## NATIONAL WATER RESOURCE INFRASTRUCTURE (NWRI)

# Resource Management Plan MISVERSTAND DAM

REPORT – Volume 4 of 5

August 2017



WATER IS LIFE - SANITATION IS DIGNITY



## water & sanitation

Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA



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## ACKNOWLEDGEMENTS

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- Department of Environmental Affairs;
- Department of Public Works;
- Department of Transport;
- Department of Economic Development, Finance and Tourism;
- Department of Agriculture Forestry and Fisheries;
- Department of Rural Development and Land Reform;
- Westcoast District Municipality;
- Swartland Local Municipality;
- The Community members of Moorreesburg and around Misverstand Dam; and
- Club Elani Resort.

The Acknowledgement is also extended to all other Stakeholders who attended and participated in the Stakeholder engagements.

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#### **Review:**

Review Period	Month			Year		
Annual Review of Business Plan	December	2019 <sup>1</sup>	2020	2021	2022	2023
Five (5) Yearly Review of RMP	December	2023				

<sup>&</sup>lt;sup>1</sup> The implementation of the RMP and BP requires a year budget planning prior to operationalisation.

## **AMENDMENTS PAGE**

Revision No	Description	Date
1	Draft for DWS Review	18/11/2016
2	Draft for Public Review	06/04/2017
3	Final RMP for DWS Approval	10/08/2017
4	Final RMP for DWS Sign off	16/08/2017

## LIST OF ACRONYMS

ADU	Animal Demography Unit
ΑτοΝ	Aid(s) to Navigation
BID	Background Information Document
BP	Business Plan
<b>CD: IO MANCO</b>	Chief Director Infrastructure Operations Management Committee
CIWSP	Cooperative Inland Waterways Safety Programme
CPSI	Centre for Public Service Innovation
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DMC	Dam Management Committee
DPW	Department of Public Works
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
DWS, RQS	Department of Water and Sanitation, Resource Quality Services
ECC	Effective Carrying Capacity
EMF	Environmental Management Framework
FSL	Full Supply Level
GDP	Gross Domestic Product
GP	Guideline Programme
GPS	Global Positioning System
GRP	Gross Regional Product
GVD	Gross Value Added
GWW	Governmental 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
IRMP	Integrated Resource Management Planning
КРА	Key Performance Area
LAAP	Local Accountable Aton Parties
NEMA	National Environmental Management Act
NWA	National Water Act
NWRI	National Water Resources Infrastructure
	Operations Management Committee
	Physical Carrying Capacity
	Public Participation
	Public Private Partnership
	Professional Sonvice Provider
	Quarter Degree Square
QD3 PCC	Real Carrying Capacity
DE	Real Carlying Capacity Rotation Eactor
	Resource Management Plan
	RMP Project Steering Committee
RW/H	Recreational Water Lise
SAMSA	South African Maritime Safety Authority
SANGA	South African Police Service
	South African Sports Confederation and Olympic Committee
JAJUUL	South Amean sports confederation and Orympic committee

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SSA Swimming South Africa

**SWOT** Strengths, Weaknesses, Opportunities and Threats

WCDM Westcoast District Municipality

### **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 Misverstand 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 Misverstand 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 Planning (IRMP).

Location of the dam: Misverstand Dam is a gravity and arch dam located on the Berg River under the Berg River catchment area. It is located under ward 3 within the jurisdiction of the Swartland Local Municipality (SLM), which falls under Westcoast District Municipality (WCDM) in the Western Cape Province in South Africa. Its GPS coordinates are: 33°01'22.63''S and 18°47'17.53''E.

**Purpose of the Dam:** The dam was built mainly for municipal and industrial use. The surrounding farms depend on the dam for irrigation water by making use of water pumps.

The secondary uses of the dam includes recreational activities such as boating, water sports (both power and non-power boats), swimming, bird watching, picnic and other leisure related activities.

**Dam ownership and management**: The dam is owned by DWS and operated by DWS. There are two (2) access points at the dam, one of the access point is at the dam wall which is restricted to DWS for maintenance purposes. Another access point is situated within the Club Elani Resort and it is used for recreational purposes.

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 Misverstand 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 done and secondary information reviewed as part of gathering baseline information about the dam. A process was also established to get into contact with the I&APs and relevant authorities to ensure co-operation interests and support of 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, formulated by the stakeholders.

The identified key common objectives are:

- Misverstand Dam is affected by green algae, which needs to be addressed;
- Access through private properties should be properly managed in order to control recreational activities in the dam;
- The dam has the potential to improve the socio-economic status of the local communities;
- Prevention of water pollution;
- Alien plant species eradication;

- Control of recreational activities;
- Effective zoning plan;
- Establishment of commercial fishing;
- Ensuring public safety at the dam;
- Maintaining good water quality;
- Affordable fees for public access;
- Visible sign boards for easier direction to the dam; and
- Sufficient water supply for domestic use.

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

"To utilise Misverstand Dam to its full potential and thereby improving the lives of the local residents without debilitating the environmental components of the area".

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 Misverstand Dam that could enhance tourist attraction:

- Establishment of commercial fishing at the dam for the local communities and for tourism purposes.
- Using the dam as a tourism hub of the Swartland Local Municipality area.

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### **CHAPTER 1: INTRODUCTION**

#### 1.1 BACKGROUND OF MISVERSTAND DAM

Misverstand Dam is a gravity and arch dam located on the Berg River under the Berg River Catchment Area. It is located under ward 3 within the jurisdiction of the Swartland Local Municipality (SLM), which falls under Westcoast District Municipality (WCDM) in the Western Cape Province in South Africa. Its GPS coordinates are: **33°01'22.63''S 18°47'17.53''E.** (See **Figure 1**).

The primary purpose of Misverstand Dam is to supply water for irrigation purposes. The dam

currently supplies water to the surrounding communities as well as to the surrounding farms.

The secondary uses of the dam includes recreational activities such as boating, water sports (both power and non-power boats), swimming, bird watching, picnic and other leisure related activities.

The dam is owned and operated by DWS, and it was established in 1977. **Table 1** summarizes the dam profile.

Misverstand Dam Profile		
South Africa		
Western Cape		
West Coast District Municipality		
Swartland Local Municipality		
Moorreesburg		
1977		
33º01'22.63''S 18º47'17.53''E		
Irrigation and Domestic Use		
DWS		
Berg River		
Berg River		
7 737 200 000		
255		
Gravity & Arch		
23		

 Table 1: Misverstand Dam Profile

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



Figure 1: Misverstand Dam Locality Map

#### 1.2 **BIOPHYSICAL ENVIRONMENT**

#### 1.2.1 Climate

Misverstand Dam receives rainfall of about 370 mm from May to August. Mean daily temperatures range between 29.3°C and 4.8°C for February and July. Frost incidence is between 3-8 days per year.

#### 1.2.2 Flora

Misverstand Dam is located on moderately undulating plains and valleys which support low to moderately tall leptophyllous shurbland of varying canopy cover as well as low, open shrub land dominated by renosterbos. Heuweltjies are a very prominent local feature of the environment, forming 'Hummockveld' near Picketberg and giving Tygerberg Hills their name.

Stunted trees and thicket are often associated with the Heuweltjies. Distributed areas are dominated by *Athanasia trifurcarta* and *Otholobium hirtum*. Patches of Cynodon dactylon 'grazing lawns' also occur in abundance.

There are various terrestrial alien invasive species along the Berg River, which also affect the Misverstand Dam area.

The endemic plant species includes Aspalathus Macrocarpa, Cliffortia varians, Lotononis Nigida. Succulent shrubs includes: Acrodon purpureum, D. hallii, Lampranthus hurlingii. Geophytic herbs includes: Babiana Villosa, Freesia fucata, Ixia vanzijiae, I. vinacea, moranea incurve, M. radians.

The conservation status of the area within which the Misverstand Dam falls under, has been identified as vulnerable. The unit is statutorily conserved at Vrolijkheid Nature Reserve as well as in Langeberg-wes and Matroosberg mountain catchment areas. Some 31% transformed, mainly by cultivation. Alien species called *Pinus Pinaster* and several species of *Acacia* occur locally, at low levels.

#### 1.2.2.1. Terrestrial Alien Species

Alien invasive plant species are non-indigenous plants introduced from other countries. Once they were introduced, they tend to spread beyond the area where they are desired. Alien plant species also outcompete the indigenous species wherever they germinate. Many of these species are prominent in riparian ecosystems (i.e. on the banks of water sources (streams, rivers, estuaries, dams and lakes)).

Alien species were either intentionally or unintentionally introduced to South Africa. The intentional introduction was for aesthetic and/or economic gain. Some plants have been introduced with the intent of aesthetically improving public recreation areas or private properties, whilst others are introduced for ornamental or timber uses.

The most common Terrestrial Alien Plants in South Africa are the Black Wattle (*Arcacia Mearnsii*), Mauritius Thorn (*Caesalpinia Decapetala*), Guava (*Psidium Guajava*), Castor Oil plant (*Ricinas Communis*), Blue Gum (*Eucalyptus globulus*), Pine Trees, Bug weed (*Solanum Mauritinum*), Port Jackson willow (*Acacia Saligna*), weeping willow (*Salix Babylonica*), Tickberry (*Lantana camara*, blackwood (*Dalbergia melanoxylon*) and the silver wattle (*Acacia dealbata*).

1.2.2.1.1 Impacts of Alien Plants on Natural Environment

- They are water guzzlers;
- They cause Eutrophication;
- They outcompete and displace the indigenous species; and
- They cause soil erosion.

#### **Control Methods**

There are three methods to control or eradicate alien invasive species growing in the environment namely; **Physical control, Chemical and Biological control.** 

#### Physical removal

Many invasive plants can be removed manually or with the help of simple tools. Shrubs can be removed by using a tree popper. The top growth of such plants can be cut, followed by the removal of the stem and roots from the ground. Larger trees can be dealt with using the ring-barking method. This involves peeling off the barks on the stem of the tree.

#### **Chemical removal**

Herbicides can be sprayed on plants less than 2m in height for quick results. Spraying needs to be done when there is no wind in order to prevent spray drifting onto adjacent wanted plants. All plants that are subjected to the spray will be destroyed. Large tree can be cut down, leaving a stump as flat and as close to the ground as possible, and apply a recommended herbicide.

#### **Biological control**

Biological control consists of the use of natural enemies to reduce the vigor or reproductive potential of an invasive alien plant. Biocontrol can be achieved by the use of specially selected and carefully tested plant-feeding insects, mites, and pathogens.

#### 1.2.2.2. Aquatic Alien Species

Aquatic weeds is defined as "unwanted and/or undesired plants which grow and reproduce in an aquatic environment ".Whilst plants are important components of the aquatic environment, the excessive growth and spread of aquatic weeds can have a detrimental effect on water bodies and its inhabitants. Some of the problems caused by the growth and spread of aquatic weeds in water bodies are as follows:

- Interfere with or prohibit recreational activities such as swimming, fishing, and boating;
- Detract from the aesthetic appeal of a water body;
- Stunt or interfere with a balanced fish population;
- Produce quiet water areas that are ideal for mosquito breeding;
- Certain weeds can give water bad tastes and odours;
- Impede water flow in drainage ditches, irrigation canals, and culverts, causing water to back up; and
- Deposition of weeds, sediment, and debris, can hinder bodies of water to fill in.

There are ten known aquatic weeds in South Africa. The known weeds include, among others, the Water Hyacinth (Eichhornia crassipes), Red water fern (Azolla filiculoides), Parrots feather (Myriophyllum aquaticum), Water lettuce (Pistia Stratoites), etc.

#### **Control Methods**

#### Mechanical Control

Mechanical control usually refers to the mowing or mechanical cutting of an invasive plant infestation to limit seed production. With mowing, timing is essential. Invasive plants must be removed before the plants go to seed in order to be an effective method of control. Plants should be cut as close to the ground as possible and may have to be treated more than once in a growing season to achieve desired results.

#### **Manual Control**

Manual invasive plant control usually refers to hand-pulling or digging. Manual control works well for dealing with single plants or small infestations that can be eradicated with a small amount of labour. It is most effective if invasive plants are shallow rooted and the soil is loose or moist. One should be aware this type of control may not be effective for invasive plants that also reproduce by roots and rhizomes. In these instances, limited hand-pulling or digging may actually increase the size of the infestation.

#### **Biological control**

Biological control often works best on large infestations, or infestations that are near the water. It is a long-term approach and often it takes many years for insects to establish and results to be seen. In some cases, a single biological control agent can adequately control an invasive plant species. However, in most cases, a variety of agents are needed to achieve control of the weed species population levels. Biological control will not eradicate the infestation directly. Rather, the agents are used to decrease the vigor and seed production of the plants in order to decrease their competitive ability. Therefore, it is important to use other weed management strategies to ensure that the infestations are contained.

#### 1.2.3 Fauna

#### **Amphibians**

According to the Avian Demography Unit (ADU), 2015 Frogmap Atlas, there are seven (7) amphibian species that have been recorded within the 3318BB Quarter Degree Square (QDS). Only one (1) specie called Cape Caco is known to be vulnerable to extinction.

#### <u>Birds</u>

There are three (3) bird species recorded according to the ADU 2015, and there are no vulnerable species. Alien bird species at Misverstand Dam are Egyptian Geese and Indian Minor.

#### **Reptiles**

According to the (ADU 2015), there are twenty three (23) reptile species within the 3318BB QDS. Only three (3) of these species are considered to be vulnerable. The Plain Mountain Adder and the Albany Adder are considered as endangered reptile species.

#### Mammals

There are twenty nine (29) mammal species which have been recorded within 3318BB QDS. Two of these species are critically endangered, these are Black Rhinoceros and the Black Rhinoceros Arid Ecotype. The Honey Badger and White Rhinoceros are classified as nearly threatened for extinction.

#### 1.2.4 Topography

Misverstand Dam is located on moderately undulating plains and valleys which support

low to moderately tall leptophyllous shurbland of varying canopy cover as well as low, open shrub land dominated by Renosterbos. Heuweltjies are a very prominent local feature of the environment, forming 'Hummockveld' near Picketberg and giving Tygerberg Hills their name.

#### 1.2.5 Geology and Soil

According to Mucina et al (2006), the dam has clay soils derived from Malmesbury Group Shales specifically the Porterville formation in the north and east and the Moorreesburg formation in the west. The soils contain prismacutanic and pedocutanic diagnostic horizons, Glenrosa and Mispa forms are predominant.

#### 1.2.6 Hydrology

#### 1.2.6.1 Surface Water

The dam lies within the Berg River Catchment Management Area and it impounds the Berg River. Figure 2 illustrate the current storage capacity of the dam from year 2015 to 2016 (Western Cape Province state of dams on 2016/06/20). According to the level indicators, Misverstand Dam was lower than eighty per cent (80%) between November and December 2015, however, it recovered to moderately high level between January and March 2016. During the month of April 2016 the dam reached an absolute minimum level of less than seventy per cent (70%) and recovered during the months of May and June to a moderately high level of one hundred and fifteen percent (115%).



Figure 2: Misverstand Dam Level Indicators (DWS 2016)

#### 1.2.2.3. Water Quality

The term water quality is used to describe the physical, chemical, biological and aesthetic properties of water, all of which determine its fitness for use and its ability to maintain the health of aquatic organisms (DWAF, 1996). Water quality therefore expresses the suitability of water to sustain various uses or processes. Any particular use will have certain requirements for the physical, chemical or biological characteristics of water.

Consequently, water quality can be defined by a range of variables which limit water use.

Human health is directly affected by the proximity, availability and quality of water resources. Different water uses requires different water quality standards. Agricultural activities requires a high standard in water quality to improve crop production and export.

According to the DWS RQS, there is no monitoring for water quality at Misverstand Dam by DWS, however, it is the responsibility of DWS Resource Quality services to ensure that the water is tested frequently to ensure that changes in the quality of water are detected at all times.

#### 1.3 USES AND USERS OF THE DAM

#### 1.3.1. Primary Use

The dam was built mainly for municipal and industrial use. The surrounding farms depend on the dam for irrigation water by making use of water pumps.

#### 1.3.2. Recreational Use

The dam has a recreational facility that accommodates various recreational activities such as boating, fishing, quad biking and water sports competitions. The dam also attracts tourists from Cape Town.

#### 1.4 RECREATIONAL INSTITUTIONAL STRUCTURE

Misverstand Dam was previously managed by the Westcoast District Municipality (WCDM) for recreational activities under a contract with DWS. At the end of the contract, the WCDM gave the responsibility of managing the secondary use of the dam back to DWS who are currently managing the dam. The RMP for the dam will be accompanied by a suitable institutional structure for the management of secondary uses.

#### 1.4.1. 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.

#### 1.4.2. Access

There are two (2) official access points at the dam, where one (1) is located next to the dam wall and the second one is at Club Elani. The access near the dam wall is only used by DWS for maintenance purposes as well as DEA Working for Water (WFW). The access at Club Elani is used by the general public for access into the water. Other access points are on the private properties adjacent to the dam.

#### 1.5 SAFETY

Misverstand Dam is surrounded by a protective fence for safety and demarcation reasons. For effective public safety at the dam the recreational facility has various measures in place to ensure public safety at the dam. These measures are as follows:

- Water Safety Rules are implemented as per SAMSA regulations. Resort Committees assist with the policing thereof;
- General Resort Health and Safety Rules are in place and regularly circulated by the resort committees;
- Emergency and Safety Information boards are placed at public areas with the necessary contact numbers;
- Nature Information Boards are present to highlight the reptiles, birds and water life at the resort;
- Although there is an existing fire safety procedures in place, resort owners are

currently revising and updating the procedures;

- The existing Building Rules have recently been amended to incorporate the latest safety guidelines;
- The dam wall safety rope has recently been re-installed and marked as requested by DWS;
- The existing no-wake zone has been extended to provide better safety due to the increase in public demands for an area to facilitate non-motorised activities;
- The resort has installed an approved sewerage system which is serviced regularly and it is released into approved secure evaporation dams;
- The resort provides clean water by way of a water plant on site that is tested regularly by the municipality health inspector; and
- There is a limited size of boats permitted on the river in accordance with SAMSA regulations. This is for boats using the club's slipway.

#### 1.5.1 Safety Navigation

There is currently no adequate, standardized and harmonized fixed and floating aids to Navigation<sup>2</sup> (Aton) and Demarcation Markers in Place.

#### 1.5.2 Incident Management

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

#### 1.6 SOCIO-ECONOMIC ENVIRONMENT

#### 1.6.1 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 Wards 3 of the SLM. An understanding of socio-economic conditions of Wards 3 can be used at a later stage to

<sup>&</sup>lt;sup>2</sup> A marine 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".

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, Education level and employment status was undertaken and is presented in section 1.6.1.1 to 1.6.1.4, respectively.

#### 1.6.1.1 Population Size

According to the Census (2011) the SLM has a population of 113762. This population is composed of 50.36% females and 49.64% males. **Table 2** shows the population percentage of the SLM:

**Table 2:** Swartland Local Municipality PopulationPercentage

Population group	People	Percentage
Coloured	73753	64.83%
Black African	20805	18.29%
White	17780	15.63%
Other	838	0.74%
Indian or Asian	585	0.51%

#### 1.6.1.2 Education Level

**Table 3** shows the level of education forindividuals of age twenty (20) years and abovefor the SLM.

Table 3:SwartlandLocalMunicipalityEducationPercentage

Education Percentage		
Higher Education	9.50 %	
Matric	24.20 %	
No Schooling	6.00 %	

#### 1.6.1.3 Employment Percentage

**Table 4** shows the employment percentage aswell as the youth unemployment rate withinthe area.

Table 4: Labour Market

Labour Market	Percentage
Unemployment rate	12.70%
Youth unemployment	17.90%
Rate	

Unemployment in the area is estimated to be between 10 and 20%. This rate is relatively lower than national estimates, which are in the order of 25-30%. It is estimated that 4.47% of households in the area have no income and that approximately 8% of households use social grants as their main source of income.

Though GDP per capita in the area is estimated to be R 22 187, the distribution of income within the area may explain the existence of dire poverty in the area.

The Gini coefficient, which measures the gap between the income of the rich and the income of the poor, is estimated to be 0,68 in Swartland (Swartland LED Strategy May 2007).

#### 1.6.2 Gross Value Added (GVA)

SLM makes the second highest contribution to the West Coast's GDP (29%), after Saldanha Bay, which makes a 33.6% contribution. In 2004 Swartland had a GDP of approximately R1, 6 billion. Between 1995 and 2004 the average annual growth in GDP for Swartland Municipality was 3.4%, which made it the fastest growing economy within the West Coast. In 2004, Swartland's average annual growth rate was equivalent to national growth in GDP. Swartland absorbs 25.5% of the West Coast's Labour market, making it the main employment area within this District.

The four (4) key drivers of the local economy in terms of Gross Regional Product (GRP) (in order of importance) are **manufacturing**, **financial and property services**, **agriculture** as well as **retail and trade**, while government services is a significant fifth contributor. In contrast, the four (4) biggest sectoral contributors to employment (in order of importance) are agriculture, retail and trade, government services and manufacturing. Within this area, construction, manufacturing, trade and to some degree tourism are some of the key economic sectors contributing to GDP and employment in the Western Cape. These sectors also hold potential for growth and creating new opportunities within Swartland.

#### **Agriculture**

Although agriculture remains the most important contributor in terms of employment, its GRP contribution has decreased from 25 % to 19.9 %, with better performance from manufacturing and financial and property services.

Agriculture within the Swartland is diverse in the sense that it is made up of farming grapes, olives, dairy, canola, legumes, sheep, beef and wheat. This diversity belies the stability and sustainability of the agricultural sector in this area.

The Swartland is known as the breadbasket of the Western Cape because it is one of the main wheat producing areas within the winter rainfall region. With wheat as the main agricultural crop it adds a degree of volatility to the agricultural sector. This volatility stems from wheat being a high-risk crop, especially within the context of drought and falling wheat prices.

Since 2002 the price at which farmers are able to sell their wheat has been declining steadily, while at the same time the input costs have remained high. Wheat yields in the area have been declining, in 2001 the crop estimate for wheat was 83 000 hectares, while in 2006 the crop estimate was 65 000 hectares. This represents a 22% decline in wheat yields over the years. Since 2003 farmers have been making losses, and it was estimated that farmers were going to experience a net loss during 2006. Though farmers in the area have been making losses, many continue farming.

#### **Manufacturing**

The contribution of manufacturing to the economy in terms of GRP as well as employment is steadily increasing. This can largely be attributed to the number of light industries and manufacturers of agricultural based products found in the area. It is possibly

one of the Swartland's greatest assets that it has a number of national and international businesses located within the area.

Swartland has a number of established manufacturers and wine cellars in the area. Some of the businesses with international profiles are: Bonwit, Swartland Group, Raiel, Pioneer Foods, Swartland Winery and PPC Cement. As these businesses grow and expand, they can contribute to the development of the Swartland economy.

Though many of these businesses have been established in the area because of historical reasons, they remain in the area because of good services provided by the municipality, easy access to markets outside of Swartland and the availability of land in the area.

#### Financial, Property and Business Services

This sector's contribution to GRP has increased significantly to 7.7% during 1996-2001. The GRP increased significantly to 20.2% in 2004. The services are mainly located in Malmesbury and can be attributed to the growth in manufacturing and increase in residential developments in the area, requiring these services. However, this sector remains a relatively low employer in Swartland.

#### Trade and Catering

This sector has experienced a marginal increase from 13 to 14.8 increase over the period and linked to growth in other related sectors such as manufacturing, residential development and increased disposable income in the area.

#### Government

Government remains a key employer and contributor to the Swartland economy, of which the Malmesbury Prison is an important role player. Government's contribution to GRP has declined from 22% during 1996-2001 and in 2004 it declined to 12.9%. This decline, in terms of its overall contribution to the economy, is desirable in order to ensure greater stability and diversity in the Swartland economy.

#### **Construction**

Though construction was ranked seventh in terms of its contribution to GRP, it is a sector that absorbs an estimated 6 percent of the labour force. More recent data that is available for this sector indicates that between 2001 and 2004 the value of building plans passed in Swartland increased from R87 million to R288 million, representing a 231% increase. As highlighted earlier, there has been an upsurge in residential development, along with an expansion of industrial operations, most notably that of Raiel and Bokomo.

#### <u>Tourism</u>

Finally, the sector that has promise, though perhaps not being one of the main drivers, but definitely playing a more significant role in the economy than it currently does, is tourism. Some the Swartland's greatest assets for developing tourism are:

- Its scenic beauty.
- Its rural qualities that offer opportunities for relaxation.
- Its many tourist attractions (game farms, 4x4 trails, bike trails, olive festival, Evita se Perron etc.).
- The advancement of its reputation as an area with good wines and wine farms.
- Its coastal beauty along Yzerfontein.
- Attractive places of accommodation.
- Its cultural and historical towns such as Darling, Koringberg and Riebeek Kasteel.

#### 1.7 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 Misverstand 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.

- I. 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 a national or provincial department; to ensure the coordination of the use of an immovable asset with the service delivery objectives of a national or provincial department; to provide for issuing of guidelines and minimum standards in respect of immovable asset management by a national or provincial department; and to provide for matters incidental thereto.
- 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 the management of 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:

- Broad-based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003).
- Communal Land Rights Act, 2004 (Act No.11 of 2004).
- Intergovernmental Relations Framework Act, 2005 (Act No.13 of 2005).
- Land Administration Act, 1995 (Act No. 2 of 1995).
- Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000).
- National Heritage Resources Act, 1999 (No. 25 of 1999).
- Occupation Health and Safety Act, 1993 (Act No. 85 of 1993).
- Restitution of Land Rights Act, 1994 (Act No. 22 of 1994).
- State Land Disposal Act, 1961 (Act No. 48 of 1961).
- The Mountain Catchment Areas Act, 1970 (Act No. 63 of 1970).
- Western Cape Nature Conservation Board Act, 1998 (Act No. 15 of 1998).
- Western Cape Nature Conservation Laws Amendment Act, 2000 (Act No. 3 of 2000):
- Western Cape Provincial Development Framework (2005).
- $\geq$ 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 GWWs. 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 extensive, other legislation 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 will be to attain the objectives underlying sustainability and to compile functional, workable sustainable access and utilisation plans for water resources.

Without approved management plans relating to water resources utilized for recreational purposes, it is difficult for informed decisions to be made necessitating a precautionary approach to access, utilisation 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 and funding 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 shown on **Table 5**.

**Table 5:** Trigger Factors for the Development of Misverstand Dam RMP

Trigger Factors	Description		
Resource Management	<ul> <li><u>Water Quality</u></li> <li>Misverstand Dam is affected by green algae, which needs to be addressed.</li> <li><u>Access control</u></li> <li>Access through private properties should be properly managed in order to control recreational activities in the dam.</li> </ul>		
Community Participation and Beneficiation	<ul> <li><u>Community beneficiation</u></li> <li>The local communities do not partake in the recreational activities at the dam. It is more dominated by people from Cape Town.</li> <li>The dam has the potential to improve the socio-economic status of the local communities.</li> </ul>		
Public Policy	<ul> <li>Local Planning Initiatives</li> <li>The Misverstand Dam should be integrated in other local planning initiatives and decision support tools such as Swartland Local Municipality (SLM) IDP and Local Economic Development (LED) plan as well as</li> </ul>		

#### MISVERSTAND DAM RESOURCE MANAGEMENT PLAN

Trigger Factors	Description		
	Westcoast District Municipality (WDM) Environmental Management		
	Framework (EMF).		

#### 3.4. RMP DEVELOPMENT PROCESS

The RMP is developed in accordance with the RMP guideline procedure (DWAF, 2006) as illustrated in **Figure 3**.

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

Figure 3: 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 Misverstand 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 Misverstand Dam on **16 November 2015** to gather baseline information using a checklist questionnaire. The site inspection was undertaken with the DWS delegates (DWS IEE and Southern Operations Champion). Photos of the study area were also taken during site inspection.

#### 3.5.3. Public Participation

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 2 (Encumbrance Survey), Phase 3 (Objective Identification) and Phase 4 (Research/ Information Gathering) 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. 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 RMP process.

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. 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 Adverts

The newspaper advert regarding the RMP project was placed on the *Die Courant* **Newspaper**. The advert invited the public to attend the Public Participation Meeting. The notice was published on **25 May 2016** and it was advertised in Afrikaans. The notice invited al I&APs to the Public Participation Meeting that was scheduled on **30 May 2016**. (See attached **Appendix C**).

#### 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 Xhosa and were distributed on **19 May 2016.** 

Moreover, the flyers for the draft RMP were distributed on **07 April 2017** (See attached **Appendix D**).

#### 3.5.3.5. Direct Communication

#### 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 invitation entailed the BID, meeting venue and time. The email notifications were sent out on **23 May 2016.** Moreover, the meeting invites for the draft RMP were sent out on **07 April 2017** (See attached **Appendix E**).

#### 3.5.3.5.2. Authority Meeting

The initial Authorities Meeting was held on **30** May 2016 at the Withoogte Water Treatment Works (Moorreesburg).

The purpose of the meeting was:

- To present the RMP, its goal and 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 was presented to the authorities on **20 May 2017**, whereas the follow up meeting was held on **22 June 2017**.

#### 3.5.3.5.3. Public Meeting

The initial Public Meeting was held on **30 May 2016** at the **Moorreesburg Town Hall**. A platform was also given to I&APs to identify encumbrances/ challenges that might hinder the progress of the RMP as well as to identify objectives and vision for Misverstand Dam.

The draft RMP was presented to the public on **20 April 2017**, whereas the follow up meeting was held on **22 June 2017**.

	R	egister			
A copy of	f the draf	t report	: was c	irculate	d on <b>14</b>
August	2017	for	comm	nenting.	The

commenting period was to elapse **25** August **2017** (See attached **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 6**.

**Table 6:** RMP Planning Partners and their respective Mandates

Department/ Agency	Mandate
Westcoast District Municipality (WDM) /	The dam is within the jurisdiction of the municipality and is
Swartland Local Municipality (SLM)	mandated to provide bulk water services.
	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.
Department of Agriculture, Forestry and	
Fisheries (DAFF)	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	The department will assist in terms of Land Claims/Ownership
Land Reform (DRDLR)	issues.
Department of Environmental Affairs (DEA)	Responsible for Biodiversity Management within the dam including Invasive Alien Species.
Department of Public Works (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.
	Responsible for legislation, policy and regulations for all
Department of Transport (DoT)	transportation in South Africa, including shipping and other
	transport by water or sea also inland waterways.
	The use of State assets is governed by National Treasury
National Treasury (NT)	Regulations, requiring DWS to plan concessions in compliance or
	association with National Treasury, guided by the Tourism Public
	Private Partnership (PPP) Toolkit of 2005.

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Department/ Agency	Mandate
South African 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 maritime 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** and **Social.** 

**Tables 7 - 9** outline the summary of limitations that might affect the development or implementation of the RMP for Misverstand Dam.

Table 7: Summary of Biophysical I	Encumbrances
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Item	Encumbrance	Description
Alien Species	Yes	• The presence of Alien species pose a threat to native species through competition. These species consume a lot of water and also cause erosion on the banks of the river.
Water Quality	Yes	• The water at the dam wall has green algae which negatively affects the water quality in the dam.

Table 8: Summary of Legal Encumbrances

Item	Encumbrance	Description
Land ownership	No	• The land surrounding the Misverstand Dam is privately owned.

#### Table 9: Summary of Social Encumbrances

Item	Encumbrance	Description
Education	Yes	• The community members who fall under the 6% of No Schooling did not receive any form of education and therefore may not be active on the recreational use of the dam. Those who have matric qualifications may also need training in the recreational use of the dam.
Unemployment	No	• The high rate of youth unemployment rate might affect the activeness of the youth on the RMP implementation. This is affected by the rate of education at the area. The affected youth may not actively take part in the recreational activities at the dam.

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 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

Table 10: SWOT Analysis for Misverstand Dam

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 shown in **Table 10**.

	Strengths		Weaknesses
	The dam has a long distance for skiing activity		There is still no proper control of other activities
	Club Flani has an agreement with DWS and it is	•	in the dam
•	allowed to give access to the dam for the public	•	The recreational club at the dam has a lease
•	It is preferred that the Municipality take	•	agreement with the Department of Public Works
-	responsibility of managing the recreational		(DPW) not with DWS even the WCDM is no
	activities as an Implementing Agency (IA)		longer involved in the management of the dam
•	There are a vast of job opportunities due to the	•	The Wine Cellar discharged water into the river
	number of recreational activities taking place at		this has negatively impacted the water quality in
	the dam.		the dam.
•	Subsistence and commercial fishing	•	Most farmers are using water from the river for
	opportunities are available at the dam.		domestic purposes because there is no water
•	The dam is easily accessible.		supply for domestic uses.
	Opportunities		Threats
•	Business Plans can ensure that the dam is	•	The clearing of terrestrial alien species along the
	properly controlled.		Berg River has already started as they have
•	The dam should also be made accessible to the		encroached the Misverstand Dam.
	general public, and the entrance fees should be	•	Public safety is a threat due to lack of control.
	affordable.		Personal safety:
•	The access road is considered a provincial		• Farm attacks on farmers and their workers.
	secondary road and it is maintained by the		• Break-ins in farm houses, sheds and farm
	provincial government.		workers houses.
•	Local residents want to buy out the excess land		• Theft of tyres and diesel.
	that is unused by DWS and DPW.		• Theft of fruit from orchards.
•	Bigger and better signboards should be erected		• Theft of livestock and solar panels
	for easier directions for visitors.		<ul> <li>Trespassing on private land.</li> <li>Smuggling of drugs and wine delivered by</li> </ul>
•	Local residents visit the dam for special events		Unregistered shaheen owners during the
	while people who usually come from Cape		night that result in the trade of farm diesel
	Town visit the dam for recreational activities.		for their orders
•	Opportunities of future canoeing are available		$\circ$ The danger of fires in rine wheat fields
	at the udil.		during the summer months that are highly
•	they recheck how the dam was structured		flammable.
	The access road requires improvement some	•	Microbial pollution during the festive seasons
Ī	improvement		usually takes place at the dam wall. This occurs
	inprovement.		due to the increase in the number of visitors
			during festive season.
		•	The current water quality parameters measured
			at the dam do not check for eutrophication,
			however, the Berg River is known for
			Eutrophication problems and this might also
			affect the water quality of the dam.
		•	The dam is accessible from different private
			lands and this poses a threat to the control of
			recreational activities.

• Alien vegetation is a big problem as it causes soil erosion on the banks of the river.
• The main problem in the water is ECOLI. During the winter months the level of ECOLI is too high
• According to private water monitoring by
farmers, the water quality is a threat and it affects the farmers' exports. This will also have an impact on job availability.
• The absence of a proper zoning plan poses a threat to the control of recreational activities.
<ul> <li>PPC cement discharges untreated grey water into the side stream which ends up in the main stream and thereby affecting the water quality at the dam.</li> </ul>
• The development extension that took place upstream, has led to the mix of storm water and sewage which the municipality cannot treat.

#### 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 Misverstand Dam and have been categorized into three (3) Key Performance Areas (KPAs) as illustrated below:

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

- Prevention of Water pollution at the dam;
- Alien plant species eradication around the dam;
- Control of recreational Activities; and
- Effective Zoning Plan.

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

- Establish commercial and subsistence fishing;
- Public Safety at the dam; and
- Improving the access road to the dam.

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

• Affordable fees for public access;

- Visible sign boards for easier direction to the dam; and
- Water supply for domestic use.

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 utilise Misverstand Dam to its full potential and thereby improving the lives of the local residents without debilitating the environmental components of the area."

After setting 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. This 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 shown in **Figure 4**.



Figure 4: Research 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

Misverstand Dam has the potential of being a preferred tourism destination within the SLM. The recreational activities will require proper advertising so that people from the

surrounding towns can visit the dam more often. The dam currently attract visitors from Cape Town and other surrounding towns.

#### 3.6.3.2 Feasibility for 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		
•	<ul> <li>Objective</li> <li>Prevention of water pollution.</li> </ul>	<ul> <li>Status Quo</li> <li>The recreational facility has installed an approved sewage system which is serviced regularly and it is released into approved secure evaporation dams.</li> <li>It also provides clean water by way of a water plant on site that is tested regularly by the municipality's health inspector.</li> </ul>	<ul> <li>Water quality monitoring can be undertaken at the dam in order to verify the state of the water quality of the dam. All the river inlets should also be tested to check for any pollutants that might be on the streams.</li> <li>Eutrophication Monitoring: the provincial office of the Western Cape does not have the capacity of personnel and equipment to perform the necessary tests. The only facility with the capacity is the DWS resource quality services at Roodeplaat Dam. The monitoring will have to form part of the national eutrophication programme, however this is not active in the western cape. This monitoring is required for the agricultural, domestic water and ecosystems monitoring.</li> <li>Microbial Monitoring: a number of monitoring points will have to be established around the dam, both upstream and downstream of the dam to determine the impacts. Monitoring should be done at an interval of two weeks to obtain accurate results. This monitoring is required for agricultural, domestic use and recreational water uses.</li> <li>General chemistry monitoring: the general monitoring will have to be determined. This monitoring is required for all primary and secondary water uses as well as to manage</li> </ul>		
			pollution incidents. <b>Aquatic health monitoring:</b> this monitoring should also be done on a regular basis. It will have to be determined if the resource protection of the Western Cape is already		

			monitoring some of the sites in the vicinity and if further points are required.
			Currently all the different monitoring programs are done by different units within the department. The budgets for different monitoring programs are also with different units as well as reporting of the information.
•	Alien invasive plant species eradication.	<ul> <li>DWS and DEA Working for Water (WFW) are currently in a process of removing alien invasive plant species along the river and around the dam.</li> </ul>	<ul> <li>Working for water programmes should be extended to the upstream so that the alien invasive plan species can be kept under control at all times.</li> </ul>
•	Control of recreational activities.	• There is only one (1) recreational facility that gives access to the general public to undertake various activities at the dam.	<ul> <li>Access through private land on farms around the dam should be controlled to ensure that the number of boats in the dam is managed.</li> </ul>
•	Effective zoning plan for the dam.	<ul> <li>WCDM has previously developed a structure plan with a zoning map, however, as part of the RMP, the zoning plan will be developed.</li> </ul>	<ul> <li>Misverstand Dam RMP will have a Zoning Plan which will be compiled in terms of DWAF's Guidelines for Compilation of Zoning Plans for Government Waterworks (DWAF, 1999).</li> </ul>
KPA 2: Resource Utilisation			
	Objective	Status Quo	Practicability
•	Objective Establishment of commercial and subsistence fishing.	<ul> <li>Status Quo</li> <li>The local communities visit the dam for subsistence fishing. Currently there are no commercial fishing activities.</li> </ul>	<ul> <li>Practicability</li> <li>The Small Scale Fishery Policy (Marine Living Resources Act 1998, (Act No.18 of 1998)) should be considered as it aims to provide rights to small scale fishing communities and to ensure that communities have equal access to water resources.</li> </ul>
•	Objective Establishment of commercial and subsistence fishing. Public safety at the dam.	<ul> <li>Status Quo</li> <li>The local communities visit the dam for subsistence fishing. Currently there are no commercial fishing activities.</li> <li>Water Safety Rules are implemented as per SAMSA Regulations. The recreational facility Committees assist with the policing thereof.</li> </ul>	<ul> <li>Practicability</li> <li>The Small Scale Fishery Policy (Marine Living Resources Act 1998, (Act No.18 of 1998)) should be considered as it aims to provide rights to small scale fishing communities and to ensure that communities have equal access to water resources.</li> <li>The safety rules and regulations should be enforced at all times to ensure undisturbed public safety at the dam.</li> </ul>
•	Objective Establishment of commercial and subsistence fishing. Public safety at the dam. Improvement of access road.	<ul> <li>Status Quo</li> <li>The local communities visit the dam for subsistence fishing. Currently there are no commercial fishing activities.</li> <li>Water Safety Rules are implemented as per SAMSA Regulations. The recreational facility Committees assist with the policing thereof.</li> <li>The gravel road from the N7 to Misverstand is maintained by the council and when a request is made for it to be graded, they oblige timeously.</li> </ul>	<ul> <li>Practicability</li> <li>The Small Scale Fishery Policy (Marine Living Resources Act 1998, (Act No.18 of 1998)) should be considered as it aims to provide rights to small scale fishing communities and to ensure that communities have equal access to water resources.</li> <li>The safety rules and regulations should be enforced at all times to ensure undisturbed public safety at the dam.</li> <li>The provincial government is responsible for maintaining the road. The road can be upgraded to a tar road, however, a feasibility study will need to be undertaken.</li> </ul>
•	Objective Establishment of commercial and subsistence fishing. Public safety at the dam. Improvement of access road.	<ul> <li>Status Quo</li> <li>The local communities visit the dam for subsistence fishing. Currently there are no commercial fishing activities.</li> <li>Water Safety Rules are implemented as per SAMSA Regulations. The recreational facility Committees assist with the policing thereof.</li> <li>The gravel road from the N7 to Misverstand is maintained by the council and when a request is made for it to be graded, they oblige timeously.</li> <li>KPA 3: Benefit Flow Management</li> </ul>	<ul> <li>Practicability</li> <li>The Small Scale Fishery Policy (Marine Living Resources Act 1998, (Act No.18 of 1998)) should be considered as it aims to provide rights to small scale fishing communities and to ensure that communities have equal access to water resources.</li> <li>The safety rules and regulations should be enforced at all times to ensure undisturbed public safety at the dam.</li> <li>The provincial government is responsible for maintaining the road. The road can be upgraded to a tar road, however, a feasibility study will need to be undertaken.</li> </ul>
•	Objective Establishment of commercial and subsistence fishing. Public safety at the dam. Improvement of access road. Objective	Status Quo         • The local communities visit the dam for subsistence fishing. Currently there are no commercial fishing activities.         • Water Safety Rules are implemented as per SAMSA Regulations. The recreational facility Committees assist with the policing thereof.         • The gravel road from the N7 to Misverstand is maintained by the council and when a request is made for it to be graded, they oblige timeously.         KPA 3: Benefit Flow Management Status Quo	<ul> <li>Practicability</li> <li>The Small Scale Fishery Policy (Marine Living Resources Act 1998, (Act No.18 of 1998)) should be considered as it aims to provide rights to small scale fishing communities and to ensure that communities have equal access to water resources.</li> <li>The safety rules and regulations should be enforced at all times to ensure undisturbed public safety at the dam.</li> <li>The provincial government is responsible for maintaining the road. The road can be upgraded to a tar road, however, a feasibility study will need to be undertaken.</li> </ul>

#### MISVERSTAND DAM RESOURCE MANAGEMENT PLAN

	for the community together with fund raising to support these institutions.	at the dam. Local communities should be charged a reasonable amount to the dam.
<ul> <li>Erecting visible signboard for easier direction to the dam.</li> </ul>	<ul> <li>There are smaller signboards on the N7 road to show directions to Misverstand Dam.</li> </ul>	<ul> <li>DWS, DT, DAFF and the recreational facility at the dam should evaluate the most suitable size of the signboard and the points at which the boards can be placed/erected.</li> </ul>
Effective water supply for domestic use.	<ul> <li>The recreational facility provides clean water by a water plant on site, however, the surrounding farmers depend on raw water from the dam for domestic use.</li> </ul>	• DWS, WCDM and SLM should provide water for domestic use to the farms around the dam.

# 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 the needs of the dam users. The Integrated Resource Management Planning (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 5**.

#### **MISVERSTAND DAM RESOURCE MANAGEMENT PLAN**



Figure 5: Integrated Resource Management Planning

#### 4.1 INSTITUTIONAL PLAN

The Institutional Plan provides a framework for the institutional arrangements at the dam. The proposed management systems includes three (3) committees namely; The Dam Management Committee (DMC), Operations Management Committee (OMC) and National Project Steering Committee (NPSC). The appointed management authorities by DWS at the dams, 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 give support to Implementing Agency (IA) in the management of the dam for recreational purposes. Moreover, 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 and BP;
- 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; and

• Management of the incident management system and wash bays.

**Figure 6** illustrates the proposed user groups that will form part of the DMC.



Figure 6: Proposed DMC

The DMC will have a number of management tools which will enable proper management of the dam in line with legislative 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

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**OMC** as this is the existing reporting structure. The ToR provides guidance on the following management aspects:

- Roles and responsibility of chairperson;
- Roles and responsibilities of an IA;
- Roles and responsibilities of members;
- Minutes and attendance requirements;

- Reporting requirements;
- Management of agreements;
- Management of access objectives;
- Management of development targets;Management of water quality
- monitoring;
- Management of the control of aquatic invasive species;
- Management of development pressure;
- Management of incident management system and wash bays; and
- Management of AtoN and demarcation markers.

#### 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.

#### 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 and appropriate action must be taken to ensure that all parties comply with the requirements of the RMP.

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

#### **Recreational Use Agreements**

Recreational Clubs must enter into an agreement with DWS. 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 No.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) 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; and
- Establish or deploy the relevant fixed and/or floating AtoN.

#### Event Applications

Different events that involves recreational activities such as angling competitions are more popular at the dam. All events must be managed through an event application process. The applications should be directed to DWS for approval.

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) and
- Access points to be used.

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

#### **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 (CDIO 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 Infrastructure Operations within NWRI as shown in **Figure 7**.

The committee should meet quarterly discussing matters relating to operations and maintenance of all GWWs. RMP will be a standard item on the agenda. Any matters relating to the RMP that are outside the scope of DWS will be escalated to the NPSC.



Figure 7: 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 8** illustrates a typical example of Governmental Departments that will form part of the NPSC.



Figure 8: 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 the co-ordination tourists; and 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 organise 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 authorised.

#### **Conservation Zones:**

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 motorised 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 12: Proposed Water Surface Zoning Description

Zone Name	Permissible Activities	Non Permissible Activities	Recommendation
<ul> <li>Safety and Security Zone.</li> </ul>	<ul> <li>Alien invasive species clearing</li> <li>Management of dam infrastructure</li> <li>Management and maintenance activities by DWS and authorised personnel</li> </ul>	Public access	<ul> <li>Area should be demarcated by dermacation makers and AtoN.</li> </ul>
Conservation Zones.	• None	<ul> <li>Public activities (in order prevent aquatic habitats disturbance)</li> </ul>	<ul> <li>Area should be demarcated by demarcation makers and AtoN.</li> <li>Strict management and control of these areas.</li> </ul>
• Low Impact Activity Zone.	<ul> <li>Activities associated with no or little wakes, such as         <ul> <li>Angling</li> <li>Swimming</li> <li>Canoeing</li> <li>Rowing</li> <li>Paddle boating</li> <li>Kayaks</li> <li>float tubes</li> <li>Rafting</li> <li>Sailing</li> </ul> </li> </ul>	<ul> <li>Motorised boating</li> <li>Water Skiing</li> <li>House boats</li> <li>Para-sailing</li> <li>Kite-surfing</li> <li>Jet skis</li> </ul>	<ul> <li>Area should be demarcated by demarcation makers and AtoN.</li> </ul>
• High Impact Activity Zone.	<ul> <li>Motorised boating</li> <li>Water Skiing</li> <li>House boats</li> <li>Para-sailing</li> <li>Kite-surfing</li> <li>Jet skis</li> </ul>	<ul> <li>Large vessels such as:         <ul> <li>Angling</li> <li>Swimming</li> <li>Canoeing</li> <li>Rowing</li> <li>Paddle boating</li> <li>Kayaks</li> <li>float tubes</li> <li>Rafting</li> <li>Sailing</li> </ul> </li> </ul>	<ul> <li>Area should be demarcated by demarcation makers and AtoN.</li> <li>All activities within the high impact zone shall take place beyond 70m from the shoreline.</li> <li>Activities within this zone must be evaluated to determine their impact on the water resources and other dam users before they are allowed into the dam.</li> </ul>



Figure 9: Proposed Water Surface Zoning Map 1 of 2

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**Figure 10:** Proposed Water Surface Zoning Map 2 of 2

#### 4.2.2 Shoreline Zoning<sup>3</sup>

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

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

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 means the following:

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

<sup>&</sup>lt;sup>3</sup> Permanent structures within the purchase line are not allowed. All developments should be outside 1:100 year flood line.

Table 13: Proposed Shoreline Zoning Description

Zone Name	Permissible Activities	Non-permissible Activities	Recommendation
• Safety and Security Zone.	<ul> <li>Fire management</li> <li>Alien invasive species clearing</li> <li>Management of dam infrastructure</li> <li>Management and maintenance activities by DWS and authorised personnel</li> </ul>	Public access	<ul> <li>A minimum area of 100m wide downstream the dam wall should be demarcated preventing public access and use.</li> </ul>
Conservation/ Low     Density Activity     Zone.	<ul> <li>Conservation management activities:         <ul> <li>Bird watching</li> <li>Hiking</li> </ul> </li> </ul>	Development	<ul> <li>These zones should control access to ecological sensitive areas.</li> </ul>
Medium Density Activity Zone.	<ul> <li>Camping (tent and/or caravan)</li> <li>Day visitors</li> <li>Picnic</li> <li>Shoreline fishing</li> <li>Braai facilities</li> <li>Swimming pools</li> <li>Ablution facilities</li> <li>Infrastructure for services</li> </ul>	<ul> <li>Accommodation facilities such as:         <ul> <li>Chalets</li> <li>Recreational club houses</li> </ul> </li> </ul>	<ul> <li>The management of this area should follow the PPP process in terms of National Treasury.</li> <li>All developments must be approved by IA and DWS.</li> <li>Requirements of NWA and NEMA must be taken into account in all developments.</li> <li>Camping, picnicking, bank angling and access to the water must be done in accordance to access agreements.</li> <li>Camping and picnicking is allowed only in designated areas.</li> <li>Noise levels to be kept at a minimum.</li> <li>No littering at Camping and Picnic spots.</li> </ul>
High Density Activity Zone.	<ul> <li>Accommodation facilities such as:</li> <li>Chalets</li> <li>Resorts</li> <li>Recreational club houses</li> <li>Infrastructure for services</li> </ul>	<ul> <li>Day visitors</li> <li>Picnic</li> <li>Hiking</li> <li>Permanent structures</li> </ul>	<ul> <li>The management of this area should follow the PPP in terms of National Treasury.</li> <li>All developments must be approved by IA and DWS.</li> <li>Requirements of NWA and NEMA must be taken into account in all developments.</li> <li>Noise levels should be kept at a minimum.</li> <li>No private slipways should be built without approval from DWS.</li> </ul>



**Figure 11:** Proposed Shoreline Zoning Map 1 of 2



Figure 12: Proposed Shoreline Zoning Map 2 of 2



Figure 13: Overall proposed Zoning Map 1 of 2



Figure 14: Overall Proposed Zoning Map 2 of 2

#### 4.2.3 Carrying Capacity

In order to determine the degree of recreational use possible on the water surface, the Methodology for Carrying Capacity Assessment: Recreational Water Use (DWAF) was used as a guideline to determine the level of activity that would be sustainable at Misverstand Dam.

Determining the carrying capacity ensures that recreational use of the dam is safe and that users do not feel crowded and enjoy their use of the dam. There are three kinds of carrying capacity, namely:

- 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 ≥ 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 refers to the maximum number of users that can physically fit into or onto a defined water resource, over a particular time.

#### Formula: PCC = A x U/a x Rf

#### Where:

- **A** = Available Surface area for public use
- **U/a** = Area required per user
- Rf =Rotation factor (number of visits/day)

A is calculated as the area of the water surface available for public use: **255 ha** 

The **U/a** is assumed to be the average which was calculated as 1 craft/3 ha. And again the rotation factor (Rf) is assumed as 1 visit per day.

The **U/A** used for the assessment is as follows:

Craft	U/A (ha/craft)
Craft	U/A (ha/craft)
Power boats	4.0
Angling	1.0
Skiing	2.0
Canoe	2.0
Average	2.5 ha

Based on the table above, the average hectare per user is 2.5 ha (25000 m<sup>2</sup>), the value of 3 ha  $(30\ 000\ M^2)$  can be acceptable area per user. This has been chosen in order to ensure that the dam is not overcrowded, as such impacting on the sense of the area.

Therefore: **PCC** =  $A \times U/a \times Rf$ 

= 85 crafts

#### Real Carrying Capacity (RCC)

It refers to the maximum permissible number of users to the water resource, once the corrective factors (Cf) derived from the particular characteristics of the site have been applied to the PCC. The limiting factors include:

• Safety Areas/ No go Zones and

Conservation Area

**RCC** for Misverstand Dam: **RCC** = **PCC** x (100 – Cf1) % x (100 – Cf2) % x (100 – Cfn) % Where:

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

The RCC takes into account factors that limit recreation use (craft based) of the dam. For Misverstand Dam these factors includes sensitive areas such as conservation areas, security zones (9.9 ha) as well as aspects regarding the safe operation and management of the dam (1.5 ha).

These factors accounts for 11.05 ha, which is 4.3%.

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

= 85 x (100 – 4.3) %/100 = 81 Crafts

#### **Effective Carrying Capacity**

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

ECC = [Infrastructure Capacity x Management Capacity] x 100/ RCC Given that there are less facilities e.g. slipways at Misverstand Dam, the infrastructure capacity is estimated to be approximately 0.1. The management capacity is also estimated to be low as there is only one formalised recreational management structure in place and thus the ECC is currently 0. Once a proposed Institutional Structure and infrastructure capacity is in place, the ECC can be recalculated to verify if the RCC can be possible.

#### 4.3. STRATEGIC PLAN

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

- Objective (What 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 14 – 16**, the Strategic Plan on how to achieve the identified objectives identified regarding the dam is outlined.

Table 14: Strategic Plan for KPA 1: Resource Management

KPA 1: Resource Management				
Objectives	Motivation	Action Projects	Management And Support	
PreventionofWaterPollution• To prevent any kind of pollution to the water so that the dam can remain with good water quality.	• The secondary use of water resources can cause pollution in the water if the activities are not properly managed. The hazard potential for Misverstand Dam has been ranked significant and the dam is prone to pollution from the catchment area. As part of the RMP, pollution must be prevented at all times.	<ul> <li>Water quality tests have to be done at a monthly interval. This will ensure that any problems in the quality of the water gets detected as soon as possible.</li> <li>A wash bay should be developed at the dam in order to clean all the boats that enter the dam. This will minimise pollution in the water.</li> </ul>	<ul> <li>DWS resource quality services and DEA water quality division should monitor the catchment area for the water quality so that the dam remains pristine with good water quality.</li> </ul>	
<ul> <li>Alien Invasive Plant Species</li> <li>Management</li> <li>Managing and eradicating the available terrestrial alien plant species at the dam.</li> </ul>	• There is a presence of terrestrial alien species at the dam. These plants consume too much water from the river and they also cause soil erosion on the river banks.	<ul> <li>Working for Water (WFW) Programme is being used in the eradication of alien invasive plant species along the Berg River. This programme is effectively controlling the alien species.</li> </ul>	<ul> <li>DWS, DMC, DEA, DAFF are working together in coordinating the process of removing alien species.</li> </ul>	
<ul> <li><u>Control of Recreational</u></li> <li><u>Activities</u></li> <li>Controlling all recreational activities in a proper manner to ensure public safety at all times.</li> </ul>	<ul> <li>Misverstand Dam is a host to various recreational activities, therefore an effective control of these activities is required at all times. The control of activities includes shoreline and water surface zoning of activities, boat inspections before and after launching into the dam as well as constant monitoring of activities at the dam. Public safety should be made a priority.</li> </ul>	<ul> <li>All boats that are launched into the dam should go through a stringent check for any faults and any leaks. Visitors should be registered in order to maintain control within the dam. Time limits should be used so that all boats are out of the dam before sunset. Constant monitoring in the dam should also be conducted so that accidents can be prevented.</li> </ul>	<ul> <li>DWS, DMC, DEA, SAPS Water Wing, SLM and WDM should work together in managing and controlling activities at the dam. The RMP institutional structure will play a vital role in achieving the objective.</li> </ul>	
<ul> <li>Effective Zoning Plan</li> <li>To develop a suitable Zoning Plan for the proper</li> </ul>	<ul> <li>Recreational activities requires proper allocation of areas at the dam. A zoning plan comprises of a zoning map which shows the</li> </ul>	<ul> <li>The RMP Implementing Agency, DMC, PSC and OMC should ensure that the zoning plan is implemented at the dam. Continuous policing will also help in</li> </ul>	<ul> <li>DWS, DMC, SAPS Water Wing, recreational club and local communities should work together in ensuring that the zoning plan is</li> </ul>	

#### MISVERSTAND DAM RESOURCE MANAGEMENT PLAN

management of activities at the dam.	allowed activities and their designated areas at the dam. An effective zoning map protects the surrounding environment and maintain public safety.	ensuring that the implementation of the zoning map is done accordingly.	followed successfully. Enforcement of regulations and local rules should be done at all times.
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 Table 15: Strategic Plan for KPA 2: Resource Utilisation

KPA 2: Resource Utilisation					
Objective	Motivation	Action Projects	Managements And Support		
<ul> <li>Establishment of Commercial Fishing</li> <li>To establish commercial fishing at the dam for the benefit of the local communities.</li> </ul>	Some of the local community fishermen visit the dam for subsistence fishing. The introduction of commercial fishing at the dam will improve the socio- economic status of the local communities by increasing opportunities for job creation.	<ul> <li>Commercial fishing should enhance community participation and beneficiation. All participants should be given appropriate training to enhance their skills on commercial fishing.</li> <li>In a case where fish species are more abundant at particular seasons, the operation of the fishery should be limited to those seasons.</li> </ul>	<ul> <li>Different governmental departments such as DWS, DEA, DAFF, DT, can conduct a feasibility study to assess the viability and possibility of introducing the small scale fishery as proposed by the local community.</li> </ul>		
<ul> <li>Ensuring Public Safety at the Dam</li> <li>Providing measure that will ensure that all the dam users are safe at all times when visiting the dam.</li> </ul>	<ul> <li>Public safety is of high importance at the dam. Primary and secondary activities should not endanger human life in any manner. Misverstand Dam has a good record of public safety in the water, however, the security measures should be followed at all times to prevent injuries and fatalities.</li> </ul>	<ul> <li>DWS Resource Quality Division should ensure that water is tested on a regular basis. Where water quality is affected by activities remedial actions should be applied.</li> </ul>	<ul> <li>DWS, DMC, SAPS Water Wing and other institutions will assist in maintaining safety in the dam. Monitoring of activities should be the main area of focus in ensuring public safety.</li> </ul>		
<ul> <li>Maintaining Good Water Quality</li> <li>Ensuring that the state of the water quality does not get affected by activities at the dam in order to maintain a good water quality state.</li> </ul>	• Water is a scarce resource in South Africa, therefore the water quality at the dam should not be put under strain. Activities that are undertaken at the dam must not deteriorate the quality of the water.	<ul> <li>DWS resource quality division should ensure that water is tested on a regular basis. Where water quality is affected by activities remedial actions should be applied.</li> </ul>	<ul> <li>The DMC, DWS, SLM, WCDM and all other institutions that are involved will control activities to ensure that the water quality is not affected.</li> </ul>		

 Table 16: Strategic Plan for KPA 3: Benefit Flow Management

KPA 3: Benefit Flow Management			
Objective	Motivation	Action Projects	Managements And Support
AffordableFeesforPublicAccess• To encourage the general public to visit the dam more often by charging affordable feesfor entrance and different activities.	• As part of the RMP mandate, community participation and beneficiation should be enhanced at the dam. Entry fees for access to the recreational facilities at the dam should be made affordable for the local communities.	• The charges to be used at the recreational facilities should be regulated so that they accommodate all participants at the dam.	<ul> <li>DWS and DMC to establish affordable fee structure that will be suitable for the local community members.</li> </ul>
Putting Visible Sign Boardsfor Easier Direction to theDam• Increasing visibility on giving directions to the dam by putting bigger signboards.	<ul> <li>Directions to Misverstand Dam needs to be clear from the N7 road until the dam. A bigger sign board is needed on the main road, then other sign boards should be on the road that leads to the dam.</li> </ul>	• The areas where the bigger sign boards are to be erected need to be assessed before the boards can be placed.	<ul> <li>DMC, SLM should create and maintain the sign boards on the road.</li> </ul>
Sufficient Water Supply for Domestic Use Providing water for domestic use.	<ul> <li>The people who stay near the dam use the water straight from the dam because there is no water supply for domestic use.</li> <li>The use of impure water directly from the dam may cause diseases to human beings.</li> </ul>	<ul> <li>Water supply for domestic use should be made a priority as water is a basic human need.</li> <li>A mobile purification plant can be stationed at the dam to purify the water before it can be used for domestic purposes.</li> <li>Water tankers may also be used to supply drinking water wherever there is a lack of water supply. However, this may be used as a temporary solution.</li> </ul>	<ul> <li>DWS, SLM and WCDM should provide water for domestic use.</li> </ul>

#### 4.4. FINANCIAL PLAN

The RMP provides guidance on cost recovery mechanisms to ensure the sustained and improved management of the dam. 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.

The dam is a state asset and as such all profits generated from the recreational use, should also 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 socio-economic 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 Misverstand 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 15** illustrates the RMP & BP review framework.



#### Figure 15: RMP and BP Review Framework

### CONCLUSIONS

The RMP documents the challenges that exists within the Misverstand Dam that can significantly impact on the utilisation and management of the dam and it's surrounding for recreational purposes. Such factors include legal, biophysical, socio-economic, 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 **Institutional Plan** for the effective 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**. In addition, a **Financial Plan** will provide guidance on funding requirements and funding options to implement the objectives of the RMP.

Furthermore the RMP promotes community beneficiation, participation and through Stakeholders which engagement were conducted to obtain common key objectives to be met by the RMP. The vision for the dam was formulated from the key common objectives identified by Stakeholders. Based on the strategic objectives identified for Misverstand Dam, a BP has been developed to describe a manner in which the potential recreational activities are to be financially resourced. Furthermore, by including the RMP in the Local Initiatives such as IDPs, LED, etc, can ensure effective co-operative governance as well as to provide necessary support with regards to the use of the 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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