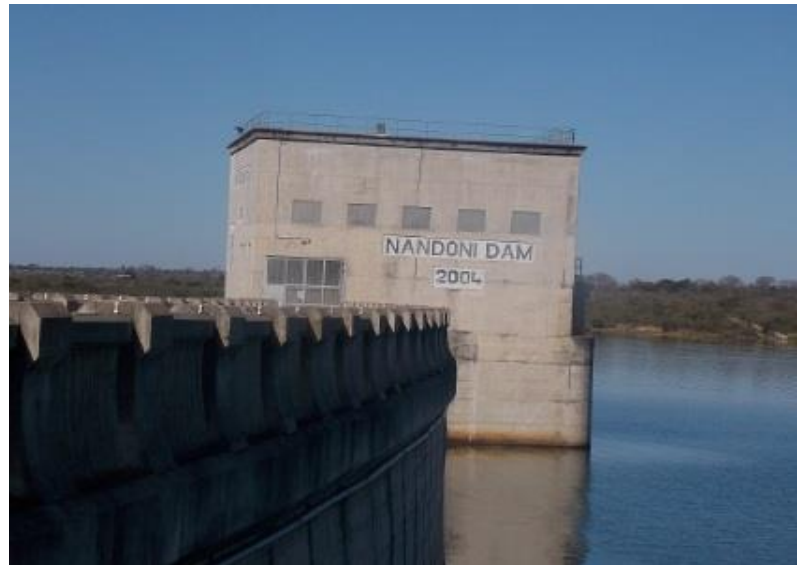


# Resource Management Plan **NANDONI DAM**

REPORT – Volume 4 of 5

March 2019



WATER IS LIFE - SANITATION IS DIGNITY

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**water & sanitation**

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REPUBLIC OF SOUTH AFRICA



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- Department of Environmental Affairs;
- Department of Transport;
- Department of Water and Sanitation;
- Limpopo Department of Agriculture and Rural Development;
- Limpopo Department of Economic Development, Environment and Tourism;
- South African Police Services;
- Community members of Mulenzhe, Dididi, Tshitomboni, Budeli, Mutoti, Mphego, Tshiulungoma, Maniini, Muledane, Tswinga and Mashawana;
- Thulamela Local Municipality;
- Traditional Authorities of the local villages; and
- Vhembe 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 Period	Month	Year				
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>The implementation of the RMP and BP requires one financial year planning ahead.

## AMENDMENTS PAGE

Revision No	Description	Date
1	Draft RMP for DWS Review	13/06/2016
2	Draft RMP for DWS Review	14/06/2017
3	Draft RMP for Public Review	19/06/2017
4	Final Draft RMP for DWS Review	11/08/2017
5	Final Draft RMP for DWS Approval	26/09/2017
6	Final Draft RMP for Public Review	02/10/2017
7	Final RMP for DWS Sign Off	20/11/2017
8	Final RMP for DWS Sign Off	04/02/2019
9	Final RMP for DWS Approval	11/02/2019
10	Final RMP for DWS Approval	05/03/2019

## EXECUTIVE SUMMARY

### **Purpose of the Resource Management Plan:**

The 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 Nandoni Dam, herein after referred to as the Dam, which is part of the Infrastructure Build, Operate and Maintenance (IBOM): Northern Operations.

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

The RMP focus is on the secondary use of the Nandoni Dam, herein after referred to as the “Dam”. The secondary use shall entail using the water for recreational purposes within the DWS purchase boundary as defined in Section 21(k) of the NWA. The implementation of the RMP is not to retard the primary use of the Dam. The primary use, in terms of Section 21(b) of the NWA, entails the storing of water for domestic use.

**Mandate of Department of Water and Sanitation:** The Department of Water and Sanitation (DWS), through the NWA, mandates the minister as the custodian of the nation’s water resources to ensure that government waterworks (GWWs), including Nandoni 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. To assist the Minister in fulfilling this mandate, the DWS initiated and commissioned the development of the RMP for the Dam.

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

#### *Resource Management:*

- Whether the water resource is situated within a protected area or not, is subject to protection by legislation;
- Alien and invasive species; and
- Water quality issues.

#### *Recreational Industry Involvement:*

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

#### *Community Participation and Beneficiation:*

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



*Public Policy:*

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

**Description and Location of the Dam:** The Dam has an earth-fill and gravity type dam wall that impounds the Luvuvhu River and confluence with the Dzindi tributary to the east. The construction of the Dam was completed in 2005. At full service level the water surface area of the dam is approximately 1570 ha with a capacity of 164 million cubic meters. The Dam is situated within the Thulamela Local Municipality (TLM: LIM343) which forms part of the Vhembe District Municipality (VDM) within the Limpopo Province of South Africa. The centre point co-ordinates of the Dam are 22°59'34.16"S and 30°33'18.83"E.

**Purpose of the Dam:** The primary purpose<sup>2</sup> of the Dam is to provide bulk raw water for domestic use. The secondary use<sup>3</sup> of the Dam offers recreational activities such as boating, fishing (recreational and subsistence), caravan and camping, and picnicking. Other recreational activities such as swimming are not allowed due to the presence of crocodiles and hippos at the Dam.

**Dam Ownership and Management:** DWS owns and operates the Dam for its primary purpose. Currently there is no institutional structure managing the Dam for recreational purposes (secondary use). Through the development of the RMP, an appropriate Implementing Agency (IA) such as VDM, shall be appointed by DWS to

facilitate the implementation of the objectives and identified action projects in line with the requirements of the Nandoni Dam RMP, on behalf of DWS. The IA will sign a Memorandum of Agreement (MOA) with DWS, which shall be a legal binding document outlining the roles, responsibilities and conditions that must be followed by both parties for the management of the water resource for recreational use.

**Stakeholder Engagement:** The success of the development and implementation of the RMP depends on the cooperation of all stakeholders and planning partners. The communities consulted during the stakeholder engagement meetings are situated within Ward 18 and 19 of TLM. Authority and public meetings were conducted to obtain inputs (challenges and objectives) regarding the Dam. These meetings were conducted in accordance with the DWAF Guidelines for Public Participation (DWAF, 2001).

**Identified Objectives and Vision:** During the authority and public meetings, issues and concerns were raised from which the following objectives were identified:

- To maintain the high-water quality standard of the Dam;
- To remove alien and invasive species to support recreational activities and to protect the terrestrial and aquatic ecology of the water resource;
- To conserve threatened and endangered species and promote their occurrence;
- To prevent the unsolicited harvesting and removal of endogenous plant and animal material;
- Water quality monitoring and reporting;
- Alien and invasive species management and control;

<sup>2</sup> Section 21(b) of the NWA – Storing water

<sup>3</sup> Section 21(k) of the NWA - Using water for recreational purposes

- Adequate access control to ensure the safety of people and safe tourism;
- To attend to the issues of unauthorised structures within the DWS purchase boundary;
- To establish an effective institutional structure that can manage the recreational use of the Dam in an acceptable manner, and which is representative of all the stakeholders;
- To provide adequate access for broader public use of the water resource and its associated State Land through controlled authorised access;
- To promote sustainable harvesting of fish;
- To introduce aquaculture/ small-scale fishery at the Dam; and
- To uplift the local economy and increase benefit flows to the surrounding communities through community development programmes.

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

***“To promote and ensure sustainable use of the Dam based on effective resource management and sound business planning in a way that benefits the local communities and the Vhembe District as a whole”.***

**Tourism Potential:** There are a number of conservancies, national parks, nature reserves and resorts that have been established and developed nearby the location of the Dam, as well as significant initiatives concerning tourism and conservation in the area. The potential recreational developments identified to enhance tourist attraction within the DWS purchased boundary (line) includes the fishing linked tourism service sector, wildlife observation and

the construction of swimming pools and tourism facilities (i.e. overnight accommodation).

**The key challenges identified comprise:**

- The Dam’s capacity might reduce over time due to sediment build-up caused by sand mining, cultivating unsuitable areas of land, overgrazing the veld and removing large quantities of wood for fuel;
- Possibility of occurrence of cultural or archaeological artefacts within the Dam;
- The water from the inlets, namely Dzindi and Mvudi Rivers, have high concentration of nutrients (i.e. phosphates) possibly from poor waste water treatments works or poor agricultural land-use practices up stream;
- Alien invasive species such as trout and black bass fish species, including the tree species *Melia azedarach* are present at the Dam that competes with and replaces indigenous species of the area;
- Lack of recreational management structure;
- The Dam is mainly fenced around the Dam wall and infrastructure. There are numerous informal slipways (uncontrolled access) around the Dam. Uncontrolled access leads to drowning incidents. A number of drownings have previously been reported at the Dam;
- Dangerous animals such as crocodiles and hippos stray into populated areas close to the Dam (fencing and enclosure of the Dam required at specific hot spots);
- Alleged uncontrolled developments around the Dam without proper sanitation systems;
- Alleged unauthorised developments within the DWS purchased boundary that restricts movement around the Dam; and



- Inadequate recreational marketing of the Dam.

### **Recommendations:**

This RMP recommends the following immediate actions:

- Appoint VDM as an IA to manage recreational use of the Dam on behalf of DWS;
- Establishment of a Dam Management Committee (DMC) to serve as an advisory committee to the proposed IA;
- Water quality monitoring and reporting;
- Alien and invasive species management and control;
- Adequate access control to ensure the safety of people and safe tourism;
- Promotion of small-scale fishery at the Dam to contribute to the transformation and equitable socio-economic benefit from inland fish resources;
- Ensure organised development, equitable visitor access, sound resource management and optimal community beneficiation, as per the proposed Zoning Plan in Section 4.2;
- Ensure public safety with regards to the use of inland vessels, as per the Carrying Capacity in Section 4.2.3; and
- Ensure resource management, resource utilisation and benefit flow management, as per the Strategic Plan and Key Performance Areas in Section 4.3.

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## LIST OF ACRONYMS

<b>AtoN</b>	Aids to Navigation
<b>BP</b>	Business Plan
<b>CATHSSETA</b>	Culture, Arts, Tourism, Hospitality, Sport Sector and Education Training Authority
<b>CC</b>	Real Carrying Capacity
<b>CCLM</b>	Collins Chabane Local Municipality (LIM345)
<b>CD: IO MANCO</b>	Chief Director: Infrastructure Operations Management Committee
<b>CE</b>	Critically Endangered
<b>C<sub>f</sub></b>	Correction Factor
<b>CIWSP</b>	Cooperative Inland Watercourse Safety Programme
<b>CoGTA</b>	Cooperative Governance and Traditional Affairs
<b>DAFF</b>	Department of Agriculture, Forestry and Fisheries
<b>DEA</b>	Department of Environmental Affairs
<b>DMC</b>	Dam Management Committee
<b>DoT</b>	Department of Transport
<b>DPW</b>	Department of Public Works
<b>DRDLR</b>	Department of Rural Development and Land Reform
<b>DSR</b>	Department of Sport and Recreation
<b>DWAF</b>	Department of Water Affairs and Forestry
<b>DWS</b>	Department of Water and Sanitation
<b>EA</b>	Environmental Authorisation
<b>ECC</b>	Effective Carrying Capacity
<b>EIA</b>	Environmental Impact Assessment
<b>GIAMA</b>	Government Immovable Asset Management Act, 2007 (Act No.19 of 2007)
<b>GPS</b>	Global Positioning System
<b>GWWs</b>	Government Waterworks
<b>I&amp;APS</b>	Interested and Affected Parties
<b>IA</b>	Implementing Agency
<b>IALA</b>	International Association of Marine Aids to Navigation and Lighthouse Authorities
<b>IBOM</b>	Infrastructure Build, Operate and Maintenance
<b>IDP</b>	Integrated Development Plan
<b>IEE</b>	Integrated Environmental Engineering
<b>IRMP</b>	Integrated Resource Management Planning
<b>KPA</b>	Key Performance Area
<b>LDARD</b>	Limpopo Department of Agriculture and Rural Development
<b>LED</b>	Local Economic Development
<b>LEDET</b>	Limpopo Department of Economic Development, Environment and Tourism
<b>LIHRA</b>	Limpopo Heritage Resource Agency
<b>MOA</b>	Memorandum of Agreement



<b>MSA</b>	Municipal Systems Act, 2000 (Act No. 32 of 2000)
<b>NDT</b>	National Department of Tourism
<b>NEMA</b>	National Environmental Management Act, 1998 (Act No. 108 of 1998)
<b>NEMPAA</b>	National Environmental Protected Areas Act, 2003 (Act No. 57 of 2003)
<b>NHRA</b>	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
<b>NPSC</b>	National Project Steering Committee
<b>NWA</b>	National Water Act, 1998 (Act No. 36 of 1998)
<b>OMC</b>	Operations Management Committee
<b>PCC</b>	Physical Carrying Capacity
<b>PP</b>	Public Participation Process
<b>PPO</b>	Public Protector's Office
<b>PPP</b>	Public Private Partnership
<b>RMP</b>	Resource Management Plan
<b>SAHRA</b>	South African Heritage Resource Agency
<b>SAMSA</b>	South Africa Maritime Safety Authority
<b>SAPS</b>	South African Police Services
<b>SASCOC</b>	South Africa Sport Confederation and Olympic Committee
<b>SUP</b>	Sustainable Utilisation Plan
<b>SWOT</b>	Strengths, Weaknesses, Opportunities and Threats
<b>TLM</b>	Thulamela Local Municipality (LIM343)
<b>WfW</b>	Working for Water
<b>WRC</b>	Water Research Council
<b>WQGs</b>	Water Quality Guidelines
<b>WTW</b>	Water Treatment Works

## 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 government waterworks (GWWs), including the Nandoni 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) for GWWs, which inter alia include the following:

#### *Resource Management:*

- Whether the water resource is situated within a protected area or not, is subject to protection by legislation;
- Alien and invasive species; and
- Water quality issues.

#### *Recreational Industry Involvement:*

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

#### *Community Participation and Beneficiation:*

- Challenges of communities regarding physical access and access to the water-based economy of the resource;
- Participation and beneficiation of surrounding communities remains a challenge;

- Unlocking the economic potential of the Dam through the establishment of effective Public Private Partnerships (PPPs); and
- Equitable and sustainable benefit flow into the community through the creation of appropriate institutional arrangements.

#### *Public Policy:*

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

To assist the Minister in fulfilling this mandate, the DWS initiated and commissioned the development of the RMP and its Business Plan (BP) for Nandoni 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 Dam must be used for recreational purposes<sup>4</sup> (secondary use). The principles and guidelines seek to promote community participation and beneficiation, environmental conservation and unlocking socio-economic opportunities associated with the recreational use of the Dam. This RMP is for Nandoni Dam, herein after referred to as the Dam, which is part of the Infrastructure Build, Operate and Maintenance (IBOM) Northern Operations.

<sup>4</sup> NWA Section 21 (k) Water Use - Using water for recreational purposes.

This RMP was developed in accordance with the Guideline on Integrated Resource Planning for the Use of Water for Recreational Purposes (DWAF, 2004) and to attain the objectives underlying sustainability in Section 2 of the NWA, with particular relevance to Section 26 and 113 relating to the use of water and access and use of government waterworks for recreational purposes.

### 1.3 DESCRIPTION AND LOCATION OF THE DAM

The Dam has an earth-fill and gravity type dam wall that impounds the Luvuvhu River and confluence with the Dzindi tributary to the east. The construction of the Dam was completed in 2005. At full service level, the water surface area of the dam is approximately 1570 ha with a capacity of 164 million cubic meters. The centre point co-ordinates of the Dam are 22°59'34.16"S and 30°33'18.83"E. **Table 1** shows the Dam profile.

The Dam is situated within the Thulamela Local Municipality (TLM: LIM343). TLM is Category B Municipalities and forms part of the Vhembe District Municipality (VDM), located in the north-north-east of the Limpopo Province, as shown in **Figure 1**. The centre point co-ordinates of the Dam are 22°59'34.16"S and 30°33'18.83"E.

### 1.4 PURPOSE OF THE DAM

The primary purpose of the Dam is to provide bulk raw water for domestic use. The Dam offers recreational activities (secondary use) such as boat cruising, fishing (recreational and subsistence), wedding ceremonies, caravan, camping and picnicking. Other recreational activities such as swimming are not allowed due

to the presence of crocodiles and hippos at the Dam.

### 1.5 DAM OWNERSHIP AND MANAGEMENT

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

**Table 1:** Nandoni Dam Profile

<b>Nandoni Dam Profile</b>	
<b>Location</b>	South Africa
<b>Province</b>	Limpopo
<b>District Municipality</b>	Vhembe
<b>Local Municipality</b>	Thulamela (LIM343) and Collins Chabane (LIM345)
<b>Nearest Town</b>	Thohoyandou
<b>Completion Year</b>	2005
<b>Coordinates</b>	22°59'34.16"S 30°33'18.83"E
<b>Primary Purpose</b>	Domestic use
<b>Owner</b>	DWS
<b>Quaternary Catchment</b>	A91F
<b>Water Management Area</b>	Luvuvhu/Letaba
<b>River</b>	Luvuvhu
<b>Capacity (Mm<sup>3</sup>)</b>	164
<b>Surface Area (ha)</b>	1 570.0
<b>Wall Type</b>	Earth-fill and Gravity
<b>Wall Height (m)</b>	43
<b>Length (m)</b>	2 215

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



# NANDONI DAM RESOURCE MANAGEMENT PLAN

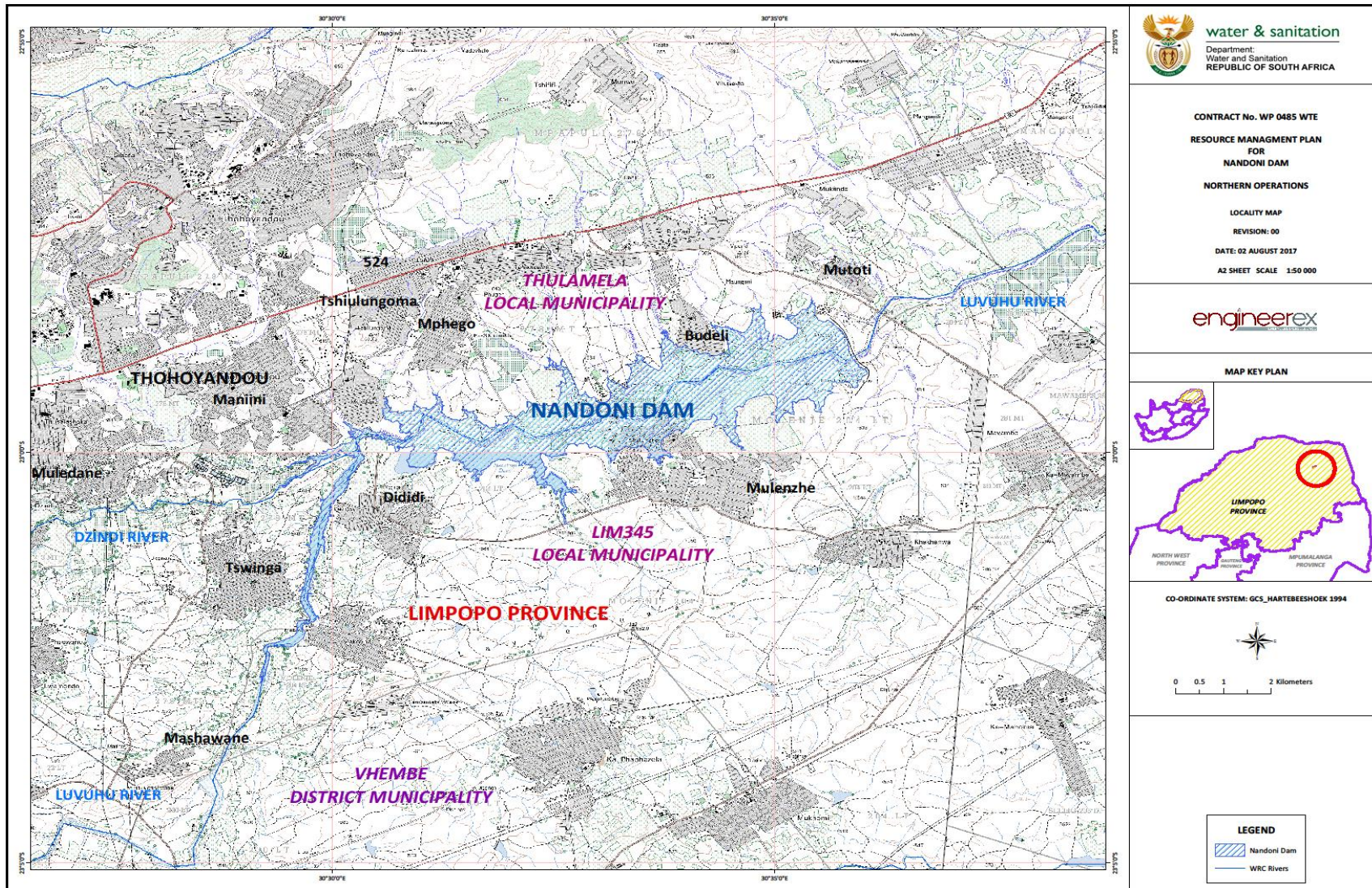


Figure 1: Locality Map for Nandoni Dam

## 1.6 LEGISLATIVE FRAMEWORK

Provided in the table below are the key data sources used to develop the RMP.

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

Policy and Guidelines	Description
<b>Consideration on Institutional Arrangement for Managing Use of Water for Recreational Purposes (DWAF, 2003)</b>	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.
<b>1st Draft National Inland Fisheries Policy Framework for South Africa. Department of Agriculture, Forestry and Fisheries, 2018</b>	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.
<b>General Public Participation Guidelines (DWAF, 2001)</b>	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.
<b>Government Notice R654 dated 1 May 1964, in terms of the Water Act, 1956 (Act No. 54 of 1956)</b>	Regulates access and use of government waterworks for recreational purposes.
<b>Guidelines for Compilation of Resource Management Plans (DWAF, 2006)</b>	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.
<b>Guidelines for Compilation of Zoning Plans for Government Waterworks (DWAF, 1999)</b>	It provides direction on the compilation of zoning plans for government waterworks (within DWS purchased boundary (line)).
<b>Methodology for Carrying Capacity Assessment for the Use of Water for Recreational Purposes (DWAF, 2003)</b>	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.
<b>National Treasury Public Private Partnership (PPP) Toolkit for Tourism, 2005</b>	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.



## NANDONI DAM RESOURCE MANAGEMENT PLAN

Policy and Guidelines	Description
<b>Operational Policy: Using Water for Recreational Purposes (DWAF, 2004)</b>	This policy is the main guideline in support of the RMP process with regards to the basic principles, policies, strategies and actions for regulating the use of water for recreational purposes.

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

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

Legislation: Acts, Ordinances & By-Laws	
Constitution	Relevance:
<b>Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996), Environmental Rights (Section 24)</b>	<p>Section 24 - Everyone has the right:</p> <ol style="list-style-type: none"> <li>1. to an environment that is not harmful to their health or wellbeing,</li> <li>2. to have an environment protected for the benefit of present and future generations, through reasonable legislative and other measures that- <ol style="list-style-type: none"> <li>a. prevent pollution and ecological degradation</li> <li>b. promote conservation and secure ecologically sustainable development and use natural resources while promoting justifiable economic and social development.</li> </ol> </li> </ol>
National Legislation	Significance to the RMP:
<b>Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003)</b>	It aims to address inequities resulting from the systematic exclusion of black people from meaningful participation in the economy.
<b>Communal Land Rights Act, 2004 (Act No. 11 of 2004)</b>	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.
<b>Conservation of Agricultural Resource Act, 1983 (Act No. 43 of 1983) [CARA]</b>	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.

## NANDONI DAM RESOURCE MANAGEMENT PLAN

Legislation: Acts, Ordinances & By-Laws	
	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 and invasive species and bush encroachment.
<b>1st Draft National Inland Fisheries Policy Framework for South Africa. Department of Agriculture, Forestry and Fisheries, 2018</b>	In terms of the National Water Act (Act 36 of 1998), the Department of Water Affairs and Sanitation (DWS) is the custodian of South Africa's water resources and is responsible for access to and the control of activities on public water works (Dams) under its jurisdiction. As such, access to DWS public water works land and water for fishing activities is subject to DWS control. A system of RMPs is being implemented by the DWS to manage the activities of multiple user groups on public water works.
<b>Government Immovable Asset Management Act, 2007 (Act No. 19 of 2007) (GIAMA)</b>	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.
<b>Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000)</b>	To provide for the manner in which municipal powers and functions are exercised and performed; to provide for community participation; to establish a simple and enabling framework for the core processes of planning, performance management, resource mobilisation and organisational change which underpin the notion of developmental local government.
<b>Merchant Shipping (National Small Vessel Safety) Regulations (2007)</b>	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.
<b>National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA]</b>	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.
<b>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) [NEMBA]</b>	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.

## NANDONI DAM RESOURCE MANAGEMENT PLAN

Legislation: Acts, Ordinances & By-Laws	
	The Alien and Invasive Species Regulations of 2014 for this Act came into effect 01 October 2014. NEMBA together with the Alien and Invasive Species Regulations, 2014 aims to prevent the introduction and spread of alien and invasive species across South Africa.
<b>National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) [NEMPAA]</b>	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.
<b>National Environmental Management: Waste Act, 2014 (Act No. 59 of 2008) [NEWA]</b>	Provides for the national domestic waste collection standards and national norms and standards for the storage of waste.
<b>National Heritage Resources Act, 1999 (Act No. 25 of 1999) [NHRA]</b>	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.
<b>National Water Act, 1998 (Act No. 36 of 1998) [NWA]</b>	<p>The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in a sustainable and appropriate manner, for the benefit of all. Furthermore Section 113 of the Act states that the water of a government waterworks and surrounding state-owned land may be made available for recreational purposes, subject to controls determined by the Minister and regulations made by the Minister.</p> <p>Using water for recreational purposes is a water use under Section 21K and can be exercised as permissible use of water under Schedule 1 of the Act. However, this provision does not cater for commercial use hence the RMP should be implemented in line with General Strategic Plan for commercialisation of Tourism Public Private Partnerships at Government Waterworks, 2009 and PFMA Treasury Regulation 16. Once the RMP has been approved, the RMP will regulate access and use of the Dam. It is important to note that users will need to comply with other relevant legislation.</p>
<b>Occupational Health and Safety Amendment Act 181 of 1993 G.15369 GoN 2471</b>	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.
<b>Public Finance Management Act, 1999 (Act No. 29 of 1999) [PFMA]</b>	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

## NANDONI DAM RESOURCE MANAGEMENT PLAN

Legislation: Acts, Ordinances & By-Laws	
	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.
<b>Safety at Sport and Recreational Events Act, 2010 (Act No. 2 of 2010)</b>	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.
<b>South African Maritime Safety Authority Act, 1998 (Act No. 5 of 1998) [SAMSA]</b>	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.
<b>Water Services Act, 1997 (Act No. 108 of 1997)</b>	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.
<b>Provincial Legislation</b>	<b>Significance to the RMP:</b>
<b>Limpopo Conservation Plan v2 (2013)</b>	The conservation plan will inform recreational development projects and explain the significance of a particular site and how that significance will be retained for future use.
<b>Limpopo Development Plan (2014)</b>	Aims at assisting to utilise the available resources more effectively to achieve well-defined objectives.
<b>Limpopo Environmental Management Act, 2003 (Act No. 7 of 2003)</b>	A tool that can be used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced.
<b>Limpopo Growth and Development Strategy (2005)</b>	It is the purpose of this strategy to share the dream of a prosperous province that, through the actions of both government and its collaborating stakeholders, will improve the quality of life of all its citizens (beneficiation).
<b>Municipal Policy, By-Laws, Reports &amp; Guidelines</b>	<b>Significance to the RMP:</b>
<b>Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000)</b>	Sets out legislation that enables municipalities to uplift their communities by ensuring access to essential services. The Act defines the legal nature of a municipality as including the community and clarifies the executive and legislative powers of municipalities.

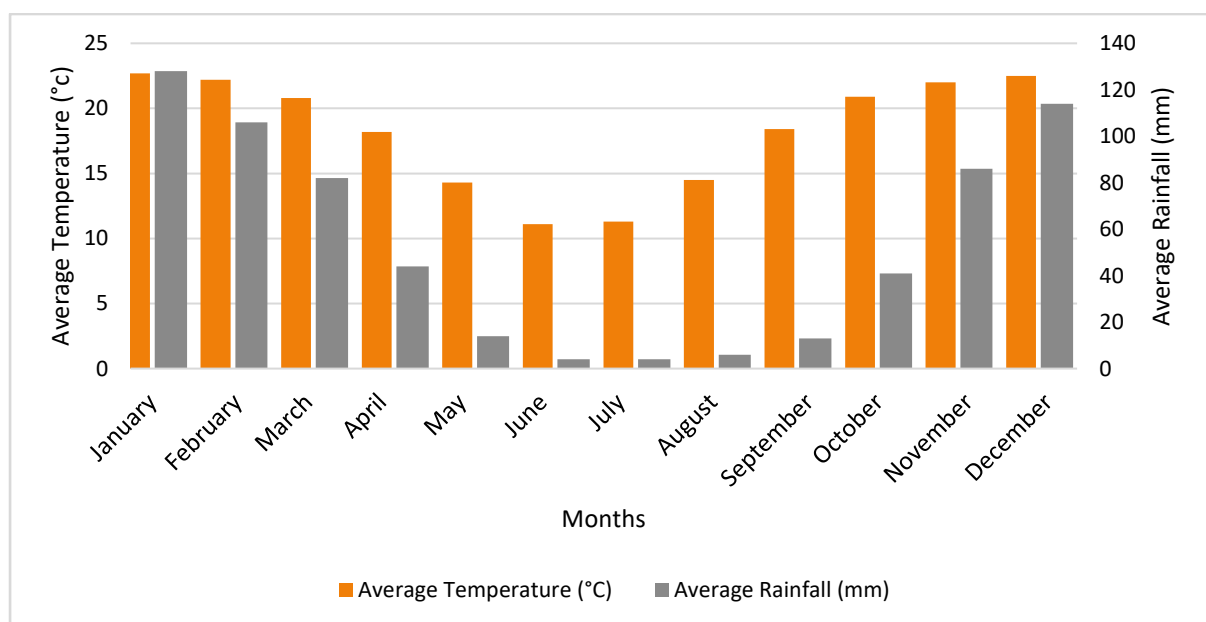
## CHAPTER 2: ENVIRONMENTAL ANALYSIS

### 2.1 BIOPHYSICAL ENVIRONMENT

#### 2.1.1 Climate

The Dam is located near the town of Thohoyandou, situated north of the Dam. According to Climate-Data. ORG (2016) the area experiences good rainfall in summer, while winter months are characterised by little rainfall. As shown in **Figure 2** the driest months of the year are from May until September with an average of about 7.6 mm. Most of the rainfall is received during December and January with an average rainfall of about 125 mm.

The average annual temperature for the Thohoyandou area is 18.2 °C. As shown in **Figure 2**, the warmest months include January, February, March, November and December with an average temperature of about 21°C. The months with the lowest temperatures include June and July with an average temperature of 12°C. The prevailing wind direction is east to southeast in both the summer and the winter months. The average wind speed is 11km/h in the summer and 15km/hr in the winter (SUP for the Nandoni Dam, 2003).



**Figure 2:** Average Temperature and Rainfall of the Area of Thohoyandou

**Source:** Adapted from Climate Data. ORG, 2016

#### 2.1.2 Topography

According to DWAF (2003), the landscape within which the Dam is situated is characterised by undulating hills.

#### 2.1.3 Geology and Soil

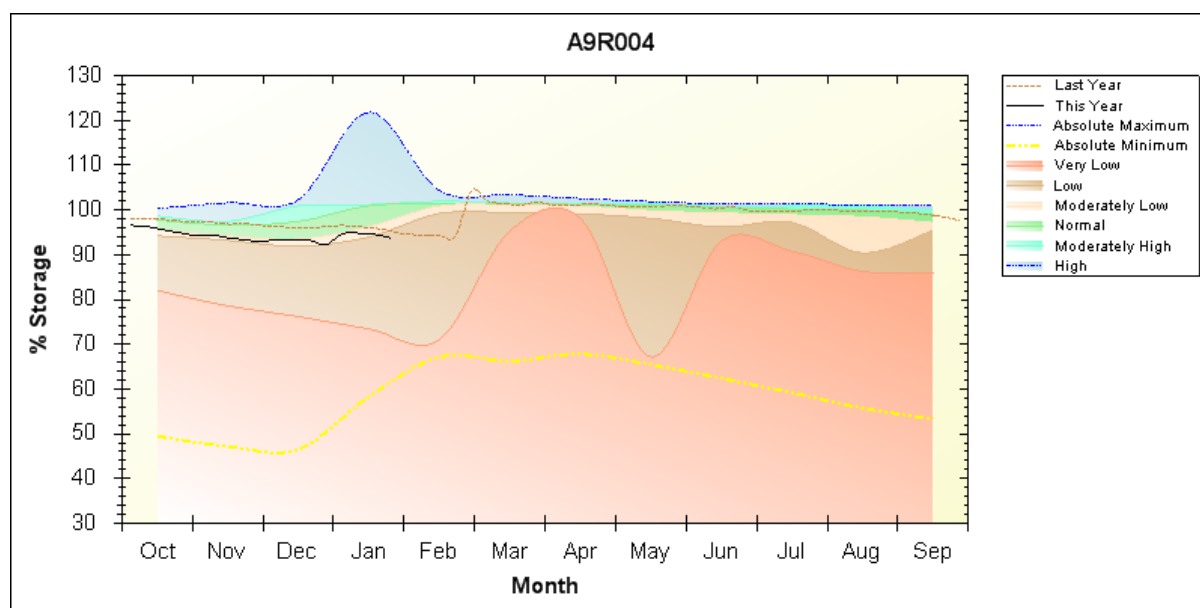
The general soil description within the area is described as solid with minimal development, usually shallow, on hard or weathering rock, with or without intermittent diverse soils. Lime

is generally present in part or most of the landscape. The remaining parts of the study area falls within an area with soils described as red, yellow and/or greyish soils with low to medium base status. The soil type may receive water runoff from associated rock. The soil depth is restricted and is associated with rockiness. The characteristics of the soil are described as shallow on hard or weathering rock (National Soils SANBI BGIS, 2013)

## 2.1.4 Hydrology

### Water Surface

The Dam lies within the Quaternary Drainage region A91F that forms part of the Luvuvhu/Letaba Water Management Area (WMA). The Dam impounds the Luvuvhu River that is categorized as a National Freshwater Ecosystems Priority Area (NFEPA) in terms of the Limpopo Conservation Plan (2013). The Present Ecological State (PES, 1999) of Luvuvhu River is categorised as Class D: Largely Modified.



**Figure 3:** Fluctuations of Nandoni Dam Water Level over a Year

Source: DWS, 2019

### Water Quality

The DWS National Eutrophication Monitoring Programmes (2004 to 2010) uses chlorophyll and phosphorus levels to assess the status of dams. The trophic status of water in the Nandoni Dam can be described as Oligotrophic, and is classified as serious ( $>0.13$  mean annual TP mg/l) and no change in risk for potential and current algal productivity. Of concern is dams that have been classified with a serious risk of algal productivity. This would be expected with high nutrient loads.

High nutrient loads are mainly caused by inadequately treated sewerage effluents that are discharged into river systems. Other

sources of high nutrient loads resulting in oligotrophication include industrial effluents, agriculture, households, and urban and road surface runoff (Harding 2011; Oberholster & Ashton 2008). Precautionary measures should therefore be exercised for contact sports within or around the Dam.

The water quality of Luvuvhu River is regarded as “good”, although with slightly elevated phosphate ( $0.2\text{mg/l}$ ) when compared to the Water Quality Guidelines (Fouche et al, 2013). Although the Luvuvhu River has always been a river with high silt loads, the increased levels of sedimentation caused by unsustainable farming practices is a concern.



The analysis of Mvudi and Dzindi streams show a poor water quality mainly due the discharge of poor-quality effluent from the Thohoyandou Domestic Wastewater Treatment Works into the streams (Fouche et al. 2013).

#### 2.1.5 Protected Areas

The formal land based protected areas (NBA, 2011) within the region of the Dam includes:

- Kruger National Park (32km to the east);
- Nzhelele Provincial Nature Reserve (45 km to the east);
- Honnet Nature Reserve (46km to the north-north-west);
- Nwanedi Nature Reserve (55 km to the north-north-west); and
- Partially protected Soutpansberg Important Bird Area is located approximately 21 km north-west of the Dam.

#### 2.1.6 Sensitive Biodiversity Areas

Based on the Limpopo Conservation Plan (2013), land adjoining the Dam on the north-east and south-east is classified as Critical Biodiversity Areas (CBAs), refer to **Figure 6**. CBAs require to meet the region's biodiversity targets and need to be maintained in the appropriate condition for their category.

#### 2.1.7 Threatened Ecosystem Status

The Dam falls within the savannah biome. The threat status of the terrestrial ecosystem is classified as Vulnerable (VU) in terms of the Limpopo Conservation Plan, 2013.

#### 2.1.8 Flora

According to DWAF (2003), the Dam displays veld types typical of a seasonal river system with riparian forests along the main river (Luvuvhu) and its tributaries. Very few plant species grow in the river, while the sandy banks have many weeds, sedges, flowering plants and few ferns. The steep river banks leading to the floodplains have more shrubs, lianas and herbaceous plants. Most big tree species and rare specimens (*Raspolia*) occur in this riverine bush, steep banks and gullies where they have survived due to inaccessibility of the areas.

The floodplains have good stands of *Acacia Combretum* (**Figure 4**) and *Ficus* species (including the endemic *Ficus capreifolia*). Conservation of endemic species together with their habitat should be a first priority for biodiversity conservation in the province. The hills and gravely areas beyond the floodplains have healthy communities of *Acacia* and *Combretum* species, *Afzelia*, *Adonsonia* and *Crossopteryx*, as well as some rare flowering shrubs (DWAF, 2003).



**Figure 4:** *Acacia, Combretum*

The dense vegetated areas found within the fenced property of the Madzivhandila Agricultural College up to Tshiulungoma, and from Tshiulungoma to Maniini and Muledane are severely infested with alien and invasive species. The most prominent invasive plants species in the area are *Ricinus communis* (Castor oil plant), *Lantana camara* (Lantana), *Melia azedarach* (Syringa) and *Sesbania punicea* (Sesbania), refer to **Figure 5**.

Alien and invasive tree species *Melia azedarach* are present at the Dam.



**Figure 5:** Castor Oil Plant

Rare and protected plants like aloes, orchids, *Albizia anthelmintica*<sup>5</sup>, *Ruspolia*, lilies and ferns grow in a limited distribution (i.e. these are found in only a few spots in the area).

(DWAF, 2003). The Red Data plant species identified that could be present in the area are *Ruspolia*, *Xylopia* and *Albizia amara* (DWAF, 2003).

#### **2.1.9 Fauna**

No specialist studies on the fauna within the Dam basin had been conducted at the time of the compilation of this document. It is therefore assumed that fauna indigenous to the area include mostly small antelope, monkey and bird species indigenous to the area. These species will be most abundant and most diverse in the protected, inaccessible stream gullies and riverine woods, that feeds into the Dam. These stream gullies and riverine woods would also be used by crocodiles and hippos as migratory routes and feeding sites, requiring protection of their habitat.

Alien and invasive fish species such as trout, black bass and the Mozambique Tilapia (*Oreochromis mossambicus*) have also been previously recorded in the Livuvhu River, which could be present at the Dam (Water Research

Commission, 2013). Alien and invasive species compete with and replaces indigenous species of the area.

<sup>5</sup> Used by the local community as a medical plant.

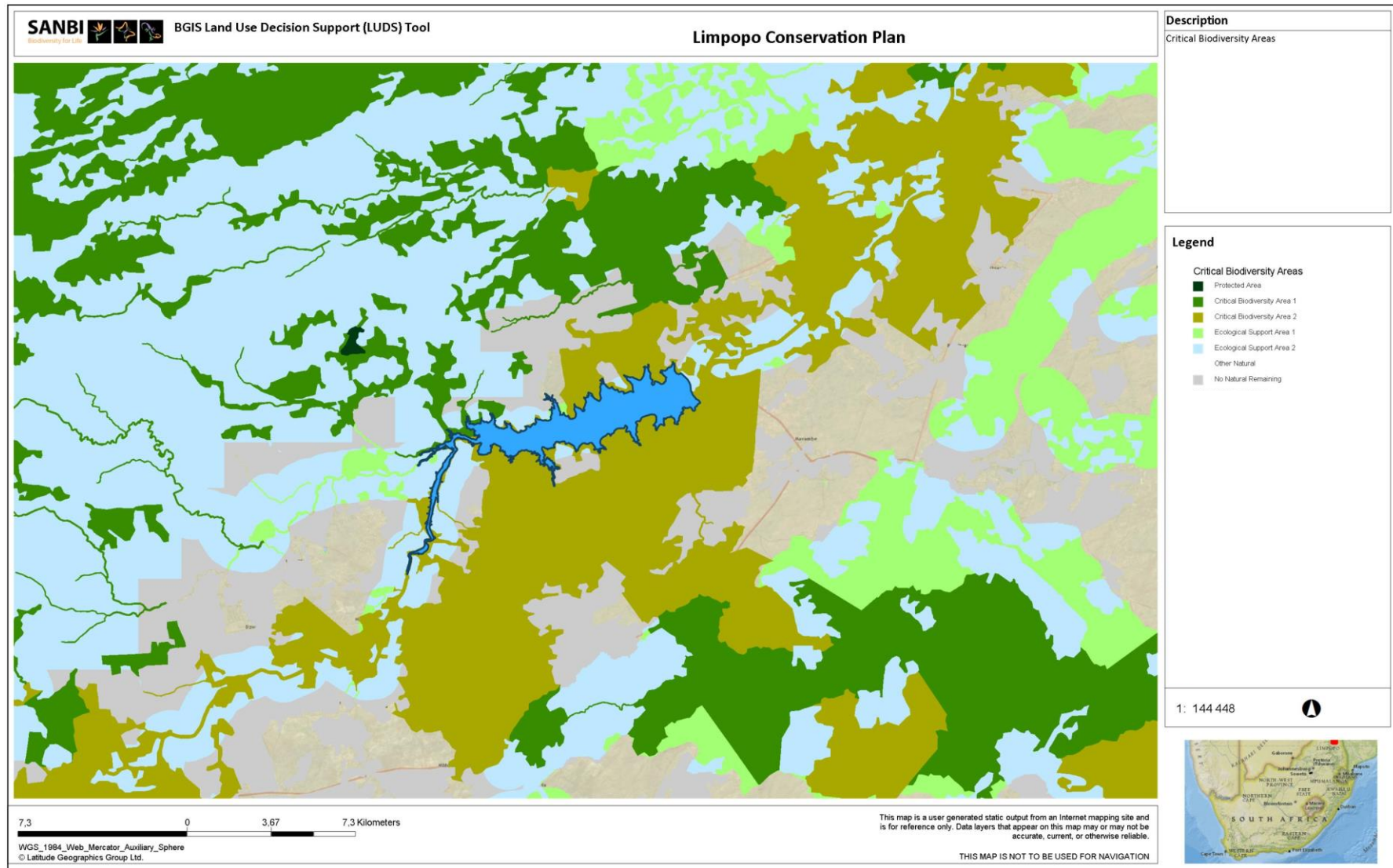


Figure 6: 2013 Limpopo Conservation Plan

Source: Adopted from SANBI BGIS Map Viewer

## 2.2 BUILT ENVIRONMENT

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

- Roads and land-based transportation;
- Air transportation;
- On-site facilities;
- Bulk Services
- Fencing;
- Management and operation;
- Safety; and
- Legal

### 2.2.1 Roads and Land-Based Transportation

The Dam is situated along the provincial road (R524). There are several internal unnamed gravel roads that provide direct access to the Dam. There is no rail transport near the Dam.

### 2.2.2 Air Transportation

The nearest airport is the PR Mphephu Airport located approximately 14 km west of the Dam. The airport offers no scheduled flights.

### 2.2.3 On-site Facilities

The facilities at the Dam includes:

- Water Treatment Works;
- Housing and Offices for DWS (Control Office);
- Camping facilities;
- Accommodation facilities; and
- One (1) DWS slipway.

### 2.2.4 Fencing

The Dam is fenced mainly around the Dam wall and associated infrastructure. A potential problem exists when livestock and community members have direct access to the water edge. The abovementioned is also a safety threat due to the fact that dangerous animals naturally occur in the Dam such as crocodiles and hippos.

### 2.2.5 Management and Operation

The management and operation of the Dam is done by the DWS. Currently there is no institutional structure managing the Dam for recreational use. Through the development of

this RMP, VDM is proposed as an IA for the management of recreational use for this Dam.

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

### 2.2.6 Safety

There is currently no specific incident management system in place to ensure that incidents are recorded and responded to in a co-ordinated manner. The Incident Management Plan will be implemented as part of the RMP to ensure that incidents are recorded and responded to in terms of the Cooperative Inland Watercourse Safety Programme (CIWSP).

### 2.2.7 Legal

The purchase boundary (line) for the Nandoni Dam has been officially surveyed by the DWS, as shown in **Figure 7**. Numerous informal slipways are present along the shoreline of the Dam.



# NANDONI DAM RESOURCE MANAGEMENT PLAN

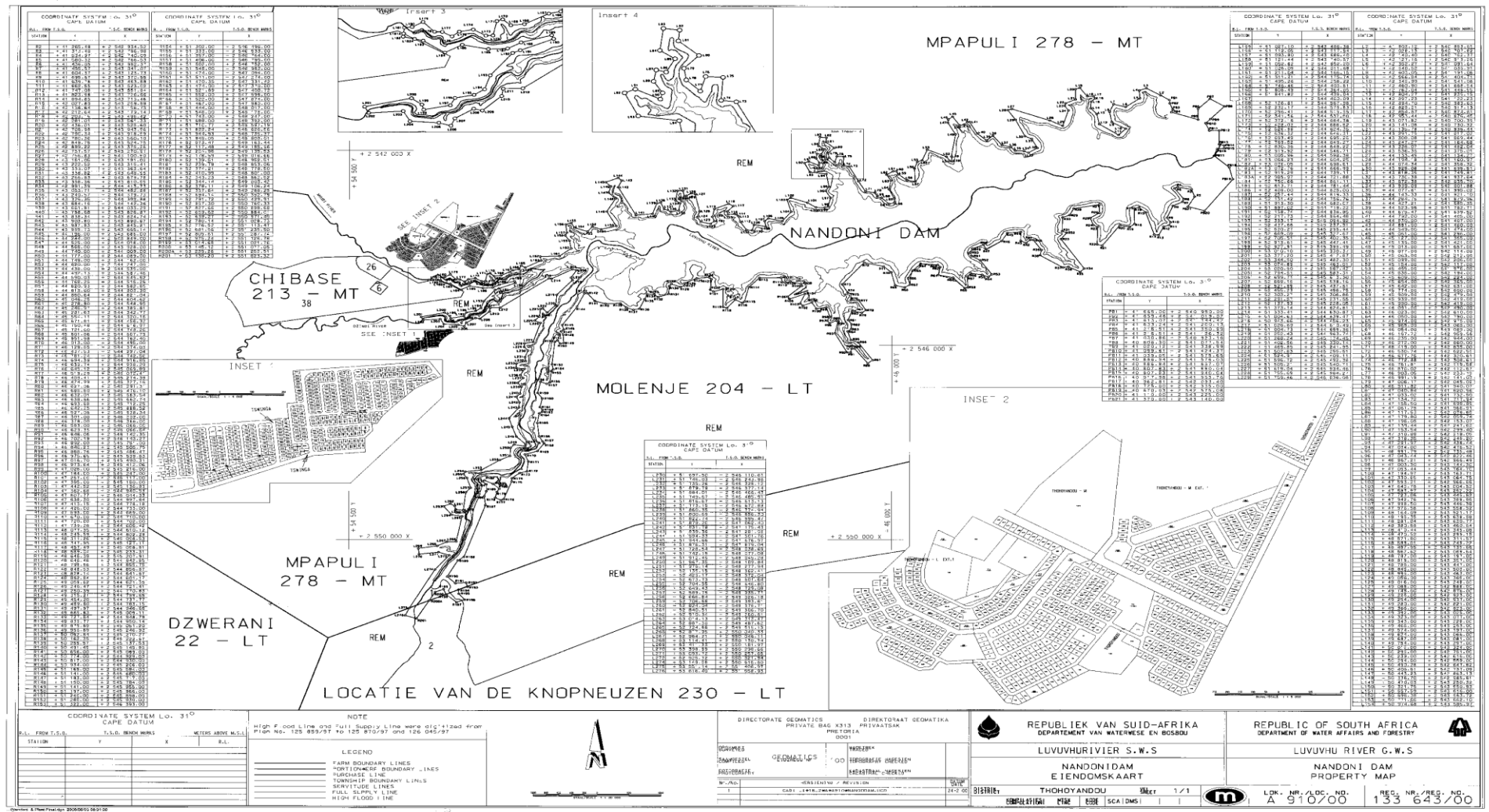


Figure 7: DWS Purchased Boundary (Line) for Nandoni Dam

## 2.3 SOCIO-ECONOMIC ENVIRONMENT

The purpose of assessing the socio-economic conditions is to determine matters that need to be addressed through the implementation of the RMP process to uplift the standard of living of the communities.

A new municipality (CCLM) was established by the amalgamation of portions of TLM and Makhado Local Municipality (MLM) on 3 August 2016. The Dam currently falls within Ward 18 and 19 under CCLM and Ward 19, 20, 26, 36 and 41 of TLM.

The socio-economic data for CCLM (LIM345) could not be found as the municipality was still new at the time of developing this report. Therefore, the socio-economic analysis will be based on previous Ward 18 and 19 of TLM within which the Dam previously fell under. The information used was adopted from Statistics SA Community Survey (2016) and the TLM IDP (2014-2015).

The socio-economic conditions within the Wards of TLM is summarised in the sub-sections as follows:

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

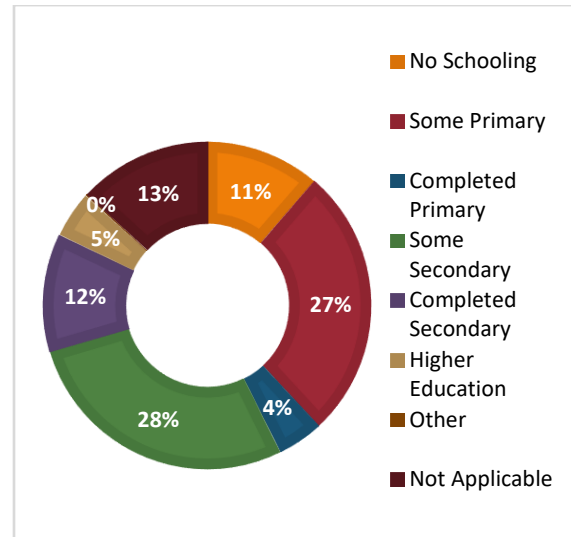
### Population Size

Ward 18 and 19 have approximately 32 274 people combined, which accounts to 5.22% of the TLM's population comprising of 14 426 males and 17 848 females. Females outnumber males as they comprise 55.3% of the population within these wards. Black Africans constitute 99.8% of the population. Young people between

the ages of 16 – 35 constitute 35.4% (11423) of the total population of the wards.

### Educational Level

Thirty percent (12%) of residents in Ward 18 and 19 have matriculated, only 5% of the population has attained higher education.



**Figure 8:** Educational Level of Ward 18 and 19

**Source:** Stats SA Community Survey (2016)

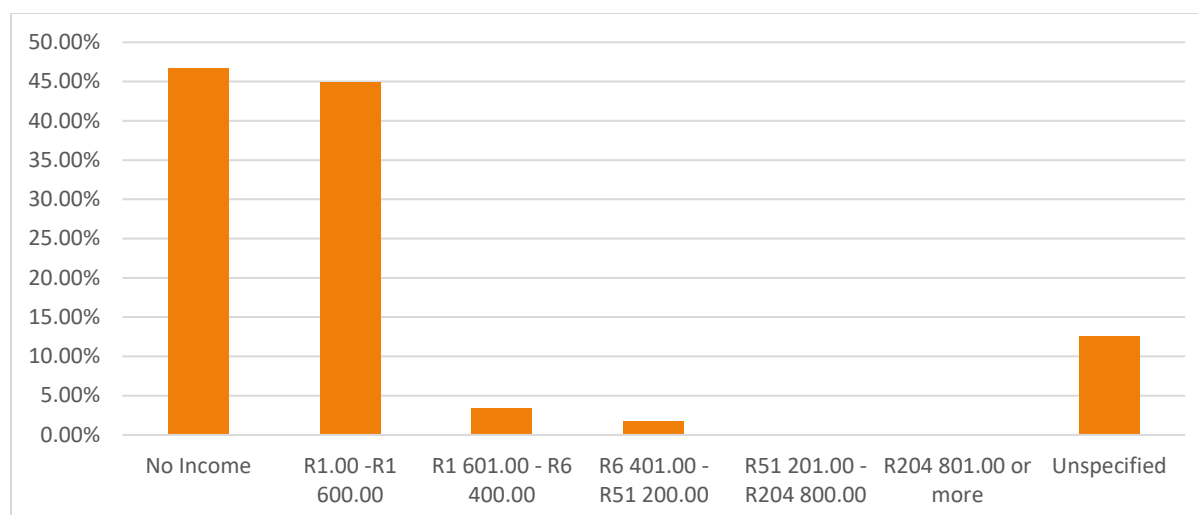
### Monthly Income

Ward 18 and 19 has 15 073 individuals without a source of income representing 43% of the TLM population (**Figure 9**). Rigorous and integrated efforts are required by municipalities to create work opportunities and sustainable livelihoods for the people.

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

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





**Figure 9:** Monthly Income for Ward 18 and 19

**Source:** Stats SA Community Survey (2016)

### 2.3.1 Community Beneficiation

It is the DWS's policy that local communities should equally share the benefits emanating from the utilisation of the Dam for recreational use. According to DWAF (2006), it is important to ensure that communities have physical access to the resource, as well as access to the water-based recreation economy. This will ensure that water resource remain protected for future generations.

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

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

In addition to the above, subsistence fishing is widely practiced by rural community members

to sustain their livelihoods. Hence, appropriate policies to promote greater participation by rural community members in the recreational angling value chain have the potential to create opportunities such as decent jobs and food security in rural areas. In terms of the 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 includes leisure, culture and religious activities. Although recreational use does not involve consumption of water, it is still a major water use and needs to be managed effectively with minimal detrimental environmental impacts.

### 3.2 PROCESS TRIGGERS

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

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

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

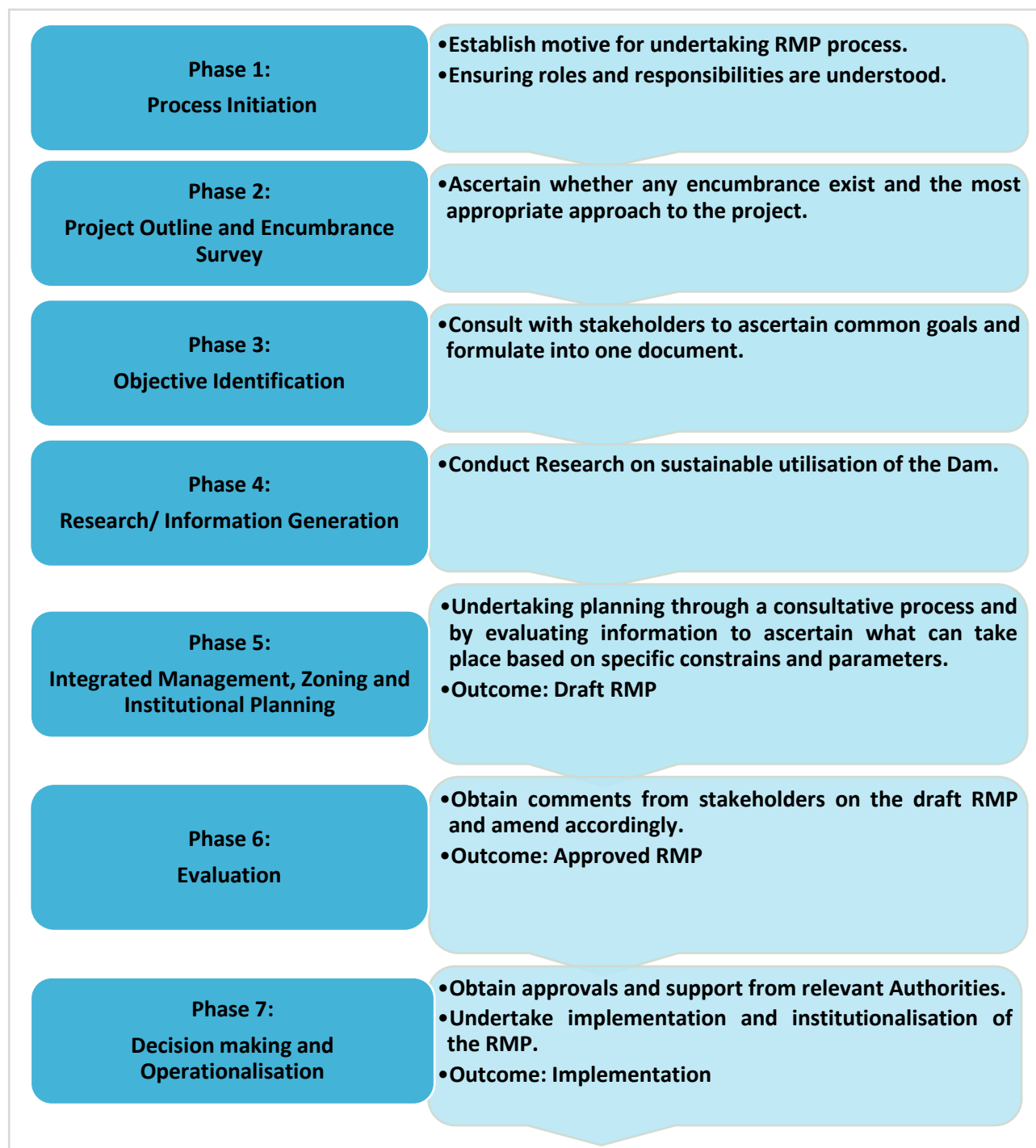
**Table 4:** Summary of Triggers and Potential Challenges for Nandoni Dam

Trigger (s)	Potential Challenges
<b>Resource Management</b>	<ul style="list-style-type: none"> <li>To promote the protection of the Dam and its surrounding environment as well as to reduce or prevent water pollution and degradation from the surrounding users (i.e. concern on water quality entering the Dam from tributary rivers Mvudi and Dzindi).</li> <li>There are a number of alleged uncoordinated developments around the Dam, which threatens the sustainable use and equitable access to the resource.</li> <li>The Dam was built at a culturally rich area, which need to be protected.</li> <li>There are Marula trees within the Dam which are protected in terms of National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA), and these indigenous plant species need to be conserved and preserved.</li> </ul>
<b>Recreational Industry Involvement</b>	<ul style="list-style-type: none"> <li>The Dam has poor safety and access measures and has resulted in drowning incidents.</li> </ul>
<b>Community Participation and Beneficiation</b>	<ul style="list-style-type: none"> <li>There is a mistrust within the local communities against DWS due to failure to fulfil the promises made prior and during the construction of the Dam and also the slow pace by DWS to implement the remedial actions as recommended by the Public Protector's Office (PPO).</li> </ul>

Trigger (s)	Potential Challenges
	<ul style="list-style-type: none"> <li>• There are currently allegations of illegal gill net fishing taking place at the Dam by some community members.</li> <li>• Local communities should be involved in managing and utilising the Dam for recreational purpose. This will assist in ensuring that the Dam is utilised in a sustainable manner and in a way that fulfills the interests of the community.</li> <li>• There is a lack of community awareness regarding environmental and tourism education.</li> </ul>
<b>Public Policy</b>	<ul style="list-style-type: none"> <li>• The Dam has been identified by the Vhembe District Municipality (VDM) as a strategic resource to stimulate local economic development of the region, but nothing much has been done to achieve this, thus the Dam should be integrated into planning initiatives and decision support tools such as the municipal Integrated Development Plan (IDP) and Local Economic Developments (LED).</li> </ul>

### 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 10**.



**Figure 10:** RMP Procedure

### 3.4 RMP PLANNING STAGES

#### 3.4.1 Desktop Study

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

#### 3.4.2 Site Inspection

A site inspection was conducted with the DWS Officials (DWS IEE, Northern Operations Manager, Northern Operations Champion and Dam Control Officer) on **9 June 2014**.

During the site inspection the following amongst others were observed: fencing mainly around the Dam wall, camping facilities, recreational activities (fishing, boating, and camping) hippotamuses and crocodiles. Additional background information was collated from consultation with different stakeholders. Potential I&APs were identified during the site inspection through liaison with the Dam Control Officer.

#### 3.4.3 Public Participation

The Public Participation (PP) process is a process in which potential I&AP are given an opportunity to comment or raise issues of concern on specific matters. The three (3) fundamental and theoretical objectives of the PP process, as stipulated in the DWAF's Guideline for Public Participation (2001) are:

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

The PP process was conducted in order to obtain information for **Phase 2 (Encumbrance Survey)**, **Phase 3 (Objective Identification)** and **Phase 4 (Research/ Information Generation)** from

stakeholders, authorities and I&AP that was used to complete **Phase 5 (Integrated Management, Zoning and Institutional Planning)**.

#### Stakeholder Database Register

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

#### Advertising Process

The purpose of advertising is to notify the public about the proposed RMP project and to give the public an opportunity to register as I&APs and provide comments. The following advertising methods were used:

- **Newspaper Advert:** Public meetings were advertised in the Mirror Newspaper in English on 25 July 2014 and 10 October 2014. The newspaper advert of the draft RMP presentation was advertised on 23 June 2017 (refer to **Appendix B**).
- **Flyers and On-site Notices:** Flyers and on-site notices were compiled in English and distributed on 24 July 2014. Flyers for the draft RMP presentation were distributed on 14 June 2017. (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 17 June 2014, notifying I&APs about the scheduled consultative meetings. Meeting invites for the draft RMP were sent on 29 June 2017 (refer to **Appendix D**).
- **Background Information Document (BID):** The BID was sent to stakeholders *via* email with information about the proposed RMP project (refer to **Appendix E**).

- **Authority Meeting:** The initial authority meeting was held on 31 July 2014 at Nandoni Dam (DWS Offices). A follow up meeting was held on 31 October 2014. The draft RMP was presented to the authorities on 30 June 2017. The purpose of the meeting was:
  - To present the RMP, its goal and the objectives of the project to the authorities; and
  - To allow the authorities an opportunity to participate in the project by sharing information on their respective mandates.
- **Public Meeting:** The initial public meeting was held on 31 July 2014 at Mulenzhe Traditional Council which was cancelled by the Chief of Mulenzhe Traditional Council. A follow up meeting was held on 01 August 2014 at Mutoti Musanda.
  - Special meetings were held at Mulenzhe Traditional Council, Mphaphuli Traditional Council and the respective Ward Councilors, with respect to the manner in which the second meetings will be conducted.
  - Follow up public meetings were held as shown in **Table 9**.
  - The draft RMP was presented to the public on **01, 02, 07 and 10 July 2017**.

**Table 5:** Public Meetings Scheduled for Nandoni Dam RMP Project

Meeting Type	Date	Time	Venue
Public Participation Meeting	31 October 2014	15H00pm-18H00pm	HaBudeli Musanda,
	01 November 2014	09H00am-12H00pm	Mulenzhe Tribal Council Offices
		15H00pm-18H00pm	Tshiulungoma Primary School
	02 November 2014	09H00am-12H00pm	Tswinga Musanda
	28 October 2015	16H00pm-18H00pm	Dakari Grounds
	27 October 2015	10H00am-12H00pm	Musanda ha Mahwasane
	27 October 2015	16H00pm-18H00pm	Ha Budeli Musanda
	28 October 2015	16H00pm-18H00pm	Dakari Grounds
	30 October 2015	10H00am-12H00pm	Musanda Ha Mashawana
	06 December 2015	07H30am-11H00am	Mulenzhe Tribal Office
	06 December 2015	16H00pm-18H00pm	Dididi Primary School

### 3.4.4 Planning Partners

As an integrated planning procedure, the RMP Process addresses both the institutional structure required to effectively manage the water resource, as well as the site planning parameters (environment, community and visitor) resulting in a management plan specific to the Dam. Both the proposal regarding the

institutional structure and the management plan are consolidated into a RMP, which will serve as guide for the development and management of the water resource for recreational use. In order to successfully complete the RMP, it is essential that the information obtained in the previous phases is utilised as planning input. The RMP provides for coordination between different

government departments and agencies as shown in **Table 7**. 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.

## NANDONI DAM RESOURCE MANAGEMENT PLAN

Table 6: Planning Partners

Department	Functions / Objectives
<b>Vhembe District Municipality (VDM)</b>	The Dam is within the jurisdiction of the Municipality and the Municipality is mandated to provide bulk water services. The Municipality has further identified the Dam as a tourism attraction centre.
<b>Department of Agriculture, Forestry and Fisheries (DAFF)</b>	<p>The purpose of the DAFF includes sustainable development and management of resources to maximise the economic potential of the fisheries sector while protecting the integrity and quality of the country's aquatic ecosystems.</p> <p>Operation Phakisa's expansion to inland Dams is one of the DAFF's initiatives aimed at unlocking the economic potential of the fisheries sector of inland water. The latter programme will be used as a benchmark for the implementation of conservation policies, while implementing job creation in the fishery and fish processing market.</p>
<b>Department of Environmental Affairs (DEA)</b>	<p>The DEA is mandated to give effect to the right of citizens to an environment that is not harmful to their health or wellbeing, and to have the environment protected for the benefit of present and future generations.</p> <p>In relation to the RMP, the DEA is responsible for biodiversity management within the GWWs. In addition, the DEA should assist with combatting, eradicating or implement the control, in accordance with the NEMBA: Alien and Invasive Species Regulations (2014), of Category 1b Listed Invasive Species growing in a riparian (wetland) area, Protected Area (as declared in the Protected Areas Act), or within a listed ecosystem or ecosystem identified for conservation in terms of a Bioregional Plan or Biodiversity Management Plan in compliance with sections 75(1-3) through appropriate measures which are least harmful to environment. The Department should ensure that Environmental Impact Assessments (EIAs) is undertaken for all activities that might be harmful to environment in terms of the EIA Regulations, 2014.</p> <p>The DEA through the WfW programme, can assist in implementing the control, combat or eradicate alien and invasive species, such as Gum trees (<i>Eucalyptus sp.</i>) and invasive fish species, according to an Invasive Species Management Programme (to be developed).</p>
<b>Department of Public Works (DPW)</b>	DPW is tasked with the function to regulate and control the use of state land outside the GWWs.
<b>Department of Rural Development and Land Reform (DRDLR)</b>	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).
<b>Department of Transport (DoT)</b>	Responsible for legislation, policy and regulations for all transportation in South Africa, including shipping and other transport by water, and inland waterways. For the purpose of Inland Waterways, DoT has established an agency called the South African Maritime Safety Authority (SAMSA). SAMSA has been charged with the responsibility of executing the administration of the Merchant Shipping (National Small Vessel Safety) Regulation, 2007 (as amended). The Regulations extends SAMSA's core mandate to include inland waterways accessible to the public within the Republic, to ensure boating safety on our waters.



## NANDONI DAM RESOURCE MANAGEMENT PLAN

Department	Functions / Objectives
<b>National Treasury (NT)</b>	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.
<b>Cooperative Watercourse Programme (CIWSP)</b> <b>Inland Safety</b>	<p>The CIWSP is the programme under DWS and is supporting a multi-departmental working group that is developing an innovative approach to inland water and safety integrity. The project, was initiated out of the need to find an innovative, practical and cost-effective way to implement SAMSA' Vessel Safety Regulations on inland watercourses and to implement responsible water use within the broader socio-economic context of the country.</p> <p>The CIWSP is a partnership between multiple government entities and between the Government and communities. The main aim of the project is to enhance the development of a best practice model to ensure safe and structured inland maritime environment and culture, whilst protecting the country's precious water resource.</p>
<b>Culture, Arts, Tourism, Hospitality, Sport Sector, Education and Training Authority (CATHSSETA)</b>	CATHSSETA deals with the approval and financing of training relating to the culture, hospitality, tourism and sport sectors.
<b>Department of Corporate Governance and Traditional Affairs (CoGTA):</b>	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
<b>Department of Basic Education (DBE):</b>	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.
<b>Department of Sports and Recreation (DSR)</b>	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.
<b>Department of Tourism (NDT)</b>	The Department is mandated to create conditions for the sustainable growth and development of tourism in South Africa. The Tourism Act makes provision for the promotion of tourism to and in the Republic and for regulation and rationalisation of the tourism sector, including measures aimed at the enhancement and maintenance of the standards of facilities and services utilised by tourists; and the co-ordination and rationalisation of the activities of those who are active in the tourism sector.
<b>South African Police Service (SAPS)</b>	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).

## NANDONI DAM RESOURCE MANAGEMENT PLAN

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

### 3.5 RMP DATA ANALYSIS

#### 3.5.1 Encumbrance Survey (Phase 2)

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

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

The identified encumbrances are categorized into **Biophysical**, **Legal** and **Socio-Cultural** in **Tables 8** and summarises the identified biophysical and social-cultural encumbrances, respectively that might affect the development or implementation of the RMP for the Dam.

**Table 7:** Summary of Biophysical, Legal and Socio-cultural Encumbrances

Items	Description
<b>Water Quantity</b>	<ul style="list-style-type: none"> <li>Fluctuations in the Dam level due to drought or water abstraction may impact on the recreational use of the Dam.</li> </ul>
<b>Biodiversity</b>	<ul style="list-style-type: none"> <li>Existence of dangerous animals such as Hippos and Crocodiles within the Dam.</li> <li>Presence of alien and invasive species.</li> <li>Occurrence of Red Data Species.</li> </ul>
<b>Water Pollution</b>	<ul style="list-style-type: none"> <li>Possible pollution of the Dam from poor waste water management up-streams.</li> </ul>
<b>Land Ownership</b>	<ul style="list-style-type: none"> <li>Alleged unauthorised construction of facilities within the purchased boundary (line).</li> <li>Possible sediment built-up in the Dam from inadequate/ unsustainable land-use practices undertaken around the Dam.</li> <li>Unlawful or unauthorized extraction of water from the Dam.</li> <li>Permanent structures within the DWS purchased boundary (line).</li> <li>Poor waste management by facilities operating at the Dam.</li> <li>The existing lease agreements need to be revised to be align with the objectives of the RMP.</li> </ul>
<b>Community Participation and Beneficiation</b>	<ul style="list-style-type: none"> <li>Lack of proper public access to the Dam.</li> <li>Limited space available for recreational use on the shoreline due to the narrow State Land within the purchased boundary (line).</li> <li>Possible o archeological artifacts within the Dam purchased boundary (line).</li> <li>Poor association between DWS and the local communities.</li> <li>Lack of education and awareness for recreational use of the Dam.</li> <li>Limited water provision to the local communities.</li> <li>Prohibition of full contact sports due to danger posed by dangerous animals at the Dam.</li> <li>Drowning incidents.</li> <li>No institutional structure to manage the Dam for recreational activities.</li> </ul>

### 3.5.2 SWOT Analysis and Objective Identification

Engineerex Pty Ltd as the process facilitator conducted the Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis to determine the **Strengths** and **Opportunities** that define the potential of the Dam whereas the challenges regarding the Dam were identified through **Weaknesses** and **Threats**. Refer to **Table 9** for the SWOT analysis.

**Table 8:** SWOT Analysis for Nandoni Dam

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>The Dam has a vast water surface area which can accommodate various water based recreational activities.</li> <li>Existing service infrastructure (i.e. roads and electricity) around the Dam.</li> <li>The Dam has reasonably good water quality.</li> <li>Low crime rates around the Dam.</li> <li>The Dam is located near prominent tourism destination, such as the Kruger National Park.</li> <li>The Dam is not over utilised and the presence of alien and invasive species is limited.</li> <li>The Dam is easily accessible.</li> </ul>	<ul style="list-style-type: none"> <li>Poor safety around the Dam leading to drowning incidents.</li> <li>Only one (1) formal slipway located within DWS's property, while the general public access the Dam via informal slipways.</li> <li>Erosion and dongas around the Dam.</li> <li>Majority of the local communities consists of Black Africans (96% of the population), which are generally afraid to utilise the water resource for recreational purposes.</li> <li>Lack of information regarding the Dam.</li> <li>Unreliable water supply to the local communities.</li> <li>Lack of project support for the Dam by the local communities due to unresolved historical issues.</li> <li>By-laws not complied with or enforcement by the Municipality.</li> <li>Lack of marketing for the Dam.</li> <li>Crocodiles and hippos at the Dam.</li> <li>Lack of recreational management structure.</li> <li>Poor access roads for some of the local communities.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>There is high tourism potential in the area.</li> <li>There is an opportunity for the Dam to provide adequate drinking water to the surrounding communities.</li> <li>There is an opportunity for community education and information sharing so that the community can understand the importance and threats associated with the Dam.</li> </ul>	<ul style="list-style-type: none"> <li>Deforestation around the Dam as a result of removing large quantities of wood for fuel.</li> <li>Uncontrolled developments around the Dam without proper sanitation systems.</li> <li>Poor water quality at the Dam's inlets might deteriorate the water quality of the Dam. The water from the inlets (Dzindi and Mvudi Rivers) has high content in nutrients (i.e. phosphates) possibly from</li> </ul>

<ul style="list-style-type: none"> <li>• Opportunity to rebuilding the bridge linking villages in other sides of the Luvuvhu Inlet (Tswinga to Dididi).</li> <li>• There is an opportunity for low impact and controlled activities that can be introduced e.g. guided walking trails, river rafting, bird viewing and specialized fishing etc.</li> <li>• The Dam has been identified by Thulamela Local Municipality (TLM) as a strategic resource to stimulate local economic development of the region.</li> <li>• There is an opportunity to market the Dam as preferred destination of choice.</li> <li>• Opportunities for large sporting events, namely running, hiking etc.</li> <li>• Opportunity for tourism facilities around the Dam.</li> <li>• Opportunity for large-scale fisheries at the Dam (aquaculture).</li> <li>• Establishment of bird watching, game viewing, swimming pools, tourism facilities such and lodges.</li> </ul>	<p>poor waste water treatment or agricultural practices up streams.</p> <ul style="list-style-type: none"> <li>• Alien and invasive species such as trout and black bass fish species and also tree species such as Melia azedarach are present at the Dam.</li> <li>• Alleged unauthorised developments within the purchased boundary (line) which restrict movement around the Dam.</li> <li>• Unresolved historical issues.</li> <li>• Lack of security and access control to the Dam.</li> <li>• No warning signs within the Dam.</li> <li>• During rain seasons crocodiles and hippos find their way into the community areas due to the Dam area not being entirely fenced.</li> <li>• Dam capacity might reduce due to sedimentation caused by sand mining and deforestation.</li> <li>• Possibility of cultural or archaeological artefacts within the Dam.</li> </ul>
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Key objectives were formulated from the identified **Strengths** and **Opportunities** of the Dam.

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

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

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

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

- To maintain the high-water quality standard of the Dam;
- To remove alien and invasive species to support recreational activities and to protect the indigenous terrestrial and freshwater aquatic species;
- To promote safety regarding the utilization of the Dam for recreational activities;

- To identify and acknowledge the existence and importance of sites of cultural and religious significance around the Dam (i.e. areas used for baptisms); and
- To prevent the unsolicited harvesting and removal of indigenous plant and animal material.

#### **KPA 2: Resource Utilization:**

- To provide adequate public access for broader public use of the water resource and its associated state land through controlled authorized access and associated infrastructure development;
- To promote sustainable small-scale fisheries at the Dam;
- To establish aquaculture at the Dam; and
- To attend to the issues of alleged unauthorised structures within the DWS purchase boundary (line).

### KPA 3: Benefit Flow Management:

- To uplift the local economy and increase benefit flows to the surrounding communities through community development programmes; 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.

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 promote and ensure sustainability use of the Dam based on effective resource management and sound business planning in a way that benefit the local communities and Vhembe District as a whole”.***

### 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

Nandoni Dam is one of the dams that is frequently visited by people for recreational activities, due to its nearby location to nature reserves. It is located near the Thohoyandou Town. The Dam is also rich in biodiversity. The recreational facilities that attract people i.e. are picnic sites, people visiting during festive seasons and when music festivals are hosted at the Dam.

There are also overnight accommodations near and within the Dam for tourists.

### Practicability/ Feasibility of Potential Objectives:

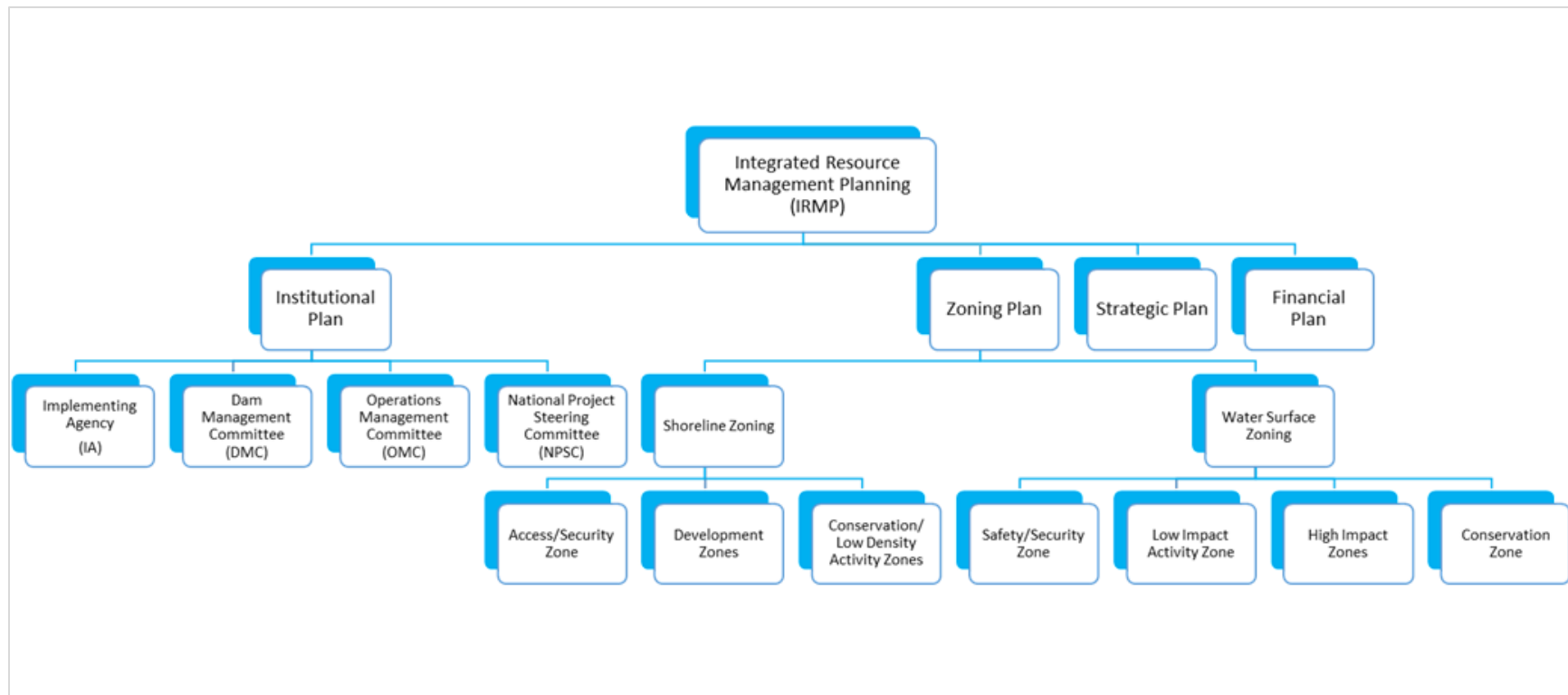
According to the DWAF (2006), the feasibility of the proposed objectives needs to be determined prior to the RMP implementation. Based on the desktop study done for the Dam, all identified objectives are considered to be practical/ feasible during the implementation stage, others will be subjected to 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 11** shows the plans and their components.



**Figure 11:** Integrated Resource Management Planning

## 4.1 INSTITUTIONAL PLAN

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

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

### 4.1.1 Implementing Agency (IA)

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

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

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

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

Some of the functions/ responsibilities of the IA include:

- Management of public access area;
- Management of recreational and tourism related activities;
- Management of agreements entered between DWS and third parties;

- Management of incident management system and wash bays;
- Management of community skills and training programmes;
- Management of commercial activities (in line with Treasury Requirements); and
- Management of AtoN and demarcation markers.

### 4.1.2 Dam Management Committee (DMC)

The DMC comprises of user groups representatives that are interested or affected by the Dam and will assist in raising and addressing issues relating to the Dam. Any unresolved issues relating to the Dam are escalated to OMC (described in detailed in 4.1.4). The DMC is required to meet quarterly.

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

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

Figure 12 shows the proposed parties to form part of the DMC for Nandoni Dam.

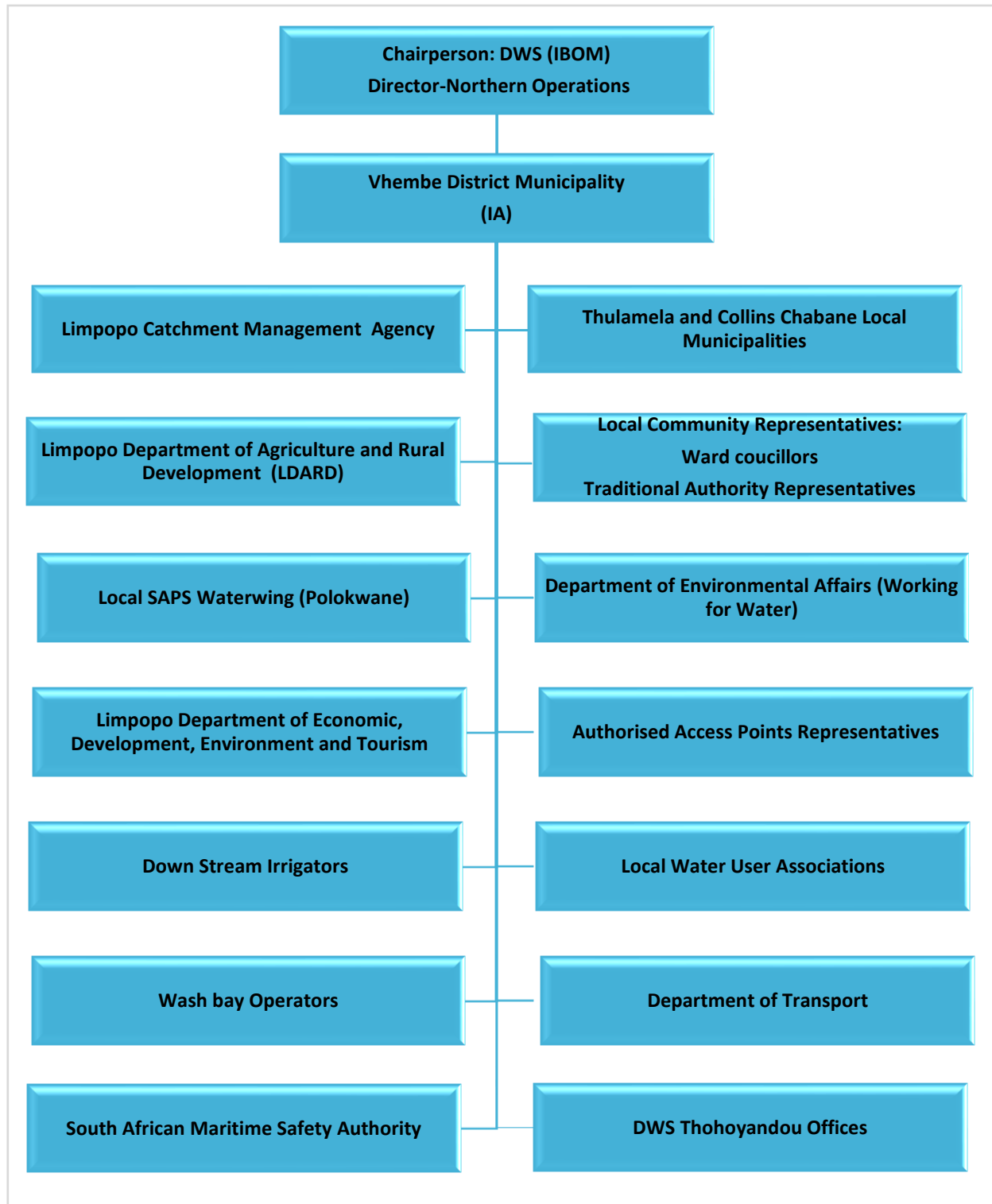


Figure 12: Proposed DMC

### **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**

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>6</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. 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 a wash bay is necessary between the DWS and DEA. A wash bay must be built on State Property as part of the Cooperative Inland Watercourse Safety Programme (CIWSP).

### **Event Applications:**

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

- Number of participants;
- Emergency Response Plan;

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<sup>6</sup> The Department of the Water and Sanitation reserves the right to appoint the Implementing Agency at their own discretion.

- 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 DWS. The 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. 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 13.

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 13:** 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 14** shows government departments (also referred to

as planning partners and/ or authorities) and agencies that will form part of the NPSC:



**Figure 14:** 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 zoning plan does not legitimise nor does it authorise any existing built structures, infrastructure or services within the government waterworks (in both the water surface and shoreline zones).

### 4.2.1 Water Surface Zoning

The water surface zones provide guidance on permissible and non-permissible recreational activities on the water surface taking into account the biophysical factors of the Dam. The zonation map is a desktop exercise and must not be used for navigational purposes. DWS and SAMSA will update the zonation map to be used for navigational purposes. The water surface is zoned as follows:

#### Safety and Security Zone:

This zone covers a minimum area of 100m from the wall and outlet works indicated by demarcation markers and AtoN. This area is reserved for the DWS management purposes. Management of this zone is aimed at protecting the Dam wall and outlet works, as well as to

ensure the safety of the public. This is a no-go zone to the public unless authorised.

#### Conservation Zone:

The aim of this zone is to conserve and protect sensitive aquatic habitation at the inlet(s) of the Dam. Access to this area is generally not allowed due to the following:

- The areas intercept sediments and nutrients/pollutants which pose safety risks to the public due to muddy clay; and
- They are used by aquatic birds and fish species as habitat, refuge and breeding areas.

#### Low Impact Activity Zone:

This zone acts as a buffer between high impact activity zones and conservation zones. The low impact activity zone allows for low intensity activities, i.e. activities associated with little or no wake, such as wind surfing, kayaking, swimming, rowing, sailing, paddle boating, float tubes, canoeing, angling, yachting, aquaculture<sup>7</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 9** and **Figure 15** shows the proposed water surface zoning for Nandoni Dam.

<sup>7</sup> The final location of the aquaculture will be dependent on the outcome of a feasibility study.



## NANDONI DAM RESOURCE MANAGEMENT PLAN

**Table 9:** Proposed Water Surface Zoning Description

Zone Name	Permissible Activities	Non-Permissible Activities	Recommendations
<ul style="list-style-type: none"> <li>• <b>Safety and Security Zone</b></li> </ul>	<ul style="list-style-type: none"> <li>• Alien and invasive species clearing;</li> <li>• Management of Dam infrastructure; and</li> <li>• Management and maintenance activities by DWS and authorised personnel.</li> </ul>	<ul style="list-style-type: none"> <li>• Public access</li> </ul>	<ul style="list-style-type: none"> <li>• Area should be demarcated by demarcation makers and AtoN.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Conservation Zone</b></li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Public activities are allowed in order to prevent aquatic habitat disturbance.</li> </ul>	<ul style="list-style-type: none"> <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>
<ul style="list-style-type: none"> <li>• <b>Low Impact Activity Zone</b></li> </ul>	<ul style="list-style-type: none"> <li>• Angling;</li> <li>• Canoeing;</li> <li>• Rowing; and</li> <li>• Aquaculture facilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Water Skiing;</li> <li>• House boats;</li> <li>• Para-sailing; and</li> <li>• Swimming.</li> </ul>	<ul style="list-style-type: none"> <li>• Area should be demarcated by demarcation makers and AtoN.</li> <li>• Activities must remain around the shoreline of the dam and will accommodate activities associated with little or no wake.</li> <li>• Navigation rules for inland vessels must comply with COLREGs<sup>8</sup>.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>High Impact Activity Zone</b></li> </ul>	<ul style="list-style-type: none"> <li>• Jet skis</li> <li>• Motorised boating;</li> <li>• Power boats</li> </ul>	Large vessels such as: <ul style="list-style-type: none"> <li>• Houseboats;</li> <li>• Para-sailing; and</li> <li>• Kite-surfing tiller-bar operated vessels.</li> <li>• Yachting</li> <li>• Ski/wake boats</li> </ul>	<ul style="list-style-type: none"> <li>• Activities associated with high speed and wake.</li> <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> <li>• Navigation rules for inland vessels must comply with COLREGs.</li> </ul>

<sup>8</sup> The International Regulations for Preventing Collisions at Sea of 1972 (COLREGs)

# NANDONI DAM RESOURCE MANAGEMENT PLAN

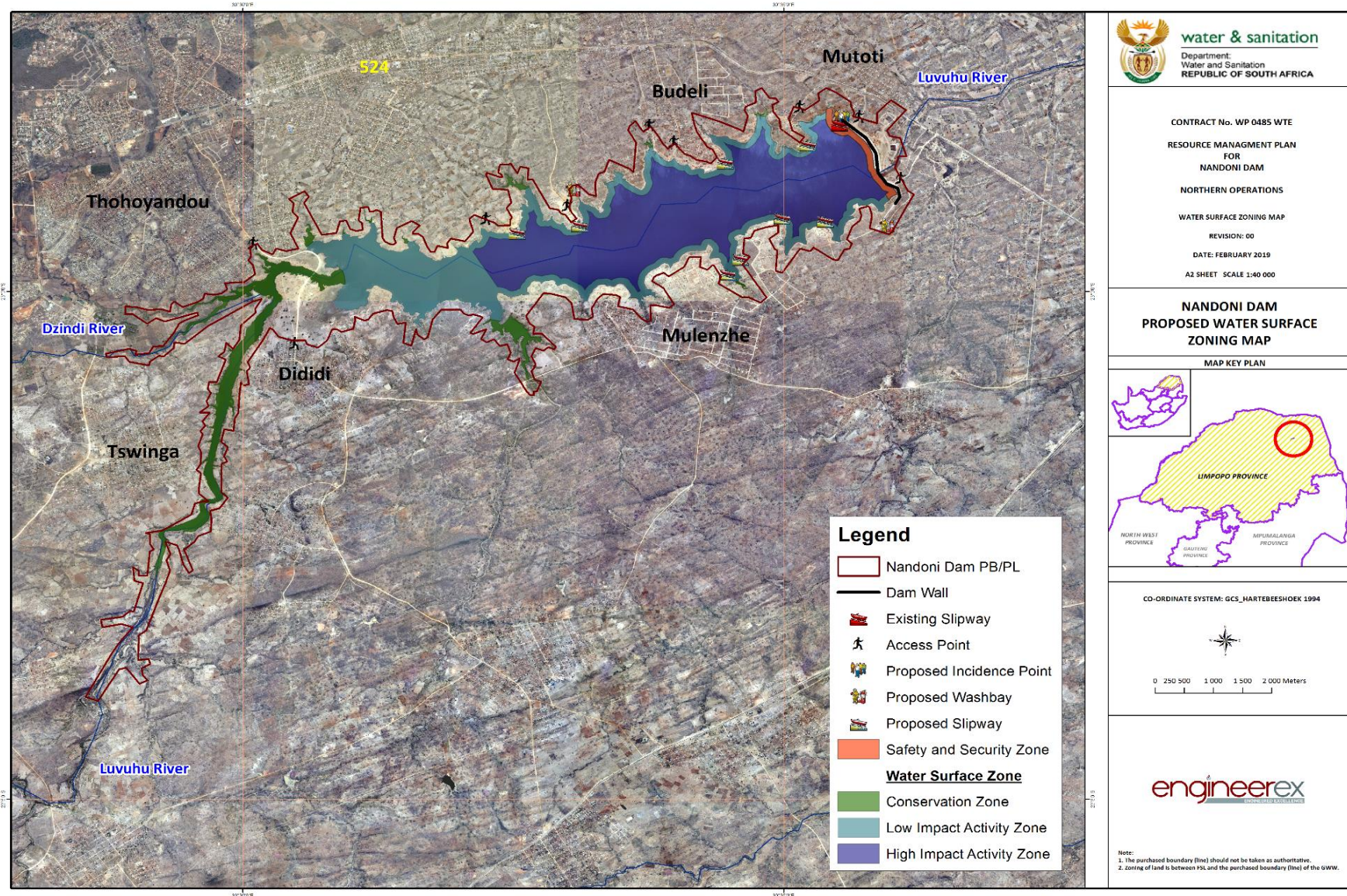


Figure 15: Proposed Water Surface Zoning Map



#### 4.2.2 Shoreline Zoning<sup>9</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 (line)). The shoreline zones include:

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

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

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

##### **Conservation / Low Density Activity Zone:**

This zone consists of ecologically sensitive areas and areas with high biodiversity. It also includes the area around the inlets of the Dam. Access to this area is limited to low impact activities such as hiking and bird watching. This area is demarcated to prevent ecological impact from high-density development activities.

##### **Medium Density Activity Zone:**

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

##### **High Density Activity Zone:**

This zone is demarcated for large-scale activities including chalets, recreational club houses,

infrastructure for services and land-based aquaculture.

##### **Community Resource Zone:**

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

Table 10, Figure 16 and Figure 17 shows the proposed shoreline and overall zoning for Nandoni Dam.

<sup>9</sup> Permanent structures within the purchase line are not allowed. All developments should be outside 1:100 year floodline.

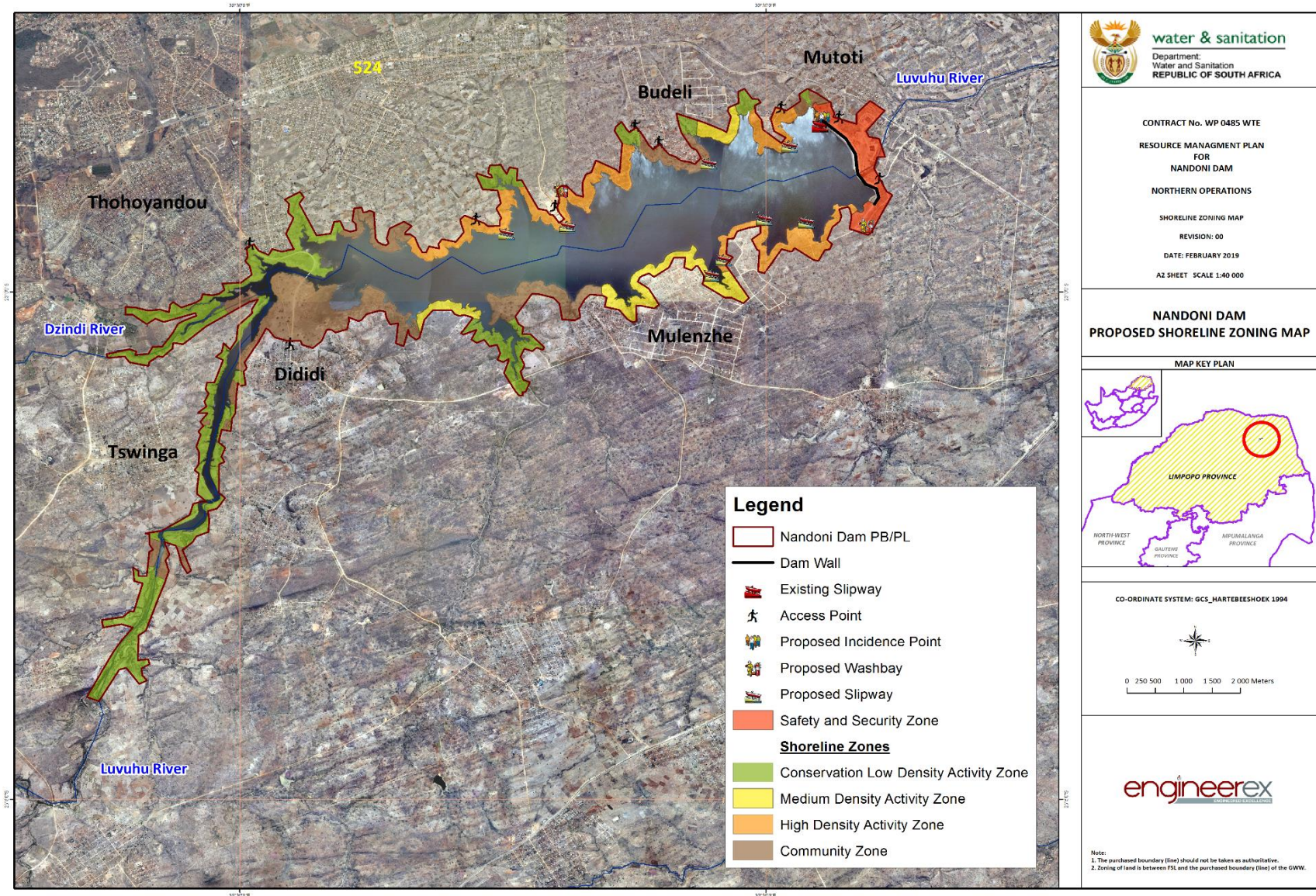
# NANDONI DAM RESOURCE MANAGEMENT PLAN

**Table 10:** Proposed Shoreline Zoning Description

Zone Name	Permissible Activities	Non-Permissible Activities	Recommendation
<ul style="list-style-type: none"> <li>• <b>Safety and Security Zone</b></li> </ul>	<ul style="list-style-type: none"> <li>• Fire management;</li> <li>• Alien and invasive species clearing;</li> <li>• Management of Dam infrastructure; and</li> <li>• Management and maintenance activities by DWS and authorised personnel.</li> </ul>	<ul style="list-style-type: none"> <li>• Public access</li> </ul>	<ul style="list-style-type: none"> <li>• A minimum buffer area of 100m downstream the Dam wall should be demarcated preventing public access and use.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Conservation/Low Density Activity Zone.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Conservation activities;</li> <li>• Hiking;</li> <li>• Cycling; and</li> <li>• Bird watching.</li> </ul>	<ul style="list-style-type: none"> <li>• Development</li> </ul>	<ul style="list-style-type: none"> <li>• Area should be demarcated by AtoN/ Demarcation Markers.</li> <li>• No public activities should be allowed in order to allow for protection of fish breeding habitats.</li> <li>• No vessels may be launched anywhere in this area.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Medium Density Activity Zone</b></li> </ul>	Activities associated with: <ul style="list-style-type: none"> <li>• Camping;</li> <li>• Shoreline angling;</li> <li>• Braai facilities;</li> <li>• Picnicking;</li> <li>• Camping;</li> <li>• Swimming pools; and</li> <li>• Ablution Facilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Accommodation facilities such as;               <ul style="list-style-type: none"> <li>○ Chalets; and</li> <li>○ Houses.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Camping and picnicking is allowed only in designated areas.</li> <li>• Noise levels to be kept at a minimum.</li> <li>• No littering at Camping and Picnic spots.</li> <li>• Adequate sanitation facilities.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>High Density Activity Zone</b></li> </ul>	<ul style="list-style-type: none"> <li>• Accommodation facilities (chalets, resorts, etc.); and</li> <li>• Recreational club house.</li> </ul>	<ul style="list-style-type: none"> <li>• Day visitors;</li> <li>• Picnic; and</li> <li>• Hiking.</li> </ul>	<ul style="list-style-type: none"> <li>• Camping and picnicking is allowed only in designated areas.</li> <li>• Noise levels to be kept at a minimum.</li> <li>• No private slipways to be built without approval from DWS.</li> <li>• All developments should be subject to EIA process and water use licence (Section 21 of NWA).</li> <li>• Adequate sanitation facilities.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Community Resource Zone</b></li> </ul>	<ul style="list-style-type: none"> <li>• Subsistence fishing/ small-scale fisheries;</li> <li>• Livestock watering points;</li> <li>• Small scale community gardens;</li> <li>• Harvesting of medicinal and cultural plants; and</li> <li>• Religion (Baptism) and Cultural place.</li> </ul>	<ul style="list-style-type: none"> <li>• Chalets;</li> <li>• Recreational club houses;</li> <li>• Hiking; and</li> <li>• Braai facilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Demarcation of the area by fence and provision of an access control.</li> </ul>



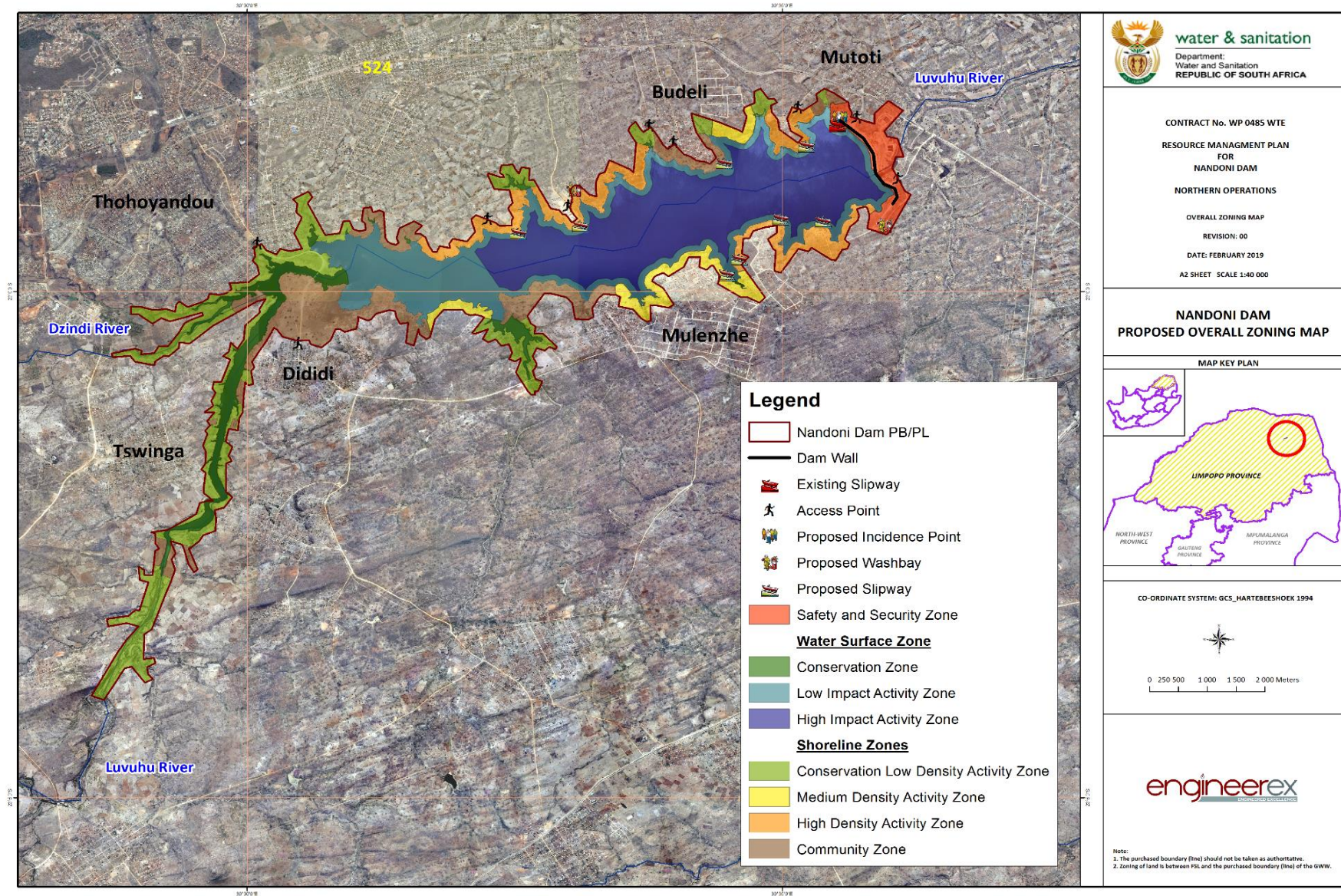
# NANDONI DAM RESOURCE MANAGEMENT PLAN



**Figure 16:** Proposed Shoreline Zoning Map



# NANDONI DAM RESOURCE MANAGEMENT PLAN



**Figure 17:** Proposed Overall Zoning Map



### 4.2.3 Carrying Capacity

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

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

There are three levels of carrying capacity:

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

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

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

- Analysis of recreation and water resource management policies;
- Analysis of objectives of the water resource;
- Analysis of current recreational water use;

- Definition, strengthening or modification of policies regarding recreational water use management;
- Identification of factors influencing recreational water use; and
- Determination of the recreational water use carrying capacity.

#### **Physical Carrying Capacity (PCC)**

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

**Where:**

**A** = available surface area for public use

**U/a** = area required per user

**Rf** = rotation factor (number of visits/day)

**Table 12** shows the type of craft and the required area for use.

**Table 11:** Area Required Per User

Craft	U/A (ha/craft)
Fishing (non-motorized)	3.0
House boating	6.0
Sailing	6.0
Motor boating	6.0
<b>Average</b>	<b>5.25</b>

Based on the Table 12, the average hectare per user is 5.25 ha, the value of 8.0 ha can be acceptable area per user. This has been chosen in order to ensure that the Dam is not overcrowded, and does not impact on the sense of the area as well as safety of the Dam users.

The available surface area for Nandoni Dam is 1 570 ha whereas U/a is assumed to be the average which was calculated as 1 craft/3 ha. And again the rotation factor (Rf) is assumed as 1 visit per day.

$$\begin{aligned} \text{Therefore: } PCC &= A \times U/a \times Rf \\ &= 1570.0 \text{ ha} \times (1 \text{ craft}/8 \text{ ha}) \times 1 \\ &= 196 \text{ crafts on the Dam} \end{aligned}$$

### Real Carrying Capacity (RCC)

$$RCC = PCC \times (100 - Cf_1) \% \times (100 - Cf_2) \% \times \dots (100 - Cf_n) \%$$

**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 Nandoni Dam, these factors include sensitive areas, as well as aspects regarding the safe operation and management of the Dam (168.60 ha).

These factors account for 168.60 ha, that is 10.73% of the area that is not available for recreational use.

$$\begin{aligned} \text{Therefore: } RCC &= PCC \times (100 - Cf_1) \% \times (100 - Cf_2) \% \times \dots (100 - Cf_n) \% \\ &= 196 \times (100 - 10.73) \% / 100 \\ &= 175 \text{ crafts} \end{aligned}$$

### Effective Carrying Capacity

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

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

## **4.3 STRATEGIC PLAN**

The strategic plan is informed by the objectives identified by stakeholders and through research on potential opportunities at the Dam. The objectives are broken down into management fields which are listed below in a format offering ease of reference:

- Objective (What is envisaged for the Dam?);

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

In **Tables 13 to 15**, outlines the strategic plan on how to achieve the objectives identified for the Dam.

### 4.3.1 KPA 1: Resource Management

**Table 12:** Strategic Plan for KPA 1: Resource Management

Objective	Motivation	Action Projects	Management Support
<p><b><u>Water Quality:</u></b></p> <ul style="list-style-type: none"> <li>To maintain the high-water quality standard within the Dam.</li> </ul>	<ul style="list-style-type: none"> <li>Luvuvhu River is regarded to have as “good” water quality, although with slightly elevated phosphate (0.2mg/l) when compared to the WQGs. Although the Luvuvhu River has always been a river with high silt loads, the increased levels of sedimentation caused by badly planned farming practices and sand mining as well brick making activities at the inlets of the Dam are a cause for concern.</li> <li>The analysis of Mvudi and Dzidzi streams show poor water quality mainly due to the Muledane and Thohoyandou Domestic Wastewater Treatment Works (WTW). This indicates that the WTW is discharging poor quality effluent into the rivers.</li> </ul>	<ul style="list-style-type: none"> <li>Enforce all relevant environmental legislations (e.g. NWA and NEMA) at the Dam to improve the Dam’s water quality.</li> <li>Implement the CIWSP components at the Dam.</li> <li>Establish a proper sewage/ wastewater treatment system to service the areas around the Dam.</li> <li>Assist local famers to use organic fertilizers in order to reduce water pollution from agricultural effluents.</li> <li>Frequent sampling and monitoring of water quality.</li> <li>Green drop assessment of the Waste Water Treatment Works (WWTWs) within the catchment.</li> </ul>	<ul style="list-style-type: none"> <li>DWS</li> <li>IA (VDM) with the support of the DMC</li> <li>Limpopo Department of Agriculture, and Rural Development (LDARD)</li> <li>LEDET</li> <li>Other relevant Non-Governmental Organisation (NGOs) that concern themselves with water quality and environmental health</li> </ul>
<p><b><u>Alien Invasive Vegetation</u></b></p> <ul style="list-style-type: none"> <li>To have the Dam free from alien and invasive species.</li> </ul>	<ul style="list-style-type: none"> <li>Alien and invasive species have a detrimental effect on the natural ecology of the Dam and its surrounding. These species result in a decrease in indigenous biodiversity and usually result in the overall degradation of the</li> </ul>	<ul style="list-style-type: none"> <li>Initiate businesses in the region to ‘adopt’ sections of the Dam for the clearing of alien and invasive species and in return receive advertising and publicity (i.e. road side and/or newspaper advertising).</li> <li>Co-ordinate a systematic programme for clearing alien and invasive species and</li> </ul>	<ul style="list-style-type: none"> <li>DWS</li> <li>Department of Environmental Affairs (DEA): Working for Water (WfW)</li> </ul>

## NANDONI DAM RESOURCE MANAGEMENT PLAN

Objective	Motivation	Action Projects	Management Support
	<p>ecological integrity of the Dam. The Dam and its surrounding are infested with exotic plants species such as <i>Ricinus communis</i> (Castor oil plant), <i>Lantana camara</i> (Lantana) <i>Melia azedarach</i> (Syringa) and <i>Sesbania punicea</i> (Sesbania). Further spread of alien and invasive species can have a detrimental effect on the ecology of the Dam and the natural aesthetic of the area in general.</p> <ul style="list-style-type: none"> <li>Currently, there is no specific alien and invasive species management programme in place.</li> </ul>	<p>vegetation rehabilitation in co-operation with Working for Water (WfW). This programme should begin on all state-owned land.</p> <ul style="list-style-type: none"> <li>Removal of alien and invasive species, and replacement by fast growing indigenous and/or endemic plant species - job creation.</li> <li>Prevention of overgrazing / over-utilization.</li> <li>Put in place a cable to catch the hyacinths at the inflow; this can help to prevent the spreading of the plant into the Dam.</li> <li>Develop an inspection and cleaning mechanism (such as a wash bay) to ensure vessels entering the Dam do not introduce alien and invasive species.</li> </ul>	<ul style="list-style-type: none"> <li>DAFF (Soil Management section)</li> <li>Expanded Public Works Programme (EPWP)</li> <li>South African Biodiversity Institute (SANBI)</li> <li>IA (VDM) with the support of the DMC</li> <li>Local Businesses</li> <li>DEA</li> </ul>
<p><b>Safety:</b></p> <ul style="list-style-type: none"> <li>To ensure safety regarding the utilisation of the water resource.</li> </ul>	<ul style="list-style-type: none"> <li>During the high raining seasons the water levels of the Dam rises and reach the adjacent villages (mostly affected village is Beja village), as a result crocodiles find their way into residential areas which poses a threat to the villagers.</li> <li>The Dam has poor safety measures and has resulted in drowning incidences.</li> <li>There is no standardised, harmonised AtoN demarcation markers and incident management plan available at the Dam.</li> </ul>	<ul style="list-style-type: none"> <li>Implement Incident Management System and extend to the local communities.</li> <li>Standardized Aids to Navigation (AtoN) and demarcation markers to be implemented.</li> <li>Erect signage warning community and users regarding the presence of dangerous animals in the Dam.</li> </ul>	<ul style="list-style-type: none"> <li>SAMSA</li> <li>IA (VDM) with the support of the DMC</li> <li>DWS</li> </ul>

## NANDONI DAM RESOURCE MANAGEMENT PLAN

Objective	Motivation	Action Projects	Management Support
<p><b><u>Cultural and Heritage Resource Management:</u></b></p> <ul style="list-style-type: none"> <li>To identify and acknowledge the existence and importance of sites of cultural and religious significance within the Dam.</li> </ul>	<ul style="list-style-type: none"> <li>Archaeologically the Dam is rich in evidence of Early Iron Age settlement (hence the name 'Nandoni', meaning the place of the iron smelters).</li> <li>Some evidence of medicinal plant collection has been found within the Dam during its construction and this practice is likely to be continuing given that traditional medicine is still wide spread and popular around the Dam. In addition, the Dam is also used by both churches and traditional healers for baptism and healing processes respectively.</li> </ul>	<ul style="list-style-type: none"> <li>Resources must be conserved and managed as required by the National Heritage Resource Act, 1999 (Act No. 25 of 1999) (NHRA) and applicable regulations.</li> <li>All new proposed developments and infrastructure should adhere to Regulation 38 of NHRA.</li> <li>If any archaeological sites or graves are exposed during construction work, construction work should be stopped immediately and the findings should be reported to LIHRA/SAHRA for further investigations.</li> </ul>	<ul style="list-style-type: none"> <li>South African Heritage Resource Agency (SAHRA)</li> <li>Limpopo Heritage Resource Agency (LIHRA)</li> <li>IA (VDM) with the support of the DMC</li> </ul>
<p><b><u>Biodiversity Management:</u></b></p> <ul style="list-style-type: none"> <li>To prevent the unsolicited harvesting, destruction and removal of indigenous plant and animal material.</li> </ul>	<ul style="list-style-type: none"> <li>The natural resource provides the foundation for tourism development in the area. The tourism development potential of the area is highly dependent of the biodiversity of the area. The importance of maintaining and improving the existing natural resource should be recognized by all tourism operators.</li> <li>The existence of endemic plant species such as <i>Ficus capreifolia</i> and Marula trees means there is a need for protection of the area.</li> </ul>	<ul style="list-style-type: none"> <li>Adequately plan all developments based on a detailed ecological survey as well as Environmental Impact Assessment (EIA), in order to avoid unnecessary clearing of indigenous plants and fauna species.</li> <li>Protect and manage the strategic important habitats (inlets and shorelines) to ensure their ecological functioning.</li> </ul>	<ul style="list-style-type: none"> <li>DEA</li> <li>DAFF</li> <li>LEDET</li> <li>IA (VDM) with the support of the DMC</li> </ul>

#### 4.3.2 KPA 2: Resource Utilisation

**Table 13:** Strategic Plan for KPA 2: Resource Utilisation

Objective	Motivation	Action Projects	Management Support
<p><b><u>Access Control:</u></b></p> <ul style="list-style-type: none"> <li>To provide adequate access for broader public use of the water resource and its associated State Land through controlled authorised access and associated infrastructure development.</li> </ul>	<ul style="list-style-type: none"> <li>The water surface of the Dam is fairly vast as such it can accommodate many different types of water based recreational activities and facilities.</li> </ul>	<ul style="list-style-type: none"> <li>Access to the Dam must be authorised and will be monitored.</li> <li>Raise awareness amongst the local communities about the importance of having the Dam and facilities to prevent vandalism.</li> </ul>	<ul style="list-style-type: none"> <li>IA (VDM) with the support of the DMC</li> <li>DWS</li> </ul>
<p><b><u>Sustainable Fishing:</u></b></p> <ul style="list-style-type: none"> <li>To promote sustainable harvesting of fish at the Dam.</li> </ul>	<ul style="list-style-type: none"> <li>People harvest fish using gill nets (which is illegal), and this threatens depletion of fish population in the Dam.</li> </ul>	<ul style="list-style-type: none"> <li>Fishing permits compliance will be monitored.</li> <li>Permits (fishing licences) must be acquired and the use of gill nets must be prevented, as it has significant negative impact on fish population in the Dam.</li> <li>Educate people on fishing methods that are safe and sustainable.</li> <li>Preserve the core habitats for nesting, resting, feeding and breeding of fish within the inlets, by demarcating areas for subsistence fishing.</li> <li>Management authority or DWS must develop communication signage in order to effectively inform different angling groups, subsistence fishers about the Dam fishing rules.</li> <li>Monitoring of fishing permits or access points will be done.</li> <li>Generate the necessary infrastructure, such as banks to fish from, in order to support sustainable fishing.</li> </ul>	<ul style="list-style-type: none"> <li>DAFF</li> <li>LDARD</li> <li>LEDET</li> <li>IA (VDM) with the support of the DMC</li> <li>Other relevant conservation NGOs within the Vryheid Area must be involved</li> <li>DWS</li> </ul>



## NANDONI DAM RESOURCE MANAGEMENT PLAN

Objective	Motivation	Action Projects	Management Support
<b><u>Aquaculture:</u></b> <ul style="list-style-type: none"> <li>To establish aquaculture at the Dam.</li> </ul>	<ul style="list-style-type: none"> <li>LEDET's Aquatic Services Section has supported a recent study which was aimed at determining whether fish can be harvested, or fishery industry should be developed within the Dam and also during the RMP stakeholder engagement process, LDARD indicated their objectives of developing community based small-scale fishery within the Dam.</li> </ul>	<ul style="list-style-type: none"> <li>Identify range of farming activities that can be pursued at subsistence level (such as aquaculture) and encourage potential linkages between aquaculture and the tourism industry.</li> <li>Facilitate access to farming inputs for small-scale farmers and acquire the necessary technical advice.</li> <li>Conduct a feasibility study to get comprehensive information on the viability of the project, e.g. the soil type for its stability in case ponds are to be constructed, water quality parameters, size to be demarcated for aquaculture and targeted production;</li> <li>Generate key partnerships with farmers' organisations, CBO's and NGO's.</li> <li>In consultation with Department of Agriculture, set up and implement a farmer's support and advice programme (especially for subsistence farmers).</li> <li>Promote co-operative arrangements for supply and distribution networks.</li> <li>Develop a business plan for the aquaculture project.</li> </ul>	<ul style="list-style-type: none"> <li>LDARD</li> <li>DAFF</li> <li>LEDET</li> <li>IA (VDM) with the support of the DMC</li> <li>DWS</li> </ul>
<b><u>Unauthorised Developments:</u></b> <ul style="list-style-type: none"> <li>To attend to the issues of unauthorised structures within DWS purchase land.</li> </ul>	<ul style="list-style-type: none"> <li>There are allegations of unauthorised developments within the DWS purchased boundary (line) which restrict movement around the Dam.</li> </ul>	<ul style="list-style-type: none"> <li>To appoint VDM as an IA.</li> <li>Verify if there are any unauthorised structures within DWS purchase boundary (Line).</li> <li>Establish if there are any agreements in place.</li> </ul>	<ul style="list-style-type: none"> <li>DWS</li> </ul>

### 4.3.3 KPA 3: Benefit Flow Management

**Table 14:** Strategic Plan for KPA3: Benefit Flow Management

Objective	Motivation	Action Projects	Management Support
<p><b><u>Community Participation and Beneficiation:</u></b></p> <ul style="list-style-type: none"> <li>Uplift the local economy and increase benefit flows to the surrounding communities through community empowerment.</li> </ul>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Implement skills development programmes where opportunities exist.</li> <li>Institute a comprehensive alien and invasive species 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> <li>Community empowerment partnership opportunities should be given to local communities including job opportunities.</li> </ul>	<ul style="list-style-type: none"> <li>IA (VDM) with the support of the DMC Sector Education and Training Authority (SETA)</li> <li>DWS</li> </ul>
<p><b><u>Institutional Planning:</u></b></p> <p>To establish an effective recreational institutional structure that can manage the use of the Dam for recreational purpose.</p>	<ul style="list-style-type: none"> <li>There is currently no management structure in place to oversee the use of the Dam for recreational purposes.</li> </ul>	<ul style="list-style-type: none"> <li>Establish interim DMC and appoint professional valuer to determine market related value for rentals in concluding lease agreements.</li> <li>DWS to appoint VDM as an IA.</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>	<ul style="list-style-type: none"> <li>DWS</li> <li>VDM</li> </ul>

## 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 (VDM) for this Dam can explore the various streams of generating revenue as presented below:

### 4.4.1 Potential Sources of Revenue

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

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

- **Parking Fees:** Motorists can be charged extra fees for parking.
- **Event and Service Based Fees:** These are extra fees that can be charged for the following:
  - Fishing (sports);
  - Private boating;
  - Functions (festivals, weddings, conferences and cultural activities); and
  - Caravan/ outdoor camping.

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

**Rental Charges<sup>10</sup>:** Potential source of revenue can also be explored on rental fees, *inter alia*,

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

### 4.4.2 Target Market

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

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

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

### 4.4.3 Co-Funding

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

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

<sup>10</sup> Leasing of DWS property will be concluded based on market related rental fee

use of the Dam on behalf of DWS. Examples of potential co-funders are:

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

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

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

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

The BP provides a good description of possible economic recreational activities and the methods that can be used or enhanced to achieve the ultimate vision and the key objectives of the Nandoni Dam RMP. It also describes the financial management and operational requirements to implement the objectives of the RMP.

## CONCLUSION AND WAY FORWARD

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

### Main Challenges:

The following key challenges were identified for Nandoni Dam:

- The Dam's capacity might reduce over time due to sediment build-up caused by sand mining, cultivating unsuitable areas of land, overgrazing the veld and removing large quantities of wood for fuel;
- Possibility of occurrence of cultural or archaeological artefacts within the Dam basin;
- The water from the inlets, namely Dzindi and Mvudi Rivers, have high concentration of nutrients (i.e. phosphates) possibly from poor waste water treatments works or poor agricultural land-use practices up stream;
- Alien invasive species such as trout and black bass fish species, including the tree species *Melia azedarach* are present at the Dam that competes with and replaces indigenous species of the area;
- Lack of recreational management structure;
- The Dam is mainly fenced around the Dam wall and infrastructure. There are numerous informal slipways (uncontrolled access) around the Dam. Uncontrolled access leads to drowning incidents. A number of drowning incidents have been previously reported at the Dam;
- Dangerous animals such as crocodiles and hippos that stray into populated areas close to the Dam (fencing and enclosure of the Dam required);
- Lack of security and access control to the Dam;
- Alleged uncontrolled developments around the Dam without proper sanitation systems;
- Alleged unauthorised developments within the purchased boundary (line) that restricts movement around the Dam;
- To identify and acknowledge the existence and importance of cultural and religious sites around the Dam (i.e. areas used for baptism);
- To provide adequate access for broader public use of the water resource and its associated State Land through controlled authorised access and associated infrastructure development;
- To promote sustainable harvesting of fish at the Dam;
- To introduce aquaculture/ small-scale fishery at the Dam;
- To uplift the local economy and increase benefit flows to the surrounding communities through community development programmes;
- Promotion of small-scale fishery at the Dam to contribute to the transformation and equitable socio-economic benefit from inland fish resources; and
- Inadequate recreational marketing of the Dam.

### Recommendations:

This RMP recommends the implementation of the following immediate actions:

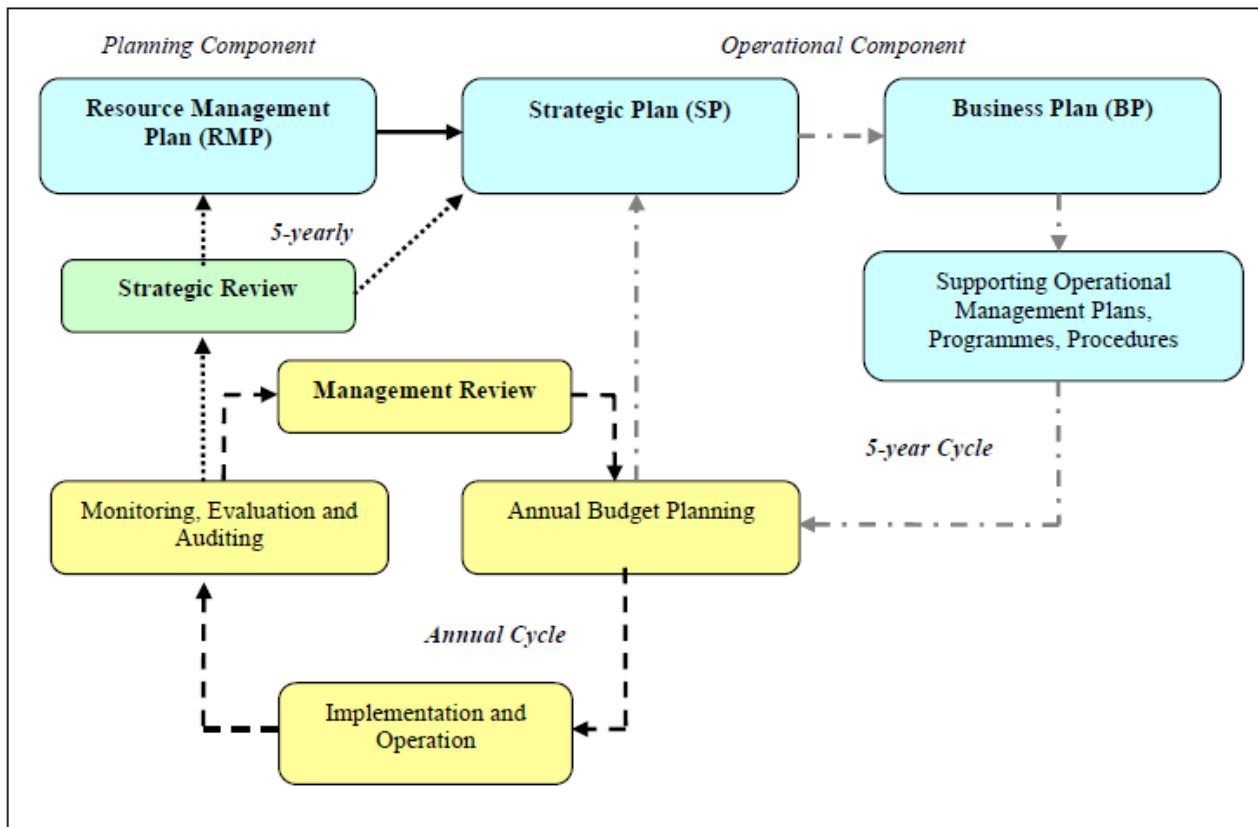
- Appoint VDM as an IA to manage recreational use of the Dam on behalf of DWS;
- Establishment of a Dam Management Committee (DMC) to serve as an advisory committee to the proposed IA;
- Water quality monitoring and reporting;
- Removal of alien and invasive species;
- Adequate access control to ensure the safety of people and safe tourism;
- Promotion of small-scale fishery at the Dam to contribute to the transformation and equitable socio-economic benefit from inland fish resources;
- 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.

### Way Forward:

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 18** illustrates the RMP and BP review framework.



**Figure 18:** RMP and BP Review Framework



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## APPENDICES

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**APPENDIX A: STAKEHOLDER DATABASE REGISTER**

**APPENDIX B: NEWSPAPER ADVERT**

**APPENDIX C: FLYERS**

**APPENDIX D: EMAILS**

**APPENDIX E: BACKGROUND INFORMATION DOCUMENT**

**APPENDIX F: COMMENT AND RESPONSES REGISTER**

**APPENDIX G: EXAMPLES OF SUCCESSFULLY CO-FUNDED PROJECTS**

**APPENDIX H: POTENTIAL CO-FUNDERS**

**APPENDIX I: BUSINESS PLAN**