safety Programme (CIWSP) | 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 |

WAGENDRIFT DAM RESOURCE MANAGEMENT PLAN

| Department | Functions / objections |
|--|--|
| | <p>innovative, practical and cost-effective way to implement SAMSA' Vessel Safety Regulations on inland watercourse 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 Corporate 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 within and around the Dam, including other factors that may influence the development and implementation of the RMP.

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

The identified encumbrances are categorized into Biophysical, Existing Zoning Plan and Socio-cultural.

Tables 7 summarises the identified biophysical, Existing Plan and social-cultural encumbrances that might affect the implementation of the RMP at the Dam.

Table 7: Summary of Biophysical Social, Existing plan and Socio-cultural Encumbrances

| Item | Description |
|--|--|
| Flora | <ul style="list-style-type: none"> There is <i>Solanum mauritianum</i> alien invasive species at the Dam. This plant species will compete with and replace indigenous riverine species. The species can also be harmful to grazing animals and humans because its unripe fruits are poisonous and the hairy leaves and stems can cause allergic dermatitis and asthma |
| Fauna | <ul style="list-style-type: none"> There are alien fish species at the Dam. The occurrence of alien fish species will threaten indigenous fish population, resulting mainly from predation by trout, largemouth bass and carp. |
| Social | <ul style="list-style-type: none"> The Dam is not entirely fenced This leads to fish poaching and vandalism of the existing recreational facilities as well as other structures at the Dam There is also lack of community awareness regarding environmental and tourism education. |
| Zoning Plan | <ul style="list-style-type: none"> There is currently no effective Zoning Plan at the Dam. The existing zoning Plan only accommodate portions of the nature reserve and not the water surface |
| Community Participation and Beneficiation | <ul style="list-style-type: none"> Lack of education and awareness in possible recreational use of the Dam. Limited water provision to the Local Communities. Drownings incidents at the Dam. No institutional structure to manage the Dam for recreational activities |

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 were identified through **Weaknesses** and **Threats**. Refer to **Table 8** for the SWOT analysis.

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

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

Table 8: SWOT Analysis for Wagendrift Dam

| Strengths | Weaknesses |
|---|---|
| <ul style="list-style-type: none"> Wagendrift Dam attracts tourists from different provinces. There is currently a large camping facility which is being well utilized during the festive seasons. Everybody has access to the Dam. Recreational facilities for recreational activities are available. The Dam is close to the N3 highway and is easily accessible. Bushmans boating club already has an environmental education programme at the Dam to teach children about the water resource and other parts of nature. The Bushmans boating club already has swimming competitions that are often taking place at the Dam. Local people engage in subsistence fishing at the Dam. The water level at the Dam is always at a high level. There is already an existing management structure at the Dam. There is an education center at the nature reserve to educate people about the importance of the environment. The Dam is manageable and the communities are interested in using the Dam for the recreational purposes, they just need to be involved in all the activities that are taking place at the Dam. There is access control at the Dam and people are provided with the rules and regulations that they should consider when using the Dam for recreational purposes. The water quality at the Dam is good. Pollution from farmers around the Dam has been detected but only minor traces of pollution. | <ul style="list-style-type: none"> The Dam is not well marketed. Only the nature reserve is marketed. Certain activities won't be feasible at the Dam such as hosting events because the Dam is situated within a nature reserve and noise should be avoided so as to not disturb the animals. The Dam is not fenced entirely therefore it is not safe. Access fees are unaffordable for local communities. It is often difficult to control a large number of people around the Dam when they intoxicated. The capacity of the shoreline space available for proposed recreational activities is limited and it will be challenging to include more activities within the Dam. |
| Opportunities | Threats |
| <ul style="list-style-type: none"> Environmental Education at the Dam should also target the surrounding communities e.g. Wembezi. More shade areas should be included to be able to accommodate more activities. Local communities can also be given swimming lessons at the Dam, particularly for the youth. Events (festival) such as Imbizo can take place at the Dam. Harvesting of reeds by community members at the nature reserve. Introducing hunting game at the nature reserve. Introducing boating to local communities. Construct more swimming pools. Recruit people from the communities when opportunities arise. Events can be hosted at the dam and the funds that are generated there can be used for conservation, community upliftment and management of the Dam. | <ul style="list-style-type: none"> The water supply to the surrounding communities is very bad. It is alleged that people consuming alcohol during festive season, use the Dam for swimming and then they end up drowning. The crime rate is high. There are no rangers patrolling around the reserve or the Dam to ensure that there is safety of the users. Buoys have been placed before and they were stolen. There are a lot of small animals that are sensitive to noise so activities with noise might pose a threat to the animals. Some proposed activities within the nature reserve will not be compatible with the area. |

Objective Identification (Phase 3)

The set of key objectives acknowledged were categorised into three (3) Key Performance Areas (KPA's) as follow:

KPA 1: Resource Management

- To have the Dam and surrounding environment free of alien invasive species;
- To manage and monitor the alien fish population within the Dam; and
- To develop a Zoning Plan which will integrate conservation, recreation and development whilst not retarding the primary functions of the Dam.

KPA 2: Resource Utilisation

- There are no rangers patrolling around the reserve or the Dam to ensure that there is safety of the users;
- To provide the local communities with an opportunity for subsistence fishing, and
- To construct swimming pools in order to prevent children and elderly people, who cannot swim, from drowning.

KPA 3: Benefit Flow Management

- To improve the Dam's tourism marketing strategy as it is not well known amongst local community members;
- To uplift the local economy and increase benefit flows to the surrounding communities through community empowerment; and
- To establish an effective institutional structure that can manage recreational use of the Dam in an acceptable manner, which is also representative of all the stakeholders.

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

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

"To manage the Dam in a sustainable manner and ensure safety and security while promoting community participation and beneficiation".

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:

Wagendrift Dam is located within Wagendrift Nature Reserve. The reserve is one of the popular places to visit at Estcourt. There are different recreational activities that are currently taking place at and around the Dam e.g boating, hiking, and 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 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 14** shows the plans and their components

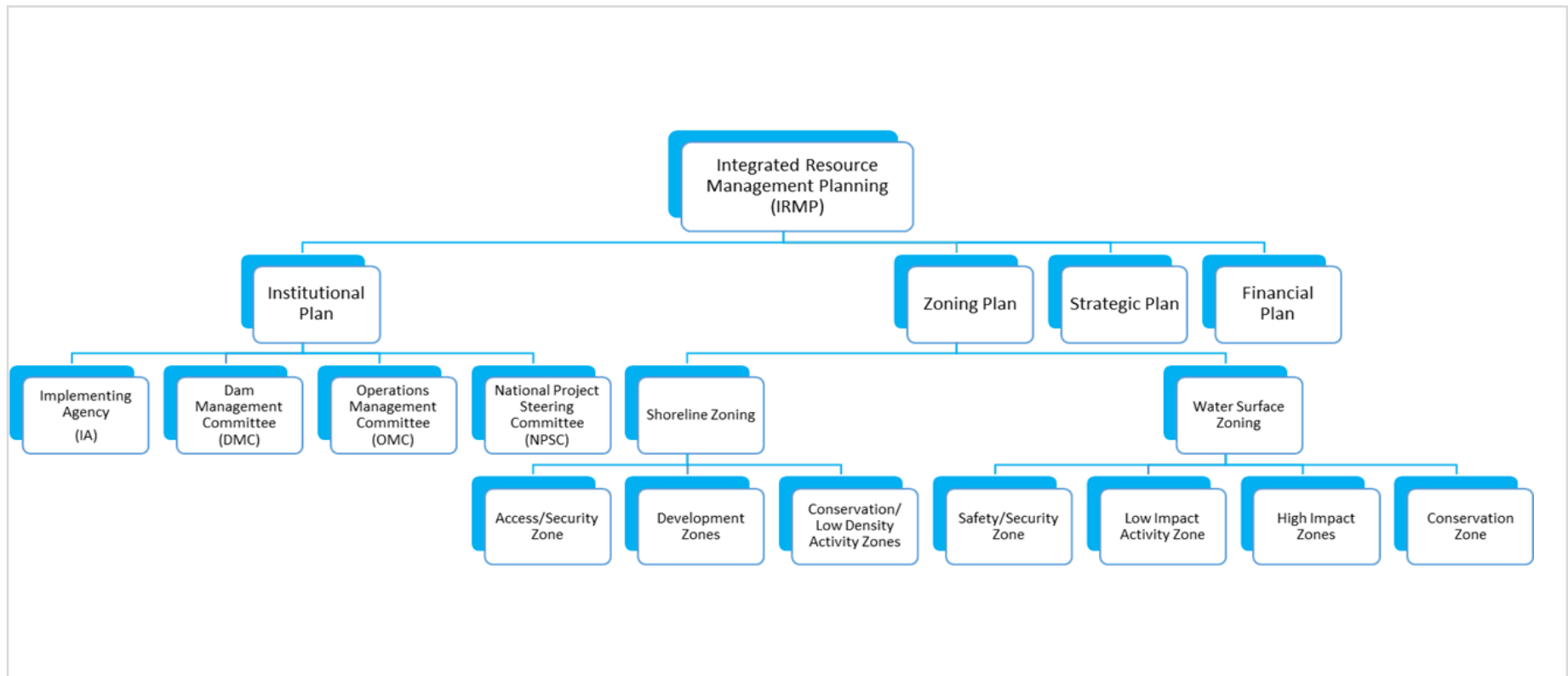


Figure 14: Integrated Resource Management Planning

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:

- Implementing Agency (IA);
- Dam Management Committee (DMC);
- Operations Management Committee (OMC); and
- National Project Steering Committee (NPSC).

The management authorities appointed by the DWS 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. 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 4.1.4). 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 15 shows the proposed parties to form part of the DMC for Wagendrift Dam.

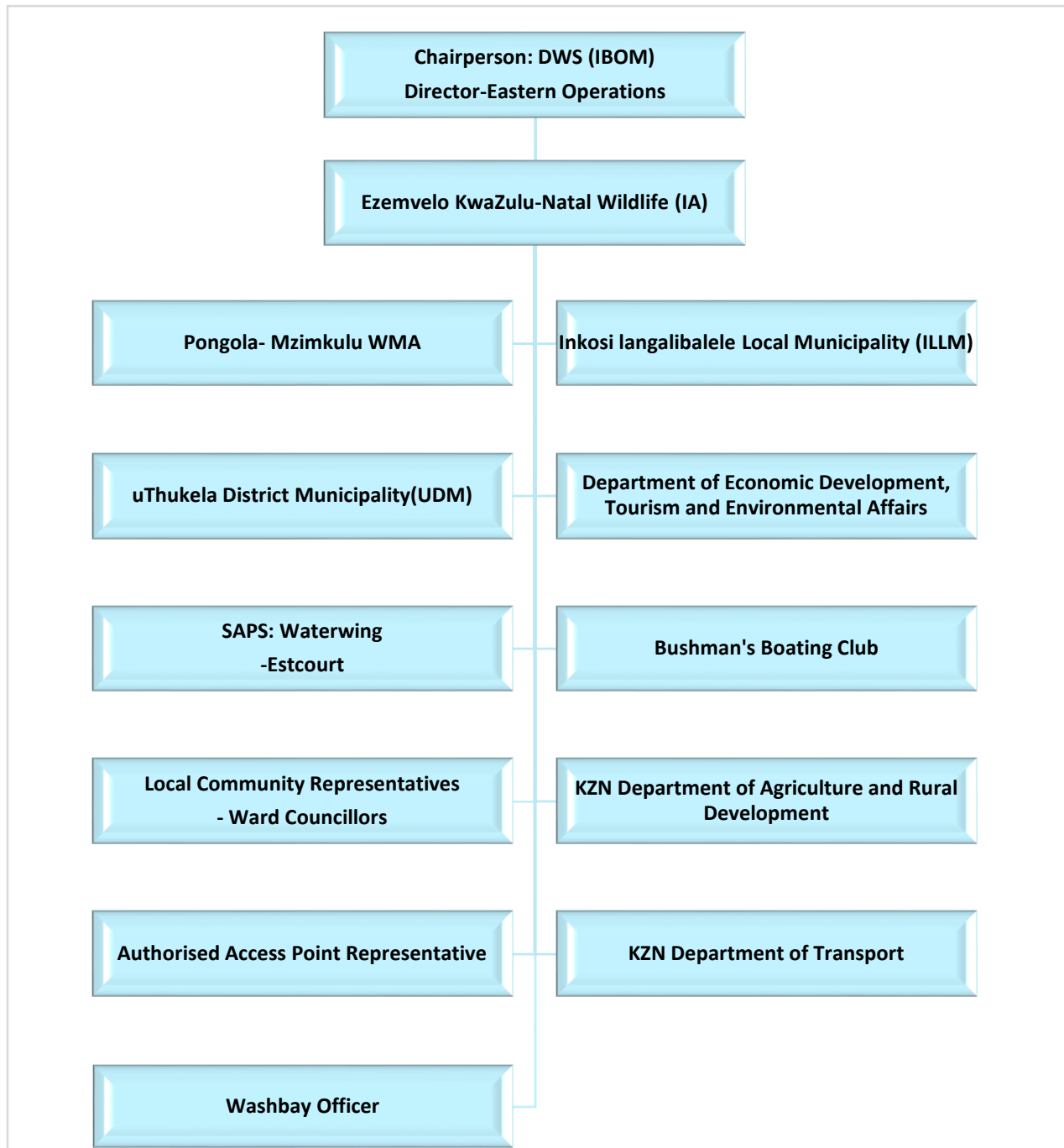


Figure 15: Proposed DMC

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 for Inland Waterways Safety Programme (CIWSP).

Event Applications:

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

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

Recreational Use Agreements:

Recreational clubs must enter into an agreement with the DWS. IA will manage the agreement as it would be responsible for the surface water and shoreline management of the Dam. All recreational use at the Dam must be through an appropriate Legal Framework. However, all agreements must be approved in writing by DWS and the IA. Recreational Use Agreements must be developed in line with the conditions stipulated in the agreement between DWS and the IA. All agreements must be finalised within twelve (12) months of the RMP being approved.

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.

4.1.4 Operations Management Committee (OMC)

There is an existing Chief Directorate: Infrastructure Operations Management Committee (CD: IO MANCO) within the DWS IBOM which comprises of directors of the IBOM's four (4) operations (Northern, Southern, Eastern and Central) and is chaired by the Chief Director: Infrastructure Operations within the IBOM as illustrated in **Figure 16**.

The committee shall meet quarterly to discuss matters relating to operations and maintenance of all GWWs. An RMP must be a standard agenda item. Any matters relating to the RMP that are outside the scope of the DWS will be escalated to the NPSC (described in detail in **4.1.5**).

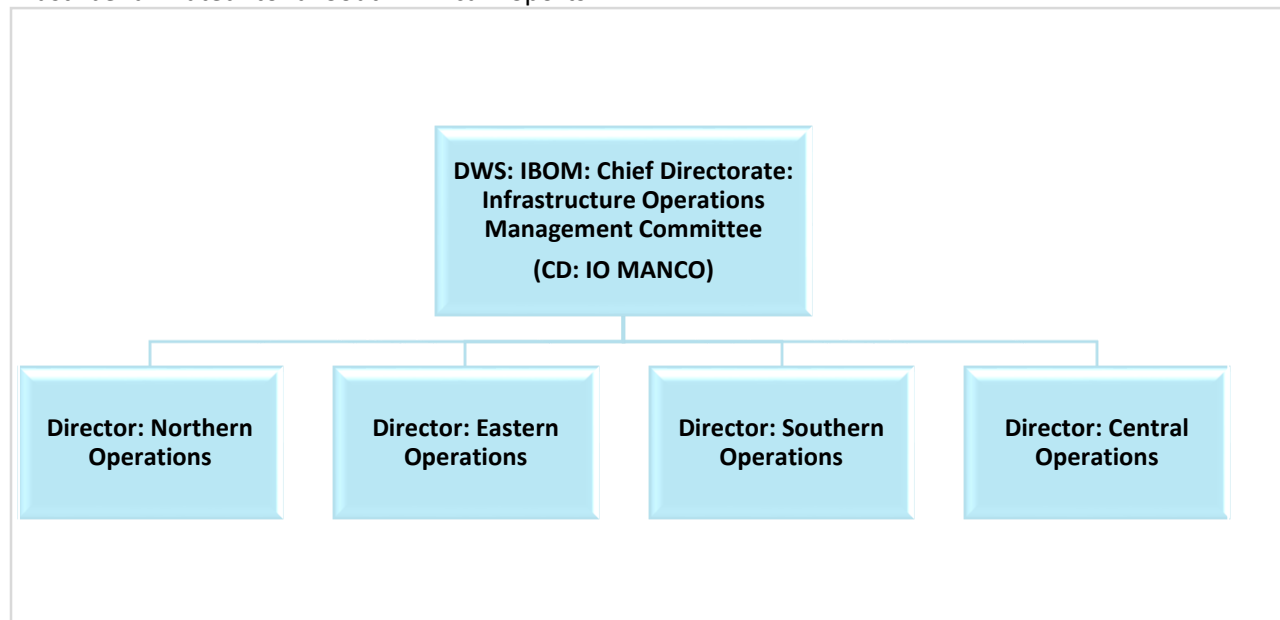


Figure 16: Existing CD: IO MANCO

4.1.5 National Project Steering Committee (NPSC)

The NPSC is formed by the DWS and is made up of representatives from national government departments and their agencies (also referred to

as planning partners) that have direct and/or indirect mandate in managing the water resource. The function of the NPSC is to provide guidance and support to DWS on recreational water use in terms of their respective mandates with the aim of achieving sustainable utilisation

of the Dam. The NPSC shall meet twice a year. **Figure 17** shows government departments (also referred to as planning partners and/ or authorities) and agencies that will form part of the NPSC:



Figure 17: Proposed NPSC

4.2 ZONING PLAN

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

The proposed zoning plan integrates conservation, recreation and development, whilst not retarding the primary functions of the Dam. This RMP and/ or zonation does not legitimise nor does it authorise any existing built structures, infrastructure or services within the Government Water Work (in both the water surface and shoreline).

4.2.1 Water Surface Zoning

The water surface zoning provides guidance on permissible and non-permissible recreational activities on the water surface taking into account the biophysical factors of the Dam. This zonation map is a desktop exercise and must not be used for navigational purposes. DWS and SAMSA will update the zoning 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 habitats at the inlet(s) of the

Dam. Access to these areas are 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
- These areas are used by aquatic birds, amphibians 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 9 and **Figure 18** shows the proposed water surface zoning for Wagendrift Dam.

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

WAGENDRIFTDAM RESOURCE MANAGEMENT PLAN

Table 9: Proposed Water Surface Zoning Description

| Zone Name | 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 Zones | <ul style="list-style-type: none"> None | <ul style="list-style-type: none"> Public activities (to prevent 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, especially with regards to illegal fishing and dumping. |
| <ul style="list-style-type: none"> Low Impact Activity Zone | <ul style="list-style-type: none"> Boat Angling Houseboats Canoeing Swimming | Activities associated with no or little wakes, such as <ul style="list-style-type: none"> Power boats: Jet skis Water skis | <ul style="list-style-type: none"> Area should be demarcated by demarcation makers and AtoN. Anglers on boats must move at slow speed and only during daytime due to the underneath and floating objects. The dam is infested with crocodiles, as such, cautions must be taken when using angling boats. |
| <ul style="list-style-type: none"> High Impact Activity Zone | <ul style="list-style-type: none"> Powerboats Water ski | <ul style="list-style-type: none"> Jet ski Boat Angling Houseboats Canoeing Swimming | <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. |

WAGENDRIFTDAM RESOURCE MANAGEMENT PLAN

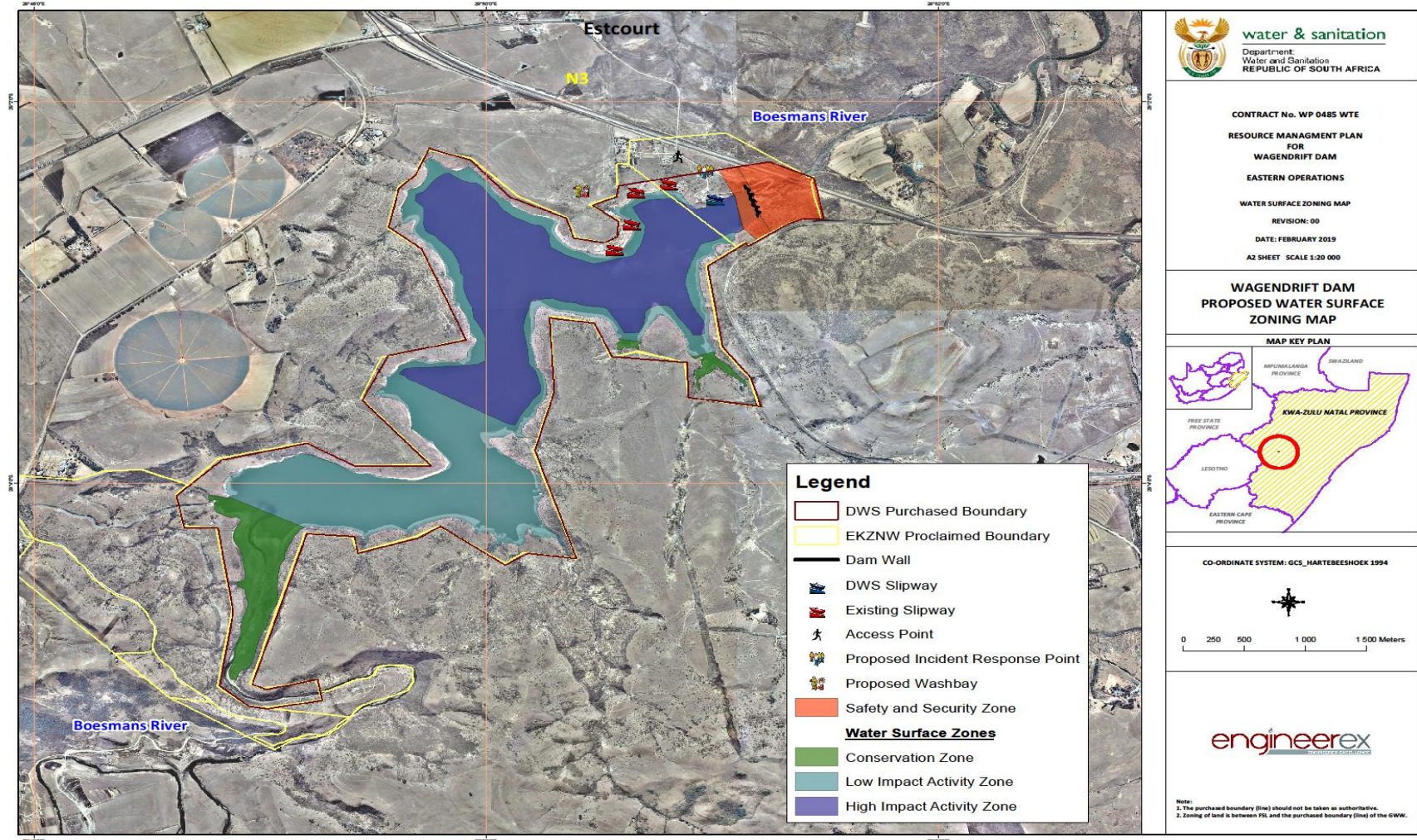


Figure 18: Proposed Water Surface Zoning

4.2.2 Shoreline Zoning⁴

In addition to the water surface zoning, an integral part of the RMP is also shoreline zoning, which provides guidance on what recreational activities (if any) are permissible 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 these areas are limited to low impact activities such as hiking and bird watching. These areas are demarcated to prevent ecological degradation 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. This zone will not be applicable for Wagendrift Dam as it is within a nature reserve.

Table 10 and **Figure 19** shows the proposed shoreline zoning for Wagendrift Dam

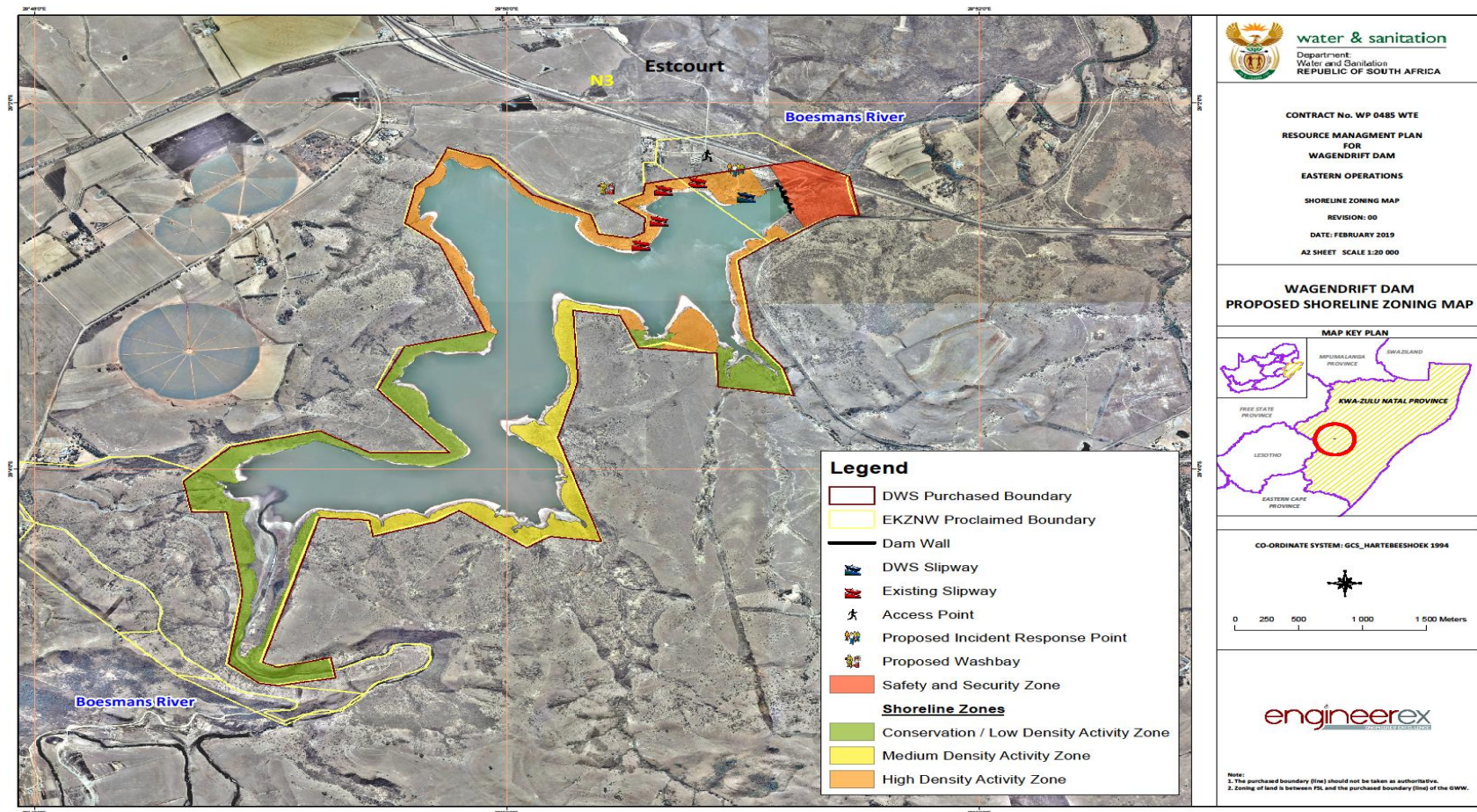
⁴ Permanent structures within the purchased boundary are not allowed. All developments should be outside 1:100 year floodline.

WAGENDRIFTDAM RESOURCE MANAGEMENT PLAN

Table 10: Proposed Shoreline Zoning Description

| Zone Name | 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"> • Unauthorised 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: • Hiking trails | <ul style="list-style-type: none"> • Development | <ul style="list-style-type: none"> • Permissible activities may only be permitted provided that they are approved by relevant Authorities and they are conduct as per the relevant Legislations. • These zone should control access to ecological sensitive areas. |
| <ul style="list-style-type: none"> • Medium Density Activity Zone | <ul style="list-style-type: none"> • Shoreline fishing • Picnicking • Camping • Braai facilities • Ablution facilities | <ul style="list-style-type: none"> • 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 the National Treasury. • Requirements of NWA and NEMA must be taken into account in all recreational activities. • All developments must be approved by IA and DWS. • No private slipways to be built without approval from IA and DWS. |
| <ul style="list-style-type: none"> • High Density Activity Zone | <ul style="list-style-type: none"> • Recreational club house made of wood, glass etc. • Infrastructure for Services e.g kiosk • Youth centre | <ul style="list-style-type: none"> • Permanent Structures • Hiking • Camping • caravan park | <ul style="list-style-type: none"> • The management of this area should follow PPP process in terms of the National Treasury. • Requirements of NWA and NEMA must be taken into account in all recreational activities. • Noise level to be kept at a minimum. • All developments must be approved by IA and DWS. • No private slipways to be built without approval from IA and DWS. |

WAGENDRIFTDAM RESOURCE MANAGEMENT PLAN



WAGENDRIFTDAM RESOURCE MANAGEMENT PLAN

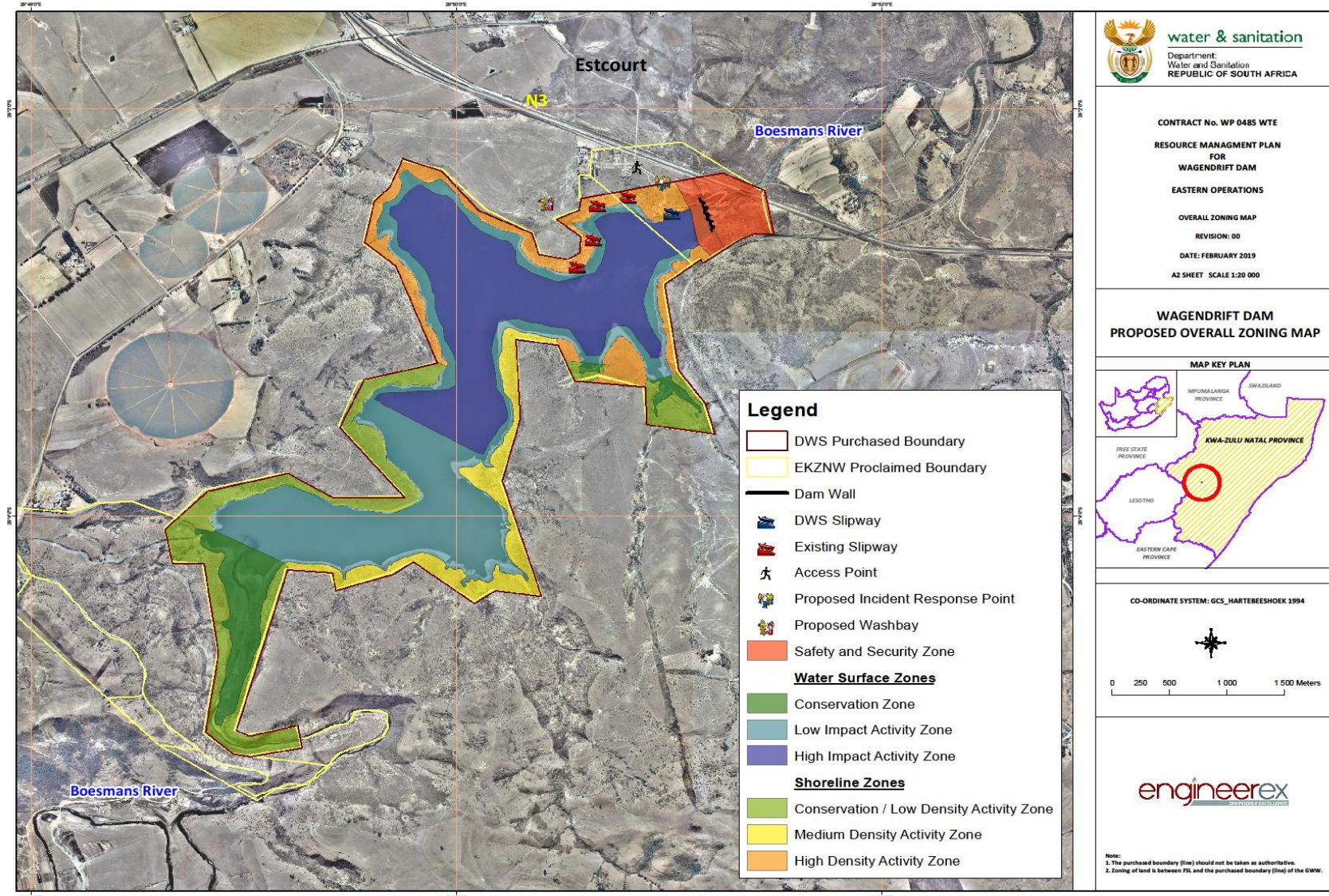


Figure 20: Proposed Overall Zoning Map

4.2.3 Carrying Capacity

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

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

There are three levels of carrying capacity:

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

Each level constitutes a corrected capacity level of the preceding level. The PCC is always greater than the RCC, and the RCC is greater than the ECC, i.e.: **PCC > RCC and RCC ≥ ECC**.

The process of establishing the carrying capacity is normally determined through the following tasks:

- Analysis of recreation and water resource management policies;
- Analysis of objectives of the water resource;
- Analysis of current recreational water use;
- Definition, strengthening or modification of policies regarding recreational water use management;

- Identification of factors influencing recreational water use; and
- Determination of the recreational water use carrying capacity.

Physical Carrying Capacity (PCC)

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

Where:

A = available surface area for public use

U/a = area required per user

Rf = rotation factor (number of visits/day)

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

Table 11: Area required per user

| Craft | U/A (ha/craft) |
|--------------|----------------|
| Powerboats | 0.4 |
| Canoeing | 0.3 |
| Boat angling | 0.3 |
| Average | 0.3 |

Based on the **Table 11**, the average hectare per user is 0.3 ha (3 000 m²), the value of 3.0 ha (30 000 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 Wagendrift Dam is **508.4 ha** whereas **U/a** is assumed to be the average which was calculated as 1 craft/3 ha. And again the rotation factor (**Rf**) is assumed as 1 visit per day.

$$\begin{aligned} \text{Therefore: } PCC &= A \div U/a \times Rf \\ &= 508.4 \times 1/3 \times 1 \\ &= 169 \text{ crafts on the Dam} \end{aligned}$$

Real Carrying Capacity (RCC)

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

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 Wagendrift Dam these factors includes sensitive areas, such as conservation areas (0.3 ha) as well as aspects regarding the safe operation and management of the dam (0.03 ha).

These factors account for 0.33 ha, which is 0.06% of the area that is not available for recreational use.

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

$$= 169 \times (100 - 0.06)\% / 100$$

$$= 168 \text{ crafts}$$

Effective Carrying Capacity (ECC)

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

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

It takes approximately 20 minutes to launch or retrieve a boat during the day. There are currently 4 slipways around the Dam. As a result Infrastructure capacity = [12 hours available per day / 20 min] x 4 slipways for public use, therefore:

$$[720 / 20] \times 4 = 144$$

As 20 minutes would apply either to entering or retrieving of vessel from the water, 144 would need to be halved: $144 / 2 = 72$. This is the maximum amount of boats that can launched on a given day.

Management Capacity

The current management capacity consists of 5 people: consisting of Chairman, Treasurer, Public Area Manager, Gate Attendant as well as Boat Club Manager.

The required management capacity for safe functioning of the dam would include 1 x General Manager, 2 x Safety Officers for boats on the water surface and 3 x Enforcement Officers present along the shoreline = 6 people.

Management Capacity = current capacity / required capacity x 100

$$= 5 / 6 \times 100 = 83.3\%$$

Therefore:

$$\begin{aligned} ECC &= (72 \times 0.833) \times 100 / RCC \\ &= (72 \times 0.833) \times 100 / 168 \\ &= 35.7\% \end{aligned}$$

Therefore, the ECC for the Dam is **357** Boats that can be allowed at the Dam.

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?)
- Action Projects (How to achieve this?)

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

4.3.1 KPA 1: Resource Management

Table 12: Strategic Plan for KPA 1: Resource Management

| Objective (What do we want) | Motivation & Strategy (Why do we want to achieve this) | Action Plans (How do we achieve this) | Management Support (Who will be involved) |
|---|---|---|--|
| <p><u>Alien Invasive Plants</u></p> <p><u>Control:</u></p> <ul style="list-style-type: none"> To have the Wagendrift Dam and surrounding environment free of alien invasive species. | <ul style="list-style-type: none"> The <i>Solanum mauritianum</i> (Category 1a) alien invasive plant species has been identified at the Dam. The plant will compete with and replaces indigenous riverine species. The species can also be harmful to grazing animals and humans because it's unripe fruits are poisonous and the hairy leaves and stems can cause allergic dermatitis and asthma. | <ul style="list-style-type: none"> Remove all alien invasive plants within the purchased boundary and the surrounding adjacent area. | <ul style="list-style-type: none"> Department of Environmental Affairs (DEA): Working for Water (WFW) Department of Agriculture, Forestry and Fishery (DAFF): Land use and Soil Management section South African Biodiversity Institute (SANBI) IA (EKZNW) with the support of the DMC |

WAGENDRIFTDAM RESOURCE MANAGEMENT PLAN

| Objective (What do we want) | Motivation & Strategy (Why do we want to achieve this) | Action Plans (How do we achieve this) | Management Support (Who will be involved) |
|---|--|---|---|
| <p><u>Alien fish management:</u></p> <ul style="list-style-type: none"> To manage and monitor the alien fish population within the Dam. | <ul style="list-style-type: none"> There are alien fish species at the dam such as carp, some trout and large-mouth bass. The occurrence of alien fish species will threaten indigenous fish population, resulting mainly from predation by carp. | <ul style="list-style-type: none"> A management strategy is needed to monitor and manage the impact of alien aquatic species in the Dam. Methods that can assist to eliminate alien fish species can be provincial angling competition where fishermen are only required to catch alien fish species. The competition should be an ongoing routine of controlling alien fish as it is a fun activity and attracts visitors to the Dam. The caught alien fish could be donated to the nearby communities | <ul style="list-style-type: none"> DAFF KwaZulu-Natal Department of Agriculture and Rural development (KZNDARD) <ul style="list-style-type: none"> IA (EKZNW) with the support of the DMC |

WAGENDRIFTDAM RESOURCE MANAGEMENT PLAN

| Objective (What do we want) | Motivation & Strategy (Why do we want to achieve this) | Action Plans (How do we achieve this) | Management Support (Who will be involved) |
|---|---|--|---|
| <p><u>Zoning Plan:</u></p> <ul style="list-style-type: none"> To develop a Zoning Plan which will integrate conservation, recreation and development whilst not retarding the primary functions of the Dam. | <ul style="list-style-type: none"> The existing zoning plan only comprises of shoreline zoning, and the zoning plan was done in 1986 and no updated zoning map can be used to zone shoreline | <ul style="list-style-type: none"> The Zoning Plan should accommodate all feasible recreational activities within the purchased boundary. Community Resource Zone must be clearly demarcated on the Zoning Map. The zone is for the sole beneficiation of the local communities in ensuring that their livelihood is maintained and improved. Activities includes subsistence fishing, livestock watering points, small scale community gardens, etc. Sensitive areas such as Cultural and Heritage sites must be clearly demarcated. Implementation of standardised and harmonised AtoN and Demarcation Markers. Implement all other aspects of the CIWSP best practice model. Establish density controls for activities and facilities that requires carrying capacity assessments (i.e. number of vessels per hectare). | <ul style="list-style-type: none"> DWS |

4.3.2 KPA 2: Resource Utilisation

Table 13: Strategic Plan for KPA 2: Resource Utilisation

| Objective (What do we want) | Motivation & Strategy (Why do we want to achieve this) | Action Plans (How do we achieve this) | Management Support (Who will be involved) |
|--|--|--|---|
| <u>Public Safety:</u> <ul style="list-style-type: none"> There are currently two rangers patrolling around the reserve or the Dam to ensure that there is safety of the users. Issue of lack of capacity and resource to add more staff to ensure safety. | <ul style="list-style-type: none"> There are incidents of drowning that have occurred at the Dam since there are no lifeguards available. | <ul style="list-style-type: none"> Establishment of fence at any hotspots that the community foresees that they are dangerous. Furthermore, fencing will also be done in recreational areas for control as well as safety purposes. DWS to revive partnership with Swim SA to train local community members to become life guards to curb drownings at the Dam. IA in conjunction with SAPS to develop and establish safety plan in the area. Implementation of DWS Incident Management System. Develop information material (i.e. signage and pamphlets, etc.) to convey safety rules at the Dam. WNR to have field rangers that patrol the recreational areas to ensure that dangerous animals do not interfere. | <ul style="list-style-type: none"> DWS EKZNW (IA) with the support of the DMC |
| <u>Sustainable Fishing:</u> <ul style="list-style-type: none"> To provide the local communities with an opportunity for subsistence fishing. | <ul style="list-style-type: none"> Subsistence fishing by the local community remains an active use of the Dam, however, this must be regulated by relevant policy to avoid overfishing within the Dam. Currently local communities fish illegally at the Dam. | <ul style="list-style-type: none"> Areas for subsistence fishing must be identified and formalized. Preserve the core habitats for nesting, resting, feeding and breeding of fish within the inlets. Management authority or DWS must develop a communication signage in order to effectively inform different angling groups about the Dam fishing rules. Appoint safety officers that will monitor compliance of the dam fishing rules. | <ul style="list-style-type: none"> DAFF KZNDARD IA (EKZNW) with the support of the DMC Other relevant conservation NGOs must be involved. |

WAGENDRIFTDAM RESOURCE MANAGEMENT PLAN

| Objective (What do we want) | Motivation & Strategy (Why do we want to achieve this) | Action Plans (How do we achieve this) | Management Support (Who will be involved) |
|--------------------------------|---|--|--|
| | | <ul style="list-style-type: none"> • Trainings should be provided to local subsistence fishers, to support subsistence fishing. • Harvesting should be adapted to the capacity of the fish stock to renew themselves. If the decline of stocks is unavoidable, the Dam can be stocked with fish naturally occurring in the Dam. • Generate the necessary infrastructure, such as banks to fish from in order to support the growth of angling tourism at the Dam. | |

4.3.3 KPA 3: Benefit Flow Management

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

| Objective (What do we want) | Motivation & Strategy (Why do we want to achieve this) | Action Plans (How do we achieve this) | Management Support (Who will be involved) |
|--|---|---|---|
| <p><u>Community Participation and Beneficiation:</u></p> <ul style="list-style-type: none"> • To uplift the local economy and increase benefit flows to the surrounding communities through community empowerment. | <ul style="list-style-type: none"> • The tourism sector has been identified as a vehicle for skills development and job creation. It is imperative that the local communities derive benefits from recreational activities conducted at the Dam. • This will assist in ensuring that the Dam is utilised in a sustainable manner and in a way that fulfills the interests of the community. | <ul style="list-style-type: none"> • Implement skills development programmes where opportunities exist. • Institute a comprehensive alien invasive plant education programme in pilot schools in the region, subsequent to be extended to all the schools. • Implement of environmental awareness programmes for the local communities and ensure that they are always updated with environmental information. • Educate the community on how to utilise the Dam for other recreational activities besides fishing. This will assist in terms of uplifting the surrounding local community. | <ul style="list-style-type: none"> • IA (EKZNW) with the support of the DMC • Sector Education and Training Authority (SETA) • ILLM • DWS |

WAGENDRIFTDAM RESOURCE MANAGEMENT PLAN

| Objective (What do we want) | Motivation & Strategy (Why do we want to achieve this) | Action Plans (How do we achieve this) | Management Support (Who will be involved) |
|---|--|--|--|
| | | <ul style="list-style-type: none"> First preference to be given to the local community members if any job opportunities arise. | |
| <p><u>Recreational Institutional Structure:</u></p> <ul style="list-style-type: none"> To establish an effective institutional structure that can manage recreational use of the Dam in an acceptable manner, which is also representative of all the stakeholders. | <ul style="list-style-type: none"> There is currently no management structure in place to oversee the use of the Dam for recreational purposes. This is evident when looking at the existing cultural rondavels and other facilities that are Damaged and not utilised for their purpose. | <ul style="list-style-type: none"> Put in place recreational institutional structure that is representative of all Stakeholders. The roles and responsibilities of the role players must be clearly defined and understood in the MOA, which may be entered into between the Department of Water and Sanitation and the Implementing agency. | <ul style="list-style-type: none"> DWS EKZNW |

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 (EKZNW) 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);
 - Functions (wedding, conference and cultural activities); and
 - Caravan/ outdoor camping.

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

Rental Charges⁵: 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.

4.4.2 Target Market

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

- Wembesi Community;
- Estcourt;
- Farmers;
- Adjacent land owners
- Churches;
- Schools;
- Group tourists; and
- Government Departments.

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

4.4.3 Co-Funding

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

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

- The Department of Tourism;

⁵ Leasing of DWS property will be concluded based on market related rental fee

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

CONCLUSION AND WAYFORWARD

This RMP comprehensively covered *inter alia* the environmental analysis (biophysical, built 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

Key Challenges:

The following key challenges were identified for Wagendrift Dam:

- The Dam is partially infested by alien invasive plant named *Solanum mauritianum*. The species can be harmful to grazing animals and humans because its unripe fruits are poisonous and the hairy leaves and stems can cause allergic dermatitis and asthma;
- There are alien fish species at the Dam such as carp, some trout and large-mouth bass. These fish species will threaten indigenous fish population, resulting mainly from predation by carp;
- The slipway at the Dam ends at the water edge; it therefore it needs to be extended in order to be operational during times of drought;
- People visit the Dam wall for leisure which is dangerous without supervision from the relevant management authority of the Dam;
- There are no rangers patrolling around the reserve or the Dam to ensure that there is safety of the users;
- 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);
- Certain activities will not be feasible at the Dam such as hosting events because the Dam is situated within a nature

reserve and noise should be avoided so as to not disturb the animals;

- The capacity of the shoreline space available for recreational activities is limited and it will be challenging to include more activities within the Dam;
- Fixed and floating Aids to Navigation (AtoN) and demarcation markers are not in place;
- Issue of lack of water supply by municipality to the surrounding communities; and
- The Dam is not entirely. As a result, some of the community members have direct access to the Dam which leads to theft and vandalism of the existing recreational facilities as well as drowning.

Recommendations:

This RMP recommends the implementation of the following immediate actions:

- Appoint EKZNW as an IA to manage recreational use of the Dam on behalf of DWS;
- Control and removal of alien invasive plants (i.e. *Solanum mauritianum*);
- Introduce practice of alien fish elimination by conducting provincial angling competition where fishermen are only required to catch alien fish species;
- Extension of slipways to accommodate drought season;
- Wagendrift Nature reserve (WNR) to have field rangers that patrol the recreational areas to ensure safety;
- DWS must ensure all proposed activities are compatible to the nature reserves biodiversity;
- There are no rangers patrolling around the reserve or the Dam to ensure that there is safety of the users;
- Construct a fence at any hotspots that the community foresees that they are dangerous;

- Ensure organised development, equitable visitor access, sound resource management and optimal community beneficiation, as per the proposed Zoning Plan in Section 4.2;
- Ensure public safety with regards to the use of inland vessels, as per the Carrying Capacity in Section 4.2.3; and
- Ensure resource management, resource utilisation and benefit flow management, as per the Strategic Plan and Key Performance Areas in Section 4.3.

Review:

According to the DWAF (2006), the RMP may be reviewed and updated every five (5) years to ensure that the management objectives are relevant and that management actions are continually improved. The BP needs to be updated annually **Figure 21** illustrates the RMP and BP review framework.

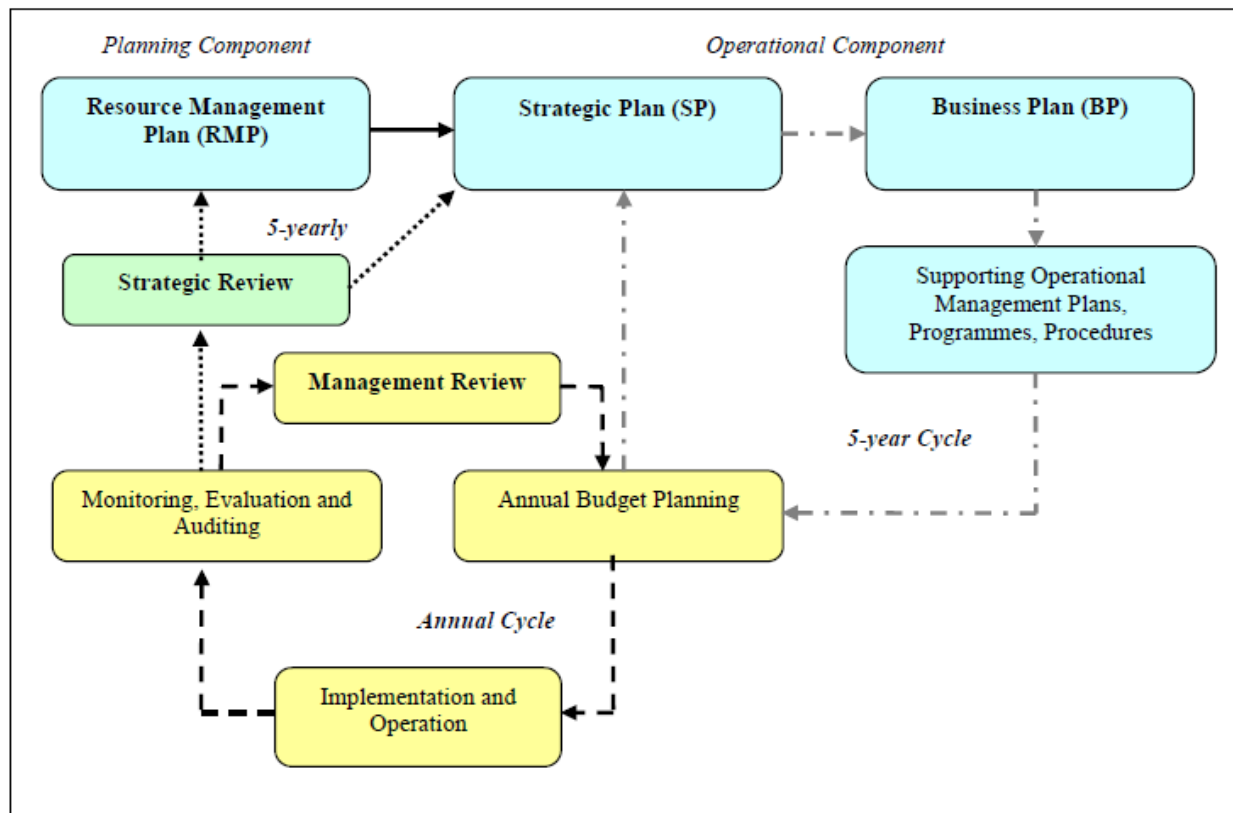


Figure 21: RMP and BP Review Framework

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APPENDICES

APPENDIX A: STAKEHOLDER DATABASE REGISTER

APPENDIX B: NEWSPAPER ADVERT

APPENDIX C: FLYERS

APPENDIX D: EMAILS

APPENDIX E: BACKGROUND INFORMATION DOCUMENT (BID)

APPENDIX F: COMMENTS AND RESPONSES REGISTER

APPENDIX G: EXAMPLES OF SUCCESSFULLY CO-FUNDED PROJECTS

APPENDIX H: POTENTIAL CO-FUNDERS

APPENDIX I: BUSINESS PLAN