NATIONAL WATER RESOURCE INFRASTRUCTURE (NWRI)

Resource Management Plan TZANEEN DAM



WATER IS LIFE - SANITATION IS DIGNITY





Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA



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- Department of Environmental Affairs: Working for Water;
- Department of Public Works: National and Provincial;
- Department of Transport;
- Department of Water and Sanitation;
- Greater Makgoba Economic Development Agency;
- Greater Tzaneen Economic Development Agency;
- Greater Tzaneen Local Municipality;
- Greater Tzaneen Tourism Association;
- Letaba Water User Association;
- Limpopo Department of Agriculture and Rural Development;
- Limpopo Department of Economic Development, Environment and Tourism;
- Limpopo Department of Education;
- Limpopo Tourism Agency;
- South African Maritime Safety Authority;
- The community members of Tzaneen;
- The Lions Club (Jetty 3); and
- Tzaneen Dam Nature Reserve.

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 $^{^{1}}$ The implementation of the RMP and BP requires a year budget planning prior to operationalisation.

AMENDMENTS PAGE

Revision No	Description	Date	
1	Draft RMP for DWS Review	28/08/2015	
2	Draft RMP for DWS Review	08/10/2015	
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11	Final RMP for DWS Approval	30/11/2016	
12	Final RMP for DWS Approval	14/12/2016	

LIST OF ACRONYMS

A+- NI	
Aton	Ald(s) to Navigation
BID	Background Information Document
ВР	Business Plan
CATHSSETA	Culture, Arts, Tourism, Hospitality, Sport Sector, Education and Training
	Authority
CD: IO MANCO	Chief Director: Infrastructure Operations Management Committee
CIWSP	Co-operative Inland Waterways Safety Programme
CMA	Catchment Management Agency
CPSI	Centre for Public Service Innovation
CRDP	Comprehensive Rural Development Programme
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DHS	Department of Human Settlement
DMC	Dam Management Committee
DoT	Department of Transport
DPW	Department of Public Works
DRDLR	Department of Rural Development and Land Reform
DSR	Department Sports and Recreation
DWA	Department of Water Affairs
DWAF	Department of Water Affairs and forestry
DWS	Department of Water and Sanitation
ECC	Effective Carrying Capacity
EMF	Environmental Management Framework
FP	Financial Plan
FSL	Full Supply Level
GIAMA	Government Immovable Assert Management Act
GMEDA	Greater Makgoba Economic Development Agency
GPS	Global Positioning System
GTEDA	Greater Tzaneen Economic Development Agency
GTLM	Greater Tzaneen Local Municipality
GTTA	Greater Tzaneen Tourism Agency
GWWs	Government Waterworks
I&APs	Interested and Affected Parties
IA	Implementing Agency
IALA	International Association of Marine Aids to Navigation and Lighthouse
	Authorities
IDP	Integrated Development Plan
IEE	Integrated Environmental Engineering
IEMS	Integrated Environmental Management System
IRMP	Integrated Resource Management Plan
ISP	Internal Strategic Perspective
КРА	Key Performance Area
LAAP	Local Accountable Aton Parties
LDA	Limpopo Department of Agriculture
LDARD	Limpopo Department of Agriculture and Rural Development
	Local Economic Development
	Limpopo Department of Economic Development, Environment and Tourism
	Limpopo Tourism Agency
LWUA	Letaba Water Users Association

MC	Management Capacity
MOA	Memorandum of Agreement
NDT	National Department of Transport
NEMA	National Environmental Management Act
NEMPAA	National Environmental Management: Protected Areas Act
NPSC	National Project Steering Committee
NT	National Treasury
NWA	National Water Act
NWRI	National Water Resource Infrastructure
OMC	Operations Management committee
PCC	Physical Carrying Capacity
PP	Public Participation
PPP	Public Private Partnership
PSP	Professional Service Provider
QDS	Quarter Degree Square
RCC	Real Carrying Capacity
RF	Rotation Factor
RMP	Resource Management Plan
SAHRA	South African Heritage Resource Agency
SAMSA	South African Maritime Safety Authority
SAPS	South African Police Service
SASCOC	South African Sports Confederation and Olympic Committee
SDF	Spatial Development Framework
SRSA	Sport and Recreation South Africa
SWOT	Strengths, Weaknesses, Opportunities and Threats
TDNR	Tzaneen Dam Nature Reserve
ТР	Tourism Potential
WfW	Working for Water
WMA	Water Management Area

EXECUTIVE SUMMARY

Mandate: The Department of Water and Sanitation (DWS), through the National Water Act, 1998 (Act No. 36 of 1998), is mandated to protect aquatic and associated ecosystems and their biological diversity. The Minister of Water and Sanitation, as the custodian of the nation's water resources must ensure that the Government Waterworks (GWWs), including Tzaneen Dam, are protected, used, developed, managed and controlled in a sustainable manner, for the benefit of all. To assist the Minister in attaining the mandate, and to ensure that access to, and use of, the dam is equitable, the DWS initiated and commissioned the development of the Resource Management Plan (RMP) for Tzaneen Dam.

Purpose of the RMP: The RMP is a plan which aims to regulate access and the recreational utilisation of a water resource and the surrounding state land, in ways which promote community participation and beneficiation, environmental conservation and unlock socioeconomic potential of the water resource.

According to DWAF (2006), the use and management of the GWWs for recreation purpose needs to be based on Integrated Resource Management Plan (IRMP) included within the RMP.

Location of the dam: Tzaneen Dam is an earthfill type of dam which impounds the Great Letaba River. It falls under Ward 14 within the jurisdiction of the Greater Tzaneen Local Municipality (GTLM), which forms part of the Mopani District Municipality in the Limpopo Province, South Africa. Its GPS coordinates are: **23°47'39.96"S; 30°9'48.26"E**

Purpose of the dam: The primary purpose of Tzaneen Dam is to provide raw water for irrigation, and domestic use.

The dam also currently offers recreational activities such as power boating, canoeing and angling.

Other recreational activities which require full contact, such as swimming, are not allowed at the dam due to the presence of dangerous animals and/or reptiles such as hippopotamuses and crocodiles.

Dam ownership and management: Tzaneen Dam is owned and operated by the DWS. There are two controlled access areas to the dam: one is at the Lions Club and the other at the Tzaneen Dam Nature Reserve (TDNR). Lions Club has a lease agreement with the former Transitional Local Council of Tzaneen, now known as Greater Tzaneen Local Municipality (GTLM).

According to the lease agreement, the Lion's Club is obliged to control, manage and maintain the dam for recreational activities. On the other hand, the Tzaneen Dam Nature Reserve has an agreement with the Limpopo Department of Economic Development, Environment and Tourism (LEDET) to control, manage, and maintain the Tzaneen Dam Nature Reserve; as well as to introduce recreational activities at the dam.

There is, however, no formal agreement between the LEDET, GTLM and DWS in managing the dam for access and recreational purposes.

Also, there is currently no institutional structure to manage the recreational use of the dam. However, the structure has been proposed in the RMP. The recreational institutional structure is necessary for the effective management of the Tzaneen Dam for recreational purposes.

Stakeholder engagement: The success of the development and implementation of the RMP depends on the role players and their level of participation. It is thus recognized that different roles and responsibilities of the stakeholders [Authorities and Interested and Affected Parties (I&APs)], their relationship towards each other and the steps in the planning procedure are imperative in the

successful development of the RMP. As such, proper consultation with the public was done in order to help in producing a credible RMP.

DWAF's Guidelines for Public Participation (2001) outlines three (3) broad phases for public participation namely the **Planning**, **Participation** and **Exit phase**.

During the **Planning phase** a site inspection was conducted and literature reviewed in order to gather baseline information about the dam. A process was also established to get into contact with the I&APs and relevant authorities to ensure co-operative interests and support in the RMP project.

The **Participation phase** entailed three (3) important aspects, namely:

- Informing stakeholders about the RMP project;
- Meeting the stakeholders to present the RMP process; and
- Giving Feedback in the form of meeting minutes, follow-up emails, telephonic and direct communication.

During the **Exit phase**, a draft RMP was presented to the stakeholders for comment and inputs. The Exit phase entailed two (2) important aspects, namely:

- Ensuring that all goals, challenges, concerns, objectives and the vision of the dam are identified and documented in the RMP; and
- Officially ending the public participation process.

Identified objectives and vision: During the Authority and Public Meetings issues of concerns were raised from which common objectives were identified and a vision for the dam, for a period of 20 years, were formulated by the stakeholders.

The identified key common objectives are:

- To maintain the water quality of Tzaneen Dam;
- To increase the water capacity of Tzaneen Dam, through the raising of the dam wall;
- To keep the dam and the surrounding environment free of alien vegetation;

- To conserve and manage the natural environment in and around the dam in a sustainable manner;
- To protect the faunal species against poaching and other illegal activities;
- To promote equitable access and use of the dam by the public;
- To address the needs of the public in an appropriate and equitable manner;
- To promote public safety when accessing and using the dam;
- To review all agreements at the dam;
- To improve the lives of the community through employment opportunities and skills development programmes; and
- To establish an appropriate institutional structure which will effectively manage the recreational use of the water resource and the surrounding environment. The appropriate powers and delegations must be clear.

A vision for the dam for a period of 20 years was formulated by stakeholders to be as follows:

"To uplift the local community through Socioeconomic development, poverty alleviation and skills transfer programmes, and introducing environmental awareness to the community which will lead to environmental sustainability".

The aforementioned objectives and vision are aimed at supporting the attainment of DWS's vision, mission and objectives.

Tourism Potential: The following were identified as some of the potential recreational developments at the Tzaneen Dam that could enhance tourist attraction:

- Establishment of small scale fisheries at the dam;
- Establishment of swimming pool;
- Establishment of water sports for entertainment; and
- Upgrading of the recreational facilities e.g. braai stands at the Tzaneen Dam Nature Reserve.

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CHAPTER 1: INTRODUCTION

1.1 BACKGROUND OF TZANEEN DAM

Tzaneen Dam is an earth-fill type of dam which impounds the Great Letaba River. It falls under Ward 14 within the jurisdiction of the Greater Tzaneen Local Municipality (GTLM), which forms part of the Mopani District Municipality in the Limpopo Province, South Africa. Its GPS coordinates are: 23°47'39.96"S; 30°9'48.26"E (refer to Figure 1)

Tzaneen Dam falls within B81B Quaternary Catchment within the Luvuvhu/Letaba Water Management Area (See **Figure 2** for Hydrology Map). The primary purpose of Tzaneen Dam is to provide raw water for irrigation, and domestic use. The rising demand of afforestation puts strains on the water resource as these plantations consume large quantities of water. There is a proposal to raise the dam wall which will help solve most of the water demand issues as the capacity of the dam will increase.

The catchment as a whole is in water deficit due to the growing demand of water in the area. While users upstream of the dam enjoy a relatively high level of water assurance, the users downstream experience water shortages. Tzaneen Dam has been over allocated due to the growing demand of agriculture and afforestation practices. Luvuvhu/Letaba WMA (DWAF, 2004). (See **Table 1** for Tzaneen Dam Profile).

Tzaneen Dam Profile		
Location	South Africa	
Province	Limpopo	
District Municipality	Mopani District Municipality	
Local Municipality	Greater Tzaneen Local Municipality	
Nearest Town	Tzaneen	
Completion Year	1976	
Coordinates	23°47′39.96″S 30°9′48.26″E	
Purpose	Irrigation and Domestic Use	
Owner	DWS	
Water Management Area	Olifants WMA	
Quaternary Catchment	B81B	
Catchment Area (km ²)	650.5	
River	Great Letaba River	
Capacity (m ³)	157 291 000	
Surface Area (ha)	1 163.6	
Wall type	Earth-fill	
Wall Height (m)	55	
Length (m)	1 140	

Source: Department of Water Affairs (List of registered dams, 2013)

 Table 1: Tzaneen Dam profile



Figure 1: Locality map for Tzaneen



Figure 2: Hydrology Map for Tzaneen Dam

1.2 BIOPHYSICAL ENVIRONMENT

1.2.1 Climate

Tzaneen falls under the summer rainfall region, with an average annual rainfall of 902.49 mm, which is from October to March. The average annual temperature in Tzaneen is 25°C and the warmest months of the year is November to February with an average temperature of 31°C. The coldest month is July with the average temperature of 9°C and is the lowest average temperature of the whole year, See **Figure 3** for the average temperature in Tzaneen and **Figure 4** for the average rainfall in Tzaneen.



Figure 3: Average Temperature of Tzaneen



Figure 4: Average Rainfall for Tzaneen

1.2.2 Flora

The dam is situated within the Tzaneen Bushveld region which is characterized by deciduous tall open Bushveld (parkland) with a well-developed, tall grass layer, occurring on low to high mountains, with undulating plains mainly at the base and on the lower to middle slopes of the north-eastern escarpment. The most dominant veld type is the Lowveld sour bush, which is one of the inland tropical forest type (Olifants and Letaba Environmental Management Framework, 2009).

The dominant indigenous plant species are catergorised as follows:

<u>Terrestrial indigenous plants species:</u> *Celtis africana* (white stinkwood), *Olea europaea subsp. Africana* (wild olive) and *Grewia accidentalis* (cross-berry). <u>Grass species:</u> Red grass, Cough Grass, White Buffalo Grass and Blue Buffalo Grass. <u>Aquatic indigenous plant species</u>: *Nympheea capensis* (blue water lily).

The dominant exotic plant species include the following:

- Eucalyptus saligna (blue gum),
- Lantana Camara),
- Caesalpinia decapetala (Mauritius thor),
- Psidium guajava (Guava shrub),
- Melia azedarach (syringe),
- Quercus robur (oak tree),
- Grevillea robusta (silver oak),
- Jacaranda mimosifolia (jacaranda),
- Delonix regia (flamboyant),
- Bougainvillaea Species,
- Persea American (advocadopear),
- Solanum mauritianim (Bugweed).

<u>Red Data plant species include</u> Asclepias cultri formis Harv.ex.Schitr, Felicia fruticosa (L.) G. Nicholson subsp.brevipendunculata (Hutch.) Grau. Zoning Plan for Tzaneen Dam (1999).

1.2.3 Fauna

Crocodiles

Tzaneen Dam is home to a good population of Crocodiles. Crocodiles are part of the biodiversity as they also add to human wonder and enjoyment of nature and should be protected as such. Ecologically, they serve as apex predators, keeping prey populations in check. Crocodiles also provide commercial, nutritional, and aesthetic benefit. However, larger crocodiles can be very dangerous to human beings through attacks.

Hippopotamus

Tzaneen Dam is also a home to Hippos. Although there have been no reported incidences the Hippos have been known to show aggression towards boats during the breeding season. It is imperative to give these animals a wide birth especially when travelling into the upper reaches of the tributaries.

Hippos are very important to the dam health, as they bring nutrients to aquatic life that wouldn't otherwise be there, helping enrich aquatic life.

1.2.4 Geology and Soils

Tzaneen area is covered by granite, which is felsic, generally equi-granular, and relatively light coloured intrusive rock. It comprises some of the oldest known rocks on earth and it is the most abundant basement rock underlying thin sedimentary rock cover in the area. There are also scattered rocks like gneiss which is formed during regional metamorphism. It is generally a coarse-grained granular textured rock which can develop from a wide variety of igneous and sedimentary material and lava (See **Figure 5** for Geology Map).

The soil type which is found in and around Tzaneen Dam is red and yellow with low to medium base structure, the soil is freely drained and structureless (Olifants and Letaba Environmental Management Framework, 2009).

1.2.5 Topography

The Tzaneen area is known for its hills and cliffs, such as the Magoebaskloof and Modjadjiskloof areas. The dam falls within the low mountainous Zone with the area surrounding the dam basin as undulated landscape. The topography around the water resource is relatively flat. (See **Figure 6** for Topographic Map).

1.2.6 Conservation

The dam is located adjacent to the Tzaneen Dam Nature reserve, which is a conservation area. Limpopo Department of Economic Development Environment and Tourism (LEDET) has declared the Tzaneen Dam Nature Reserve (TDNR) as Provincial Park through the agency of the Department, which is Limpopo Tourism Agency.

1.2.7 Historical, Archaeological and Cultural Resources

According to South African Heritage Resources Agency (SAHRA) 2015, nothing of cultural or historical value has been recorded in and around the dam. <u>www.sahra.org.za</u>. Though pot fragments from the last century have been found, no intensive studies on archaeology have been undertaken. Specialist were unable to identify any visible signs that will justify such studies (Zoning Plan for Tzaneen Dam, 1999).



Figure 5: Geology Map for Tzaneen Dam



Figure 6: Topography Map for Tzaneen Dam

1.2.7 Hydrology

1.2.7.1 Water Surface

The dam falls within B81B Quaternary Catchment within the Luvuvhu/ Letaba Water Management Area. The average water level for 2014 was 101.4 % in the dam. According to DWS surface water home website for state dams (04/2015), Tzaneen Dam water level was moderately low at 75.1%. If the water level is compared to 2014 which was 101.4% at moderately high between October and December and normal between December and March. This shows that the water level is not stable and that it changes every time, depending on the water use and the weather at a particular time.

The water surface area at full supply level is approximately 1 163.6 ha. Tzaneen Dam is very deep and cannot be operated if the water level is 30% or lower. **Figure 7** illustrates the fluctuations of the dam's water level over a year (DWS, Limpopo Province State of Dams).



Figure 7: Fluctuations of the dam's water level over a year (DWS, 2014)

1.2.7.1 Water Quality

The water in the dam is of good quality and it is within the DWS water Standards for Recreational Water Use.

The dam is surrounded by residential areas and farms, which poses a threat to the water

quality in the dam. **Table: 2** illustrates the variables which were analysed by DWS, 2011 (National Water Management System) to determine the fitness of water for recreational use:

Table 2: Water Quality Variables

Characteristics	Test Results	Water Quality Target Range (Recreational Purposes)	Description
pH (pH units)	7.552	6.5-8.5	The pH of water is well within Quality Range and the buffering capacity of the lachrymal fluid of the human eye. Skin, ear and mucous membrane irritation is absent.
Sulphate (mg/l)	1.5	0-200	No health or aesthetic effects can occur
Clarity (Secchi (m)	2.9	3.0	No health or aesthetic effects can occur
Nitrate (mg/l)	0.055	0-6	No health or aesthetic effects can occur
Free and Saline Ammonia (mg/l)	0.002	0-1.0	No health or aesthetic effects can occur

Source: Department of Water and Sanitation (WQMS, 2011)

The pH of the water is within the South African Water Quality guidelines for recreational water use.

The SECCHI is 2.9 also within the standards and some users will perceive water as suitable for swimming. Risk of disease transmission by organism associated with particulate matter is very low but cannot be excluded on the basis of clarity or turbidity measures alone. No diverse effects on aesthetic appreciation expected.

1.3 BUILT ENVIRONMENT

1.3.1 Transport Networks

All the access roads to the dam for recreational use are in a good condition, thus making the dam easily accessible for recreational use. The roads which can be used to access the dam are R71 from Polokwane and R36 from Giyani.

1.3.2 Park

Within the Nature Reserve there is a picnic site where people can relax, braai and watch birds. There is also a launching site for vessels. Lions Club also offers a nice picnic site, boat slip way for boat launching and a basketball court.

1.3.3 Buildings

Within the Lions Club and the Tzaneen Dam Nature Reserve there are functional ablution facilities for users.

1.4 USES AND USERS OF THE DAM

1.4.1 Primary Functions

1.4.1.1 Domestic Use

The primary purpose of the dam is to supply raw water to the GTLM for domestic use.

1.4.1.2 Agriculture Use

The other primary purpose of the dam is to provide water to the farmers for irrigation purposes. There is a growing demand of water for agricultural use in the Tzaneen area, for example, irrigation of various vegetables such as tomatoes and variety of sub-tropical fruits including nuts, bananas, avocados, mangoes and citrus fruits like oranges and lemons.

1.4.2 Secondary Function

1.4.2.1 Recreation Use

Recreation and tourism in the Tzaneen area is very high. Lions Club is currently offering the following recreational activities: Boating, angling (large-mouth bass angling), bird watching, and it offers picnic sites and basketball court as well to the community. The Tzaneen Dam Nature Reserve offers a place for picnics, caravan Park, camping and other activities include boating, angling and bird watching.

Other recreational activities which require full contact, such as swimming, are not allowed at the dam due to the presence of dangerous animals and/or reptiles such as hippopotamuses and crocodiles.

1.4.3 Other Uses

1.4.3.1 Afforestation

There are commercial timber plantations (Blue Gums Trees) adjacent to the river which feeds to the dam. Such plantations consume large quantities of water which may negatively affect the capacity of the dam.

1.4.3.2 Residential Estate

Tzaneen Dam is located in Tzaneen town near suburbs such as Avis Park, Aqua Park Premier, Park Medi Park and Arbor Park. Some of these suburbs are adjacent to the dam and they have a scenic view of the dam.

1.5 RECREATIONAL INSTITUTIONAL STRUCTURE

There is no formal institutional structure managing the recreational use of the dam. However, DWS is the owner and operator of the dam.

1.5.1 Management of Water Surface

The management of the surface water in terms of operation of the Dam is done by DWS.

In addition to the DWS, Local Accountable AtoN Parties (LAAP) and other Bodies providing access to Government waterways and watercourses have a responsibility to ensure that the required fixed and/or floating AtoN are provided after obtaining the necessary support from DWS and thereafter the permission by SAMSA.

1.5.2 Event Management

Permits are should be issued by DWS prior to any event undertaken at the dam.

1.6 LAND OWNERSHIP

DWS is the owner of Tzaneen Dam and the purchased boundary. The land adjacent the dam (outside the purchase boundary) is privately owned by farmers and residential estate owners.

1.6.1 Land Claims

There are no land claims which have been logded against Tzaneen Dam.

1.6.2 Access and Use Agreement

16.2.1 Letaba Water User Association (LWUA)

The dam falls under the jurisdiction of the LWUA. The association provides funds for the operation and maintenance of these dam by DWS (Seshoka et al, 2004). Tzaneen Dam is located on the Great Letaba River immediately upstream of the town of Tzaneen. There are various water users in the Great Letaba River but the LWUA only comprises of farmers. The municipalities are not part of the LWUA.

The administrative offices of the LWUA are in Tzaneen. The current management is mainly based on the following three (3) activities (Seshoka et al, 2004):

- Monitoring water abstraction; The LWUA controls and monitors the abstraction of water by its members from the Great Letaba River, with the help of two full-time bailiffs.
- Operating waterworks; and The LWUA operates the five weirs from which the canals depart.
- Strategically managing the consumption of water for agriculture in the two large dams (Tzaneen and Ebenezer Dams) with DWS; by assessing the consumption of water in the dam and impose restrictions to effectively manage the dam.

1.6.2.2 Lions Club

There is a lease agreement on portion of portion 258 of the Farm 555T, 1.5 ha between the Lions Club and the former transitional Local Council of Tzaneen now known as GTLM. The lease agreement started on the 1st of September 2000 and is renewed on a monthly basis.

The club is responsible for controlling the public access, maintaining the Lions Club area and also managing recreational activities at the dam.

Some of the conditions of the lease agreement are as follows:

- No subletting and no other person(s) will be allowed on the Property except the employees of the Lessee without written consent by Board.
- Only for the activities of the Lions Club, and no other use without written consent by Board will be allowed.
- Lessee need to maintain the Property in the term of the lease agreement conditions, and is require to hand over the Property in the same state as received to the Board.
- Property must be kept clean and sanitation must be kept in working order.
- Maintenance of the property is lessee's responsibility.

1.6.2.3 Tzaneen Dam Nature Reserve

There is a concession agreement between TDNR and LTA which is an agency of LEDET to manage and control the access through the Nature Reserve and also to maintain the Nature Reserve.

1.7 SAFETY

There are two (2) public access controlled areas at the dam. Other unauthorized accesses are near the dam wall and in some parts of the dam as the dam is not fenced. The communities use such unauthorized accesses to practice net fishing which is unlawful, poaching of bushbucks and also putting their lives in danger as the dam is a home to crocodiles and hippopotamuses.

There are tree stumps inside the dam and some of them are not visible when the water level is high, these are likely to cause accidents during boating. Public Safety Boards should be erected to make the public aware about the tree stumps.

1.7.1 Safety of Navigation

There is currently no adequate, standardised and harmonised fixed and floating Aids to Navigation² (AtoN) and Demarcation Markers in place.

1.7.2 Incident Management

There is no specific incident management system in place to ensure that incidents are responded to in a co-ordinated manner.

1.8 SOCIO-ECONOMIC ENVIRONMENT

1.8.1 Social Audit

The main purpose of social audit is to examine the general status of the study area and to determine issues that need to be addressed when developing the RMP in order to overcome potential difficulties in an area. The study area falls within Ward 14 of the GTLM. An understanding of socio-economic conditions of Ward 14 can be used at a later stage to determine the impact of a RMP in the area in terms of changed socio-economic conditions.

A social Audit which focused on the population composition of the ward, Population dynamics, Education level and employment status was undertaken and is presented in section 1.8.1.1 to 1.8.1.3, respectively.

² A maritime Aid to Navigation (AtoN) is defined by the international Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) as "A device or system

external to vessels that is designed and operated to enhance the safe and efficient navigation of vessels and/or vessel traffic"

1.8.1.1 **Population Dynamics**

According to Statistics South Africa, 2011, GTLM has increased its population between 2001 and 2011 from 375 588 to 390 092 (an increase of 14 504) comprising of 181 558 males and 208 536 females. Females still

outnumber males as they comprise 53% of the population (54% during Census 2001). Young people between the ages of 14 - 35 constitute 40% (156 900) of the total population of the municipality. Presented in **Figure 8** is the population pyramid that shows sex and age of the area for 2011.



Figure 8: Population Pyramid for GTLM

The population is mostly blacks (± 96% according to the 2011 Census), with the minority consisting of whites (3%), Indians / Asians (0.4%) and Coloured (0.2%). The most widely spoken first language is Sepedi (46%), followed by Xitsonga (40.7%), Afrikaans (3%) and English (2%). The other seven (7) official languages and other languages are represented by a small minority. Furthermore, Ward 14 in which Tzaneen Dam is located constitute 4% of the population in Greater Tzaneen Local Municipality. The dominating population group in Ward 14 is black Africans individuals, followed by white people and then Indian or Asians.

1.8.1.2 Education Level

According to Census 2011, there is a decline of education after Grade 12 or standard 10 within the municipality. Access to higher education remains a challenge not only locally, but nationally as well. It also shows the same trend within Ward 14 as it also forms part of the GTLM as a whole. Approximately 43% of people within the municipality did not complete their primary education while only 0.1% have went further to attend tertiary education See **Figure 9**:



Figure 9: Education Level for GTLM

1.8.1.3 Employment Status

According to Statistics SA Census 2011, the employment status of GTLM does not show an impressive situation, 160 254 individuals who makes a total of 41% in the GTLM do not have any source of income, while the rest of the community do have a source of income. A total percentage of 45% of people with an income earn below the minimum living level, which is R31 200 per annum or lower than R2 600 per month as defined by statistics SA. See **Table 3** and **Figure 10**.

Table 3: GTLM Income Level

Individual monthly Income	Total
No income	160, 254
R1-R400	105, 823
R401-R800	15, 004
R801-R1600	56, 634
R1601-R3200	15, 148
R3 201-R6400	8, 057
R6 401-R12 800	7, 793
R12 801-R25 600	5, 779
R25 601-R51 200	1, 507
R51 201-102 400	367



Figure 10: Employment Status for Ward 14, Statistics SA, 2011

1.8.2 Community Beneficiation

It is DWS's belief that Local Communities should equally share the benefits emanating from the utilisation of the dam for recreational purposes, by ensuring that they have both physical access to the resource, as well as access to the water-based recreation economy.

According to DWAF (2006), by ensuring that the Local Communities move beyond merely being affected by or living close to a water resource, but rather undertaking the transition to become participants will ensure that water resources can and will be protected by the people closest to and most affected by the dam.

The community will benefit in amongst others the following ways:

- By having equitable access to the dam;
- The community needs will be addressed in an appropriate and equitable manner;
- By being safe while accessing and using the dam;
- By being given first preference when there are employment opportunities and skills development;
- Through the PPP; and
- By participating in decision-making with respect to major developments planned or proposed for the dam (through the Dam Management Committee).

CHAPTER 2: LEGISLATIVE FRAMEWORK

The RMP forms the overarching framework for the management of Tzaneen Dam. It is informed by relevant policy, legislation and planning documents administered by other government departments. Similarly, these government departments are required to use the RMP to inform the development of future policy, legislation and planning documents.

- The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996), Section 24: Provides that, everyone has a right to an environment that is not harmful to their health or well-being.
- II. **Conservation of Agricultural Resource** Act, 1983 (Act No. 43 of 1983): Provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith. Regulation 7 and 8 within the same Act deals with the protection of wetlands and water courses, while regulations 15 and 16 deals with Alien Invasive Plant Species and bush encroachment.
- III. Consideration on Institutional Arrangement for Managing Use of Water for Recreational Purposes (DWAF, 2003): It outlines some of the institutional issues at a local level and makes recommendations about the conditions under which different Institution Management arrangements may be considered.
- IV. General Public Participation Guidelines (DWAF, 2001): Public Participation refers to the ongoing interaction between Role Players and all stakeholders that is aimed at improving decision making during planning, design, implementation and evaluation of all projects within the

state, this includes the proposed development of the RMP.

- V. Government Immovable Asset Management Act, 2007 (Act No. 19 of 2007): To provide for a uniform framework for the management of an immovable asset that is held or used by national provincial а or 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.
- VI. Government Notice R654 dated 1 May 1964, in terms of the Water Act, 1956 (Act No. 54 of 1956): Regulates access and use of government waterworks for recreational purposes.
- VII. Guidelines for Compilation of Resource Management Plans (DWAF, 2006): Directs and guides the development of RMPs by providing insight into the purpose and objectives of these plans, the procedure for its compilation and structure of such documents.
- VIII. Merchant Shipping (National Small Vessel Safety) Regulations (2007): These Regulations provide *inter alia* for:
 - Requirements for vessel safety;
 - Crewing requirements and responsibilities;
 - Controlled events such as competitions and regattas; and
 - Responsibilities of authorised agencies (governing boards/clubs/organisations and regulating authorities).

Regulations apply to These 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.

- IX. Methodology for Carrying Capacity Assessment for the Use of Water for Recreational Purposes (DWAF, 2003): The carrying capacity of a water resource represents the maximum level of visitor/recreational use and related infrastructure that the water resource and surrounding area can accommodate, without diminishing user satisfaction or adverse impacts upon the local or host community, the economy and culture of the area.
- X. National Environmental Management Act, 1998 (Act No. 107 of 1998): 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.
- XI. National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) and Related Regulations: This Act aims to provide the framework, norms and standards for the conservation, sustainable use and equitable benefit-sharing of South Africa's biological resources.

The Alien and Invasive Species Regulations for this Act came into effect 01 October 2014. NEMBA together with these Regulations aim to prevent the introduction and spread of alien and invasive species across South Africa.

- XII. National Environmental Management: Protected Area Act, 2003 (Act No. 57 of 2003): 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.
- XIII. National Treasury Public Private Partnership (PPP) Toolkit for Tourism, 2005: This toolkit assist 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.
- XIV. National Water Act, 1998 (Act No. 36 of 1998): The purpose of the Act is to ensure that the nation's water resources are protected, used. developed, conserved, managed and controlled in a sustainable and appropriate manner, for the benefit of all. Furthermore Section 113 of the Act states that the water of a government waterworks and surrounding state owned land may be made available for recreational purposes, subject to controls determined by the Minister and regulations made by the Minister.

Using water for recreational purposes is a water use under Section 21K and can be exercised as permissible use of water under Schedule 1 of the Act. However, this provision does not cater for commercial use hence the RMP should be implemented in line with General Strategic Plan for commercialisation of Tourism Public Private Partnerships at Government Waterworks, 2009 and PFMA Treasury Regulation 16.

Once the RMP has been approved, the RMP will regulate access and use of the dam. It is important to note that users will need to comply with other relevant legislation.

- XV. Operational Policy: Using Water for Recreational Purposes (DWAF, 2004): This policy is the main guideline in support of the RMP process with regards to the basic principles, policies, strategies and actions for regulating the use of water for recreational purposes.
- XVI. Public Finance Management Act (PFMA) (Act No. 29 of 1999): Section 76 of the Act secures transparency, accountability and sound management of the revenue. expenditure, assets and liabilities of government departments. The Act promotes the objective of good financial management in order to maximise service delivery. The Act allows DWS to enter into PPP agreements with the private sector for the commercial use of state assets.
- XVII. Safety at Sport and Recreational Events Act, 2010 (Act No. 2 of 2010): Events management is addressed by Safety at Sport and Recreational Events Act (Act No. 2 of 2010). This act deals with ensuring responsibility for safety and security at events. The act deals with among other things,
 - Responsibility for safety and security at the events;
 - Risk categorization of events; and
 - Safety certificates.
- XVIII. South African Maritime Safety Authority Act, 1998 (Act No. 5 of 1998): 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.
- XIX. Water Services Act (Act No. 108 of 1997): The Act outlines the roles and responsibilities for the supply of water and sanitation to citizens. It also

recognises the rights of all humans to basic water supply and sanitation services.

The RMP process also takes cognizance of the following Legislations, Policies, Programmes and Reports:

- Communal Land Rights Act, 2004 (Act No.11 of 2004).
- Development Facilitation Act, 1995 (Act No. 67 of 1995).
- Disaster Management Act, 2002 (Act No. 57 of 2002).
- Draft Limpopo Spatial Planning and Land Use Management Bill (2012).
- Environmental Conservation Act, 1989 (Act No, 73 of 1989).
- Intergovernmental Relations Framework Act, 2005 (Act No.13 of 2005).
- Land Administration Act, 1995 (Act No. 2 of 1995).
- Limpopo Conservation Plan v2 (2013).
- Limpopo Development Plan (2014)
- Limpopo Environmental Management Act, 2003 (Act No. 7 of 2003).
- Limpopo Growth and Development Strategy (2005)
- Limpopo Province: Provincial Land Use Legislature Reform (2011)
- Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000).
- National Development Plan (Vision for 2030).
- National Heritage Resources Act, 1999 (No. 25 of 1999)
- National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998)
- Occupation Health and Safety Act, 1993 (Act No. 85 of 1993).
- Restitution of Land Rights Act, 1994 (Act No. 22 of 1994).
- Safety at Sports and Recreational Events Act, 2010 (Act No. 2 of 2010).
- State Land Disposal Act, 1961 (Act No. 48 of 1961).
- Sustainable Development Goals (2015)
- Tourism Act, 1993 (Act No. 72 of 1993).
- Safety of Navigation: In addition to its common-law responsibility, DWS is, in terms of the requirements described in the National Water Act, Act No 36 of

1998, amongst others, responsible for the safety of Government's waterways and watercourses, including its dams. DWS, its delegated public sector partner, or a delegated water management institution, has therefore the responsibility to provide the required fixed and/or floating AtoN for general navigation.

In addition to the DWS, Local Accountable AtoN Parties (LAAP) and other Bodies providing access to Government waterways and watercourses have a responsibility to ensure that the required fixed and/or floating AtoN are provided after obtaining the necessary support from DWS and thereafter the permission by SAMSA.

In order to demarcate specific zones/areas, standardised

demarcation markers are to be used in conjunction with the relevant AtoN.

SAMSA Marine Notices and its Directive on the Standardisation of fixed and floating AtoN and Demarcation Markers on all navigable Inland Waterways in the Republic of South Africa.

The aim is to enhance the development of a best practice model to ensure a safe and structured inland maritime environment and culture, whilst protecting the country's precious water resources.

Not only do these Acts, Regulations and Frameworks guide specific decisions and actions, they also provide the framework for monitoring performance and compliance, and provide guidelines regarding contravention, offences and penalties. This list is not complete and other legislations could be applicable.

CHAPTER 3: WHAT IS A RESOURCE MANAGEMENT PLAN

3.1 DEFINITION OF RMP

A Resource Management Plan (RMP) is a plan which aims to regulate access and the recreational utilization of a water resource and the surrounding state land, in ways which promote community participation and beneficiation, environmental conservation and unlock socio-economic potential of the water resource.

Recreational use includes activities ranging from leisure, sport to culture and religion. Although recreational use does not involve consumption of water, it is still a major water use and needs to be managed effectively with minimal environmental impacts and to ensure communities have access to water based economy.

3.2 PURPOSE OF THE RMP

The main aim of RMPs is to attain the objectives underlying sustainability and to compile functional, workable sustainable access and utilization plans for water resources.

Without approved management plans related to the utilization of the water resource in place, it makes it difficult for informed decisions to be made, necessitating a precautionary approach to access, utilization and development proposals. One of the components of the RMP process is to implement an Institutional Plan for effective management of GWWs. The focus on the Institutional Plan is accompanied by a Zoning Plan which is influenced by current and potential recreational uses The RMP also outlines the Strategic Plan for all the identified objectives for the dam. In addition, a Financial Plan is incorporated into the Business Plan (BP) and provides guidance on funding requirements funding and options to implement the potential recreational activities at the dam.

3.3 PROCESS TRIGGERS

Triggers are factors that have encouraged DWS to initiate and commission the development of RMPs.

A number of generic factors have been identified by DWS for the development of RMPs, however, the Process Facilitator identified site specific trigger factors, as illustrated in **Table 4**. Table 4: Trigger Factors for the development of Tzaneen Dam RMP

Trigger Factors	Description	
	 <u>Water quality</u> Tzaneen Dam is surrounded by farms which might pose a threat to the water quality of the dam through agricultural runoff, if it is not monitored timeously. 	
Resource Management	 Water quantity It is alleged that the amount of water abstracted from the dam by some of the adjacent farmers is not recorded as per the Water Use Licence recommendations. It is also alleged that there are unauthorised water pumps installed in the dam and they are abstracting water without authorisation. 	
	 Alien vegetation There is scattered alien vegetation (wild sage, Mauritius thorn, etc.) and commercial timber plantations (Blue Gums Trees) adjacent to the river which feeds to the dam. Such plantations consume large quantities of water which may negatively affect the capacity of the dam. 	
Recreational Industry	 <u>Public safety</u> There are drowning incidents reported in the past which should be prevented in future as Public safety is the main priority when developing a RMP for the dam. 	
Involvement	Unlawful activities within the dam	
	 It is alleged that community members are practising net fishing which is not sustainable method and may deplete fish species in the water resource. It is also alleged that there is poaching of bushbucks at the Nature Reserve. 	
Community Participation and Beneficiation	 Public Private Partnership Tzaneen dam is a potential tourist attraction area which in turn can unlock the economic potential of the dam through establishment of effective PPPs. 	
Public Policy	 Local Planning Initiatives The Greater Tzaneen Local Municipality is interested in getting involved in the recreational activities at the dam. The dam has also been included in the IDP for the municipality. The dam can be a tourist attraction centre if developed and utilised to its full potential. 	

3.4 RMP DEVELOPMENT PROCESS

RMP is developed in accordance with the RMP guideline procedure (DWAF, 2006) as illustrated in **Figure 11.**

Phase 1: Process Initiation	 Establish motive for undertaking RMP process. Ensuring roles and responsibilities are understood.
Phase 2: Project Outline and Encumbrance Survey	•Ascertain whether any encumbrance exist and the most appropriate approach to the project.
Phase 3: Objective Identification	•Consult with stakeholders to ascertain common goals and formulate into one document.
Phase 4: Research/ Information Generation	•Prepare a Research Report containing information on sustainable utilisation of the dam.
Phase 5: Integrated Management, Zoning and Institutional Planning	 Undertaking planning through a consultative process and by evaluating information to ascertain what can take place based on specific constrains and parameters. Outcome: Draft RMP (Institutional Plan, Zoning Plan (Water Surface & Shoreline) ,Financial Plan and Strategic Plan).
Phase 6: Evaluation	 Obtain comments from stakeholders on the draft RMP and amend accordingly. Outcome: Revised RMP. Submit the Revised RMP to NPSC and Public for final review.
Phase 7: Decision making and Operationalisation	 Obtain approvals and support from relevant Authorities. Undertake implementation and institutionalisation of the RMP. Outcome: Approval of the RMP and Implementation.

Figure 11: RMP Procedure

3.5 RMP PLANNING STAGES

3.5.1 Desktop Study

The desktop study was conducted with the aim of acquiring background information about the Tzaneen Dam. This was done through literature review. This study provided information such as the location of the dam, user groups, current activities, previous studies conducted for the dam.

3.5.2 Site Inspection

A site inspection was conducted at Tzaneen Dam on **11 June 2014** to gather baseline information using a checklist questionnaire. The site inspection was undertaken with DWS officials (DWS IEE, Northern Operations, Water control officer and the dam operator). The dam wall, Lions Club and the Tzaneen Dam Nature Reserve were visited as part of the information gathering process. Photos of the study area were also taken during site inspection.

3.5.3 Public Participation(PP)

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

A Public Participation was conducted in order acquire information for Phase to (Encumbrance Survey), Phase 3 (Objective Identification) and Phase 4 (Information Gathering/ Research) from Stakeholders, which was used to complete Phase 5 (Integrated Management Zoning and Institutional Planning). In order to successfully complete the RMP, it is essential that the information obtained in the previous phases is utilised as planning input.

The public participation process for this project was formulated to include the following objectives:

- The identification of role players;
- The introduction of the RMP project to role players and inform them about their roles and responsibilities;
- The engaging of the Stakeholders (Authorities and I&APs) in the planning process;
- The answering of questions and noting of concerns;
- The identification of important issues, problems, conflicts and alternatives;
- Identification of the overall vision of the dam;
- The elimination of false expectations and preconceptions; and
- The creation of awareness amongst users.

DWAF's Guidelines for Public Participation (2001) outlines three (3) broad phases for public participation namely the **Planning**, **Participation** and **Exit phase**. Summarized below are the aspects of each phase and the approach for this project.

3.5.3.1 The Planning Phase

Planning phase entails three (3) important aspects namely:

- Decision analysis;
- Participation planning; and
- Implementation planning.

During the **Planning Phase** a site inspection and literature review was conducted to gather baseline information about the dam. A process was also established to get into contact with the I&APs and relevant Authorities to ensure co-operative interests and support in the RMP project.

3.5.3.1.1 The Role Players

It is recognized that different roles and responsibilities of the stakeholders (Authorities and I&APs), and their relationship towards each other and the steps in the planning procedure are imperative in the successful development of the RMP. It is also important that proper consultation with the public is done in order to produce a credible RMP. As such, the success of the RMP is dependent on the level of involvement of the
various stakeholders. Various stakeholders were identified and invited to participate in an open and consultative process. (See attached **Appendix A)**. The stakeholder list is updated on a continuous basis throughout the RMP process.

3.5.3.2 Participation Phase

The **Participation Phase** entails three (3) important aspects:

- Informing stakeholders explained briefly under 3.5.3.4 Advertising Process.
- Meeting the stakeholders explained briefly under 3.5.3.5 Direct Communication.
- Feedback it is of utmost importance that feedback is directed to and from stakeholders. In this project feedback, thus far has been given in a form of minutes of the meetings and follow up e-mails.

3.5.3.3 Exit Phase

The **Exit Phase** entails two (2) important aspects namely:

- Ensuring that all goals, challenges, concerns, objectives and the vision for the dam have been identified and documented in the RMP.
- Officially ending the public participation process for the development of a RMP.

During this phase, a draft RMP will be presented to the stakeholders so that they can comment and give inputs.

3.5.3.4. The Advertising Process

3.5.3.4.1 Compilation and Distribution of Background Information Document (BID)

The purpose of this document was to provide Stakeholders (Authorities and I&APs) with the background information about the proposed RMP project and to introduce the processes to be followed in developing the plan. It also aimed to inform authorities and I&APs on how to fully participate in the process and to encourage active attendance in Stakeholder engagement meetings. The BID was compiled from the information collated through the desktop study and site inspection (See Attached **Appendix B**).

3.5.3.4.2 Newspaper Advert

A Newspaper advert regarding the RMP project was placed in the **Letaba Herald Newspaper**. The notice was published on **25 July 2014** on Bulletin Newspaper, and on **16 January 2015**. Furthermore, an advert for the draft RMP Report was placed on Bulletin newspaper on **18 December 2015** (See attached **Appendix C**: Newspaper Advert).

3.5.3.4.3 Flyers Compilation and Distribution

Flyers were also used as a form of notification, they aimed at informing the I&APs about the public consultative meetings. The flyer detailed a brief description of the RMP, meeting date, time, venue and relevant contact details. The flyers were compiled in English and were distributed on **17 July 2014**, and on **16 January 2015**.

The flyers for the draft RMP were distributed on **14 December 2015** (See attached **Appendix D**: Flyer).

3.5.3.5 Direct Communications

3.5.3.5.1 E-mails

Meeting invitations were sent out to authorities and I&APs notifying them about the scheduled consultative meetings. The invitations entailed the BID, meeting venue and time. The email notifications were sent out on **16 July 2014** and on **19 December 2014**. Moreover, the meeting invites for the draft RMP were sent on **18 December 2015**. (See Attached **Appendix E**: Email Invitations).

3.5.3.5.2 Authority Meeting

The initial Authority Meeting was held on **29** July 2014 at Minitzani Hall.

A follow-up authorities meeting was held on **29** January **2015**.

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.

The draft RMP Report was presented to the Authorities on **25 January 2016.**

3.5.3.5.2 Public Meeting

The initial public meeting was held on **29 July 2014** at **Minitzani Hall.**

A follow-up meeting was held on **29 January 2015**.

The draft RMP Report was presented to the public on **25 January 2016**.

3.5.3.5.3 Focused Group Meeting

The main objective of the focused group meeting was to introduce the RMP to all the business people who are either interested or affected by the plan, these included land owners, clubs (Lions Club) and the Tzaneen Dam Nature Reserve. The meeting was held on **29 January 2015**, at **Minitzani Hall.**

Table 5: Planning Partners and their respective mandate

3.5.3.5.4 Comments and Responses Register

A copy of the draft report was circulated on **14 December 2015** for commenting. The commenting period was to elapse on 25 March 2016. See **Appendix F**.

3.5.4 Planning Partners

RMPs are developed through a process of cooperative governance and stakeholder participation. The distinctly different roles and responsibilities of the stakeholders, and their relationship towards each other and the steps in the planning procedure are imperative in the success compilation of the RMP.

The RMP provides for coordination between different governments and agencies to ensure that not only the objectives of DWS are attained, but also the objectives of other relevant Government Departments are attained. Such Departments includes among others as outlined in **Table 5**.

Department/ Agency	Mandate	
Mopani District Municipality / Greater Tzaneen Local Municipality	The dam is within the jurisdiction of the municipality and is mandated to provide bulk water services.	
Department of Environmental Affairs (DEA)	Responsible for Biodiversity Management within the dam including Invasive Alien Species.	
Department of Agriculture, Forestry and Fisheries (DAFF	The purpose of DAFF includes sustainable development and management of resources to maximizing the economic potential of the fisheries sector while protecting the integrity and quality of the country's aquatic ecosystems. Operation Phakisa expansion to inland dams is one of DAFF initiative aimed at unlocking economic potential of fisheries sector within the inland water. The latter programme will be used as benchmark for implementation of conservation policies while implementing job creation within fishery and fish processing market	
Department of Rural Development and Land	As part of the RMP process the Department will assist in	
Reform (DRDLR)	terms of Land Claims/Ownership issues.	

Department/ Agency	Mandate	
Department of Public Works (DPW)	Has the power to regulate and control the use of state la outside the GWWs. In this regard, lease agreements permits will be required from the department as some the recreational activities will overlap into the state land	
Department of Transport (DoT)	Responsible for legislation, policy and regulations for all transportation in South Africa, including shipping and other transport by water or sea also inland waterways.	
National Treasury (NT)	The use of State assets is governed by National Treasury Regulations, requiring DWS to plan concessions in compliance or association with National Treasury, guided by the Tourism Public Private Partnership (PPP) Toolkit of 2005.	
South Africa Maritime Safety Authority (SAMSA)	One of SAMSA's three legislative mandates is "to ensure safety of life and property at sea". The Act enables SAMSA to administer and execute the relevant marine legislation.	

3.6 RMP DATA ANALYSIS

3.6.1 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 will assist DWS to identify hindrances and other factors that may influence the development and implementation of the RMP. The identified encumbrances are broken down into **Biophysical, Legal, Social and Existing Plans**:

Table 6 - 9 outlines the summary of limitationsthat might affect the development orimplementation of the RMP for the dam.

Table 6: Summary of Biophysical Encumbrances

Item	Description		
Vegetation	 There are commercial timber plantations of Blue gums adjacent to the river which feeds the dam, these plantations consume large quantities of water which is supposed to be going to the dam. The alien plant species (wild sage, Mauritius thorn, etc.) which are scattered around the water resource consume large quantities of water. If they are not removed at an earlier stage, it will become expensive to remove them at a later stage as they spread quickly. 		
Fauna	 The presence of hippopotamuses and crocodiles restrict some of the recreational activities to be practiced at the dam. Activity such as swimming cannot be allowed in the dam because of these dangerous fauna species. The presence of Vervet monkeys in the nature reserve makes it uncomfortable for general public to leave their belongings unattended when engaging in recreational activities. There are venomous snakes within the nature reserve premises. Big signs must be conspicuously displayed to sensitize visitors of such dangerous reptiles when engaging in recreational activities at the dam. 		
Geology and Soil	• Due to the restricted soil depth, excessive drainage, high erosion, construction of large structures will be costly.		
Topography	 The mountainous nature and undulating slopes of the area, will restrict some of the structures to be built due to cost implications, as they will need to be leveled before construction. The mountainous nature and undulating slopes of the area, will result to soil erosion as a result of surface run-off during rainy seasons. 		

Table 7: Summary of Legal Encumbrances

Item	Description
Agreements	• There is no confirmation of agreement between DWS and the two institutions (LEDET and GTLM) in managing the dam for recreational purposes and access.
Land Claim	• There is a land claim which have been lodged by Makgoba community at Tzaneen Dam and Tzaneen Dam Nature Reserve. The land claim is being facilitated by the Greater Makgoba Economic Development Agency (GMEDA).

Table 8: Summary of Social Encumbrances

Item	Description	
Tourism	 The dam basin is under developed and also underutilised, making it difficult for tourists and also local people to fully utilize the dam to its potential. There is no formal institutional structure for the dam for recreational purposes. There is lack of marketing when it comes to recreational activities that the dam can offer. 	

Table 9: Summary of Existing Plans Encumbrances

Item	Description	
Existing Plans	• The Zonal Plan which was approved in 1999 for the dam is outdated and requires	
	updating in terms of the RMP zoning plan guideline.	

Upon identifying the encumbrances, objectives needed to be identified in order to facilitate a

planning procedure aimed at the compilation of a RMP. It is essential to clarify objectives to

be met by the planning procedure (DWAF, 2006).

3.6.2 SWOT analysis and objective identification

The SWOT Analysis was conducted to gather Strengths and Opportunities that define the potential of the dam whereas the challenges regarding the dam where identified through Weaknesses and Threats. The common key objectives were formulated and identified from the Strengths and Opportunities of the dam. Moreover, the vision for the dam for a Table 10: SWOT Analysis for Tzaneen Dam period of 20 years was formulated by stakeholders from the identified objectives.

3.6.2.1 SWOT Analysis Approach

There were issues of concerns that were raised in the stakeholder engagement meetings prior to conducting the SWOT analysis. Other challenges or encumbrances that may hinder the progress of the dam's RMP process were identified by the stakeholders following the SWOT analysis approach as illustrated in **Table 10**.

Strengths	Weaknesses
 Tzaneen Dam has good water quality. Tzaneen Dam is a good water supplier for various communities in the Tzaneen area. The location of the dam makes it easily accessible as it is located in town. The raising of the dam wall will increase water security in and around Tzaneen area. 	 There is lack of proper infrastructure for recreational activities at the Tzaneen Dam Nature Reserve. There is lack of marketing for the dam in the tourism industry. There is no proper management structure to effectively manage the dam for recreational use. There is a concern of individuals who ride their vessels under the influence of intoxicating drinks, which put their lives and those of others in danger There is a rumour that the Jetty 3 will have a new management which is planning to turn the club into a concert venue. Other people have concerns that it will make a lot of noise as the dam is located in a residential area. People are worried that the space for recreational activities is very small as the dam is surrounded by private property, there is no enough space for recreational activities. The Tzaneen Dam Nature Reserve facilities are under-utilized and the area is underdeveloped due to lock of funding.
Opportunities	Threats
 There are social and youth development opportunities through awareness. Skills development through learnerships to the youth who resides in and around Tzaneen. There are opportunities for small scale fisheries activities to address malnutrition, food insecurity and poverty in the rural villages. Business development for the tourism sector. Opportunities for water sports for entertainment. There are opportunities for community empowerment in the implementation of the RMP for the dam. 	 There are unauthorised access to the dam, which leads to unauthorised activities such as net fishing and crimes like mugging. There is poaching of Bushbucks at the nature reserve which threatens their existence. It is alleged that there are people which are ploughing upstream of the dam, next to the bridge, removing natural vegetation and the fertilisers runoff leading to the water resource. There are commercial timber plantations (e.g. Blue Gums Trees) adjacent to the river which feds the dam, these timber plantations consume large quantities of water which is supposed to go to the dam.

٠	There is an opportunity to review all the access agreements.	•	There is an alleged threat for water pollution from oil released during boating as there are no
•	There is an opportunity to market the dam properly to attract tourists and also investors at the dam.	•	officials to check the vessels before launching in the water at the nature reserve site. It is alleged that there is a chicken farm which throws chicken remains into the dam which might pollute the water resource if not stopped. The presence of Hippopotamuses and crocodiles pose a threat to the users of the dam. The presence of tree stumps in the dam causes danger to people's lives especially when the
			water level is high, as some are not visible when boating. The area with the tree stumps must be marked to alert the dam users.

3.6.2.2 Objective Identification (Phase 3)

Objectives were identified by all the stakeholders in order to ascertain common goals. These objectives address the following questions:

- What do we want?
- How are we going to achieve this?
- Who will be involved?
- By when would we like to achieve our goals?
- Why would we want to achieve our goals?

The set common key objectives were derived from the SWOT Analysis for the Tzaneen Dam and have been categorized into three (3) Key Performance Areas (KPAs) as illustrated below:

KPA 1: Resource Management

- To maintain the water quality of Tzaneen Dam
- To increase the water capacity of Tzaneen Dam, through the raising of the dam wall.
- To keep the dam and the surrounding environment free of Alien Vegetation.
- To conserve and manage the natural environment in and around the dam in a sustainable manner.
- To protect the faunal species against poaching and other unauthorized activities.

KPA 2: Resource Utilisation

- To promote equitable access and use of the dam by the public.
- To address the needs of the public in an appropriate and equitable manner.

- To promote public safety when accessing the dam.
- To introduce swimming as an activity at the dam for visitors.

KPA 3: Benefit Flow Management

- To review all agreements at the dam.
- To improve the lives of the community through employment opportunities and skills development programs.
- To establish an appropriate institutional structure which will effectively manage the recreational use of the water resource and the surrounding environment at the dam. The appropriate powers and delegations must be clear.

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

A vision for the dam for a period of 20 years was formulated from the key common objectives identified by the stakeholders and stands as follows:

"To uplift the local community through Socioeconomic development, poverty alleviation and skills transfer programmes, and introducing environmental awareness to the community which will lead to environmental sustainability".

After setting both the dam's specific objectives, a research was conducted in order to provide relevant information to decision – makers regarding the sustainable utilisation of

the water resource and where applicable the State Land.

3.6.3 Research/ Information Generation (Phase 4)

The aim of undertaking the research process was to collect the relevant data about the dam

to serve as a decision-making guideline tool. The report will serve as a decision-making guideline tool, guided by the objectives set for the dam and any limitations due to encumbrances. The report documents the following data as illustrated in **Figure 12**.



Figure 12: Researched Data

The main aim of the research was to identify the dam tourism development potential and also to evaluate the practicability/feasibility of the potential objectives identified.

3.6.3.1 Tourism Development Potential

Tzaneen is situated in the foothills of the impressive Wolkberg (Cloud Mountain). A must see for all tourists as it is a gem of a tourist and holiday destination. It is also known as the cleanest town in Limpopo Province and as a subtropical paradise with indigenous and exotic plants and forms the heart of the Valley of the Olifants region.

It is the second largest town in the Limpopo province of South Africa and is seen as the 'capital' of the lovely Letaba District, which is more than 2 000 square kilometers of tropical and subtropical farming in the Letsitele River Valley, a real tourist destination with a variety of available accommodation in Limpopo, such as Bed and Breakfast, guest houses, lodges, game farms and backpackers. (www.ultraquickhost.com).

According to the Constitution of South Africa Act No 106 of 1996, Schedule 5, part B, GTLM has powers to manage local tourism within its area of jurisdiction.

The Local Tourism Sector as outlined in the provincial Economic Strategy Analysis, tourism has been identified as a sector having competitive advantage. This reflects strengths, unique characteristics and a potential for growth and development. Whilst the municipal area has tremendous natural and heritage potential for the development, the performance of the trade sector (wholesale, retail, catering and accommodation) has tended to show slow growth rates. There appears to be general consensus that tourism demand is well below what would be expected from an area with such outstanding natural potential.

The revised tourism strategy, 2007 also featured in the GTLM Final Approved IDP, 2014-2015 is based on the following broad opportunities which falls under Tourism Development and promotion:

- Agri-tourism opportunities;
- Adventure and sports tourism opportunities;
- Nature-based tourism opportunities;
- Cultural heritage tourism opportunities;
- Events and routes opportunities; and
- General-organizational and marketing requirements.

The following opportunities have been identified in the Revised Tourism Development Framework, GTLM Final Approved IDP; 2014 -2015:

- Revive interest in Agri-tourism and farm visit;
- Runnymede community garden tours;
- Backpacker chalets in Haenertsburg;
- Adventure tourism camp at Tours Dam;
- Training Centre for culture, nature and adventure guides;
- Tourism facilities at Tzaneen Dam;
- Expanded day-visitor facilities at Tzaneen Dam Nature Reserve;
- Haenertsburg Grasslands declared a site of Natural importance;
- Active involvement of tourism operators in the Tourism Development Agencies;
- Acceptable tourism branding for the GTLM destination;
- A marketing and a strategic marketing alliance at regional or district level;
- The introduction of Tourism Awareness programmes at local schools;
- More effective liaison with neighbouring destinations;

- Determine the value of Tzaneen Museum; and
- Officially approaching the DWS to create tourism zoning plans around each dam and permit appropriate water-based activities on the dams.

Below are some of the factors which were taken into consideration by the GTEDA, on their feasibility study which was done in 2009:

- To turn Tzaneen Dam into a major tourist attraction.
- The Property owners around the dam should be brought and form a committee, the committee of which would be brought together to determine the process of developing the area (zoning for properties where necessary).
- Resource development plan.
- The unused property on Lions Club side (which is currently a potential for crime spot) and a land portion being donated to the Greater Tzaneen community, should be considered for development of the multi-use sports complex which will provide various types of sporting activities.

3.6.3.2 Feasibility of the identified Potential Objectives

According to DWAF (2006), the feasibility of the proposed objectives needs to be determined in light of the local environmental conditions. Table **11** shows the practicability of all proposed recreational objectives.

Table 11: Feasibility of Potential Recreational Objectives

KPA 1: Resource Management				
Objective		Status Quo	Practicability	
•	To ensure that DWS manages the allocable amount of water and proper management thereof.	 Tzaneen Dam is fully allocated due to the growing demand of agriculture and afforestation in the area. The Local Communities are installing unauthorized water pumps into the dam and abstract/draw water without permits / authorization. The raising of the dam wall project has been approved by Department of Environmental Affairs and it will be facilitated by DWS: NWRI. The raising of the dam wall will increase water security in the area. 	 Increasing the storage can practically be achieved through the raising of the dam wall as it will not require acquisition of additional land because the design's flood level remains within the existing purchased land. DEA: Environmental Authorization, 2011. The Zoning Plan should be updated as part of the RMP process and should incorporate the new full supply level of the dam. 	
•	To ensure that the water within Tzaneen Dam is of good quality and to avoid pollution in and around the dam.	 The water in the dam is of good quality and it is within the DWS water Standards for Recreational Water Use. Tzaneen Dam is surrounded by farms which pose a threat of water pollution through uncontrolled agricultural runoff. There should be a safety personnel to check the worthiness of the vessels before launching into the water and also check for oil leaks which might contaminate the water. 	 Water quality management lies within multiple institutions as well as on the dam users themselves, as such cooperation between all Stakeholders will ensure the possibility of maintaining the high-water quality standard of the dam. Enforcements of all relevant Legislation (e.g. NWA and NEMA) at the dam can always keep the dam's water quality in good conditions. The use of wash bays can assist to prevent the spread of Aquatic Alien Invasive species. The safety personnel/ Skipper must inspect the boat for water worthiness before launching into the water. 	
•	To have the dam and the surrounding environment free of Alien Vegetation in order to support the proposed recreational activities.	 WFW programme is currently not eradicating alien plants at Tzaneen Dam. There is no proper control and inspection of the vessels before they launch into the dam, which poses a threat of spread of aquatic alien invasive weeds. 	 It is practical through the WFW programme and compliance of all users to all the relevant Legislations, Regulations and dam rules, this will assist to minimize the Alien Invasive plants at the dam. The establishment of wash bays will assist in preventing the spread of Aquatic Alien Invasive plants at the dam. 	

•	To protect the faunal species against poaching e.g. net fishing and poaching of bushbucks.	 There are practices of poaching and unauthorized fishing currently taking place at the dam. Such practices can result in population decrease and possible extinction of the fauna species. The dam is not fenced, making it vulnerable to unauthorized practices like net fishing and poaching of bushbucks. 	 There should be a safety plan put in place to monitor the activities that are occurring at the dam. The IMP should be established as it will document approaches on how to combat the unauthorized activities within the nature reserve. There is a need for DAFF and LEDET to join forces to alleviate the high level of fish poaching.
•	To develop an Integrated Management Plan.	 Currently there is no integrated Management Plan at the Tzaneen Dam Nature Reserve. 	 Developing, monitoring and evaluating the Integrated Management Plan for the Tzaneen Dam Nature Reserve. Identify relevant studies such as environmental impact assessment, biodiversity assessment, etc. to be undertaken to conserve the natural environment.
•	To conserve and manage the natural environment in and around the dam in a sustainable manner.	 Portion of the dam is adjacent to the Tzaneen Dam Nature Reserve. The Nature Reserve has been declared as a provincial park. 	 By implementing an effective institutional structure, it will help in conservation and management of the natural environment in and around the dam. The IMP should be established as it aims to guide conservation and preservation of the Nature Reserves.
		KPA 2: Resource Utilization	
	Objectives	Status Quo	Practicability
•	To promote public safety when engaging in recreational activities at the dam.	 The dam is a home to a population of crocodiles and hippopotamuses. Hippopotamuses are dangerous animals that attack human in water and on land without apparent provocation. Currently there are no standardised and harmonised AtoN and Demarcation Markers at the dam. 	 Implementation of DWS Incident Management System. DWS in conjunction with SAMSA and DEA (WFW) should provide a lifeguard skills and first aid trainings and educations to the locals to ensure safe utilization of the dam. Implementation of standardised and harmonised AtoN and Demarcation Markers.

		 Implement aspects of the CIWSP best practice model to ensure the safe usage of the dam by the public. Visible warning signs should be erected alerting the visitors about the dangerous aquatic animals.
 To promote equitable access and use of the dam. 	 Local communities should be able to go to the dam and engage in recreational activities at a reasonable price. The entrance fees for both the Nature Reserve and the Boat Club are reasonable at R5 per child and R10 per adults. This makes it affordable for everyone who wants to engage in recreational activities. 	 The tariffs at the dam must remain reasonable and affordable to accommodate all the local communities. The BP should entirely focus on ways that can fund the community's entry fee so that it can enhance their participation and utilization of the dam. The entry fees need to be reasonable to ensure that the dam remains accessible and affordable to the local community.
 To improve the existing recreational facility at the Tzaneen Dam Nature Reserve. 	 The existing recreational facilities are in a state of despair and need renovations. The roads within the nature reserve are in a bad condition, and during the rainy reasons, it becomes difficult to access the recreational facilities. 	 The institutional structure will ensure that the Nature Reserve is developed and utilised to its maximum potential, as it serves as tourist attraction. The BP will assist in identifying the marketing strategies and funding mechanism to improve the current recreational structures.
 To develop and improve recreational facilities at the dam in order to attract new tourists to the dam. 	 There is a lease agreement between a private entity and GTLM to control access, manage and maintain the dam for recreational use. The dam needs to be developed in order to attract tourists into the area. Currently there is no swimming activities taking place at the dam, as it is a home to a population of crocodiles and hippopotamus. Hippopotamuses are dangerous animals that attack human in water and on land without apparent provocation. 	 Review the lease agreement between Lion's Club and GTLM Review of the Feasibility Study dated 2009. Establishment of swimming pools. The swimming pool will require life guards for the safety of the community and tourists. Local community members can be trained to be life guards.
• Introduction of small scale fishery at the dam.	 Currently there are unauthorized fishing at the dam, where people use nets to harvest the fish. Tzaneen Dam is big enough to accommodate the small-scale fishery project. 	 Preserve the core habitats for nesting, resting, feeding and breeding of fish within the inlets. Management Authority must develop a communication signage in order to effectively

	• Small-scale fisheries will make an important contribution to	inform different angling groups about the dam
	nutrition, food security, sustainable livelihoods and poverty	fishing rules.
	alleviation to the local community.	 DAFF to issue fishing licenses.
		Appoint Safety Officers that will monitor
		compliance of the dam fishing rules.
	KPA 3: Benefit Flow Management	
Objectives	Status Quo	Practicability
 To establish an appropriate institutional structure which will effectively manage the recreational use of the water resource and the surrounding environment in accordance with the institutional guidelines. 	 There is no formal institutional structure in place for recreational use. 	• As per the RMP process, a functional institutional structure will be established which will effectively manage the recreational utilization of the dam and the surrounding environment.
• To promote Tzaneen Dam to become a major tourist attraction.	• There is lack of marketing strategies regarding tourism attraction for the dam.	 The proposed institutional structure must work together with the local economic development agency and the municipality to market the dam. The BP will assist in identifying marketing strategies and funding mechanisms that can assist the local communities to invest in the recreational industry at the dam, which will enhance the economic growth of the area.
To promote community participation and beneficiation.	 The DWS: Area Office appoints personnel on a contract basis to clear the weed growing on the dam wall. Lions Club and the Nature Reserve appoints members of local communities as gate keepers and ground men to clean the facilities in these places. Currently there are no skills development programs in place which are linked to the utilization of the dam. 	 Establishment of functional institutional structure that should have enough power to ensure that the Local Communities are benefitting from the economic benefits emanating from the dam use and development. The BP will detail how the previously disadvantaged communities can benefit from recreational opportunities. The job opportunities that might arise from the implementation of the RMP should follow the PPP to ensure community beneficiation. Skippers can be trained and be appointed at the dam, including safety personnel, care takers, cleaners and etc

	•	DEA Working for Water to provide Wash Bay
		Officer Training.
	•	SAMSA to provide Vessel Safety Training to
		Wash Bay Officer.

CHAPTER 4: INTEGRATED MANAGEMENT, ZONING AND INSTITUTIONAL PLANNING (PHASE 5)

The purpose of this phase is to evaluate the information obtained from previous stages to ascertain what could be achieved based on specific constraints and parameters of the various input factors such as biophysical, cultural and socio-economic, current institutional and needs of the dam users. The Integrated Resource Management Plan (IRMP) will take into account the following:

- Biophysical, Cultural and Socioeconomic and User needs constraints;
- Development potential and requirements;

- Site planning and Zonation;
- Programmes and Plans that will unlock the potential of the water resource; and
- Institution options and legal aspects required to create these programmes and plans.

The IRMP is broken down into four (4) main plans namely the **Institutional Plan**, **Zoning Plan**, **Strategic Plan** and **Financial Plan** as illustrated in **Figure 13**.



Figure 13: Integrated Resource Management Plan

4.1 INSTITUTIONAL PLAN

The Institutional Plan provides a framework for the institutional arrangements at the dam. The proposed management systems include three (3) committees namely; a Dam Management Committee (DMC), Operations Management Committee (OMC) and National Project Steering Committee (NPSC). The appointed management authorities by DWS at the dams, will also form part of the institutional structure.

4.1.1 Dam Management Committee (DMC)

DMC refers to any party that is interested or affected by the dam and will assist in raising and addressing issues relating to the dam.

One of the main functions of the DMC is to provide support to the Implementing Agency (IA) with the management of the dam for recreational purposes and to assess commercial opportunities at the dam. As such, an agenda item related to the Strategic Plan for commercialization is required. In addition, changes in water quality, developments in the area, status of Aquatic Invasive Species and education and information programmes should be discussed. The DMC must meet quarterly.

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

- Seeking resolution for general management issues;
- Monitoring the practical implementation of the RMP;
- Reviewing the feedback received from I&APs;
- Operational management of recreational activities such as ensuring the floating AtoN and demarcation markers are in place and setting times for use of the dam (no recreational activities can take place between sunset and sunrise);
- Conveying the Management Objectives and decisions pertaining to the dam to the relevant stakeholders;
- Management of the Incident Management System and wash bays.

Figure 14 illustrates the proposed user groups that will form part of the DMC.



Figure 14: Proposed DMC

The DMC will have a number of management tools which will enable proper management of the dam in line with existing Legislations and Regulations requirements.

4.1.1.1 Management Tools

Terms of Reference

The DMC and NPSC will be guided by Terms of Reference (ToR) regarding roles and responsibilities. ToR is not required for the **OMC** as this is the existing reporting structure. The ToR provide guidance on the following management aspects:

- Roles and Responsibilities of chairperson;
- Role and Responsibilities of 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.

Agreements

One of the main management tool available is the use of agreements to ensure proper use of the dam in line with the RMP vision and objectives. Although agreements with some recreational clubs exist (refer to **Table 12**), there is no overarching agreement to manage recreational use at the dam.

Table 12: Existing Agreements

Holder		Property/ies
Greater	Tzaneen	portion of portion 258
Local	Municipality	of the Farm 555T, 1.5 ha
and Lion	is Club	

Holder			Property,	/ies	
Limpopo	То	urism	Tzaneen	Dam	Nature
Agency	and	Mrs	Reserve		
Mathonsi					

All the existing agreements would be review within the 12 months of the RMP being approved. This is to ensure that the agreements are aligned with the objectives of the RMP.

Agreements between DWS and Implementing Agency

GTLM will be appointed as an Implementing Agency (IA) for the RMP of Tzaneen Dam. GTLM and DWS will sign a Memorandum of Agreement (MOA), which is a legal binding document which will outline the roles and responsibilities and conditions to be followed by both parties in terms of managing the water resource for recreational use. GTLM can involve GTEDA as it is an agency for the municipality to implement the RMP for Tzaneen Dam.

The minimum requirements of an IA include the following:

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

The IA is appointed to manage commercial and recreational use of the dam. This would include the following:

- Management of recreational clubs;
- Management of public access area;
- Management of wash bay and DWS incident management system;
- Management of community skills and training programmes;
- Management of commercial activities (in line with Treasury Requirements); and
- Management of AtoN and demarcation markers.

Regardless, all agreements should be in line with the RMP requirements and relevant Legislations and Regulations.

Recreational Use Agreements

Recreational clubs must enter into an agreement with the IA who will be responsible for the surface water and shoreline management of the dam. All recreational use at the dam must be through an appropriate Legal Framework. However, all agreements must be approved in writing by 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.

Safety of Navigation Agreements

In addition to its common-law responsibility, DWS is, in terms of the requirements described in the National Water Act, 1998 (Act 36 of 1998), amongst others, responsible for the safety of GWWs and watercourses, including its dams. DWS, its delegated public sector partner, or a delegated water management institution, has therefore the responsibility to provide the required fixed and/or floating Aids to Navigation (AtoN)³ for general navigation.

Agreements between SAMSA and DWS, other relevant Parties or Bodies are to be concluded to allow them to:

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

Access Agreements

All surface water and shoreline access must be formalised. The conditions for such access must be written into the agreement. All illegal practices must be addressed. Appropriate action must be taken to ensure that all parties comply with the requirements of the RMP.

All adjacent landowners and clubs must be made aware that access to the surface water as well as shoreline should only be through authorised access points. Accessing the surface water through unauthorised access points is an illegal activity unless they enter into a formal agreement with IA. Further, a formal agreement with IA will be required for all adjacent landowners and recreational clubs that have direct access to the water surface of the dam through constructed slipways, natural slipways or jetties for angling and/or launching of vessels.

The wash bay must be built on State Property as part of the CIWSP. A formal agreement is necessary between the IA and DEA on the management and maintenance of the facility.

Event Applications

The dam is used for competitive angling events. All events must be managed through an event application process. The events application will be submitted to an IA for approval and DWS for commenting. These applications must follow a specific template and will include the following:

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

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

National Affiliations

All recreational clubs should be affiliated to a SASCOC affiliated organisation. The development targets set by the National Organisations must be met.

4.1.2 Operations Management Committee (OMC)

There is an existing Chief Director Infrastructure Operations: Management Committee (CD: IO MANCO) within the NWRI which comprises of all directors of four (4) operations (Northern, Southern, Eastern and Central) and is chaired by the Chief Director of

³ AtoN refers to any sort of marker which aids the traveler in navigation; the term is most commonly used to refer to nautical or aviation travel, common

types of such aids include lighthouses, buoys, fog signals and day beacons.

Operational Infrastructure within NWRI as illustrated by **Figure 15**:

The committee should meet quarterly discussing matters relating to operations and

maintenance of all GWWs. RMP must be a standard agenda item. Any matters relating to the RMP that are outside the scope of DWS will be escalated to the NPSC.



Figure 15: Existing CD: IO MANCO

4.1.3 National Project Steering Committee (NPSC)

NPSC is formed by DWS and is made up of representatives from National Government Departments and Implementing Agencies that are relevant in terms of managing the water resource.

The primary function of the NPSC is to provide guidance on recreational water use in terms of

their respective mandates as well as to ensure that continuous support by different Government Sectors is provided to the dam with the aim of achieving sustainable utilisation of the dam for recreational purposes. The NPSC should meet twice a year. **Figure 16** illustrates a typical example of Governmental Departments that will form part of the NPSC:



Figure 16: Proposed NPSC

The role of the relevant Departments forming part of the NPSC is listed below:

Centre for Public Service Innovation (CPSI):

The CPSI is supporting a multi-departmental working group that is developing an innovative approach to inland water and safety integrity. The project, was initiated out of the need to find an innovative, practical and cost-effective way to implement SAMSA' vessel safety regulations on inland waterways and to implement responsible water use within the broader socio-economic context of the country.

The CIWSP is a project piloted by CPSI that is a partnership between multiple Government entities and between the Government and communities. The main aim of the project is to enhance the development of a best practice model to ensure safe and structured inland maritime environment and culture, whilst protecting the country's precious water resource.

<u>Culture, Arts, Tourism, Hospitality, Sport</u> <u>Sector, Education and Training Authority</u> (CATHSSETA):

CATHSSETA deals with the approval and financing of training relating to culture, hospitality, tourism and sport sectors.

Department of Agriculture, Forestry and Fisheries (DAFF):

The purpose of DAFF includes sustainable development and management of resources to maximizing the economic potential of the fisheries sector while protecting the integrity and quality of the country's aquatic ecosystems.

Operation Phakisa expansion to inland dams is one of DAFF initiative aimed at unlocking economic potential of fisheries sector within the inland water. The latter programme will be used as benchmark for implementation of conservation policies while implementing job creation within fishery and fish processing market.

Department of Corporative Governance and Traditional Affairs (CoGTA):

Its function is to develop national policies and legislation with regard to Provinces and Local government, and to monitor their implementation. Other function of the Department is to support Provinces and Local Government in fulfilling their constitutional and legal obligations.

Department of Environmental Affairs (DEA):

DEA is mandated to give effect to the right of citizens to an environment that is not harmful to their health or wellbeing, and to have the environment protected for the benefit of present and future generations. In relation to the RMP, the Department should ensure that Environmental Impact Assessments is undertaken for all activities that triggers EIA Regulations at the dam. Furthermore, DEA through WfW programme can assist to eradicate alien invasive plants species (Blue Gums and Parrot Furthers) and alien invasive fish species at the dam.

Department of Public Works (DPW):

DPW has the power to regulate and control the use of state land outside the GWWs. In this regard, lease agreements or permits will be required from the Department as some of the recreational activities will overlap into the State Land, e.g. trail running, biking and running.

Department of Rural Development and Land Reform (DRDLR):

The Department is tasked with the facilitation of land claims within the country. They are also involved in rural development by improving both economic infrastructure (such as roads, etc.) and social infrastructure (e.g. communal sanitation and non-farming activities).

Department of Sports and Recreation (DSR):

The Department is mandated to promote and develop sport and recreation activities and also in co-ordination of the relationships between the Sports Commission, national and recreation federations and other agencies.

Department of Tourism (NDT):

The Department is mandated to create conditions for the sustainable growth and development of tourism in South Africa. The Tourism Act makes provision for the promotion of tourism to and in the Republic and for regulation and rationalisation of the tourism sector, including measures aimed at the enhancement and maintenance of the standards of facilities and services utilised by tourists; and the co-ordination and rationalisation of the activities of those who are active in the tourism sector.

Department of Transport (DoT):

Responsible for legislation, policy and regulations for all transportation in South Africa, including shipping and other transport by water or sea, including small vessels and inland waterways.

Department of Water and Sanitation (DWS):

DWS through the National Water Act, 1998 (Act No. 36 of 1998) is mandated to protect aquatic and associated ecosystems and their biological diversity as well as to reduce degradation of the water resources. As part of its mandate, DWS initiated the development of RMPs together with the supporting BPs with the aim of ensuring sustainable and equitable development, utilisation and management of GWWs.

National Treasury (NT):

The Department is mandated to support the optimal allocation and utilisation of financial resources in all spheres of government. As part of the RMP, The National Treasury Public Private Partnership (PPP) Toolkit for Tourism (2005), will assist the process of tourism-based businesses development 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, Provincial and Local Government Institutions.

South African Maritime Safety Authority (SAMSA):

Administers and executes maritime related legislation and regulations, including the National Small Vessel Safety Regulations and ensures standardisation, harmonisation and compliance of all AtoN in South African waters.

South African Police Service (SAPS):

The South African Police Service have been entrusted with the responsibility of creating a safe and secure environment for all people in South Africa as well as to prevent anything that may threaten the safety or security of any community.

South African Sports Confederation and Olympic Committee (SASCOC):

SASCOC is mandated to promote and develop high performance of sports as well as to act as a controlling body for sports in South Africa. It can also assist to coordinate organize events at the dam.

4.2 ZONING PLAN

According to DWAF (2006), a site-specific master planning and zoning which describes a framework for the allocation of zones needs to be undertaken based on the results of the Encumbrance Survey and basic Research regarding the Bio-physical, Social and Cultural environment as well as the objectives set by the Stakeholders (refer to section **3.6**).

The proposed Zoning Plan will integrate conservation, recreation and development whilst not retarding the primary functions of the dam.

4.2.1 Water Surface Zoning

The water surface zoning provides guidance on permissible and non-permissible recreational activities on the water surface taking into account the biophysical factors of the dam. The Water Surface is zoned as follows:

Safety and Security Zone:

It covers a minimum of 100m area from the wall and outlet works indicated by demarcation markers and AtoN. 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 to ensure the safety of the public. This is a no-go zone to the public unless authorized.

Conservation Zone:

The aim of this zone is to conserve and protect sensitive aquatic habitation at the inlet(s) of the dam. According to Section 12 and 26 of NWA, the existence of these zones is thus not negotiable as it is imperative to protect the water resource for the purposes relating to basic human needs, environmental sustainability and water quality requirements. Access to these areas 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 act as a buffer between High Impact Activity Zones and Conservation Zones. 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 and small scale fisheries.

High Impact Activity Zone:

This zone has the largest water surface area and is located where the reservoir is at its deepest. It caters for high impact activities associated with high speed, wake and noise activities such as motorized boating, house boating, water skiing, and para-sailing.

The water surface zoning colour coding means the following:

Colour	Zone Description
Red	Safety and Security Zone
Green	Conservation Zone
Sky Blue	Low Impact Activity Zone
Dark Blue	High Impact Activity Zone

 Table 13: Proposed Water Surface Zoning Description

	Zone Name	Permissible activities	Non-permissible activities	Recommendation
•	Safety and Security Zone.	 Alien invasive species clearing Management of dam infrastructure Management and maintenance activities by DWS and authorised personnel. 	Public access	 Area should be demarcated by demarcation markers and AtoN.
•	Conservation Zone.	Access is limited to conservation and research personnel.	 Public activities in order to allow for: Undisturbed fish and bird breeding habitats To limit pollution potential. 	 These areas should be demarcated by demarcation markers and AtoN. Strict management and control of these areas are necessary, especially with regards to unlawful net fishing.
•	Low Impact Activity Zone.	 Activities associated with no or little wakes, such as: Canoeing Boat angling Sailing Development of sport with specific requirement for low wake water surface conditions 	 High impact activities such as Motorised boating Water Skiing Para-sailing Kite-surfing Jet skis Swimming in the dam 	 Area should be demarcated by demarcation markers and AtoN. Launching and mooring of vessels should take place at this zone.
•	High Impact Activity Zone.	 Motorised boating Water Skiing Para-sailing Kite-surfing Jet ski 	 Low impact activities such as: Swimming Boat angling canoeing Sailing 	 Area should be demarcated by demarcation makers and AtoN. All activities within the high impact zone shall take place beyond 70m from the shoreline. Activities within this zone must be evaluated to determine their impact on the water resources and other dam users before they are allowed into the dam



Figure 17: Proposed Water Surface Zoning Map

4.2.2 Shoreline Zoning⁴

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

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

It is applicable to the area surrounding the dam wall and the outlet works. The extent of this zone is determined by 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 to ensure 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, bird watching, etc. This area is reserved to prevent ecological damage due to development activities hence high impact development not permitted.

Medium Density Activity Zone:

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

High Density Activity Zone:

This area is reserved 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 livelihood is maintained and improved. Activities include subsistence fishing, livestock watering points, small scale community gardens, etc.

The Shoreline zoning colour coding mean the following:

Colour	Zone Description	
Red	Safety and Security Zone	
Groon	Conservation/ Low Density Activity	
Green	Zone	
Yellow	Medium Density Activity zone	
Orange	High Density Activity Zone	
Brown	Community Resource Zone	

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

N.B Shoreline Zoning of Tzaneen Dam is subjected to change after acquiring the new Full Supply Line (FSL) due to the proposed plan to raise the dam wall.

 Table 14: Proposed Shoreline Zoning Description

Zone Name	Permissible Activities	Non-permissible Activities	Recommendation
 Safety and Security Zone 	 Fire management Alien invasive species clearing Management of dam infrastructure Management and maintenance activities by DWS and authorised personnel 	Public access	 A minimum area of 100m wide downstream the dam wall should be demarcated preventing public access and use.
Conservation and Low Density Activity Zone	Conservation management activities:Bird watching	Development	These zones should control access to ecological sensitive areas.
Medium Density Activity Zone	 Day visitors Picnics Camping Caravan Park Shoreline fishing Wash bay Allowed facilities: Braai facilities Ablution facilities 	 Permanent structures Accommodation facilities such as: Chalets Guesthouse Swimming in the dam. 	 The management of this area should follow PPP process in terms of the National Treasury. All developments must be approved by IA and DWS. Requirements of NWA and NEMA must be taken into account in all developments. Camping, birding, picnicking, bank angling and access to the water must be done in accordance to access agreements. Camping and picnicking is allowed only in designated areas. Noise level to be kept at a minimum. No littering at Camping and Picnic spots.
High Density Activity Zone	 Accommodation facilities: Chalets Guesthouse Recreational Club House Infrastructure for services Small Scale fishery project Day visitors Swimming pools 	 Hiking Camping caravan park Permanent structures 	 The management of this area should follow PPP process in terms of the National Treasury. All developments must be approved by IA and DWS. Requirements of NWA and NEMA must be taken into account in all developments.



Figure 18: Proposed Shoreline Zoning Map



Figure 19: Proposed Overall Zoning Map

4.2.3 Carrying Capacity

In order to determine the degree or possible recreational use on the water surface, the Methodology for Carrying Capacity Assessment: Recreation Water Use (DWS 2003) was used as guideline to determine the level of activities that would be sustainable at Tzaneen Dam

Carrying capacity for recreation provides a guideline to ensure that recreation at the dam is safe, that users do not feel crowded and that they enjoy the use of the dam for leisure activities.

There are three kinds of carrying capacity:

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

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, thus: **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 is calculated as PCC = A ×U/a ×Rf

- Where A = Area available for public use;
- **U/a** = area required for each user; and
- **Rf** = Rotation Factor (the number of visits per day)

A is calculated as the area of the water surface available for public use: 1163.6 ha

The **U/A** = There is a range of literature regarding the area required for different recreational users.

The U/A used for the assessment is as follows: Craft	U/A (ha/craft)
Powerboats	4.0
Angling	3.0
Canoeing	1.0
Average	2.7

Based on the fact that most activities do not require much space, the average hectare per user is 2.7 ha (27 000 m²), the value of 5.0 ha (50 000 m²) can be acceptable area per user. This has been chosen in order to ensure that the dam is not overcrowded, as such impacting on the sense of the area.

The PCC for Tzaneen Dam can further be calculated as:

PCC = A × U/a × Rf =1163.6 × 1/5 × 1 = 233 vessels

Real Carrying Capacity

The RCC takes factors into account that limits recreation. The limiting factors include:

Safety Areas/ No go Zones (10.3 ha); and

Conservation Area (193.9 ha).

The above factors result in 17.5% decrease in water surface available for recreation at the dam, therefore 82.5% of the surface area of the dam is still available for recreation.

RCC for Tzaneen Dam is therefore:

RCC = PCC × (100 - Cf1) % × (100 - Cf2) % × (100 - Cfn) %

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

RCC = 233 × (100 – 17.5) %/100 = 192 vessels

Effective Carrying Capacity

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

Currently there is no formal management structure in place, as such the ECC is 0. The ECC will be calculated after the proposed Institutional structure (as part of the RMP) have been implemented in order to manage the sustainable utilization of the dam for recreational purposes.

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 do we want?);
- Motivation (Why do we want to achieve this?);
- Action Projects (How do we achieve this?); and
- Management Support (Who will be involved?).

In **Tables 15 - 17**, the Strategic Plan on how to achieve the identified objectives identified regarding the dam is outlined.

Table 15: Strategic Plan for KPA 1: Resource Management

KPA 1: Resource Management					
Objective (What do we want)	Motivation (Why do we want to achieve this)	Action Projects (How do we achieve this)	Management Support (Who will be involved)		
 Water Allocation: To ensure that DWS manages the allocable amount of water and proper management thereof. 	 The water within Tzaneen Dam has been fully allocated due to the growing demand of agriculture and afforestation in the area. Local Communities tend to install unauthorized water pumps into the dam and take water without permits / authorization. The raising of the dam wall will increase water security in the area. 	 The storage capacity of the dam will be increased by raising the dam wall. By verifying the existing water use and regulating the abstraction of water. Enforcement unit to deal with alleged unlawful water abstraction. 	 DWS is responsible for raising the dam wall. DWS is responsible for Water Use Licensing and Regulation. 		
 Water Quality: To ensure that the water within Tzaneen Dam is of good quality and to avoid pollution in and around the dam. 	 The water in the dam is of good quality and is in compliance to the DWS Standards for Recreational Water Use. Tzaneen Dam is surrounded by farms which poses a threat of water pollution through uncontrolled agricultural runoff. 	 The water upstream and downstream of the water resource must be regularly sampled to check any trace of pollution in the dam. To educate and/ or encourage farmers to use organic fertilizers other than artificial fertilizers. Proper waste management system at the dam. 	 The DWS, Department of Agriculture, Forestry and Fisheries, Department of Environmental Affairs and the municipalities (local and district) Greater Tzaneen Local Municipality and Mopani District Municipality. 		
 Alien Invasive Vegetation: To have the dam and the surrounding environment free of Alien Vegetation in order to support the proposed recreational activities. 	 WFW programme is currently not eradicating alien plants at Tzaneen Dam. There is no proper control and inspection of the vessels before they launch into the dam, which poses a threat of spread of aquatic alien invasive weeds. 	 Construct an inspection and cleaning mechanism such as wash bays to ensure that there is no spread of any alien invasive species. To re-establish the native species to the area, and DEA (WFW) to remove all invasive alien vegetation within the purchased boundary. 	• DEA (Working for water), DWS.		

KPA 1: Resource Management					
Objective (What do we want)	Motivation (Why do we want to achieve this)	Action Projects (How do we achieve this)	Management Support (Who will be involved)		
 Protection of Fauna: To protect the faunal species against poaching e.g. net fishing and poaching of bushbucks. 	 There are unauthorized practices at the dam including net fishing and poaching of bushbucks. Such practices can result in population decrease of the fish species in the dam. 	• To appoint personnel to patrol the dam and also check for any unauthorised activities that might occur at the dam both at Lions Club and the Tzaneen Dam Nature Reserve.	 An Implementing agency (IA) will be appointed and it will ensure that the faunal species will be protected and eliminate unauthorised activities at the dam. 		
 Integrated Management Plan: To develop an Integrated Management Plan. 	 Currently there is no integrated Management Plan at the Tzaneen Dam Nature Reserve. 	 Developing, monitoring and evaluating the Integrated Management Plan for the Tzaneen Dam Nature Reserve. Identify relevant studies such as environmental impact assessment, biodiversity assessment, etc. to be undertaken to conserve the natural environment. 	 DWS, LEDET, TDNR, GTLM will ensure that the Integrated Management Plan is implemented. 		
 Conversation: To conserve and manage the natural environment in and around the dam in a sustainable manner. 	 Portion of the left bank of the dam is adjacent to the nature reserve. 	 Developing an Integrated Environmental Management System (IEMS) for the dam. By undertaking a biodiversity management plan By identifying areas where vegetation has deteriorated and rehabilitate accordingly. 	DWS, DEA, LEDET and other local conservation initiatives.		

Table 16: Strategic Plan for KPA 2: Resource Utilisation

KPA 2: Resource Utilisation				
Objective (What do we want)	Motivation (Why do we want to achieve this)	Action Projects (How do we achieve this)	Management Support (Who will be involved)	
 Public Safety: To promote public safety when engaging in recreational activities at the dam. 	 The dam is a home to a population of crocodiles and hippopotamuses. Hippopotamuses are dangerous animals that attack human in water and on land without apparent provocation. Currently there are no standardised and harmonised AtoN and Demarcation Markers at the dam. 	 Implementation of DWS Incident Management System. DWS in conjunction with SAMSA and DEA (WFW) should provide a lifeguard skills and first aid trainings and educations to the locals to ensure safe utilization of the dam. Implementation of standardised and harmonised AtoN and Demarcation Markers. Implement aspects of the CIWSP best practice model to ensure the safe usage of the dam by the public. Visible warning signs should be erected alerting the visitors about the dangerous aquatic animals. 	 DWS, DMC, DEA: WFW, SAMSA, LEDET, DoT, GTLM and other departments which are concerned about public safety. 	
 Equitable Access: To promote equitable access and use of the dam. 	 Local communities should be able to go to the dam and engage in recreational activities at a reasonable price. The entrance fees for both the Nature Reserve and the Boat Club are reasonable at R5 per child and R10 per adults. This makes it affordable for everyone who wants to engage in recreational activities. 	 Local communities must be introduced to water recreational activities in order to redress the past imbalances and promote physical access to the water resource and its benefits. The tariffs at the dam must remain reasonable and affordable to accommodate all the local communities. The BP should entirely focus on ways that can fund the community's entry fee so that it can enhance their participation and utilization of the dam. 	 DWS, DMC, GTLM (IA) should ensure that the entrance fees remain reasonable and affordable to the community and tourists. 	

KPA 2: Resource Utilisation					
Objective (What do we want)	Motivation (Why do we want to achieve this)	Action Projects (How do we achieve this)	Management Support (Who will be involved)		
		 The entry fees need to be reasonable to ensure that the dam remains accessible and affordable to the local community and to tourists. 			
 Recreational Facilities: To improve the existing recreational facility at the Tzaneen Dam Nature Reserve. 	 The existing recreational facilities are in a state of despair and need renovations. The roads within the nature reserve are in a bad condition, and during the rainy reasons, it becomes difficult to access the recreational facilities. 	 The existing facilities within the nature reserve should be renovated and maintained. Maintenance of the existing road for ease access to the dam. To develop and improve recreational facilities at the dam in order to attract new tourists to the dam. 	 The DMC, GTLM (IA) and LTA will ensure the nature reserve is developed and utilised to its maximum potential, as it serves as a tourist attraction point. The BP will assist in identifying the marketing strategies and funding mechanism to improve the current recreational structures. 		
 Development: To develop and improve recreational facilities at the dam in order to attract new tourists to the dam. 	 There is a lease agreement between a private entity and GTLM to control access, manage and maintain the dam for recreational use. The dam needs to be developed in order to attract tourists into the area. Currently there is no swimming activities taking place at the dam, as it is a home to a population of crocodiles and hippopotamus. Hippopotamuses are dangerous animals that attack human in water and on land without apparent provocation. 	 Review the existing lease agreement in order to cater for the proposed and existing recreational activities at the dam. To develop and improve recreational facilities at the dam in order to attract new tourists to the dam. To establish swimming pool in order to introduce swimming activity at the dam, as an alternative to use the dam as a safety measure. 	 DWS, DMC, GTLM should ensure that the dam is developed and improved to attract tourists into the area. The institutional structure must make sure that the community is aware of the crocodiles and hippopotamus in the dam by putting big visible warning signs. The BP will give an insight on how the swimming pool will be financially resourced. The swimming pool will require life guards for the safety of the community and tourists. Local community members can be trained to be life guards. 		
TZANEEN DAM RESOURCE MANAGENENT PLAN

KPA 2: Resource Utilisation								
Objective (What do we want)	Motivation (Why do we want to achieve this)	Action Projects (How do we achieve this)	Management Support (Who will be involved)					
 Small-scale Fishery: Introduction of small-scale fishery. 	 Currently there are unauthorized fishing at the dam, where people use nets to harvest the fish. Tzaneen Dam is big enough to accommodate the small-scale fishery project. Small-scale fisheries will make an important contribution to nutrition, food security, sustainable livelihoods and poverty alleviation to the local community. 	 Conduct a feasibility study to determine the viability of introducing small scale fishery at the dam Preserve the core habitats for nesting, resting, feeding and breeding of fish within the inlets. Management authority must develop a communication signage in order to effectively inform different angling groups about the dam fishing rules. Appoint Safety Officer that will monitor compliance of the fishing rules. 	 Different government departments such as DWS, DEA, DAFF, LDARD and DTI should work together into a management structure in order to assess the viability and possibility of introducing the small-scale fishery. 					

Table 17: Strategic Plan for KPA 3: Benefit Flow Management

KPA 3: Benefit Flow Management								
Objective (What do we want)		Motivation (Why do we want to achieve this)	Ac	tion Projects (How do we achieve this)	N	lanagement Support (Who will be involved)		
 Institutional Structure: To establish an appropriate institutional structure which will effectively manage the recreational use of the water resource and the surrounding environment in accordance with the institutional guidelines. 	•	There is no proper institutional structure in place for recreational use.	•	 Formalization of the RMP proposed Institutional Structure. The roles and responsibilities of the role players have to be clearly defined on the RMP implementation plan. Ensure that the following agreements are in place (as necessary): Agreements between DWS and IA; and Access Agreements with all dam users. 	•	The institutional structure should be representative of all relevant stakeholders. DWS and key stakeholders.		

TZANEEN DAM RESOURCE MANAGENENT PLAN

KPA 3: Benefit Flow Management								
Objective (What do we want)	Motivation (Why do we want to achieve this)	Action Projects (How do we achieve this)	Management Support (Who will be involved)					
		 Improved Institutional Arrangements and management at the dam, through the implementation of standardised and harmonised AtoN and demarcation markers in order to improve safety of navigation. 						
 Tourist Attraction: To promote Tzaneen Dam to become a major tourist attraction. 	• There is lack of marketing strategies regarding tourism attraction for the dam.	 The IA should update feasibility studies and marketing strategies to attract more visitors. 	 The established institutional structure must ensure that there is a good marketing strategy for the dam. 					
Community Participation and Beneficiation: • To promote community participation and beneficiation. • <td> The DWS: Area Office appoints personnel on a contract basis to clear the weed growing on the dam wall. Lions Club and the Nature Reserve appoints members of local communities as gate keepers and ground men to clean the facilities in these places. Currently there are no skills development programs in place which are linked to the utilization of the dam. </td> <td> Establishment of functional institutional structure that should have enough power to ensure that the Local Communities are benefitting from the economic benefits emanating from the dam use and development. The BP will detail how the previously disadvantaged communities can benefit from recreational opportunities. The job opportunities that might arise from the implementation of the RMP should follow the PPP to ensure community beneficiation. Skippers can be trained and be appointed at the dam, including safety personnel, care takers, cleaners and etc. DEA Working for Water to provide Wash Bay Officer Training. SAMSA to provide Vessel Safety Training to Wash Bay Officer. </td> <td> DWS, GTLM, LEDET, DMC, DEA, SAMSA, LDARD and the Involvement of the Ward councilor in making sure that the Local Community is participating as well as benefiting from the dam. </td>	 The DWS: Area Office appoints personnel on a contract basis to clear the weed growing on the dam wall. Lions Club and the Nature Reserve appoints members of local communities as gate keepers and ground men to clean the facilities in these places. Currently there are no skills development programs in place which are linked to the utilization of the dam. 	 Establishment of functional institutional structure that should have enough power to ensure that the Local Communities are benefitting from the economic benefits emanating from the dam use and development. The BP will detail how the previously disadvantaged communities can benefit from recreational opportunities. The job opportunities that might arise from the implementation of the RMP should follow the PPP to ensure community beneficiation. Skippers can be trained and be appointed at the dam, including safety personnel, care takers, cleaners and etc. DEA Working for Water to provide Wash Bay Officer Training. SAMSA to provide Vessel Safety Training to Wash Bay Officer. 	 DWS, GTLM, LEDET, DMC, DEA, SAMSA, LDARD and the Involvement of the Ward councilor in making sure that the Local Community is participating as well as benefiting from the dam. 					

4.4 FINANCIAL PLAN

The RMP provides guidance on cost recovery mechanisms to ensure the sustained and improved management of the dam. The Tzaneen Dam could become an economic lever and central to development in the Limpopo Region. There are opportunities for PPPs which could further unlock the economic potential of the dam. PPPs allows for DWS to make State Assets such as GWWs available to private parties who wish to engage in tourism related commercial operations (DWAF, 2009). PPPs should be established as per Regulation 16 of the National Treasury. When PPPs are established the private party takes up the financial, technical and operation risks but receives benefits.

The dam is a state asset and as such all profits generated from the recreational use, should be used to further develop the dam. People should not be denied access to the dam. All fees associated with the usage of the dam for recreation should take into account the socioeconomic status of the users. The access fees should make a provision for equitable access.

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

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

The BP will include a Financial Plan (FP) which will facilitate the implementation of the RMP by providing implementation program cost estimate for all possible economic recreational activities.

WAY FORWARD

Once the RMP and its BP are approved by the Minister of Water and Sanitation, it will be published in the Government Gazette as a regulation in terms of Section 26 of the NWA.

Review of RMP

According to DWAF (2006), the RMP is reviewed and updated every five (5) years to ensure that the management objectives remains relevant and management actions are continually improved. The BP is updated annually. **Figure 20** illustrates the RMP and BP review framework.



Figure 20: RMP and BP and Review Framework

CONCLUSIONS

This RMP documents the challenges that exists within the Tzaneen Dam that can significantly impact the utilisation and management of the dam and its surroundings for recreational purposes. Such factors include legal, biophysical, socio-economic, and hydrological as well as access to the resource. These factors will assist DWS with the most appropriate approach to ascertain that the issues are addressed before the implementation of the RMP.

The RMP will assist in effectively managing the dam and its surrounding environment. Furthermore, its function is to implement an for the effective Institutional Plan management of dam. The focus on Institutional Plan is accompanied by a Zonal Plan which provides guidance on potential activities that are allowed on the dam, together with a Strategic Plan. The Strategic Plan explains the action plans on how to achieve the identified objectives. In addition, a Financial Plan provides guidance on the

funding requirements and funding options to implement the objectives of the RMP.

Moreover, the RMP promotes community participation and beneficiation, through Stakeholders engagement which were conducted to obtain common key objectives to be met by the RMP. The vision of the dam was formulated from the key common objectives identified by Stakeholders. Based on the strategic objectives identified for Tzaneen Dam, a BP has been developed to describe the manner in which the potential recreational activities are to be financially resourced.

In addition, including the RMP in the Local Initiatives such as IDPs, LED, SDF, etc. can ensure effective co-operative governance as well as to provide necessary support with regards to the use of dam for recreational purposes. Undertaken in this manner, it is believed that the potential of the water resource can be optimally unlocked in a sustainable and equitable manner.

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APPENDICES