INFRASTUCTURE BUILD, OPERATE AND MAINTENANCE (IBOM)

# Resource Management Plan SPIOENKOP DAM

REPORT – Volume 4 of 5

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Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA



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# ACKNOWLEDGEMENTS

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- Adjacent Land Owners;
- Department of Water and Sanitation;
- Department of Economic Development, Tourism and Environmental Affairs;
- Ezemvelo KwaZulu-Natal Wildlife;
- KwaZulu-Natal Department of Agriculture and Rural Development;
- KwaZulu-Natal Department of Transport;
- Okhahlamba Local Municipality;
- Spioenkop Nature Reserve;
- The community members of Ward 1,11 and 12 (Okhahlamba Local Municipality) and
- uThukela District Municipality.

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

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#### **Review:**

Review Period	Month		Yea	r		
Annual Review of Business Plan (BP)	December	2020 <sup>1</sup>	2021	2022	2023	2024
Five (5) yearly Review of Resource Management Plan (RMP)	December	2024				

 $<sup>^{1}\</sup>mathrm{The}$  implementation of the RMP and BP requires one financial year. planning ahead

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	07/04/2018
6	Final RMP for DWS Approval	09/05/2018
7	Final RMP for DWS Approval	05/04/2019
8	Final RMP for DWS Approval	03/12/2019

# **AMENDMENTS PAGE**

### **EXECUTIVE SUMMARY**

**Purpose of the Resource Management Plan:** A Resource Management Plan (RMP) provides the principles and guidance within which the Dam 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 Spioenkop 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 Spioenkop 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) for GWWs which amongst others, include the following:

#### Resource Management:

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

Recreational Industry Involvement:

- Conflict between users due to no management tool in place;
- Public safety with regards to the use of inland vessels; and
- Uncontrolled developments within the Dam basin.

Community Participation and Beneficiation:

- Challenges of communities regarding physical access and access to the waterbased 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 has an earth-fill type Dam wall that impounds the Tugela River. The Dam is located, on the demarcation boundary between Ward 1, 11 and 12 of Okhahlamba Local Municipality (OLM) The OLM falls under the jurisdiction of the uThukela District Municipality (UDM) in the KwaZulu-Natal Province of South Africa. The centre point GPS coordinates of the Dam are 28°41'8.19"S and 29°28'23.02"E. **Purpose of the Dam:** The primary purpose of the Dam is to provide water for irrigation and domestic use. The secondary use of the Dam offers recreational activities such as boating and angling while the nature reserve offers game viewing, hiking, walking and horse riding.

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 Spioenkop Nature Reserve (SNR), which is managed by Ezemvelo KwaZulu-Natal Wildlife (EKZNW). The secondary use of the Dam is currently managed by the Spioenkop Nature Reserve. Through the development of the RMP, EKZNW is proposed as an Implementing Agency (IA), and shall be DWS to facilitate appointed by the implementation of the objectives and identified action projects in line with the requirements of the Spioenkop 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 1, 11 and 12 of OLM. 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 free of Alien Invasive Plant species in order to support the proposed recreational activities and to maintain the native ecological aspect of the area;
- To manage and monitor the alien fish population within the Dam;
- To improve and maintain a high water quality standard of the Dam;
- To ensure public safety regarding the recreational use of the Dam;
- Introduce small-scale fishery at the Dam;
- To promote sustainable subsistence fishing at the Dam;
- To introduce swimming as an activity at the Dam to prevent drowning incidents;
- To make the Dam a tourist attraction centre;
- Uplift the local economy and increase benefit flows to the surrounding communities through community empowerment;
- To unlock the socio-economic potential of the Dam by creating employment and entrepreneurship opportunities for community groups; and
- To establish an effective institutional structure that can manage the recreational use of the Dam in an acceptable manner, and which is also representative of all the Stakeholders.

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

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

**Tourism Potential:** The potential tourist attraction within the DWS purchased boundary includes:

- Refurbishment of existing recreational facilities;
- Harvesting of reeds could be used as cultural artefacts or craft work e.g traditional reed mats that could be sold at the Dam; and
- Refurbishments of closed swimming pools.

#### The main challenges identified comprise:

- The Dam is part of the Spioenkop Nature Reserve and part of the reserve needs to be conserved to its natural state. The grasslands at the areas designated for recreational activities is often not cut making the area dangerous for recreational use purposes;
- uThukela District Municipality is planning to pump water from Spioenkop Dam to Ladysmith which can affect the capacity of the Dam;
- There is illegal fishing on the western side of the Dam from local communities;
- The area surrounding the Dam is partially infested by terrestrial alien invasive species;
- There are alien fish species at the Dam such as Carp and Bluegill sunfish. The occurrence of alien fish species will threaten indigenous fish population, resulting mainly from predation by carp;
- Access fees are high for local community members;
- Existing braai facilities at the picnic area are in a bad condition and require to be renovated;
- it is inconclusive if the water is fit for recreational use owing to the absence of test samples for all water quality constituents (not only pH), DWAF (1996);

- The presence of submerged graves with no compensation;
- The entrance to the Dam is very far from the local communities; and
- Chalets are currently in a bad condition and this will have a negative impact on the recreational use of the Dam, particularly for tourists coming without caravans/tents.

#### **Recommendations:**

This RMP recommends the following immediate actions:

- DWS to appoint EKZNW as an IA to manage recreational use of the Dam on behalf of DWS;
- Establish a Dam Management Committee (DMC) to serve as an advisory committee to the proposed IA;
- 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 inSection 4.3.

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# **LIST OF ACRONYMS**

ΑτοΝ	Aid(s) to Navigation
BID	Background Information Document
BP	Business Plan
CATHSSETA	Culture, Arts, Tourism, Hospitality, Sport Sector, Education and Training Authority
<b>CD: IO MANCO</b>	Chief Directorate: Infrastructure Operations Management Committee
CIWSP	Co-operative Inland Watercourse Safety Programme
CoGTA	Department of Corporative Governance and Traditional Affairs
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
GIAMA	Government Immovable Asset Management Act, 2007 (Act No.19 of 2007)
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
IRMP	Integrated Resource Management Planning
КРА	Key Performance Area
KZN	
KZNDAKD	KwaZulu-Natal Department of Agriculture and Rural Development
	KwaZulu-Natal Department of Transport
	Local Accountable AtoN Parties
	National Department of Tourism
NEMA	National Department of Fourism
ΝΕΜΡΔΔ	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
ОМС	Operations Management Committee
PP	Public Participation Process
РРР	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
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 Spioenkop 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 waterbased economy of the resource;
- Participation and beneficiation of surrounding communities remains a challenge;
- Unlocking the economic potential of the Dam through the establishment of effective Public Private Partnerships (PPPs); and
- Equitable and sustainable benefit flow into the community through the creation of appropriate institutional arrangements.

Public Policy:

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

To assist the Minister in fulfilling this mandate, the DWS initiated and commissioned the development of the RMP and its Business Plan (BP) for Spioenkop 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 Spioenkop 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 Spioenkop 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 Spioenkop Dam has an earth-fill type Dam wall which impounds the Tugela River. The water surface area of the Dam is approximately 1 531 hectares with a full capacity of approximately

297 million cubic meters. **Table 1** shows the Dam profile.

The Dam is located on the demarcation boundary between Ward 1, 11 and 12 of Okhahlamba Local Municipality (OLM) .The OLM falls under the jurisdiction of uThukela District Municipality (UDM) in the KwaZulu-Natal Province of South Africa, as shown in **Figure 1**. The center point co-ordinates of the Dam are 28°41'8.19"S and 29°28'23.02"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 boating and angling while the nature reserve offers game viewing, hiking, walking, and horse riding.

#### 1.5 DAM OWNERSHIP AND MANAGEMENT

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

The Dam is situated within the Spioenkop Nature Reserve (SNR), a formal land-based protected area (NBA, 2011). Ezemvelo KwaZulu-Natal Wildlife (EKZNW) is mandated to manage the SNR, including the Dam. The recreational facilities within the DWS Purchased Boundary are managed by the Chelmsford Management Structure.

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.

Spioenkop Dam Profile		
Location	South Africa	
Province	KwaZulu-Natal	
District Municipality	uThukela	
Local Municipality	Okhahlamba	
Nearest Town	Bergville	
Completion Year	1973	
Coordinates	28°41'8.19"S 29°28'23.02"E	
Primary Purpose	Irrigation and domestic	
Owner	Department of Water and Sanitation	
Quaternary Catchment	V11L	
Water Management Area	Pongola-Mzimkulu	
River	Tugela	
Capacity (Mm <sup>3</sup> )	279	
Surface Area (ha)	1 531.0	
Wall Type	Earth fill	
Wall Height (m)	53	
Crest Length (m)	427	

Table 1: Spioenkop Dam Profile

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



Figure 1: Locality Map for Spioenkop 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.
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.
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.

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,	Section 24 - Everyone has the right:			
1996 (Act No. 108 of 1996), Environmental	1. to an environment that is not harmful to their health or wellbeing,			
Rights (Section 24)	2. to have an environment protected for the benefit of present and future generations, through reasonable legislative and other measures that-			
	a. prevent pollution and ecological degradation			
	<ul> <li>promote conservation and secure ecologically sustainable development and use natural resources while promoting justifiable economic and social development.</li> </ul>			
National Legislation	Significance to the RMP:			
Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003)	It aims to address inequities resulting from the systematic exclusion of black people from meaningful participation in the economy.			
Communal Land Rights Act, 2004 (Act No. 11 of 2004)	To provide legal security by transferring communal land to communities or by granting comparable compensation. Based on South Africa's complex history most communities who used to reside in the vicinity of the Dams have been forcefully removed. During the implementation of the RMP it is essential to comply with the act where necessary.			
Conservation of Agricultural Resource Act, 1983 (Act No. 43 of 1983) [CARA]	Provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.			
	Regulation 7 and 8 within the same Act deals with the protection of wetlands and water courses, while regulations 15 and 16 deals with Alien Invasive Plant Species and bush encroachment.			
Game Theft Act, 1991 (Act No. 105 of 1991).	To regulate ownership of game and to combat the theft, wrongful and unlawful hunting.			
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			

Legislation: Acts, ordinances, bylaws				
	of planning, performance management, resource mobilisation and organisational change which underpin the notion of developmental local government.			
Merchant Shipping (National Small Vessel Safety) Regulations (2007)	These Regulations provide <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.			
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)	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.			
[NEMBA]	The Alien and Invasive Species Regulations for this Act came into effect 01 October 2014. NEMBA together with these Regulations aim to prevent the introduction and spread of alien and invasive species across South Africa.			
National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) [NEMPAA]	The aim of this Act is to provide for the protection and conservation of ecologically viable areas, which are representative of South Africa's Biodiversity, as well as natural landscapes and seascapes.			
National Environmental Management: Waste Act, 2014 (Act No. 59 of 2008) [NEWA]	Provides for the national domestic waste collection standards and national norms and standards for the storage of waste.			
National Heritage Resources Act, 1999 (Act No. 25 of 1999) [NHRA]	To nurture and conserve their heritage resources so that they may be hand down to future generation. To introduce an integrated system for the identification, assessment and management of the heritage resources of South Africa. All heritage sites and cultural artefact must be protected and should be demarcated in the RMP zoning map.			
National Water Act, 1998 (Act No. 36 of 1998) [NWA]	The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in a sustainable and appropriate manner, for the benefit of all. Furthermore Section 113 of the Act states that the water of a government waterworks and surrounding state owned land may be made available for recreational purposes, subject to controls determined by the Minister and regulations made by the Minister.			
	Using water for recreational purposes is a water use under Section 21K and can be exercised as permissible use of water under Schedule 1 of the Act. However, this provision does not cater for commercial use hence the RMP should be implemented in line with General Strategic Plan for commercialisation of Tourism Public			

Legislation: Acts, ordinances, bylaws	
	Private Partnerships at Government Waterworks, 2009 and PFMA Treasury Regulation 16. Once the RMP has been approved, the RMP will regulate access and use of the Dam. It is important to note that users will need to comply with other relevant legislation.
Occupational Health and Safety Amendment ActAct181 of 1993G.15369GoN 2471	It requires the employer to bring about and maintain, as far as reasonably practicable, a work environment that is safe and without risk to the health of the workers. The workers and the employer must share the responsibility for health and safety in the workplace.
Public Finance Management Act, 1999 (Act No. 29 of 1999) [PFMA]	Section 76 of the Act secures transparency, accountability and sound management of the revenue, expenditure, assets and liabilities of government departments. The Act promotes the objective of good financial management in order to maximise service delivery. The Act allows DWS to enter into PPP agreements with the private sector for the commercial use of state assets.
Safety at Sport and Recreational Events Act, 2010 (Act No. 2 of 2010)	Events management is addressed by Safety at Sport and Recreational Events Act (Act No. 2 of 2010). This act deals with ensuring responsibility for safety and security at events. The act deals with <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 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.
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.
Municipal Policy, By-Laws, Reports & Guidelines	Significance to the RMP:
Okhahlamba Local Municipality Integrated Development Plan Report (2016-2017)	Provides framework within which tourism in the municipality will be implemented.

# **CHAPTER 2: ENVIRONMENTAL ANALYSIS**

#### 2.1 **BIOPHYSICAL ENVIRONMENT**

#### 2.1.1 Climate

The Dam is located near the town of Winterton According to Climate-Data. ORG (2016), the areas climate is classified as Cwa (humid or mild temperatures). The area experiences moderate rainfall throughout the year, where the least amount of rainfall occurs in June with an average of 9 mm. The greatest amount of rainfall occurs in January, with an average of 145 mm. January is the hottest month of the year, at an average temperature of 22.3°C. The lowest average temperatures in the year occur in July, when it is around 9.9°C. Refer to **Figure 2** for the average temperatures and rainfall patterns for the area in 2017.



Figure 2: Average Temperature and Rainfall of the Winterton area Source: Adapted from Climate Data. ORG, 2017

#### 2.1.2 Topography

According to Ezemvelo KwaZulu-Natal Wildlife (2013), the Winterton area within which the Dam is situated is dominated by the Spioenkop Mountain, with a height of 1465.7m above sea level. The topography around the Dam and within the reserve varies from gently undulating plains along parts of the North-Shore and to the west of the residential to very steep on the flanks of Spioenkop Mountain. North-west of Spioenkop Mountain is the neighbouring summit of Green Hill with an elevation of 1396m above sea level with rocky outcrops of dolerite.

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

and the presence of dolerite rock might pose a slight risk of structure failures to proposed recreational facilities.

#### 2.1.3 Geology and Soil

According to Mucina and Rutherford (2006), the Winterton area is underlain by shales, mudstones and sandstones and of the Beaufort Series and Ecca. Many dolerite dykes/outcrops are evident throughout the Spioenkop Nature Reserve (SNR), being particularly common in the eastern section and these have a marked influence on the soils found across the Reserve. Soil forms such as the Westleigh, Glenrosa, Mispah and Sterkspruit are usually susceptible to erosion. Certain recreational activities might cause more soil erosion.



Figure 3: Geological map for Spioenkop Nature Reserve and surrounding areas Source: Arc GIS 1 2017

#### 2.1.4 Hydrology

#### Water Surface

The Dam lies within the V11L quaternary drainage of the Pongola-Mzimkhulu Management Area and it impounds the Tugela River. **Figure 5** show the fluctuations of water

level over a year. The Dam is the most important source of water for the towns of Ladysmith, Bergville, Winterton and surrounding areas (EKZNW, 2013). **Figure 4** shows the fluctuations of water level over a year. The Dam is the most important source of water for the towns of Ladysmith, Bergville, Winterton and surrounding areas (EKZNW, 2013).



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

#### Water Quality

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

However, owing to the absence of test samples for water quality constituents (not only pH) in the Water Management System (WMS), it is inconclusive if the water is fit for recreational use. As such, DWS should conduct regular water quality tests in terms of the acceptable TWQR in order to make a conclusive decision on the suitability of the water for recreational use. Hence, precautionary measures should be exercised for contact sports at the Dam.

#### 2.1.5 Protected Areas

The Dam falls within the Spioenkop Nature Reserve which is a Formal land-based protected area (NBA 2011) and covers parts of the Thukela river and heritage sites such as the historic battlefield site of Spioenkop hill. The moist escarpment grasslands further north of the Dam also forms part of a focus area for the National Protected Area Expansion Strategy (NPAES 2010), as shown in **Figure 5**.

Therefore the Dam is situated in an area, which is governed by two (2) main acts 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: Spioenkop Nature Reserve (dark green area) and Focus Area (light green area) for the National Protected Area Expansion Strategy (NPAES 2010)

#### 2.1.6 Flora

The Dam falls mainly, within the KwaZulu-Natal Highland Thornveld vegetation type Gs6 (Mucina and Rutherford, 2006).

Alien and invasive species that currently occurs around Spioenkop Dam, which needs to be controlled are the *Opuntia* spp (Category 1a weed) and *Lantana camara* (Category 1 a). Their presence may harm native ecosystems or commercial, agricultural, or recreational activities dependent on these ecosystems.

#### 2.1.7 Fauna

The Dam has a diversity of mammal species of which 34 mammal species have been recorded at Spioenkop Nature Reserve (SNR).

These include the white rhinoceros (*Ceratotherium simum*) which is listed as Vulnerable (EKZN Biodiversity Database 2017). The SNR also consist of other dangerous

mammal species such as Black-backed jackal, Caracal and African wild cat.

Due to the presence of white rhino at the nature reserve activities such as music festivals and dirt bike competitions will not be permitted as these activities will cause noise pollution.

#### 2.2 BUILT ENVIRONMENT

The aspects investigated consist are presented under the following sub-headings:

- Roads and land-based transportation;
- Non-land-based transportation;
- Bulk services;
- On-site structures;
- Management and operation; and
- Safety.

#### 2.2.1 Roads and Land-Based Transportation

**Surrounding Roads:** The Dam is situated along provincial road network R600 from the national road N3.

**Internal Road and Circulation:** There are several internal unnamed gravel roads that lead to the DWS offices, horse riding trails, picnic areas and the ablution facilities.

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

Access Points: There is currently one (1) existing access points to the Dam and a proposed access north west of the Dam (refer to **Figure 19** for the proposed Overall Zoning Plan). The land surrounding the Dam and Nature Reserve comprise mainly of farm land which makes the viability for additional access points limited.

#### 2.2.2 Non-Land Based Transportation

**Rail Transport:** The Bergville railway passes on the south side of the Dam and three train station along the Dam namely: Hongerspoort, Suurlaer and Eversholt train stations. Refer to **Figure 6**.



Figure 6: - Spioenkop Dam Google Earth (2018)

According to the Okhahlamba Local Municipality IDP Review (2011/12), the Provincial Spatial Economic Development Strategy acknowledges the importance of rail transportation as it plays a crucial role in economic growth and development

#### 2.2.3 Bulk Services

**Solid and Liquid Waste:** According to the Okhahlamba Local Municipality IDP Review (2011/12) majority of households in OLM receive refuse removal while only 5.6 % of households do not have refuse removal at all. There is also no bulk municipal waterborne sewerage reticulation system available in the municipal area. There is no major sewer treatment works at Okhahlamba that pumps sewerage across the Municipality. Septic tank systems are used in many areas for disposal of liquid waste.

#### 2.2.4 On-Site Facilities

The on-site facilities at the Dam includes:

- DWS offices;
- Camping sites and braai facilities;
- Ablution facilities in deteriorating sate;
- Closed swimming pools; and
- Horse stables.

#### 2.2.6 Management and Operation

The management and 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 coordinated 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 1, 11 and 12, refer to **Figure 7** 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 7: OLM Ward 1, 11 and 12 Delimitation Source: Municipal Demarcation Board (2016)

#### **Population Size**

OLM has a total population size of 132 068 individuals, whereas a portion of Ward 1, 11 and 12 have a total population size of 30 294 representing 6% and 7% respectively. Refer to **Figure 8.** 



Figure 8: Population size of Ward 1, 11 and 12 versus OLM Source: Stats SA Community Survey (2016) Educational Level

As shown in **Figure 9**, 13% of residents in Ward 1, 11 and 12 have grade 12 certificate, and only 5% of the population has attained higher education.



Figure 9: Education Level of Ward 1, 11 and 12 Source: Stats SA Community Survey (2016)

#### **Employment status**

Within Ward 1, 11 and 12, 17% of the residents are in top management, 10% of the residents are in senior management. The residents not actively contributing to the economy accounts to 22% of which 15% are discouraged work-seekers, suggesting that they no longer seek to become employed. Refer to **Figure 10**.



Figure 10: Employment Status of Ward 13 Source: Stats SA Community Survey (2016)

#### Monthly Income

OLM has total population size of 132 068 individuals 15.6 % of OLM population are

without a source of income while 24.2% of OLM earn below R20 000 per month. (refer to **Figure 11**). Rigorous and integrated efforts are required by the municipalities to create work opportunities and sustainable livelihoods for the people.

The major contributors to the economy of OLM are agriculture, tourism and wholesale trade. The unemployment rate is 43%, which is among the highest in the district, which has a dependency ratio of 79. The youth unemployment rate is 52.3%.

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

#### 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 waterbased 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.



Figure 11: Monthly Income OLM Source: Stats SA Community Survey (2016)

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 1<sup>ST</sup> 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 of the Dam include leisure, culture and religious activities. Although recreational use does not involve consumption of water, it is still a major water use and needs to be managed effectively with minimal detrimental environmental impacts

#### 3.2 PROCESS TRIGGERS

Process triggers are factors based on the principles underlying integrated resource

planning for using water for recreational purposes.

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 4**.

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

Triggers (s)	Potential Challenges			
Resource Management:	<ul> <li>The Dam is part of the Spioenkop Nature Reserve and certain areas need to remain in a natural state. The grasses at the areas designated for recreational activities is often not cut leaving the area dangerous to use for recreational purposes.</li> <li>The area surrounding the Dam is partially infested by terrestrial alien invasive species.</li> </ul>			
Recreational Industry Involvement:	• There is illegal poaching of fish on the western side of the Dam from local communities.			
Community Participation and Beneficiation	• Local Communities should be involved in managing and utilising the Dam for recreational purpose. This will assist in ensuring that the Dam is utilised in a sustainable manner.			
Public Policy	• The Dam needs to be identified as a local development objective by the Okhahlamba Local Municipality (OLM). The Dam should be integrated in other planning initiatives and decision support tools such as the OLM IDP, SDF and Local Economic Development (LED) plan as well as the uThukela District Municipality (UDM) Environmental Management Framework (EMF).			

 Table 4: Summary of Triggers and Potential Challenges for Spioenkop Dam

#### 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 12**.

Phase 1: Process Initiation	<ul> <li>Establish motive for undertaking RMP process.</li> <li>Ensuring roles and responsibilities are understood.</li> </ul>
Phase 2: Project Outline and Encumbrance Survey	•Ascertain whether any encumbrance exist and the most appropriate approach to the project.
Phase 3: Objective Identification	•Consult with stakeholders to ascertain common goals and formulate into one document.
Phase 4: Research/ Information Generation	•Conduct Research on sustainable utilisation of the Dam.
Phase 5: Integrated Management, Zoning and Institutional Planning	<ul> <li>Undertaking planning through a consultative process and by evaluating information to ascertain what can take place based on specific constrains and parameters.</li> <li>Outcome: Draft RMP</li> </ul>
Phase 6: Evaluation	<ul> <li>Obtain comments from stakeholders on the draft RMP and amend accordingly.</li> <li>Outcome: Approved RMP</li> </ul>
Phase 7: Decision making and Operationalisation	<ul> <li>Obtain approvals and support from relevant Authorities.</li> <li>Undertake implementation and institutionalisation of the RMP.</li> <li>Outcome: Implementation</li> </ul>

Figure 12: 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 **5 May 2016.** During the site inspection the following were observed: vandalism of infrastructures i.e. braai stands, swimming pools and ablution facilities; Damaged chalets and the Dam is not accessible to nearby communities. 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.

- Newspaper Advert: initial public meetings were advertised on Tabloid Media Newspaper in English on 23 November 2016. An advert for the draft RMP was place on Times of Ladysmith 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 21 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 29 November 2016 at the Okhahlamba Local Municipality Council Chamber. 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 meetings were held on 30 November 2016 at, Acton Homes Community Hall, Hambrook Community Hall and Kwa Pikinini. Another initial Public meeting was held on 01 December 2016 at Khethani Community Hall. The Draft RMP was presented on 21 March 2018 at Acton Homes Community Hall. Another public meeting was held on 22 March 2018 at Khethani Community Hall.
- Comment and Responses Register: A copy of the draft RMP report was circulated on 08 March 2018 for commenting. The 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 5**. This is to ensure that not only the objectives of DWS are achieved but also that the functions/ objectives of the planning partners (relating to the recreational use of the Dam) are taken into consideration when developing the RMP.

#### Table 5: Planning Partners

Department	Functions / objectives
Okhahlamba Local Municipality (OLM)	A portion of the Dam is located within the OLM.
uThukela District Municipality (UDM)	OLM 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

Department	Functions / objectives
	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.
	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.
Culture, Arts, Tourism, Hospitality, Sport Sector, Education and Training Authority (CATHSSETA)	CATHSSETA deals with the approval and financing of training relating to the culture, hospitality, tourism and sport sectors.
Department of Corporative Governance and Traditional Affairs (CoGTA)	Its function is to develop national policies and legislation with regard to provinces and local government, and to monitor their implementation. Another function of the Department is to support provinces and local government in fulfilling their constitutional and legal obligations.
Department of Basic Education (DBE)	The function of the DBE is to develop, maintain and support a South African school education system. In this regard, the DBE can collaborate with nature reserves that encompasses GWWs, in order to provide an opportunity for school environmental tours, as this can also have influence on career options.
Department of Sports and Recreation (DSR)	The Department is mandated to promote and develop sport and recreation activities and also to co-ordinate the relationships between the sports commission, national and recreational federations and other agencies.
Department of Tourism (NDT)	The Department is mandated to create conditions for the sustainable growth and development of tourism in South Africa. The Tourism Act makes provision for the promotion of tourism to and in the Republic and for regulation and rationalisation of the tourism sector, including measures aimed at the enhancement and maintenance of the standards of facilities and services utilised by tourists; and the co-ordination and rationalisation of the 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** and **Socio-cultural**.

Item Description The area designated for recreational activities is encroached with grass, which makes • it prone to snakes and other harmful animal species. This will threaten the interest in Flora use of the Dam for recreational purposes. The presence of terrestrial alien flora can threaten the existence of indigenous flora. Due to the presence of white rhino at the nature reserve activities such as music • festivals will not be allowed as they will cause noise pollution which will affect the rhinos There are alien fish species at the Dam. The occurrence of alien fish species will • Fauna threaten indigenous fish population, resulting mainly from predation by largemouth bass and carp. • There is illegal fishing taking place at the Dam, which can result in fish depletion due to unsustainable methods used to fish. The Dam is situated in an area, which is governed by two (2) main acts (NWA and • Agreements NEMPAA). Both regulation Acts will assist in defining and clarifying functions regarding the management of the Dam for recreational purposes. Soil forms such as the Westleigh, Glenrosa, Mispah and Sterkspruit are usually • **Geology and Soils** susceptible to erosion. Certain recreational activities might cause more soil erosion. Community • There is also lack of community awareness regarding environmental and tourism Participation and education. **Beneficiation** 

 Table 6: Summary of Biophysical Legal and Socio-cultural Encumbrances

#### 3.5.2 SWOT Analysis and Objective Identification

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

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

Strengths		Weaknesses	
•	The Dam is already within a conservation area and has the element of attraction. There is already an existing management structure at the Dam but only responsible for nature reserve not for water resource. There is access control at the Dam. The Dam is fenced. The Dam has good water quality. There are security guards who patrol the entire reserve. The Dam is known by people all over South Africa so it is already a good tourist attraction in the area. The Dam is ideal to host events such as music festivals. A lot of tourism related job opportunities can arise from the Dam. The Dam has a scenic view and it can attract a lot of local and international tourists if it is marketed properly.	<ul> <li>Illegal access to the Dam.</li> <li>The entrance to the Dam is very far from the local communities.</li> <li>Access fees are high for local communities.</li> <li>Most tourism facilities are vandalised and in a bad condition.</li> <li>The Dam is less marketed amongst the local communities.</li> <li>There are incidents of drowning that have occurred.</li> <li>Preference is not given to local communities when job opportunities and tenders arise.</li> <li>The presence of submerged graves with no compensation.</li> </ul>	
Ор	portunities	Threats	
• • • • • • • • • • • • • • • • • • • •	The refurbishment of existing recreational facilities can attract more tourist and can create job opportunities. Harvesting of reeds around the Dam. Allow access for the community members to collect grass for craft work. The development of a resort at the Dam. Opening a facility like an environmental education centre at the Dam. The swimming pools that were closed because of financial difficulties can be reopened. Provide job opportunities for local communities. Establishment of a nearby access point. Communities to get the supply of portable water. To provide local communities with an opportunity for subsistence fishing. To train children to learn how to swim using swimming pool at SNR for safety reasons. To provide local communities with an opportunity to sell their own art crafts at the <b>Dam</b> .	<ul> <li>The chalets were constructed from prefabs which are not safe to utilise anymore.</li> <li>The Dam is threatened by drought.</li> <li>uThukela District Municipality is planning to pump water to Ladysmith which can affect the capacity of Spioenkop Dam.</li> <li>There are dangerous animals in the nature reserve.</li> <li>The Dam is not safe to use as there are no lifeguards available.</li> <li>The grass is not cut and dangerous animals can hide there.</li> </ul>	

Table 7: SWOT Analysis for Spioenkop Dam

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

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

#### **Objective Identification (Phase 3)**

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

#### **KPA 1: Resource Management**

- To control terrestrial alien invasive species around the Dam;
- To manage and monitor the alien fish population within the Dam; and
- To update the existing Zoning Plan and include Water Surface Zone which will integrate conservation, recreation and development whilst not retarding the primary functions of the Dam.

#### **KPA 2: Resource Utilisation**

- To provide equitable, compatible and adequate access control at the Dam;
- To ensure public safety regarding the recreational use of the Dam;
- To provide the local communities with an opportunity for subsistence fishing; and
- To establish potential developments on the Dam's surrounding environment like resort, environmental education centre etc.

#### **KPA 3: Benefit Flow Management**

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

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

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

"To have a sustainable recreational and commercial area which is free from crime, pollution and Alien Invasive plants species for the benefit of the community".

# 3.5.3 Research/ Information Generation (Phase 4)

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

#### **Tourism Development Potential:**

The Dam is a significant tourism node which offers some water based recreational activities such as boating, picnicking, camping, hiking, etc. The area has tourism development potential that will assist in terms of unlocking the socioeconomic potential of the Dam.

The Bergville Town, within the Okhahlamba Local Municipality located approximately 42 km from the Dam i has the potential to evolve into a leading town both in terms of providing high order facilities in the conferencing, sporting, agricultural, recreational (KZN COGTA Back to Basics, 2017)

# 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 13** shows the plans and their components.



Figure 13: 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 **4.1.3**). The DMC is required to meet quarterly.

The functions of the DMC include the following, amongst others:

- To give support to Implementing Agency (IA);
- To assess commercial opportunities at the Dam;
- Seeking resolution for general management issues;
- Monitoring the practical implementation of the RMP and BP;
- Reviewing the feedback received from I&APs;
- Operational management of recreational activities, such as ensuring that the floating AtoN and demarcation markers are in place and setting times for use of the Dam;
- Assist in conveying the management objectives and decisions pertaining to the Dam to the relevant stakeholders; and
- Assist in the management of the incident management system and wash bays.

**Figure 14** shows the proposed parties to form part of the DMC for Spioenkop Dam.



Figure 14: 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)<sup>2</sup>:

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

#### Safety of Navigation Agreements:

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

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

#### Access Agreements:

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

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

#### **Event Applications:**

All events at the Dam and surrounding state land must be managed through an event application process. The IA shall provide information regarding the zoning, operational rules and restrictions to users and visitors of the Dam. Access for organised events not utilising the designated zoning for such events, will be subject to prior approval and conditions of use, set out in the access agreement.

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:

<sup>&</sup>lt;sup>2</sup> The Department of the Water and Sanitation reserves the right to appoint the Implementing Agency at their own discretion.

- 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.

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 15: 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 16** shows government departments (also referred to as planning partners and/ or authorities) and agencies that will form part of the NPSC:



Figure 16: 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 zonation map to be used for navigational purposes. The water surface is zoned as follows:

#### Safety and Security Zone:

This zone covers a minimum area of 100m from the wall and outlet works indicated by demarcation markers and AtoN. This area is reserved for the DWS management purposes.

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

#### Conservation Zone:

The aim of this zone is to conserve and protect sensitive aquatic 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, aquaculture<sup>3</sup> and small-scale fisheries.

#### High Impact Activity Zone:

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

**Table 8** and **Figure 17** shows the proposed watersurface zoning for Spioenkop Dam.

<sup>&</sup>lt;sup>3</sup> The final location of the aquaculture will be dependent on the outcome of a feasibility study.

Zone Name	Permissible Activities	Non Permissible Activities	Recommendation
<ul> <li>Safety and Security Zone</li> </ul>	<ul> <li>Alien invasive species clearing</li> <li>Management of Dam infrastructure</li> <li>Management and maintenance activities by DWS and authorised personnel</li> </ul>	Public access	<ul> <li>Area should be demarcated by dermacation makers and AtoN.</li> </ul>
<ul> <li>Conservation Zones</li> </ul>	• None	<ul> <li>Public activities (to prevent aquatic habitats disturbance).</li> </ul>	<ul> <li>Area should be demarcated by demarcation makers and AtoN.</li> <li>Strict management and control of these areas, especially with regards to illegal fishing and dumping.</li> </ul>
• Low Impact Activity Zone	Activities associated with no or little wakes, such as • Angling • Bass Boats • Canoeing • Rowing • Paddle boating • Float tubes • Sailing	<ul> <li>Power boats:         <ul> <li>Jet skis</li> <li>Water skis</li> </ul> </li> </ul>	<ul> <li>Area should be demarcated by demarcation makers and AtoN.</li> <li>Anglers on boats must move at slow speed.</li> </ul>
• High Impact Activity Zone	<ul> <li>Powerboats</li> <li>Motorised Boating</li> <li>Para sailing</li> <li>Kite-surfing</li> </ul>	<ul> <li>Activities associated with no or little wakes, such as</li> <li>Angling</li> <li>Canoeing</li> <li>Rowing</li> <li>Paddle boating</li> <li>Float tubes</li> <li>Sailing</li> </ul>	<ul> <li>Area should be demarcated by demarcation makers and AtoN.</li> <li>All activities within the high impact zone shall take place beyond 70m from the shoreline.</li> <li>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</li> </ul>

#### Table 8: Proposed Water Surface Zoning Description



Figure 17: Proposed Water Surface Zoning

#### 4.2.2 Shoreline Zoning<sup>4</sup>

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:

# <u>Safety and Security Zone (Dam wall and associated DWS infrastructure):</u>

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 Spioenkop Dam as it is within a nature reserve.

**Table 9** and **Figure 18** shows the proposedshoreline zoning for Spioenkop Dam.

<sup>&</sup>lt;sup>4</sup> Permanent structures within the purchased line are not allowed. All developments should be outside 1:100 year floodline.

Zone Name	Permissible Activities	Non-permissible Activities	Recommendation
<ul> <li>Safety and Security Zone</li> </ul>	<ul> <li>Fire management</li> <li>Alien invasive species clearing</li> <li>Management of Dam infrastructure</li> <li>Management and maintenance activities by DWS and authorised personnel</li> </ul>	<ul> <li>Unauthorised public access</li> </ul>	• A minimum area of 100m wide downstream the Dam wall should be demarcated preventing public access and use.
<ul> <li>Conservation/ low density activity zone</li> </ul>	<ul> <li>Conservation management activities:         <ul> <li>Hiking</li> <li>Horse riding.</li> </ul> </li> </ul>	• Development	<ul> <li>Permissible activities may only be permitted provided that they are approved by relevant Authorities and they are conduct as per the relevant Legislations.</li> <li>These zone should control access to ecological sensitive areas.</li> </ul>
Medium Density Activity Zone	<ul> <li>Shoreline fishing</li> <li>Picnics</li> <li>Caravan Park</li> <li>Braai facilities</li> </ul>	<ul> <li>Accommodation facilities such as         <ul> <li>Chalets</li> <li>Recreational club houses</li> </ul> </li> <li>Permanent Structures</li> </ul>	<ul> <li>The management of this area should follow PPP process in terms of the National Treasury.</li> <li>Requirements of NWA and NEMA must be taken into account in all recreational activities.</li> <li>All developments must be approved by IA and DWS.</li> <li>No private slipways to be built without approval from IA and DWS.</li> </ul>
• High Density Activity Zone	<ul> <li>Recreational club house made of wood, glass, bamboo etc.</li> <li>Ablution facilities</li> <li>Infrastructure for services e.g kiosk</li> </ul>	<ul> <li>Permanent Structures</li> <li>Picnic</li> <li>Hiking</li> </ul>	<ul> <li>The management of this area should follow PPP process in terms of the National Treasury.</li> <li>Requirements of NWA and NEMA must be taken into account in all recreational activities.</li> <li>Noise level to be kept at a minimum.</li> <li>All developments must be approved by IA and DWS.</li> <li>No private slipways to be built without approval from DWS.</li> </ul>

#### Table 9: Proposed Shoreline Zoning Description



Figure 18: Proposed Shoreline Zoning Map



Figure 19: 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 <u>resource</u> <u>over a particular time;</u>
- 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 10** shows the type of craft and therequired area for use

Table 10: Area required per user

Craft	U/A (ha/craft)
Powerboats	4.0
Angling	2.0
Canoeing	1.0
Average	2.3

Based on the **Table 10**, the average hectare per user is 2.3 ha (23 000 m<sup>2</sup>), the value of 3.0 ha  $(30\ 000\ m^2)$  can be acceptable area per user. This has been chosen in order to ensure that the Dam is not overcrowded, as such impacting on the sense of the area.

The available surface area for Spioenkop Dam is **1531 ha** whereas U/a is assumed to be the average which was calculated as 1 craft/3 ha. And again the rotation factor (*Rf*) is assumed as 1 visit per day.

Therefore: **PCC** = A  $\div$  U/a x Rf =1531 x 1/3 x 1 = 510 crafts on the Dam

#### Real Carrying Capacity (RCC)

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

Where:

**Cf** = a corrective factor expressed as a percentage.

The RCC takes into account factors that limit recreation use (craft based) of the Dam. For Spioenkop Dam these factors include sensitive areas, such as conservation areas (0.58 ha) as well as aspects regarding the safe operation and management of the Dam (0.18 ha).

These factors account for 0.76 ha, which is 0.05% of the area that is not available for recreational use.

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

= 509 crafts

#### Effective Carrying Capacity (ECC)

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

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

It takes approximately 20 minutes to launch or retrieve a boat during the day. There are currently 6 slipways around the As a result Infrastructure capacity = [12 hours available per day/20 min] x 6 slipways for public use, therefore:

[720/20] x 6 = 216

As 20 minutes would apply either to launching or retrieving of vessel from the water, 216 would need to be halved: 216 / 2 = 108. 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, 8 x Field Ranger and 5 x general workers.

**Management Capacity** = current capacity/ required capacity x 100

= 5/14 x 100 = 35.7%

Therefore:

ECC = (108 x 0.357) x 100/RCC = (108x 0.357) x 100/ 766 = 5.03 %

Therefore, the ECC for the Dam remains at **766** Boats 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?);
- Action Projects (How to achieve this?); and
- Management support (Who will be involved?)

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

#### 4.3.1 KPA 1: Resource Management

Table 11: Strategic Plan for KPA 1: Resource Management

Objective	Motivation (Why do we want to	Action Projects	Management Support
(What do we want)	achieve this)	(How do we achieve this)	(Who will be involved)
Alien Fish: • To manage and monitor the alien fish population within the Dam	• There are alien fish species at the Dam such as Carp and Bluegill sunfish. The occurrence of alien fish species will threaten indigenous fish population, resulting mainly from predation by carp	<ul> <li>A management strategy to monitor and manage the impact of alien aquatic species in the Dam.</li> <li>Methods that can assist to eliminate alien fish species can be provincial angling competition where fishermen are only required to catch alien fish species.</li> <li>The competition should be an ongoing routine of controlling alien fish as it is a fun activity and attracts visitors to the Dam.</li> <li>Caught alien fishes could be donated to the nearby communities.</li> </ul>	<ul> <li>Department of Environmental Affairs (DEA): Working for Water (WFW)</li> <li>Department of Agriculture, Forestry and Fishery (DAFF)</li> <li>IA (EKZNW) with the support of DMC.</li> </ul>
Alien Invasive Plant Control: • To have Spioenkop Dam free of alien invasion vegetation in order to support the proposed recreational activities and to maintain the native ecological aspect of the area.	<ul> <li>The area surrounding the Dam is partially infested by terrestrial alien invasive species.</li> </ul>	<ul> <li>Remove all alien invasive vegetation within the purchased boundary and the surrounding adjacent area. Manual removal is more environmental friendly and can create jobs for people</li> <li>Develop an inspection and cleaning mechanism (wash bay) to ensure that vessels entering the Dam do not contaminate it with alien vegetation.</li> </ul>	<ul> <li>Department of Environmental Affairs (DEA): [Working for Water (WFW) programmes]</li> <li>Department of Agriculture, Forestry and Fishery (DAFF): (Soil Management section)</li> <li>South African Biodiversity Institute (SANBI)</li> <li>KZN Expanded Public Works Programme (EPWP)</li> <li>IA (EKZNW) with the support of the DMC.</li> </ul>
Zoning Plan:• To update the existing Zoning Plan which will integrate conservation, recreation and development whilst not	• The existing zoning plan only comprises of shoreline zoning, the Dam (water surface) should also be zoned to control activities on the water surface.	<ul> <li>The Zoning Plan should accommodate all feasible recreational activities within the purchased boundary.</li> <li>Preserve the core habitats for nesting, resting, feeding and breeding of fish and other fauna within the inlets.</li> </ul>	• DWS

Objective (What do we want)	Motivation (Why do we want to achieve this)	Action Projects (How do we achieve this)	Management Support (Who will be involved)
retarding the primary functions of the Dam. • To ensure the RMP zoning does not contradict with the Integrated Management Plan of Spioenkop.		<ul> <li>Community Resource Zone (subsistence fishing, livestock watering points, small scale community gardens, etc) 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.</li> <li>Implementation of standardised and harmonised AtoN and Demarcation Markers.</li> <li>Implement all other aspects of the CIWSP best practice model.</li> <li>Establish density controls for activities and facilities that requires carrying capacity assessments (i.e. number of vessels per hectare).</li> </ul>	
<ul> <li>Water Quality:</li> <li>To maintain water quality standard of the Dam.</li> </ul>	<ul> <li>A management plan should be DWS must develop a programme for monitoring and reporting of the water quality.</li> <li>Research the status of the aquatic resource and associated ecosystem, with a view on developing a comprehensive set of baseline data for future monitoring purposes.</li> <li>Determine water monitoring sites and add these to the national grid.</li> <li>Set Resource Quality Objectives for the water quality at the Dam.</li> <li>Develop a storm water management policy with a focus on standards for future acceptance of storm water discharge.</li> </ul>	<ul> <li>DWS (Proto CMA).</li> <li>IA (EKZNW) with the support of DMC.</li> <li>OLM</li> <li>Other Government Departments such as Environmental Affairs and NGOs that concern themselves with water quality and environmental health.</li> </ul>	<ul> <li>DWS to facilitate the process</li> <li>Agreements between SAMSA, DWS, LAAPs and other relevant parties to be concluded IA (EKZNW) with the support of the DMC</li> </ul>

#### 4.3.2 KPA 2: Resource Utilisation

Objective	Motivation	Action Projects	Management Support
(What do we want)	(Why do we want to achieve this)	(How do we achieve this)	(Who will be involved)
<ul> <li>Access:</li> <li>To provide access control at the Dam.</li> <li>To provide affordable entrance fees.</li> </ul>	<ul> <li>Spioenkop Dam is being utilised by various nearby communities and as a result there is a need for an accessible entrance to prevent vandalism of the Dam's fence.</li> <li>To ensure users safety.</li> </ul>	<ul> <li>Access to the Dam must be equitable and safe to all users.</li> <li>The entry fees need to be reasonable to ensure that the Dam remains an affordable destination for all. The fees generated from accessing the Dam can be utilised to maintain the Dam, the recreational infrastructure as well as to create job opportunities such as cleaners, security, etc.</li> </ul>	<ul> <li>DWS</li> <li>IA (EKZNW) with the support of DMC.</li> </ul>
<ul> <li>Public Safety:</li> <li>To ensure access and safety use of the Dam.</li> <li>To meet the user needs and promote compliance with applicable legislation and regulations.</li> </ul>	<ul> <li>There are incidents of drowning that have occurred at the Dam.</li> <li>The Dam is not safe to swim in, as there are no lifeguards available.</li> <li>There are dangerous animals in the nature reserve.</li> </ul>	<ul> <li>Community education and awareness.</li> <li>Build a fence at any hotspots that the community foresees as dangerous.</li> <li>DWS to revive partnership with Swim SA to train local community members to become life guards to curb drownings at the Dam.</li> <li>To make sure the community is involved in labour, for installing the fence at unfenced areas. This will be done to ensure they benefit from projects that arise from the Dam.</li> <li>IA in conjunction with SAPS to develop and establish safety plan in the area.</li> <li>Implementation of DWS Incident Management System.</li> <li>Develop information material (i.e. signage and pamphlets, etc.) to convey safety rules at the Dam.</li> <li>SNR to have field rangers that patrol the recreational areas to ensure that dangerous animals do not trespass.</li> </ul>	<ul> <li>South African Police Service (SAPS)</li> <li>South African Martine Authority (SAMSA)</li> <li>DWS</li> <li>IA (EKZNW) with the support of DMC.</li> </ul>
<ul> <li>Fence:</li> <li>Erecting fence in areas where it is unfenced or damaged by the animals</li> </ul>	• The Nature Reserve has some areas which are unfenced, wild animals roaming around the nature reserve might pose a threat to tourist visiting	<ul> <li>Erect a fence in all areas, which are unfenced.</li> <li>To appoint local community members as security personnel to monitor access and safety at the Dam.</li> </ul>	<ul> <li>DWS</li> <li>IA (EKZNW) with the support of DMC.</li> </ul>

 Table 12: Strategic Plan for KPA 2: Resource Utilisation

Objective	Motivation	Action Projects	Management Support
(What do we want)	(Why do we want to achieve this)	(How do we achieve this)	(Who will be involved)
around the national reserve.	the Dam or nature reserve especially on camping sites	• Educate the Local Communities about the importance of having a water resource and infrastructure to prevent vandalism at the Dam.	
<ul> <li>Sustainable Fishing:</li> <li>To promote sustainable subsistence fishing at the Dam.</li> </ul>	<ul> <li>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.</li> <li>Spioenkop Dam is rich in fish diversity which plays a major role in the ecological balance of the aquatic ecosystem and also serve as a food source for local subsistence fishermen.</li> </ul>	<ul> <li>Management authority or DWS must develop a communication signage in order to effectively inform different angling groups about the Dam fishing rules.</li> <li>Appoint safety officers within the local communities that will monitor compliance of fishing.</li> <li>Trainings should be provided to local subsistence fishers, to support subsistence fishing.</li> <li>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.</li> <li>Generate the necessary infrastructure, such as banks to fish from in order to support the growth of angling tourism at the Dam.</li> <li>Permits (fishing licence) must be acquired and the use of gill nets must be prevented, as it has significant negative impact on fish population within the Dam.</li> <li>Appoint safety officers within the local communities that will monitor compliance of fishing.</li> </ul>	<ul> <li>DAFF</li> <li>IA (EKZNW) with the support of DMC.</li> <li>Other relevant conservation NGOs within the area must be involved.</li> </ul>
To establish potential developments on the Dam's surrounding environment like resort, environmental educational centre etc.	• The location of the Dam is ideal environment that provides an excellent opportunity to develop the recreational facilities within the area.	<ul> <li>The location of the Dam is ideal environment that provides an excellent opportunity to develop the recreational facilities within the area.</li> </ul>	<ul> <li>IA (EKZNW) with the support of DMC</li> <li>KwaZulu-Natal Economic Development Tourism and Environmental Affairs.(KZNEDTEA)</li> <li>OLM</li> </ul>

#### 4.3.3 KPA 3: Benefit Flow Management

Objective	Motivation	Action Projects	Management Support
(What do we want)	(Why do we want to achieve this)	(How do we achieve this)	(Who will be involved)
Community Participation and Beneficiation: • To uplift the local economy and increase benefit flows to the surrounding communities through community empowerment.	<ul> <li>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.</li> <li>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.</li> </ul>	<ul> <li>Implement skills development programmes where opportunities exist.</li> <li>Institute a comprehensive alien invasive plant education programme in pilot schools in the region, subsequent to be extended to all the schools.</li> <li>Implement of environmental awareness programmes for the local communities and ensure that they are always updated with environmental information.</li> <li>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.</li> <li>First preference to be given to the local community members if any job opportunities arise.</li> </ul>	<ul> <li>Relevant Municipal Departments such as Local Economic Development must be involved.</li> <li>IA (EKZNW) with the support of DMC.</li> </ul>
Recreational Institutional Structure: • To establish an effective institutional structure that can manage recreational use of the Dam in an acceptable manner, which is also representative of all the stakeholders.	• There is currently no management structure in place to oversee the use of the Dam for recreational purposes. This is evident when looking at the existing cultural rondavels and other facilities that are Damaged and not utilised for their purpose.	<ul> <li>Put in place recreational institutional structure that is representative of all Stakeholders.</li> <li>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.</li> </ul>	• DWS • EKZNW

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

#### 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 socioeconomic 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);
  - Caravan/ outdoor camping;.
  - Refurbished swimming pools; and
  - Traditional mats made from reed obtained during harvesting season (selling stalls can be charged).

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

**Rental Charges<sup>5</sup>:** Potential source of revenue can also be explored on rental fees but not limited to the following:

#### 4.4.2 Target Market

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

- Acton Homes Community;
- Habrook Community;
- Farmers;
- 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 infrastructure as well as setting up of new facilities. The proposed IA can consider the following sub-sections as a source of capital.

#### 4.4.3 Co-Funding

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

DWS and/or other relevant Government Departments can fund the IA to supplement operational costs and other scenarios by co-funding identified objectives that are related to their mandate. It is recommended that

<sup>&</sup>lt;sup>5</sup> Leasing of DWS property will be concluded based on market related rental fee

EKZNW be appointed as an IA to manage recreational use of the Dam on behalf of DWS. Examples of potential co-funders are:

- The Department of Tourism;
- Industrial Development Corporation (IDC); and
- InvestSA (One Stop Shop).

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

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

The information acquired from the RMP will be used to produce the Business Plan (BP) based on the action projects for each objective as stipulated under the Strategic Plan. However, many of the identified objectives are not of commercial nature and as such these noneconomic 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 Spioenkop 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 Spioenkop Dam:

- The entrance to the Dam is located very far from the local communities and access fees are high for local community members;
- uThukela District Municipality is planning to pump water to Ladysmith which can affect the capacity of Spioenkop Dam;
- There is illegal fishing on the western side of the Dam by local communities.
- Owing to the absence of test samples for all water quality constituents (not only pH) it is inconclusive if the water is fit for recreational use;
- Presence of alien invasive plant species such as *Opuntia* spp and *Lantana camara;.*
- There is currently no specific incident management system in place to ensure that incidents are recorded and responded to in a co-ordinated manner;
- There are alien fish species at the Dam such as Carp and Bluegill sunfish. The occurrence of alien fish species will threaten indigenous fish population, resulting mainly from predation by carp;
- Existing braai facilities at the picnic area are in a bad condition and require refurbishment;
- Chalets are currently in a bad condition and this will have a negative impact on

the recreational use of the Dam, particularly for tourists coming without caravans/tents; and

 Lack of knowledge regarding grass harvesting season within the nature reserve.

#### **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;
- Feasibility study to determine possibility of alternative access point adjacent to the local community close to the Dam.
- Control of alien invasive plants (i.e. *Opuntia* spp and *Lantana camara* ;
- Refurbishment of the existing chalets, braai facilities and picnic area in order to attract more tourists as well as to provide job opportunities to local communities (i.e. cleaners, security and catering);
- The Dam is situated in an area, which is governed by two (2) main acts (NWA and NEMPAA). All proposed activities should consider both acts prior to implementation;
- Establishment of a Dam Management Committee (DMC) to serve as an advisory committee to the proposed IA;
- 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 20** illustrates the RMP and BP review framework.



Figure 20: 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