Department of Water and Sanitation

NATIONAL WATER RESOURCE INFRASTRUCTURE (NWRI)

Resource Management Plan

NAHOON DAM

REPORT – Volume 4 of 5

December 2016

WATER IS LIFE - SANITATION IS DIGNITY

water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

2030 NDP

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- Amatola Water;
- Buffalo City Metropolitan Municipality;
- Department of Economic Development, Environmental Affairs and Tourism;
- Department of Water and Sanitation;
- Nahoon Valley Conservancy;
- The community members of Cuba, Eluxolweni, KwaMzonkeshe, Mdantsane Nu1, Newlands and Nxarhuni; and
- The Cove Youth Development Centre.

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

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Review Period	Month	Year				
Annual Review of Business Plan	December	2018[1]	2019	2020	2021	2022
Five (5) Yearly Review of RMP	December	2022				

[1]The implementation of the RMP and BP requires a year budget planning prior to operationalisation.

AMENDMENTS PAGE

Revision No	Description	Date
1	Draft RMP for DWS Review	08/10/2015
2	Draft RMP for Public Review	09/11/2015
3	Draft RMP for DWS Review	23/11/2015
4	Draft RMP for Public Review	15/12/2015
5	Final Draft RMP for DWS Review	11/04/2016
6	Final Draft RMP for DWS Review	01/07/2016
7	Final Draft RMP for DWS Approval	16/08/2016
8	Final for DWS Approval	30/11/2016
9	Final RMP for DWS Approval	14/12/2016

LIST OF ACRONYMS

ADU	Animal Demography Unit
AtoN	Aid(s) to Navigation
BCMM	Buffalo City Metropolitan Municipality
BID	Background Information Document
BP	Business Plan
CATHSSETA	Culture, Arts, Tourism, Hospitality, Sports Sector, Education and Training Authority
CD: IO MANCO	Chief Director: Infrastructure Operations Management Committee
CIWSP	Cooperative Inland Waterways Safety Programme
COGTA	Department of Cooperative Governance and Traditional Affairs
CPSI	Centre for Public Service Innovation
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DHS	Department of Human Settlement
DMC	Dam Management Committee
DoT	Department of Transport
DPW	Department of Public Works
DRDLR	Department of Rural Development and Land Reform
DSR	Department of Sports and Recreation
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
ECC	Effective Carrying Capacity
EMF	Environmental Management Framework
GIAMA	Government Immovable Asset Management Act
GP	Guideline Programme
GPS	Global Positioning System
GVA	Gross Value Added
GWWs	Government Waterworks
I& APs	Interested and Affected Parties
IA	Implementing Agency
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IDP	Integrated Development Plan
IEE	Integrated Environmental Engineering
IRMP	Integrated Resource Management Plan
LAAP	Local Accountable Aton Parties
LED	Local Economic Development
LSDF	Local Spatial Development Framework
MOA	Memorandum of Agreement
NDT	National Department of Tourism
NEMA	National Environmental Management Act
NGO	Non-Governmental Organization
NPSC	National Project Steering Committee
NT	National Treasury
NWA	National Water Act
NWRI	National Water Resource Infrastructure

OMC	Operations Management Committee
PB	Purchased Boundary
PCC	Physical Carrying Capacity
PP	Public Participation
PPP	Public Private Partnership
PSP	Professional Service Provider
QSD	Quarter Degree Square
RCC	Real Carrying Capacity
RMP	Resource Management Plan
SAMSA	South African Maritime Safety Authority
SANBI	South African Biodiversity Institute
SAPS	South African Police Service
SASCOC	South African Sports Confederation and Olympic Committee
SDF	Spatial Development Framework
SWOT	Strengths, Weaknesses, Opportunities, Threats
TWQR	Target Water Quality Range
WfW	Working for Water
WMA	Water Management Area
WWTWs	Wastewater Treatment Works

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 Nahoon 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 Nahoon 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 socio-economic potential of the water resource.

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

Location of the dam: Nahoon Dam is a gravity type which impounds Nahoon River. It falls under Wards 12 and 26 within the jurisdiction of the Buffalo City Metropolitan Municipality (BCMM), in the Eastern Cape Province, South Africa. Its GPS coordinates are: **32°54'34.19"S 27°48'41.61"E**.

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

The dam also currently offers recreational activities such water boating, canoeing, sailing, rowing, jet skiing, picnicking, camping, shoreline fishing, etc.

Dam ownership and management: Nahoon Dam is owned by DWS. There is one controlled access point on the right bank through the Amatola Water Property. The rest of the dam is not fenced and adjacent Land Owners have direct access to the water surface where allowed by the topography (F.J de Kock & L Arch., 1992).

Amatola Water has been appointed by DWS for operation and maintenance of the dam also to manage the dam for recreational activities. This RMP proposes an improvement on the current institutional structure to include other relevant role players to assist in effectively managing the dam for recreational purposes.

Stakeholder engagement: The success of the development and implementation of the RMP depends on the role players and their level of participation. It is thus recognized that different roles and responsibilities of the stakeholders [Authorities and Interested and Affected Parties (I&APs)], their relationship towards each other and the steps in the planning procedure are imperative in the successful development of the RMP. As such, proper consultation with the public was done in order to help in producing a credible RMP.

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

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

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

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

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

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

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

The identified key common objectives are:

- To improve the water quality in the Nahoon Dam;
- To improve safety of navigation through the implementation of standardised and harmonised AtoN and demarcation markers as directed by SAMSA;
- To promote and maintain sustainable utilization of the dam and the surrounding environment;
- To ensure potential developments of municipal Local Economic Development (LED) does not degrade the attractiveness of the dam and its surroundings;
- To have formalized recreational clubs such as authorized boating clubs. In so doing South African Maritime Safety Authority (SAMSA) will be involved in surveying the vessels making sure they are water worthy;
- To see the dam in a cleaner condition as the natural scenic view of the dam has the potential to attract tourists;
- To see future developments such as Bed and Breakfasts, restaurants, family parks, parking bays, holiday resorts, hotels and casinos where local communities will benefit through job opportunities;
- To encourage the youth to participate in fishing as this will eliminate issues of crime and poverty within the community; and
- To have an alternative access points for local communities to the dam.

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

"To promote and maintain sustainable utilization of the water resource, its surrounding environment and also to create recreational developments providing job opportunities linked with skills transfer".

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 Nahoon Dam that could enhance tourist attraction:

- Development of Conservation Centre.
- Introduction of land based recreational activities such as hiking trails and mountain biking.
- Developments of Bed and Breakfasts holiday resorts, family parks, etc.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND OF NAHOON DAM

The Nahoon Dam is situated on the Nahoon River, approximately 15km North West of East London along the N2 National Road to King William's Town near East London, Eastern Cape. This attractive dam lies in a deep and meandering valley, covered with a well-established indigenous vegetation community (DWAF, 1992).

According to Mobilitate (2014), the dam falls within the jurisdiction of Buffalo City Metropolitan Municipality (BCMM) under Ward 12 and Ward 26. The dam is on Global Positioning System (GPS) coordinates**: 32°54'34.19"South 27°48'41.61"East** and is within the Mzimvubu-Keiskamma Water Management Area (WMA).

The dam is a gravity type and was established in 1966 to primarily serve for domestic supply and industrial use (DWA, 2013). However the water in the dam is also used for irrigational purposes (DWAF, 1992). The dam is owned by DWS. Amatola Water has been appointed by DWS to manage the dam for operation and maintenance including recreational activities.

The Nahoon River feeds into the Nahoon Dam. In addition to the dam's primary function for water provision, it also offers the use of water for recreational activities. The water based recreation currently taking place at the dam includes: motor boating (including water skiing), angling, sailing and canoeing.

Land based activities on the dam's surroundings includes: picnicking, angling, hiking including bird watching. Site pictures of the recreational activity undertaken at the dam amongst others and also the dam's surrounding are **illustrated in Figure 1, 2 and 3.**

Figure 1: Boating Activity

Figure 2: Fishing at Unauthorised Points

Figure 3: Ablution Facility for Day Visitors

See **Figure 4** for the Nahoon Dam Locality Map.The study area for the RMP for the Nahoon Dam includes the State Land that was expropriated for the management of the dam, as illustrated on purchased boundary map in **Figure 5**.

The dam is a perfect area for leisure trips and also a great area to interact with the environment. Its natural scenic view has a potential for tourist attraction. The dam profile is summarized in **Table 1**.

Table 1: Nahoon Dam Profile

Nahoon Dam Profile	
Location	South Africa
Province	Eastern Cape
Metropolitan Municipality	Buffalo City Metropolitan Municipality
Nearest Town	East London
Completion Year	1966
Co-Ordinates	32°54'34.19 S 27°48'41.61E
Purpose	Industrial, Irrigation and Domestic Use
Owner	DWS
Water Management Area	Mzimvubu-Keiskamma
Quaternary Catchment	R30E
River	Nahoon River
Capacity (m^3)	19 934 000
Surface Area (ha)	237.7
Wall type	Gravity
Wall Height (m)	40
Length (m)	365

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

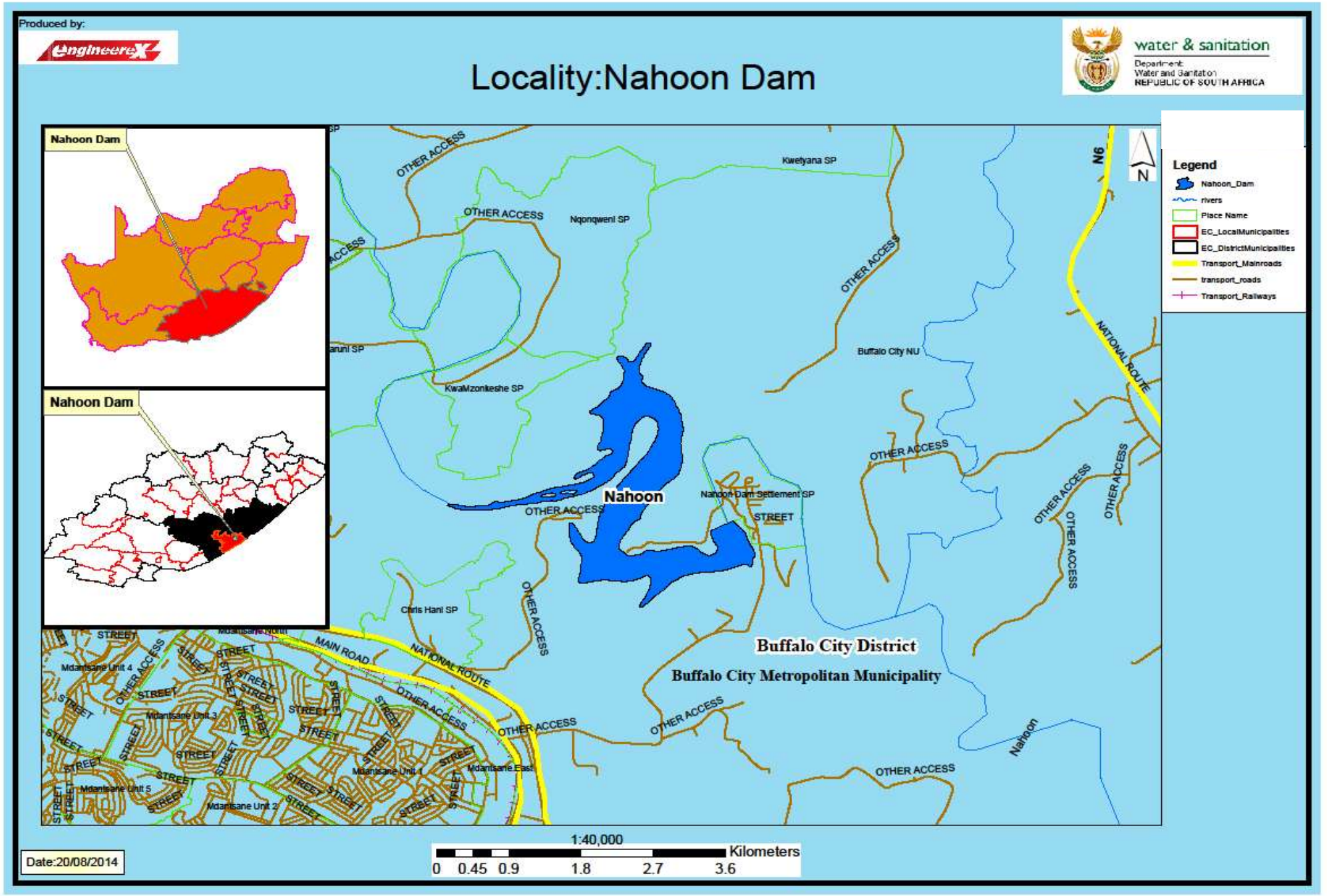

Figure 4: Locality Map for Nahoon Dam

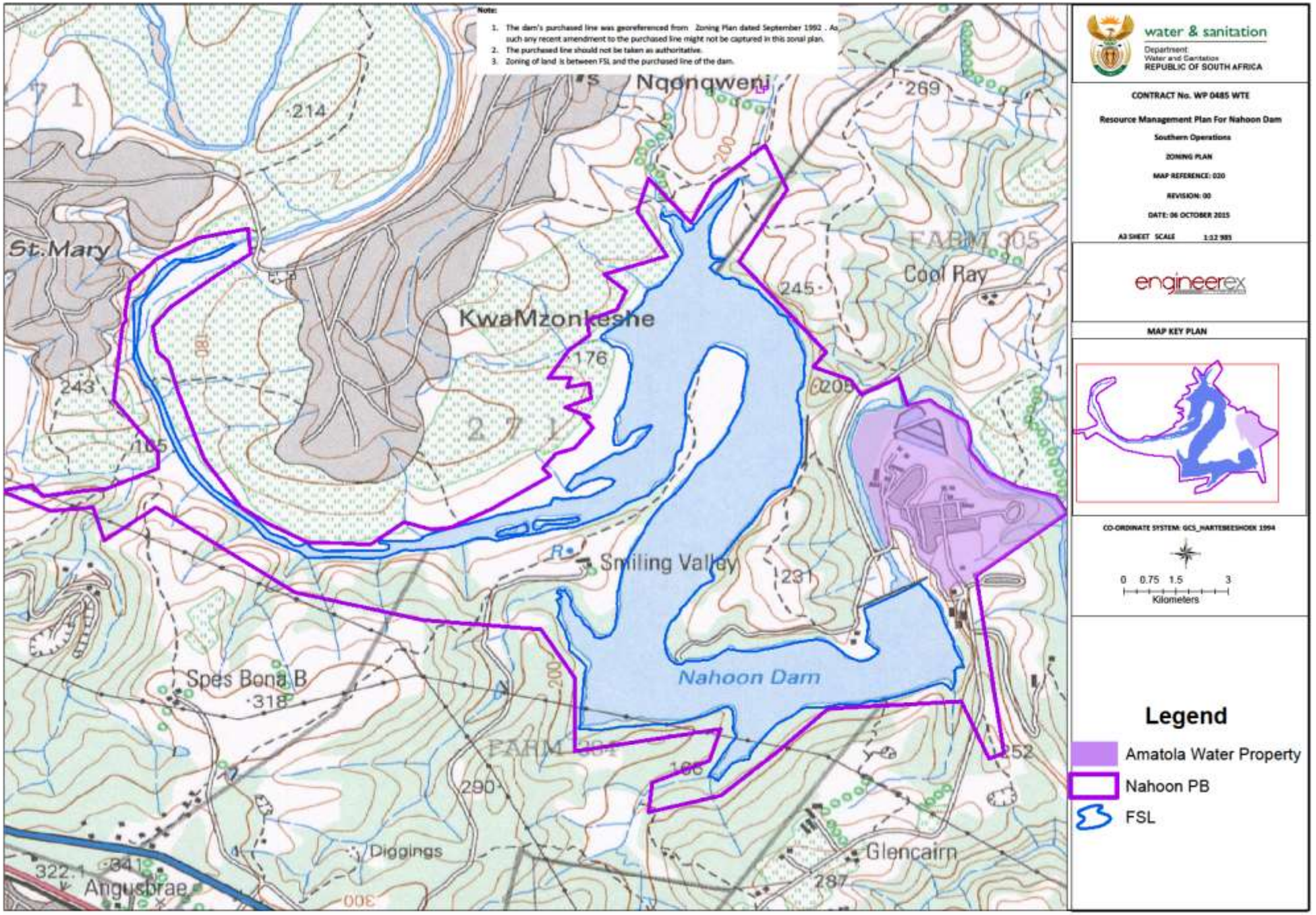

Figure 5: Purchase Boundary Map for Nahoon Dam (Georeferenced from Nahoon Dam Preliminary Zoning Map, 1992)

1.2 BIOPHYSICAL ENVIRONMENT

1.2.1 Climate

1.2.1.1 Temperature

According to the South African Biodiversity Institute SANBI (2006), the dam is situated within a mild climate area enhanced by the close proximity of the Indian Ocean. Monthly maximum and minimum temperatures for East London are recorded as 32.3°C and 5.3°C for March and July respectively with very little chances of frost.

1.2.1.2 Rainfall

The Mean annual rainfall for the area is 700 mm and the predominant winds are south westerly (F.J. de Kock & L Arch., 1992). According to SANBI (2006), the rainfall occurs in spring and early midsummer, but typically of the Eastern Cape it may occur at any time of the year. This will affect the frequency of recreational activities.

1.2.2 Flora

The dam lies in a deep meandering valley, covered with a well-established indigenous vegetation community (F.J. de Kock & L Arch., 1992). The valley slopes are dense in Valley Thicket and tangled thicket stands reaching up to 10 m as illustrated in **Figure 6.** The dense Thicket grades into more open, shorter thornveld at the edges of the valley slopes (SANBI, 2006). Plants like Cycad also occur at the cliff face on the left bank of the dam, see **Figure 7**, also (See **Figure 8** for **Land Cover Map,** illustrating the vegetation classification that exists around the dam and how it is spread out).

NB: At the time of the study, there were no Invasive Alien Vegetation (both terrestrial and aquatic) identified.

Figure 6: Valley Thicket Vegetation

Figure 7: Example of a Cycad Plant

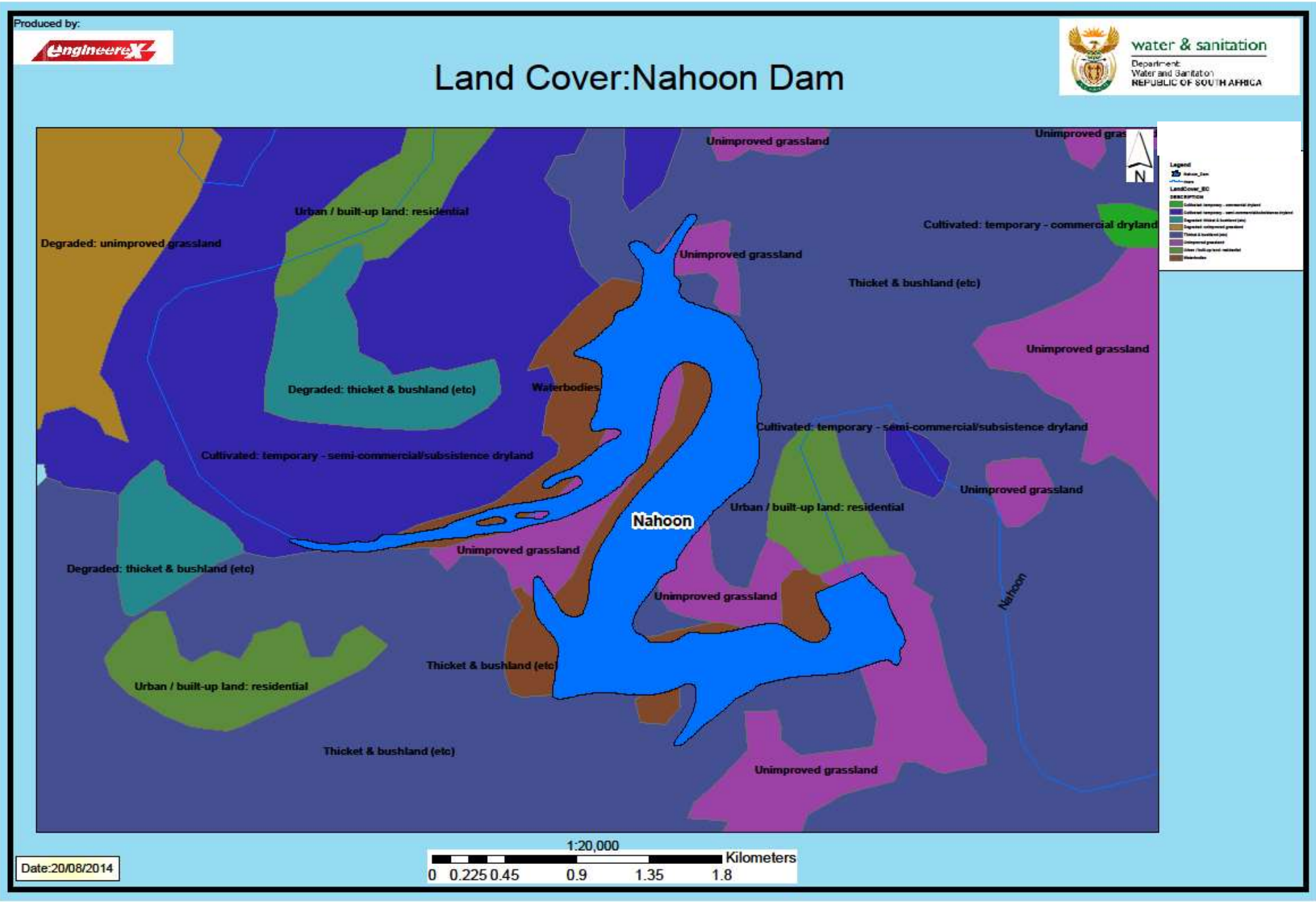

Figure 8: Land Cover Map for Nahoon Dam

1.2.3 Fauna

The relatively shallow upstream ends of the dam, where the Nahoon River and other tributaries enter the dam are regarded as ecological sensitive areas where habitats favorable for the breeding of birds and spawning of fish occurs (relatively shallow water). Other areas regarded as ecological sensitive are the cliff face on the right bank just upstream of the dam wall where birds nest (**See Figure 9**), the cliff face on the left bank (**See Figure 10**) and both sides of the saddle wall on the left bank.

Amongst others the nesting birds include: the **Black Headed Heron**, **Sacrid Ibis**, **Spoonbill, Red Cormorant, Cape Weaver**, **Hadeda** and **Fish Eagle**. Amongst other terrestrial animals that occur on the left bank between the main dam wall and the surroundings of the saddle wall area includes **Bush Buck, Blue Buck, Duiker, Otter, Bush Pigs and Monkeys**. This area (left bank between the main dam wall and the surroundings of the saddle wall area), is managed as a nature reserve by the Department of Water and Sanitation. (F.J. de Kock & L Arch., 1992).

Figure 9: Cliff face on the left bank of the dam where Cycad occur

Figure 10: Birds nesting area

1.2.3.1 **Mammals**

Mammal species that could be found within the 3227dd Quarter Degree Square (QDS) as per the Animal Demography Unit (ADU), 2015, includes:

Table 2: Mammal Species found within 3227dd QDS

Scientific Name	Common Name	Conservation Status
Philantomba monticola	Blue Duiker	Vulnerable
Chlorocebus pygerythus	Vervet Monkey	Not Listed
Caracal caracal	Caracal	Least Concern
Mastomys natelensis	Natal mastomys	Least Concern
Poecilogale albinucha	African Striped Weasel	Least Concern
Dendrohyrax arboreus	Tree Hyrax	Vulnerable
Epomophorus wahlbergi	Epomophorus wahlbergi	Least Concern
Rousettus aegyptiacus	Egyptian Rousette	Least Concern
Thryonomys swinderianus	Greater Cane Rat	Least Concern
Miniopterus schreibersii	Schreiber's Long Fingered Bat	Near Threatened

1.2.3.2 **Reptiles**

Reptile species that could be found within the 3227dd QDS as per the ADU, 2015, includes:

Table 3: Reptiles found within 3227dd QDS

Scientific Name	Common Name	Conservation Status
Agama atra	Southern Rock Agama	Least Concern
Aparallactus capensis	Black-headed Centipede-eater	Least Concern
Homoroselaps lacteus	Spotted Harlequin Snake	Least Concern
Macre Laps microlepidotus	Natal Black Snake	Near Threatened
Bradypodion ventrale	Eastern Cape Dwarf Chameleon	Least Concern
Duberia lutrix	South African Slug-eater	Least Concern
Lycodonomorphus laevissimus	Dusky-bellied Water Snake	Least Concern
Psammophylux rhombeatus	Spotted Grass Snake	Least Concern
Trachylepis capensis	Cape Skink	Least Concern
Afrotyphlops bibronii	Bibron's Blind Snake	Least Concern

1.2.4 Topography

The landscape features surrounding the dam are steep slopes of valleys in highly dissected hills and moderately undulating plains (SANBI, 2006), (See **Figure 11** for **Elevation Map,** illustrating the topographical features and different elevations around the dam).

1.2.5 Geology and Soils

Mudstones and sandstones derived from the Beaufort Group of the Karoo Supergroup as well as Jurassic Dolerite Suite Intrusions. The shallow soils (Glenrosa and Mispah) derived from these rocks are fine grained, nutrient poor silts, but the presence of forests leads to the development of humus-rich, deep soils (SANBI, 2006*).* (See **Figure 12** for **Geological Map,** illustrating the geological features surrounding the dam).

1.2.6 Hydrology

According to DWAF's (2013), list of registered dams, the dam falls within the Mzimvumbu to Keiskamma Water Management Area (See **Figure 13** for **Hydrological Map**, illustrating Quaternary Catchment properties).

1.2.6.1 **Rivers**

The Nahoon River enters on the relatively shallow upstream of the dam as illustrated in **Figure 14**.

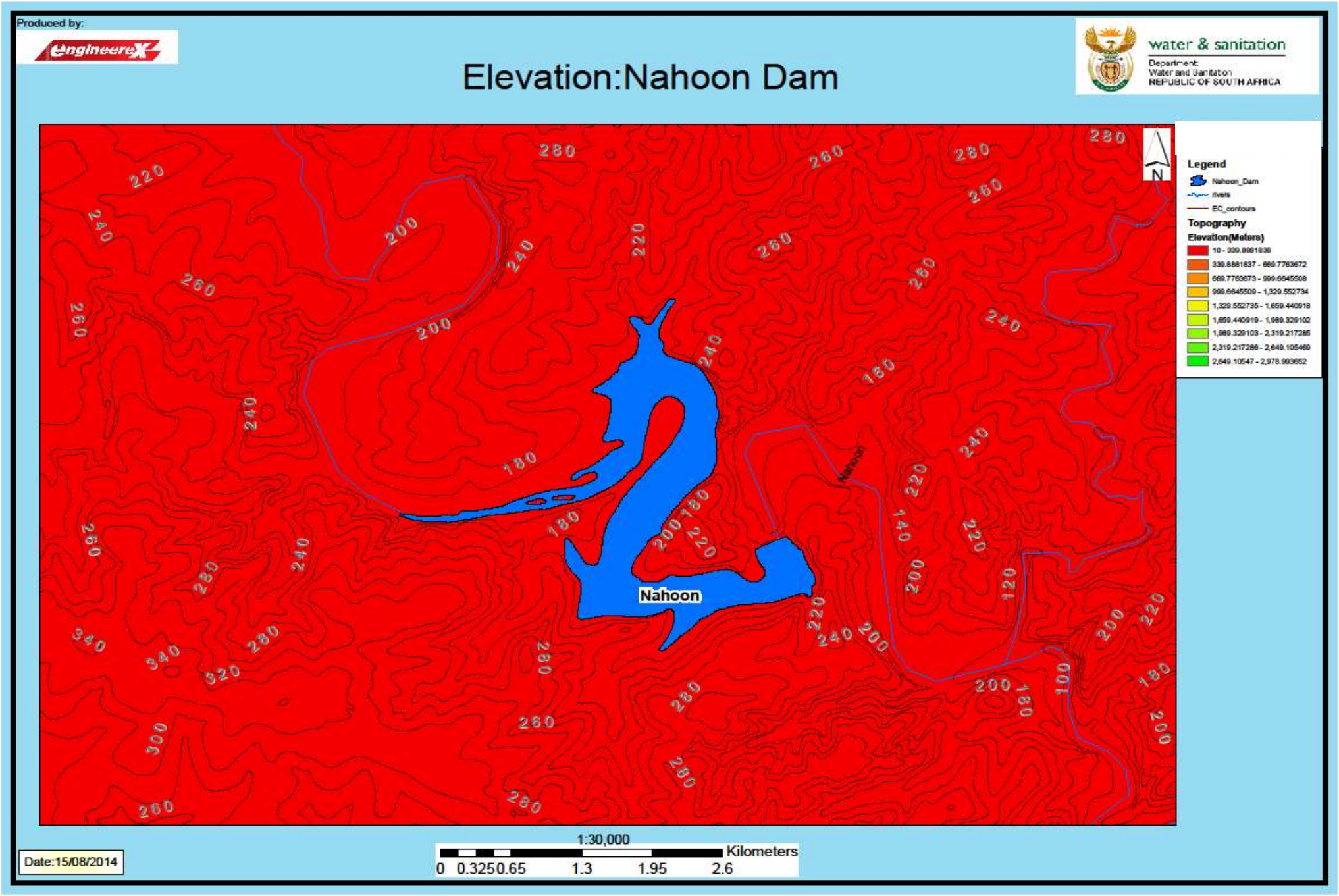

Figure 11: Elevation Map for Nahoon Dam

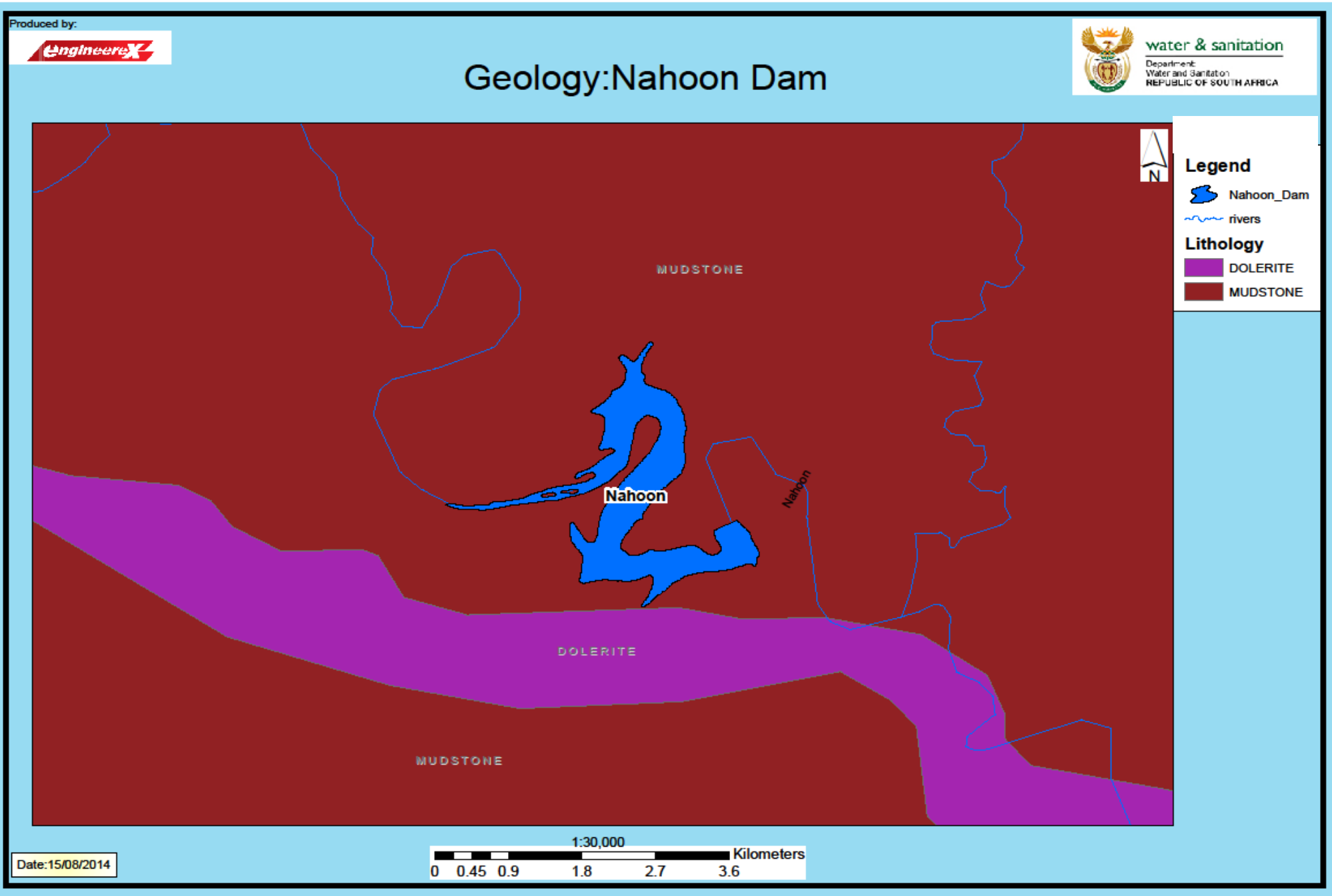

Figure 12: Geology Map for Nahoon Dam

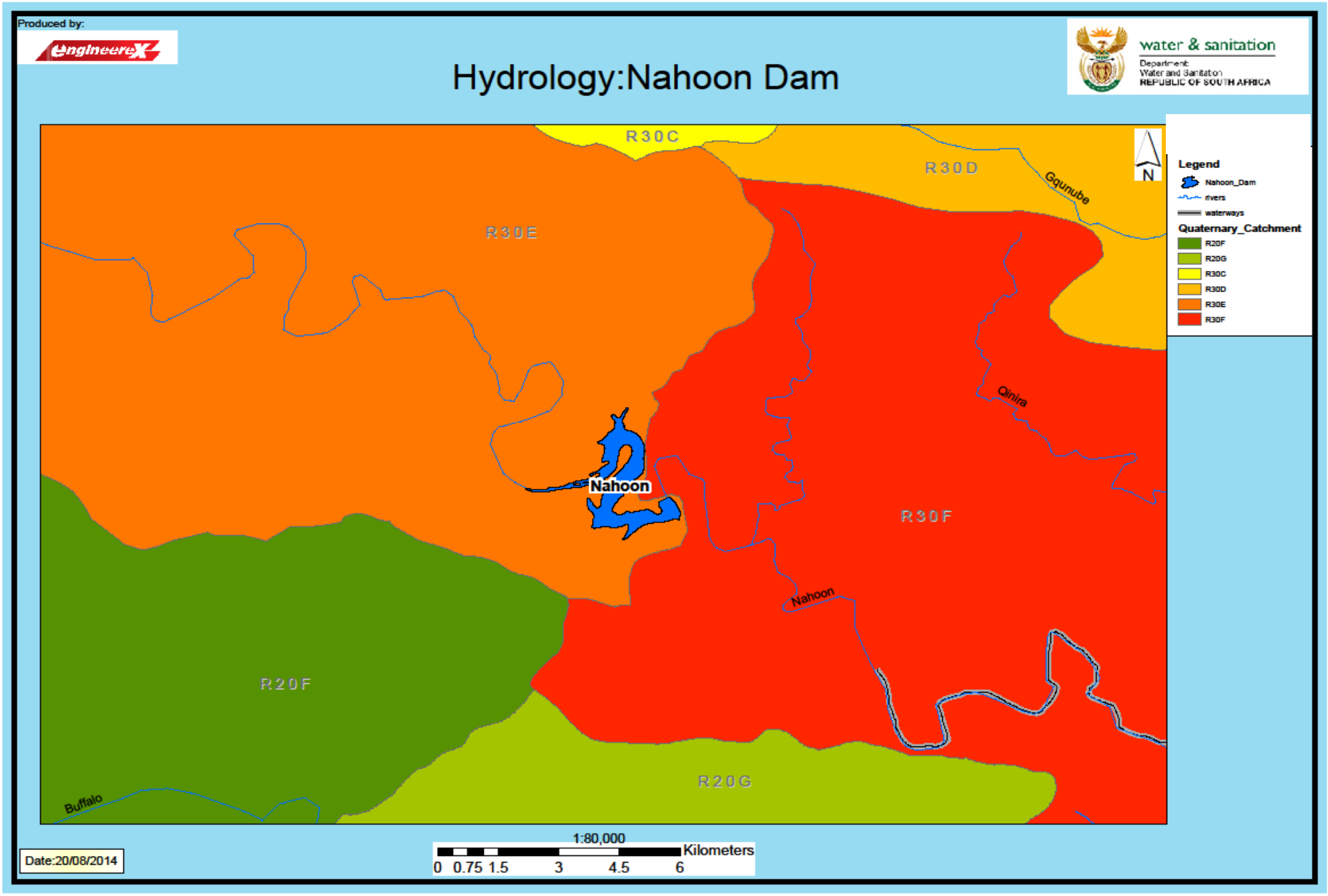

Figure 13: Hydrology Map for Nahoon Dam

1.2.6.2 **Water Quality**

The term water quality refers to the physical, chemical and microbiological properties of water that determines its fitness for use (WRC, 1998).

According to WRC (1998), "In nature, water rarely occurs in its pure form and normally contains a variety of substances. People generally have their own feeling for what "good" or "bad" quality water is, without giving it much thought. If water does not look clean, people think it is bad. On the other hand, clear water is not always safe. This means that good quality water sources are sometimes rejected while bad quality sources are accepted".

According to the BCMM (2014-2015), the water in the Buffalo (Tributary River) and Nahoon River is subject to eutrophication and water hyacinth has established in the non- tidal reach of the Nahoon River below the Nahoon Dam. The growth of hyacinth is primarily as a result of high nutrient level in this river due to industrial and domestic effluent discharge. The growth is also largely as a result of the following:

- Wastewater Treatment Works (WWTW) generally operating at or beyond capacity (often as a result of water wastage and inefficient use in their respective catchments).
- Inadequate sanitation facilities (rural and informal settlement). This impacts the dam through surface runoff during rainy seasons.

In **Table 4**, the water quality of the dam is assessed to determine the water's fitness for recreational use:

NB: These analytic results were the only ones available, and retrieved from DWS's Water Quality Management System for the study conducted.

Table 4: Nahoon Dam Water Quality Results (DWS Water Quality Management System, 2014)

Parameter	Analytical Results	Water Quality Target Range (Recreational Purposes)	Effects
Algae (g/chl-a)	23.0	0 - 15	Scums likely to occur. The water may take on a green colour. Nuisance conditions may be encountered. Occasional algal colouration with reduced light penetration.
pH (pH units)	7.6	6.5 -8.5	Minimal eye irritation occurs. The pH of water is well within Quality Range the buffering capacity of the lachrymal fluid of the human 6.5 - 8.5 eye. Skin, ear and mucous membrane irritation absent.
Turbidity (NTU)	112	3	Unsuitable for swimming. However, if lack of clarity (or turbidity) is the only consideration preventing the use of a water body for swimming, then it may be allowed, provided all subsurface, potential hazards are removed and signs indicating water depth are clearly posted. Risk of disease transmission by organisms associated with particulate matter increases but this cannot solely be determined on the basis of clarity measurements. May be some depreciation in aesthetic quality and enjoyment of the water body
Phosphate (measured as	0.04	<5	Oligotrophic conditions; usually moderate levels of species diversity; usually low productivity systems with rapid

Parameter	Analytical Results	Water Quality Target Range (Recreational Purposes)	Effects
Inorganic Phosphorus mg/l)			nutrient cycling; no nuisance growth of aquatic plants or blue-green algae.
Ammonia (NO3 mg/l)	0.001	N/A	No effect
Sulphate (SO4 mg/l)	11.418	N/A	No effect
Ecoli (counts/ml)	Not available	N/A	Presence of Ecoli can cause diseases such as fever, and stomache cramps etc.
Chloride (mg/l)	Not available	N/A	No effect

Source: Water Quality Standards: Department of Water and Sanitation, Recreational Use: Volume 2, 1996

Algae:
The concentration for algae measured as chlorophyll-a will impact the aesthetic quality of the dam during blooming season. The raw water containing so much concentration of algae is often accompanied by odour and taste in drinking water. It is also accompanied by costs to purify in that it will require pre-chlorination.

pH:
The pH for the dam is within the TWQR for recreational use and is also suitable for Aquatic ecosystem.

Turbidity:
The turbidity concentration is high and affects the clarity of the water due to the high concentration of suspended solids. Lack of clarity (presence of turbidity and/or colour) poses danger for swimmers since potentially hazardous objects and evidence of shallow waters may be obscured. In turbid waters, micro-organisms associated with particulate matter may pose a health risk (DWAF, 1996). There is huge a possibility of microbiological pollution associated with turbidity.

Phosphate:
The phosphate concentration in the dam is within the acceptable limits and this will not encourage nuisance growth of aquatic plants or blue-green algae in the dam.

The analytical results for E.coli and chloride were not available at the time of conducting the study.

During the RMP process, the analysis of the water quality results illustrated that, the water in the dam is not fit for full contact recreational activities. It is likely that the water may cause health effects if in contact with. However in depth analysis of the water quality should be done in order to make a conclusive ruling on the fitness of the water quality for full contact recreational activities.

1.3 BUILT ENVIRONMENT

1.3.1 Infrastructure
The main infrastructures at the dam includes:

- DWS offices;
- Boat house; and
- Ablution facility.

1.3.2 Transport Network
The dam is approximately 15km North West of East London along the N2 National Road to King William's Town near East London, Eastern Cape.

1.4 USES AND USERS OF THE DAM

The dam was built for Bulk Water Supply to industries and for domestic use. The raw water for domestic use is abstracted from the dam, purified at the Nahoon Water Treatment Works (WTW) and distributed to different communities such as Nxarhuni, Newlands, Mdantsane and KwaMzonkeshe.

The functions of the dam are categorized into two (2) classes namely: Primary and Secondary:

1.4.1 Primary Functions
Defines the main purpose for building the dam.

1.4.1.1 Bulk Water Supply
The dam forms part of the Amatola Bulk Water Supply System (ABWSS), which also services consumers in the Amahlati and Great Kei municipal areas (DEDEAT, 2013). The water is purified at the Nahoon Dam WTW operated by Amatola Water, then bulk water is supplied to parts of East London, Da Gama Textiles and surrounding nearby communities.

1.4.2 Secondary Functions
Represents water based sports that are taking place at the dam.

1.4.2.1 Recreational Use
In addition to the dam's primary purpose for water provision, it also offers the use of water for recreational activities. The water based recreation taking place at the dam includes:

- Angling;
- Boating;
- Sailing;

- Canoeing; etc.

Land based recreational activities include:

- Hiking;
- Bird watching; and
- Picnicking etc.

Amatola Water as the management authority of the dam indicated that during algal blooms the water activities are not allowed to take place.

1.5 RECREATIONAL INSTITUTIONAL STRUCTURE

DWS has a Memorandum of Agreement (MOA) with Amatola Water to manage the dam for operation and maintenance. Amatola Water is currently managing the dam for all the recreational activities. However as part of the RMP process the existing agreement needs to be reviewed.

1.5.1 Management of Water Surface

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

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

1.5.2 Access

The existing access control (The access is controlled by security guard personnel) to the dam is on the right bank through the Amatola Water Property, with a dramatic view of the dam wall and water surface. Access to the water surface is from the left bank at two points after crossing the Nahoon River downstream of the dam wall.

The dam is not fenced and adjacent Land Owners have direct access to the water surface where allowed by the topography (F.J de Kock & L Arch., 1992). However the access point to the dam from the adjacent communities is very far.

1.6 SAFETY

1.6.1 Safety Navigation

There is currently no adequate, standardized and harmonized fixed and floating aids to Navigation[2] (Aton) and Demarcation Markers in Place.

1.6.2 Incident Management

There is no specific incident management system in place to ensure that incidents are responded to in a coordinated manner. But in the event of flooding, there is a well-established protocol and line of communication between Amatola Water, DWS and BCMM.

1.7 SOCIO ECONOMIC ENVIRONMENT

1.7.1 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 12 and 26 of the BCMM as shown in **Figure 14** and **15**. An understanding of socio-economic conditions of Wards 12 and 26 can be used at a later stage to determine the impact of a RMP in the area in terms of changed socio-economic conditions.

A social Audit which focused on the population composition of the ward, Education level and employment status was undertaken and is presented in section 1.7.1.1 to 1.7.1.4, respectively.

[2] 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".

Figure 14: BCMM Ward 12 Boundary (Mobilitate, 2014)

Figure 15: BCMM Ward 26 Boundary (Mobilitate, 2014)

1.7.1.1. Population Dynamics (Ward 12 and Ward 26)

Tables (5 & 6) and **Figure (16 & 17)** illustrates the population groups dominating within ward 12 and 26 respectively:

Table 5: Population Groups within Ward 12 (Census 2011)

Description	Ward 12 (2011)
Black African	14 861
Colored	54
Indian or Asian	22
White	153

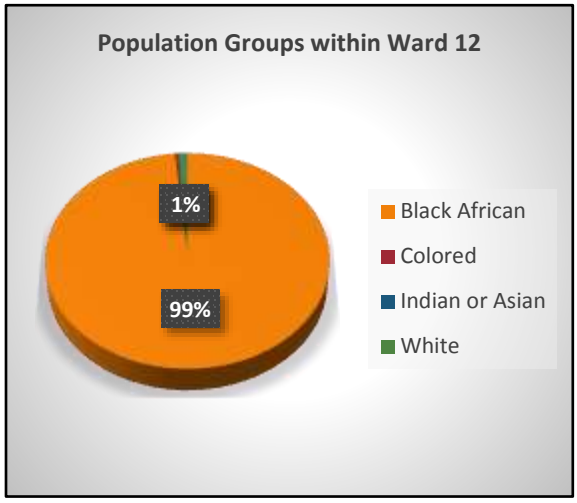

Figure 16: Population Groups within Ward 12 (Census 2011)

Table 6: Population Groups within Ward 26 (Census 2011)

Description	Ward 26 (2011)
Black African	16 638
Colored	20
Indian or Asian	25
White	257

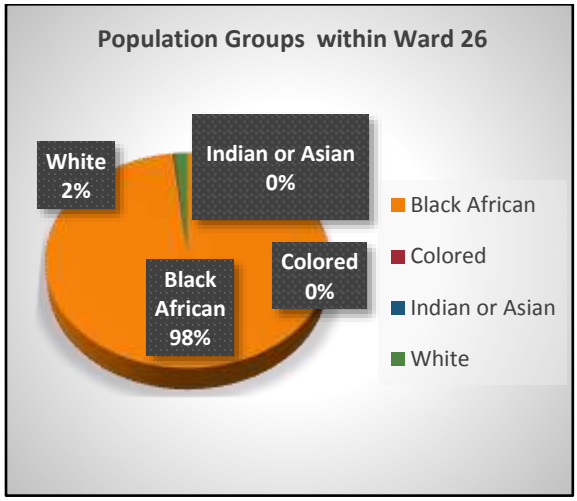

Figure 17: Population groups in Ward 26 (Census 2011)

1.7.1.2. **Ward 12 Employment Status**

The situation with regards to the unemployment rate at BCMM, after a period of decline from 2005, the unemployment rate at Buffalo City started to trend upwards especially during the period 2008 and 2009. This can be attributed to the recession which led to the loss of 5400 jobs.

The number of unemployed people also increased accordingly to 82 000 during the period under discussion. With the expected recovery that is expected during 2010, the figures are expected to look much better. The unemployment rate of 24 percent at BCMM is much better than the 31 percent that was experienced across the province in 2009 (BCMM, 2011-2016).

In **Table (7)** and **Figure (18)** the employment status of ward 12 is illustrated. It is evident that only 17% of the population is of working group. The concern is that 28% of the economically inactive population that shows they no longer seek for employment or have given up on finding employment. This speaks to the fact that there is a large proportion of people within the ward with limited income sources and still hoping that the situation will change in the future.

Table 7: Employment Status in Ward 12 (Census 2011)

Description	Ward 12 (2011)
Employed	2 727
Unemployed	2 479
Discouraged work-seeker	482
economically inactive	4 497

The direct positive impact that this has on the study area is that there is a large pool of potential labour, should tourism development projects that are labour intensive be implemented. It is however unlikely that the unemployed group in this area have the necessary skills to enter into the tourism market. Provided the study area is surrounded by rural communities. High unemployment rate is often accompanied by crime and poverty, strong deterrent factors for tourism in an area.

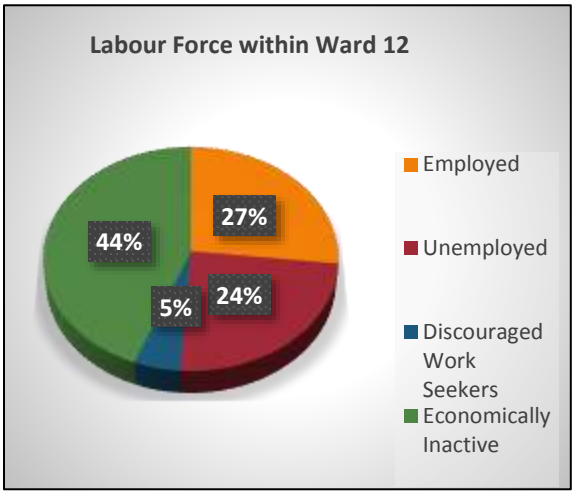

Figure 18: Labour Force within Ward 12 (Census 2011)

1.7.1.3. **Employment Status within Ward 26**

Table (8) and **Figure (19)** illustrates the employment status of Ward 26. It is evident that only 27% of the population is of working group. The concern is that 46% of the economically inactive population which shows they no longer seek for employment or have given up on finding employment.

The direct positive impact that this has on the study area is that there is a large pool of potential labour should tourism development projects that are labour intensive be implemented. It is however unlikely that the unemployed group in this area have the necessary skills to enter into the tourism market. High unemployment rate is often accompanied by crime and poverty, strong deterrent for tourism in an area.

Table 8: Employment Status within Ward 26 (Census 2011)

Description	Ward 26 (2011)
Employed	2 832
Unemployed	1 587
Discouraged work seeker	1 238
Economic inactive	4 772

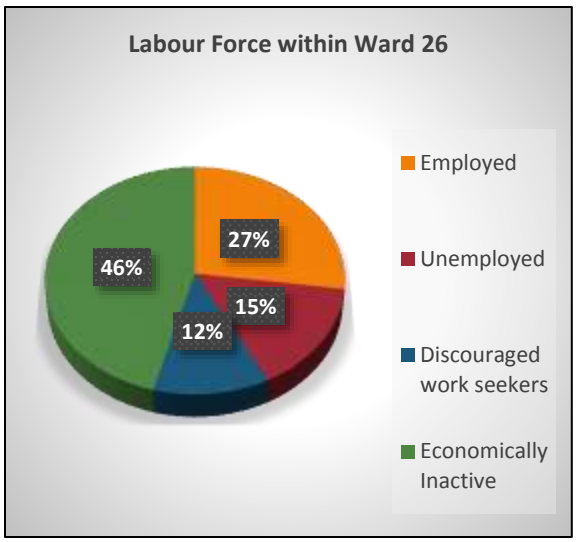

Figure 19: Labour Force within Ward 26 (Census 2011)

1.7.1.4. **Educational Levels within Ward 12 & Ward 26**

According to BCMM (2011-2016), Levels of education and training are strongly related to employment and employability, especially as South Africa moves increasingly to a service based economy that is highly integrated with the rest of the world. **Table (9 & 10)** and the **Figure (20 & 21)** shows the highest level of education in ward 12 & 26. Only 1% of the population has furthered their studies in higher institutions

Table 9: Education Levels within Ward 12 (Census 2011)

Description	Ward 12 (2011)
No Schooling	543
Primary School (Grade 0 – Grade 7)	3 989
Secondary School (Grade 8 – Grade 12)	8 094
Tertiary	86

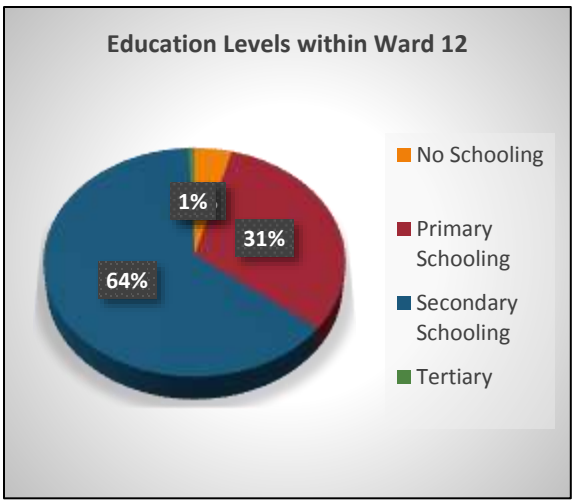

Figure 20: Education Levels within Ward 12 (Census 2011)

Table 10: Educational Levels within Ward 26 (Census 2011)

Description	Ward 26 (2011)
No Schooling	671
Primary School (Grade 0 – Grade 7)	2132
Secondary School (Grade 8 – Grade 12)	3028
Tertiary	86

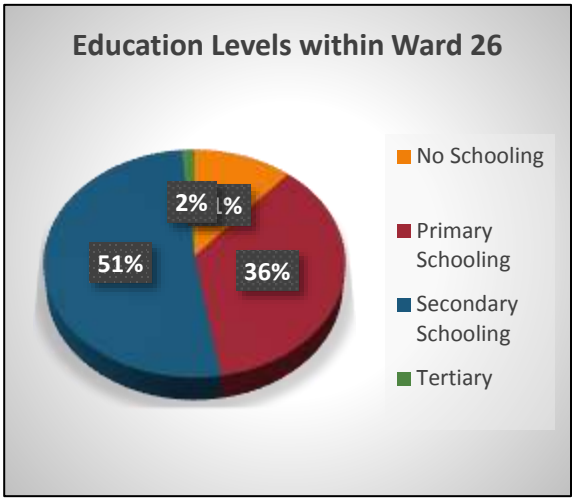

Figure 21: Education Levels within Ward 26 (Census 2011)

1.7.2 Gross Value Added

According to the BCMM (2011-2016), "Buffalo City has the 2nd largest economy in the Eastern Cape with a GVA of R29.7 Billion in the Eastern Cape after the Nelson Mandela Metro (Gross Value Add of R40 Billion) in 2009. See **Figure 22**,

it reflects the sectoral production structure of Buffalo City.

The finance sector is the largest sector in Buffalo City Municipality representing 29 percent of the total economy. This is followed closely by Community Services which accounts for 28 percent of Buffalo City's economy. This is followed by manufacturing (17 percent) and trade (13 percent) and transport (8 percent). The contribution of agriculture (1 percent) and mining (0.4 percent) remains minimal.

The size of the financial sector at BCMM can be attributed to the regional head offices of the finance institutions which are domiciled in East London. The strength of the community services sector can be attributed to the Provincial Government Head Offices in Bhisho as well as the regional offices of the government departments that are in East London.

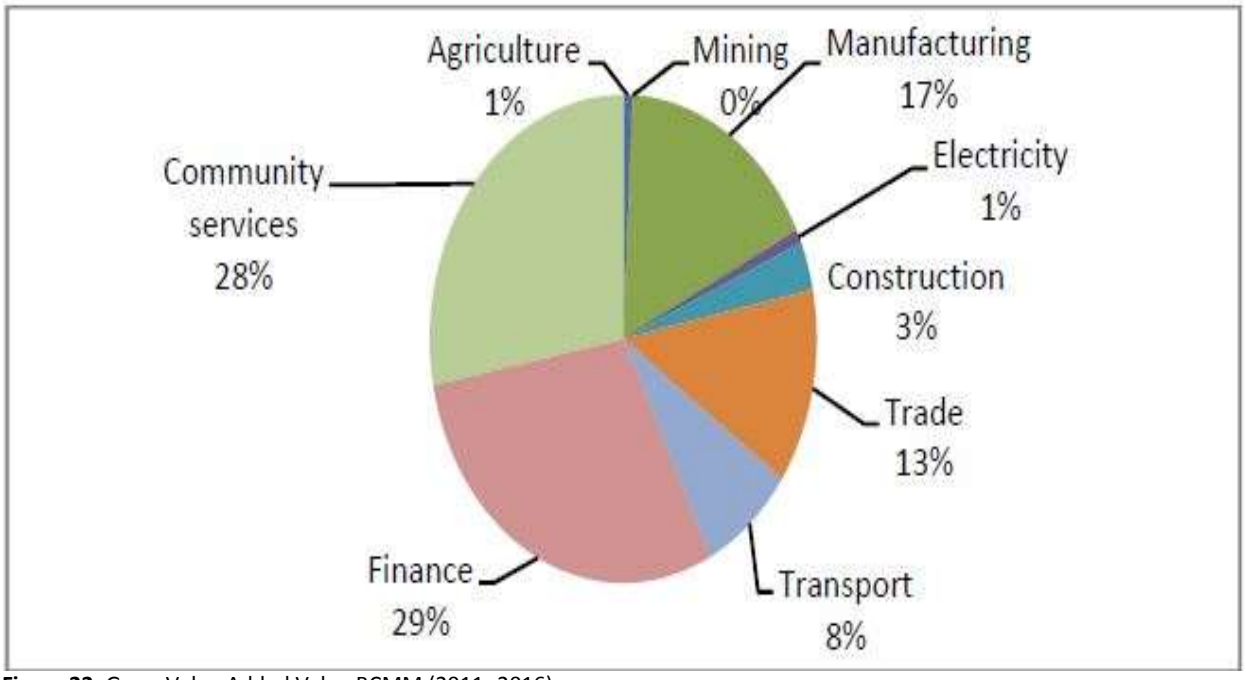

Figure 22: Gross Value Added Value BCMM (2011 -2016)

1.7.3 Adjacent Communities to the dam

The dam is surrounded by communities namely: Mzonkeshe, Nxarhuni, Newlands and Cuba. However, these communities cannot physically access the dam due to the steep terrain defining the dam. Also the existing access point is very far from the communities. In order for the community members to gain access to the dam, they need to make use of transport. Transport is an issue as it requires a fare and most of the community members are unemployed. The dam is also surrounded by farms. See **Figure 23** illustrating The Canonbury Cove Trust and its vicinity to the dam.

1.7.4 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).

Figure 23: The Cove

CHAPTER 2: LEGISLATIVE FRAMEWORK

The RMP forms the overarching framework for the management of Nahoon 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).

These Regulations apply to the Department of Water and Sanitation as they are applicable to all inland and sheltered waters and as the Department and its agencies are allowing access to government waterworks for recreational boating vessels.

IX. **Methodology for Carrying Capacity Assessment for the Use of Water for Recreational Purposes (DWAF, 2003):** The carrying capacity of a water resource represents the maximum level of visitor/recreational use and related infrastructure that the water resource and surrounding area can accommodate, without diminishing user satisfaction or adverse impacts upon the local or host community, the economy and culture of the area.

X. **National Environmental Management Act, 1998 (Act No. 107 of 1998):** NEMA serves as South Africa's Environmental Framework Legislation. It was designed to provide for co-operative and Integrated Environmental Governance by establishing a general framework for decision-making on matters affecting the environment.

XI. **National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) and Related Regulations:** This Act aims to provide the framework, norms and standards for the conservation, sustainable use and equitable benefit-sharing of South Africa's biological resources.

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

XII. **National Environmental Management: Protected Area Act, 2003 (Act No. 57 of 2003):** The aim of this Act is to provide for the protection and conservation of ecologically viable areas, which are representative of South Africa's Biodiversity, as well as natural landscapes and seascapes.

XIII. **National Treasury Public Private Partnership (PPP) Toolkit for Tourism, 2005:** This toolkit assist the process of development of tourism-based businesses on State-owned Land. The Toolkit make it easier for Institutions and the Private Sector to enter into tourism related partnerships on State Property managed by National and Provincial Government Institutions.

XIV. **National Water Act, 1998 (Act No. 36 of 1998):** The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in a sustainable and appropriate manner, for the benefit of all. Furthermore Section 113 of the Act states that the water of a government waterworks and surrounding state owned land may be made available for recreational purposes, subject to controls determined by the Minister and regulations made by the Minister.

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

Government Waterworks, 2009 and PFMA Treasury Regulation 16.

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

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

XVI. **Public Finance Management Act (PFMA) (Act No. 29 of 1999**): Section 76 of the Act secures transparency, accountability and sound management of the revenue, expenditure, assets and liabilities of government departments. The Act promotes the objective of good financial management in order to maximise service delivery. The Act allows DWS to enter into PPP agreements with the private sector for the commercial use of state assets.

XVII. **Safety at Sport and Recreational Events Act, 2010 (Act No. 2 of 2010):** Events management is addressed by Safety at Sport and Recreational Events Act (Act No. 2 of 2010). This act deals with ensuring responsibility for safety and security at events. The act deals with among other things,

- Responsibility for safety and security at the events;
- Risk categorization of events; and
- Safety certificates.

XVIII. **South African Maritime Safety Authority Act, 1998 (Act No. 5 of 1998):** One of SAMSA's three legislative mandates is "to ensure safety of life and property at sea". The Act enables SAMSA to administer and execute the relevant maritime legislation.

XIX. **Water Services Act (Act No. 108 of 1997):** The Act outlines the roles and responsibilities for the supply of water and sanitation to citizens. It also recognises the rights of all humans to basic water supply and sanitation services.

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

- Bio-Monitoring of the Nahoon River System (2008).
- Broad-based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003).
- Buffalo City Metropolitan Municipality Draft IDP (2011-2016).
- Buffalo City Metropolitan Municipality Draft IDP Review (2014-2015).
- Communal Land Rights Act, 2004 (Act No. 11 of 2004).
- Development Facilitation Act, 1995 (Act No. 67 of 1995).
- 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 (Act 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).
- **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 illustrated in **Table 11.**

Table 11: Trigger Factors for the Development of Nahoon Dam RMP

Trigger Factors	Description
Resource Management	**Ecological Sensitive Areas** • There are ecological sensitive areas where birds nest on the cliff face of the left bank of the dam. These birds are disturbed by members of the public by water activities such as power boating. • Other ecological areas are; the shallow upstream ends of the dam where the Nahoon River and other tributaries enter the dam, and the habitat favorable for birds and spawning of fish. • Species of concern such as Cycad plants occur on the cliff face of the left bank of the dam. Conservation needs to be targeted to these species. • Areas that become island when the dam is at full supply level. This affects the amphibian fauna. **Water Quality Issues** • The local surroundings such as Newlands Informal Settlement on the upstream of the dam are potential sources of sediments and cause siltation in the dam.
Recreational Industry Involvement	**Public Safety** • Safety issue where there has been recurring drowning incidents (people and livestock) need to be prevented going forward. • The area surrounding the dam is not fenced and local communities and livestock can gain access to the water surface. • Accessing of the dam unlawfully.
Community Participation and Beneficiation	**Public Participation** Any recreational developments to occur: • Communities will participate in decision-making with respect to major developments planned or proposed for the area. • Identify potential resources and attractions within their communities; and • Oppose developments that are harmful to the local environment and culture of the community etc. **Beneficiation:** • Tourism development will offer communities of a unique development opportunities, as tourism is widely recognized for creating and sustaining job opportunities, opportunities to bring new money to the area. Tourist's spending money will support local businesses and recreational facilities in a state of despair.
Public Policy	**Local Planning Initiatives** • To ensure that the RMP incorporates the planning documents from Local or District Municipality in cases where the dam is identified as local development objective in terms of the Integrated Development Plan (IDP), Spatial Development Framework (SDF) or Tourism Master Plans for the relevant Local or District municipality.

3.4 RMP DEVELOPMENT PROCESS

The RMP is developed in accordance with the RMP guideline procedure (DWAF, 2006) as illustrated in **Figure 24.**

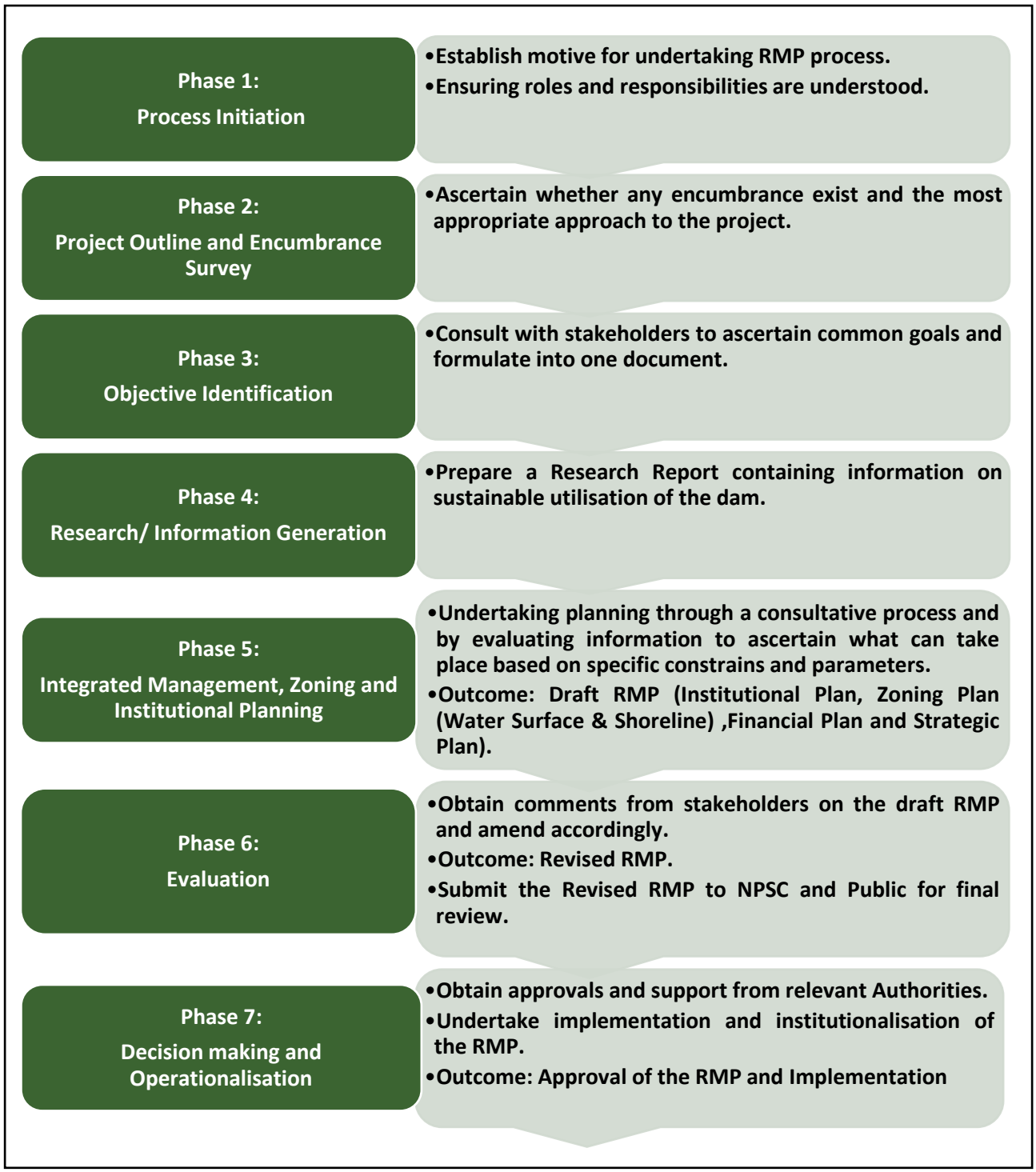

Figure 24: RMP Procedure

3.5 RMP PLANNING STAGES

3.5.1 Desktop Study

The desktop study was conducted with the aim of acquiring background information about the Nahoon 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 Nahoon Dam on **10 June 2014** to gather baseline information using a checklist questionnaire. The site inspection was undertaken with the DWS delegates (DWS IEE, Southern Operations Manager, Dam Manager and Southern Operations Champion). Photos of the study area were also taken during site inspection as illustrated in **Figure 25, 26, 27 & 28.**

Figure 25: Overview of the Dam Wall

Figure 26: Picnic & Braai Area

Figure 27: DWS Slipway

Figure 28: Cliff alongside the Dam Wall

More information was collected on **09 June 2014** in a meeting that was held at the BCMM in the Local Economic Development (LED) department, with the aim to introduce the RMP process. The department indicated that currently they do not have any planning in place with regards to the dam. However a list of other relevant departments with contact details that the PSP can engage with during the RMP process was provided. It contained the following departments:

- Engineering Services;
- City Planning;
- Land Survey; and
- Environmental Management.

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 to acquire information for **Phase 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 The Planning Phase

The **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 The 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 **The 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 Compilation and Distribution of Background Information Document (BID)

The purpose of this document was to provide stakeholders 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 stakeholders on how to fully participate in the process and encouraged active attendance to stakeholder's engagement meetings. The BID was compiled from the information collated through the desktop study and site inspection (See attached **Appendix B**).

3.5.3.4.2 Newspaper Advert

A Newspaper advert regarding the RMP project was placed in the **Eastern Cape Today Newspaper**. The advert invited the public to attend the Public Participation Meeting. The advert was published in English on **25 July 2014**. Furthermore, an advert for the draft RMP was advertised on **26 November 2015**. (See attached **Appendix C**).

3.5.3.4.3 Flyer 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 **25 July 2014.**

Flyers for the follow up meetings were distributed on **31 October 2014.** Moreover, the flyers for the draft RMP were distributed on **09 November 2015** (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 notification was sent out on **25 July 2014**. Moreover, the meeting invites for the draft RMP were sent out on **16 November 2015** (See attached **Appendix E**).

3.5.3.5.2 Authority Meeting

The initial authority meeting was held on **01 August 2014** at the **Nahoon Dam Regional Office, Amatola Water.**

The purpose of the meeting was:

- To present the RMP, its goal and the objectives of the project to the authorities; and
- To allow the authorities an opportunity to participate in the project by sharing information on their respective mandates.

The draft RMP was presented to the authorities on **08 December 2015**.

3.5.3.5.3. Public Meeting

The initial public meeting was held on **01 August 2014** at **Mdantsane Community Hall Nu 1**. 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 the Nahoon Dam.

The follow up meetings were held on **12 November 2014** at **KwaMzonkeshe & Eluxolweni Community Halls**. Moreover, the draft RMP was presented to the public on **08 and 10 December 2015.**

3.5.3.5.4 Comments and Responses Register

A copy of the draft report was circulated on **09 November 2015** for commenting. The commenting period was to elapse on **05 February 2016.** (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 12**.

Table 12: Planning Partners and their Respective Mandates

Department/ Agency	Mandate
Buffalo City Metropolitan Municipality	The dam is within the jurisdiction of the municipality and is mandated to provide bulk water services.
Amatola Water	Manages the dam for operations, maintenance and for recreational activities.
Department of Agriculture, Forestry and Fisheries (DAFF)	The purpose of DAFF includes sustainable development and management of resources to maximizing the economic potential of the fisheries sector while protecting the integrity and quality of the country's aquatic ecosystems. Operation Phakisa expansion to inland dams is one of DAFF initiative aimed at unlocking economic potential of fisheries sector within the inland water. The latter programme will be used as benchmark for implementation of conservation policies while implementing job creation within fishery and fish processing market.
Department of Rural Development and Land Reform (DRDLR)	The department will assist in terms of Land Claims/Ownership 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.
Department of Transport (DoT)	Responsible for legislation, policy and regulations for all transportation in South Africa, including shipping and other transport by water or sea also inland waterways.

Department/ Agency	Mandate
National Treasury (NT)	The use of State assets is governed by National Treasury Regulations, requiring DWS to plan concessions in compliance or association with National Treasury, guided by the Tourism Public Private Partnership (PPP) Toolkit of 2005.
South 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, Social and Existing Plans.**

Tables 13 - 15 outline the summary of limitations that might affect the development or implementation of the RMP for the dam.

Table 13: Summary of Biophysical Encumbrances

Item	Description
Climate	• When constantly raining, recreational activities cannot take place. Constant rain leads to the flooding of the dam which speaks to the fact that the dam will not be accessible. • When it is too windy, it is not advisable for vessels to launch on the dam, as south westerly winds can be strong and cause strong water ripples. This might result in vessels losing control on the water.
Vegetation	• Cycad plants exist on the cliff of the dam, these plants are a protected species and are the oldest living seed plants that face a growing threat of extinction. Conservation needs to be targeted to this plants. • Recreational developments should be prohibited at this site where Cycad exist. If not the developments will decrease the life span of the plant.
Fauna	• There are areas regarded as ecological sensitive such as: cliff face on the left bank of the dam wall where birds nest, shallow upstream area where Nahoon River and other tributaries enter the dam basin, the cliffs on the left bank and areas that become island at full supply. This will hinder future recreational developments at this sites as this will result to habitat destruction. • Disturbance of bird nesting by members of the public and their vessels requires an urgent Zoning Plan.
Topography	• Steep slopes constitute a constraint to potential development on the dam surroundings like establishing alternative access roads to the dam. This will be challenging in terms of constructing the access roads. • Steep gradients can have negative impact on the water quality as a result of increased erosion and surface runoff into the dam during heavy rainfall. • Steep slopes limit land recreational activities and developments will mostly have to be in the water surface.

Item	Description
Water Quality	• The local surroundings on the left bank are potential sources of sediments (no basic infrastructures in place such as roads etc.) and currently cause siltation to the dam. As sedimentation increases in the dam basin, the life span of the dam decreases. • The Nahoon River is subject to eutrophication and water hyacinth has established in the non-tidal reach of the Nahoon River. The presence of water hyacinth in the Nahoon River is likely to cause environmental, social and economic problems. It also threatens the biodiversity of the dam and also the economic development. • Eutrophication is a major concern and a threat to the dam. Algal blooms will gradually reduce the recreational value of the dam. Amatola Water Board highlighted that recreational activities are closed when there's algal blooms. • Due to the poor water quality in the dam, direct interactive activities like swimming cannot be introduced.

Table 14: Summary of Social Encumbrances

Item	Description
Population Dynamics	• It is unlikely that the population group dominating within Ward 12 & 26 have the necessary skills and training to enter the tourism market, provided that the study area is surrounded by rural communities. This may also be the result of the lack of knowledge about recreational potential of the dam and the lack of environmental information.
Employment Status	• The tourism developments should be able to offer trainings to the local communities in order to reduce the rate of unemployment and offer necessary skills to the community enabling them to enter the tourism market. • High rate of unemployment in ward 12 & 26 may be accompanied by theft and high crime levels. These are high preventative tourism factors in an area. • The rate of poverty and unemployment results to communities becoming less active within the tourism sector. Affordability to tourism facilities may impact the tourism development in an area.
Mobility	• During heavy rains the dam overflows and is not accessible through the existing access from the right bank. • Access to the water surface is limited to only two points along the left bank after crossing the Nahoon River. • The dam basin is not fenced and this poses safety risks as local communities and livestock access the water surface, hence access control is a problem to the dam.

Table 15: Summary of Existing Plans Encumbrances

Item	Description
Zoning Plan	• There is an old Zoning Plan that needs to be updated as part of the RMP process.
Institutional Plan	• The Institutional structure is currently limiting all other relevant institutions that could assist in effectively managing the dam and the environment.

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 to conducting the SWOT Analysis. Other challenges or encumbrances that may hinder the progress of the dam's RMP process were identified by the stakeholders following the SWOT analysis approach as illustrated in **Table 16**.

Table 16: SWOT Analysis for Nahoon Dam

Strengths	Weaknesses
• Nahoon Dam is a state owned asset and recreational activities are allowed to take place. • The natural scenic view of the dam has the potential for tourist attraction. • Security Personnel are placed at the main entrance of the dam to manage access control. • There is diversity of plants and bird life in the region (70 species). • There are competitions such as mountain biking that are hosted alongside the dam's surrounding area. • There is a tar road from the main entrance to the slipway making it easy for pulling vessels to the point of launching them into the water surface. • The natural scenic view of the dam has the potential for tourist attraction. • The Nahoon Dam has real potential for conducting research studies e.g. research on diverse fauna and flora species.	• There is a low water bridge below the wall used to access the dam. However it is inundated during flood conditions. • There is only one (1) DWS slip way and only limited vessels are allowed to launch for boating activities at a time. • The dam is not easily accessed by the local communities. The existing access point is far from the local communities. Private farmers do not allow the community members to pass through their property and access the dam. • Entrance fee/tariff at the main entrance is not market related. • The water in the dam is very turbid and swimming activities are limited. • The dam's management authority indicated that, raw water from the dam is difficult to purify due to unidentified substances from pollution upstream. • The dam is not zoned for recreational activities hence there are conflicts between boating and fishing activities. • Community members are concerned about the safety at the dam because the dam surrounding is not entirely fenced. There are recurring drowning incidents (e.g. children and livestock). People drown in the dam and commit suicide in the vicinity of the dam. A young boy was buried recently due to a drowning incident at the dam. • There is unauthorised fishing conducted at unauthorised points by some members of the community and children are involved in the activities. • There is a lack of transport to shuttle communities to visit the dam. • The dam is not recreationally marketed as a result the communities know the dam only for its provision for water supply.

	• The water quality in the dam and in the river system is in a worsening state. • Despite the knowledge of the increasing pollution, there is an element of neglect in protecting the water resource. • The community whose land was taken for the construction of the dam were not compensated.
Opportunities	**Threats**
• There should be abstraction authorization rights to be able to control water abstractions from the dam. • There should be a development of a conservation centre to benefit the local community through environmental education. • The Nahoon Dam has real potential for conducting research studies e.g. research on diverse fauna and flora species. • Land based recreational activities such as hiking trails and mountain biking can be introduced.	• Water quality in the dam is poor due to pollution upstream. There is raw sewage coming from the uphill (upstream) and gets deposited into the dam. • There is an ablution system built not far from the water surface, should the system overflow, it can easily run off to the water surface and pollute the dam. • There is a municipal solid waste landfill that impacts on the dam through surface runoff and ground water. This also impacts on the quality of the water in the dam. • The water in the dam is not suitable for swimming due to poor quality of the water. • There is pollution upstream which negatively impacts the water quality of the dam. • The activities of the communities near the dam are potential sources of sediments and this causes siltation of the dam. • Ceremonies being performed in the vicinity of the dam by some churches and traditional healers poses a threat to the water quality of the dam as foreign substances are being thrown into the dam. • There are recurring incidents of livestock drowning in the dam when trying to access water for drinking and this normally occurs more often during the afternoon.

3.6.2.2 **Objective Identification (Phase 3)**

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

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

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

KPA 1: Resource Management

- To maintain and improve water quality of the dam so that recreational activities such as swimming can take place;
- To promote conservation of all endangered and protected flora and faunal species during developments at areas where these species exist; and
- To promote and maintain sustainable utilization of the dam and its surrounding environment.

KPA 2: Resource Utilisation

- To have an alternative access point to the dam from surrounding communities;
- To improve safety of navigation through the implementation of standardised and harmonised AtoN and demarcation markers as directed by SAMSA;
- To have formalized recreational clubs such as boating clubs;
- To encourage the youth to participate in fishing as this will eliminate issues of crime and poverty within the community; and
- To see future developments such as Bed and Breakfasts, holiday resorts, family parks, restaurants, hotels, parking bays, resource centers, gym facilities and casinos where local communities will benefit through job opportunities.

KPA 3: Benefit Flow Management

- To uplift the local economy and increase benefit flows to the surrounding communities through employment empowerment, skills transfer through environmental education programmes;
- To see the dam recreationally marketed as it is known to most community members for its primary function of water provision; and
- To have an effective and suitable organizational structure that will effectively manage the recreational utilization of the dam and its surrounding land.

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 promote and maintain sustainable utilization of the water resource, its surrounding environment and also to create recreational developments providing job opportunities linked with skills transfer".

After setting both the dam's specific objectives, a research was conducted in order to provide relevant information to decision – makers regarding the sustainable utilisation of the water resource and where applicable the State Land.

3.6.3 Research/ Information Generation (**Phase 4**)

The aim of undertaking the research process was to collect the relevant data about the dam. 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 illustrated in **Figure 29**.

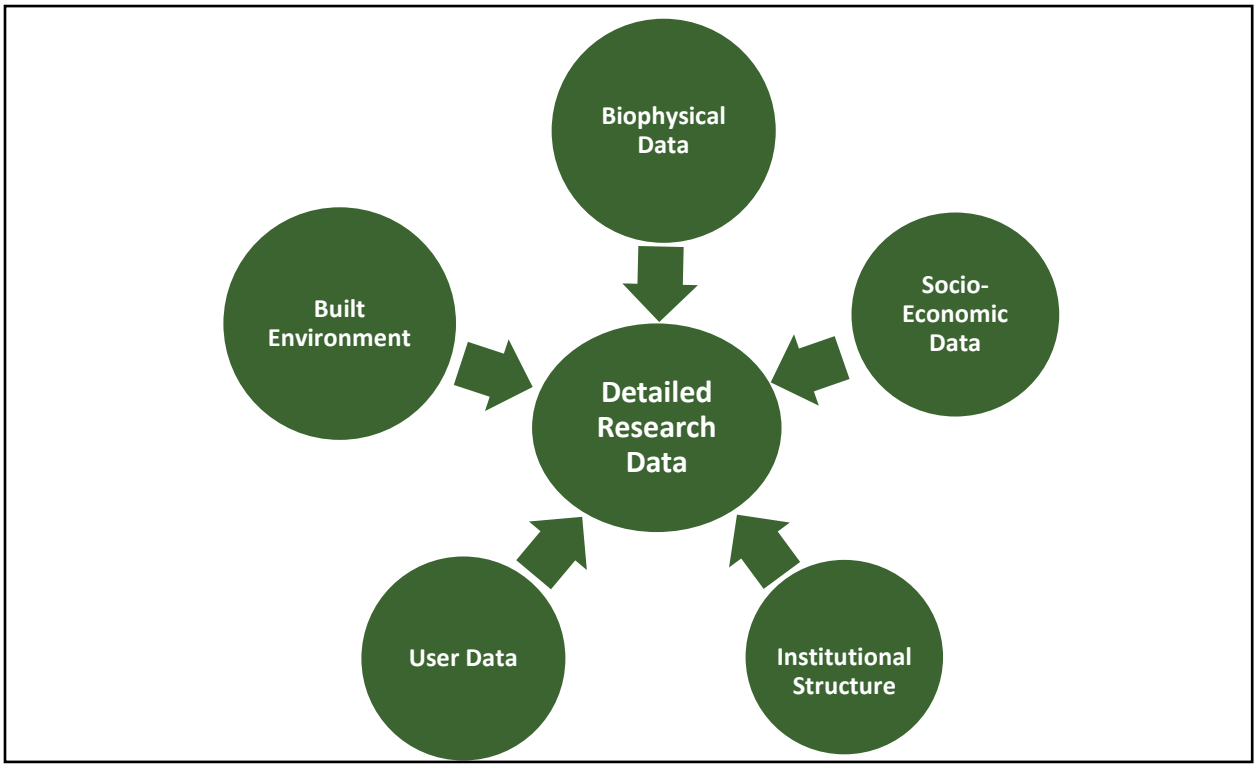

Figure 29: Research Data

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**

According to BCMM (2011-2016), Nahoon Dam is under-utilised. The dam is not recreationally marketed, it is only known to the surrounding communities for its function of water provision. The BCMM needs to identify the dam as an economic and entertainment hub. The municipality should also identify the dam as a local development objective. The dam could become an economic lever for the region.

There have been significant strides to implement the projects within the framework period of the Tourism Master Plan; however, the reality is that none of these projects would be capable of promoting large scale public and particularly private sector investment with the related and /or desired positive impacts on employment and income generation (BCMM, 2011-2016).

Tourism is one of the key growth economic sectors of the municipal economy. Despite the recession it has continued to show prospects of job creation, skills development and marketing of the Buffalo City Metropolitan Municipality as tourism destination. For 2009/10 the key objective of the unit was to market the city as a Tourist Destination of choice (BCMM, 2011-2016).

Canonbury Cove Trust has a commitment to Youth Development and the vision for establishing a youth centre/ camp site on a portion of the land that has views overlooking the native bush and the Nahoon Dam. The land

is approximately 20m away from the dam's banks.

The Cove is a Non Profit youth facility that can be used by the community as a whole, for the betterment of society. With a self-sustaining business policy that provides a multi-purpose venue catering for corporate function s, conferences, events, team building, workshops, adventure camps, school camps, parties and weddings.

With the Coves main function of funding a social responsibility program for those less fortunate and most vulnerable in the society by having fun through sports, adventure and empowering them with the message of Jesus Christ.

An application for Special Consent was submitted to the Buffalo City Metropolitan Municipality by the Cove Trust and was granted. The application was for the development of a youth centre/camp site on Farm portion 304/3. The outdoor activities will include wall climbing, abseiling, an obstacle course, mountain biking, canoeing, hiking; peddle vessels, raft building, quad bikes, paint ball, bush camps, dodge ball, rugby, soccer, high wire and rope course, netball, basketball, fishing and bird watching.

A storage reservoir is to be constructed on the consolidated site to supply water for the Youth Camp facility. Septic tanks will be used for sewerage and the grey water will be handled so as to re-use it for the irrigation of gardens and sports fields. The Cove Youth Development Centre site currently has access along a gravel road.

3.6.3.2 Feasibility of Identified Potential Objectives

According to DWAF (2006), the feasibility of the proposed objectives needs to be determined in light of the local environmental conditions.**Table 17** shows the practicability of all proposed recreational objectives.

Table 17: Feasibility of Potential Recreational Objectives

KPA 1: Resource Management		
Objectives	**Status Quo**	**Practicability**
• To improve the water quality in the dam so that recreational activities such as swimming can take place.	• The dam is silted. The local surroundings on the right bank (south-eastern side of the dam) are potential sources of sediments. These areas lack infrastructure such as roads, these conditions increase soil erosion during heavy rainfall. • Nahoon River is subject to eutrophication and water hyacinth has established in the non-tidal reach of the Nahoon River below the Nahoon Dam. The growth of hyacinth is primarily as a result of high nutrient level in this river due to industrial and domestic effluent discharge.	• DWS Water Quality and River Health section must monitor water quality regularly to point sources of pollution and determine the water's fitness use for recreational activities. • Support from other Government Departments such as Environmental Affairs and NGOs that concern themselves with water quality and environmental health must be involved. • The construction of a wash Bay to eliminate the transfer of aquatic weeds from other dams.
• To promote conservation to all protected and endangered flora and faunal species at areas where they exist.	• The right bank at the dam wall is regarded as ecological sensitive area. Protected plants such as cycads occur at the bank. Also that's where the bird nesting areas are found. • There is currently an old preliminary Zoning Plan that is used to manage the dam, however, the Zoning Plan will be updated as part of the RMP process.	• As part of the RMP process, the old Preliminary Zoning Plan will be updated. The goal of the Zoning Plan is to ultimately integrate conservation, recreation and development whilst making sure the developments do not retard the primary function of the dam. Once the updated Zoning Plan is in place, it will promote conservancy and sustainable utilization of the dam and its surrounding area.
• To promote and maintain sustainable utilization of the dam and the surrounding environment.	• Currently the dam is managed by Amatola Water for operations, maintenance and also recreational activities. As part of the RMP process the water and shoreline activities should be environmentally friendly to ensure efficient and sustainable utilisation of the dam and the surrounding environment.	• The implementation of the RMP will guide Amatola Water on how to effectively manage the recreational utilisation of the dam and the surrounding state land.
• The potential developments of municipal LED should not degrade the attractiveness of the dam and its surroundings.	• Currently there are no projected LED recreational developments for the dam.	• Any recreational developments within the DWS purchased boundary will be guided by the RMP and should be authorised.

KPA 2: Resource Utilisation		
Objectives	**Status Quo**	**Practicability**
• To have alternative access controlled points from the Local Communities to the dam.	• There is only one (1) authorized and control access from the N2 road through Amatola Water property. This current access is far from the local communities namely KwaMzonkeshe, Eluxolweni, Newlands, Cuba and Nxarhuni, hence people access the dam wherever the terrain is flat and this leads to recurring drowning incidents and conducting recreational activities at unauthorised points.	• To construct an alternative road from the nearby community to the dam namely: KwaMzonkeshe Community to the dam. The Business Plan to advice on funding mechanism to construct and maintain the road.
• To improve safety of navigation through the implementation of standardised and harmonised AtoN and demarcation markers as directed by SAMSA.	• There is no adequate standardised and harmonised AtoN and demarcation markers available on the dam.	• To improve safety of navigation through the implementation of standardised and harmonised AtoN and demarcation markers as directed by SAMSA.
• To have formalized recreational clubs such as boating clubs.	• There are no formalized recreational clubs registered with the management authority, however, there are no limitations in having formalized boat clubs.	• As part of the RMP process, all recreational clubs to be formed e.g boating clubs will be formalised only when they have entered into an agreement with DWS. • Boat clubs offer advantages such as group and on-water trainings. The boat clubs also offer maintenance, cleaning, storage, insurance and slip fees.
• To encourage the youth to participate in fishing as this will eliminate issues of crime and poverty within the community.	• The local youth are not participating in fishing activities taking place at the dam. The dam is only known to the surrounding communities for its primary use of water provision.	• Awareness programs on subsistence fishing will support the livelihood of the surrounding communities and promote community participation and beneficiation.
• To see future developments such as Bed and Breakfasts, holiday resorts, family parks, restaurants, hotels, parking bays, resource centers, gym facilities and casinos where local communities will benefit through job opportunities.	• There are no accommodation, restaurants in the vicinity of the dam. Such facilities can only be found in town which is approximately 15 kms away from the dam.	• Within the DWS purchased boundary no permanent structures are allowed. The purchased boundary is very limited as it is relatively close to the high flood level.

KPA 3: Benefit Flow Management		
Objectives	**Status Quo**	**Practicability**
• To uplift the local economy and increase benefit flows to the Local Communities through employment empowerment, skills transfer through environmental education programmes.	• The rate for economically inactive population within ward 12 is 28% and 46% for ward 26. The direct positive impact of the study area is that there is a large pool of potential labour, should tourism development projects that are labour intensive be implemented.	• Community members need to be given first preference when there are tourism emanating from the dam. Tourism development will offer communities unique development opportunities, as tourism is widely recognized for creating and sustaining job opportunities, opportunities to bring new money to the area. Tourist's spending money will support local businesses and recreational facilities in a state of despair.
• To see the dam recreationally marketed as it is only known to most the community members for its primary function of water provision.	• Most community members are not aware of the water activities taking place at the dam as they only the dam supplies them with water for domestic use only.	• Through the LED strategy and awareness programs the dam needs to be marketed very well to be a destination of choice. Pictures of the dam with the associated recreational activities need to published in local newspapers to make people aware about what the dam has to offer.
• To have an effective and suitable organizational structure that will effectively manage the recreational utilisation of the dam and its surrounding land.	• Currently Amatola Water manages the dam for operations, maintenance and recreational activities. However, patrons access the dam and are not monitored for compliancy and safety.	• The Amatola Water will be appointed as an Implementing Agency for the Nahoon Dam RMP and will sign an MOA with DWS. The agreement will outline the roles and responsibilities and conditions to be followed by both parties in terms of managing the water resource for recreational use.

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 Plan (IRMP) will take into account the following:

- Biophysical, cultural and socio-economic 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 30**.

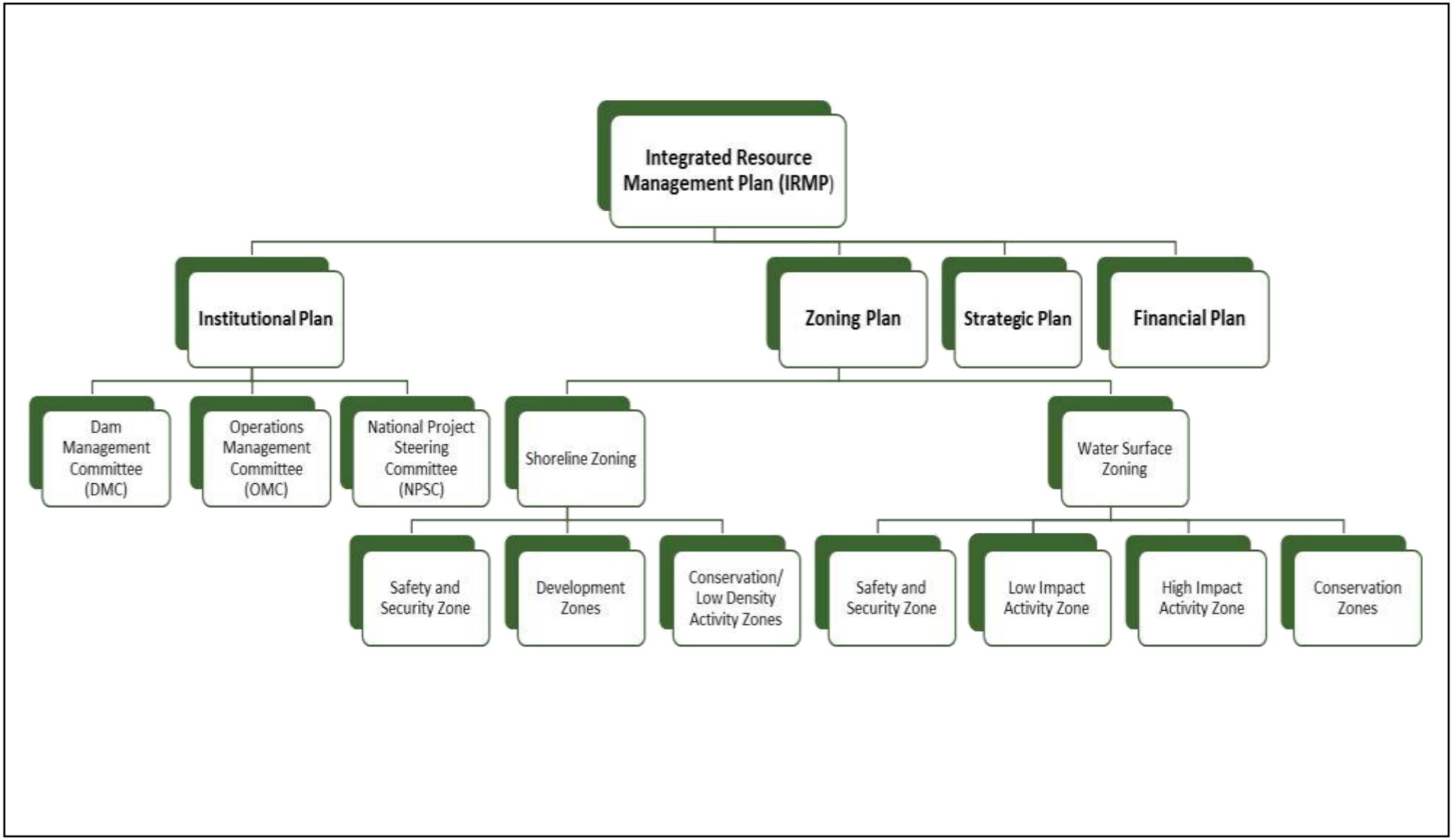

Figure 30: Integrated Resource Management Plan

4.1 INSTITUTIONAL PLAN

The Institutional Plan provides a framework for the institutional arrangements at the dam. The proposed management systems 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 31 illustrates the proposed user groups that will form part of the DMC.

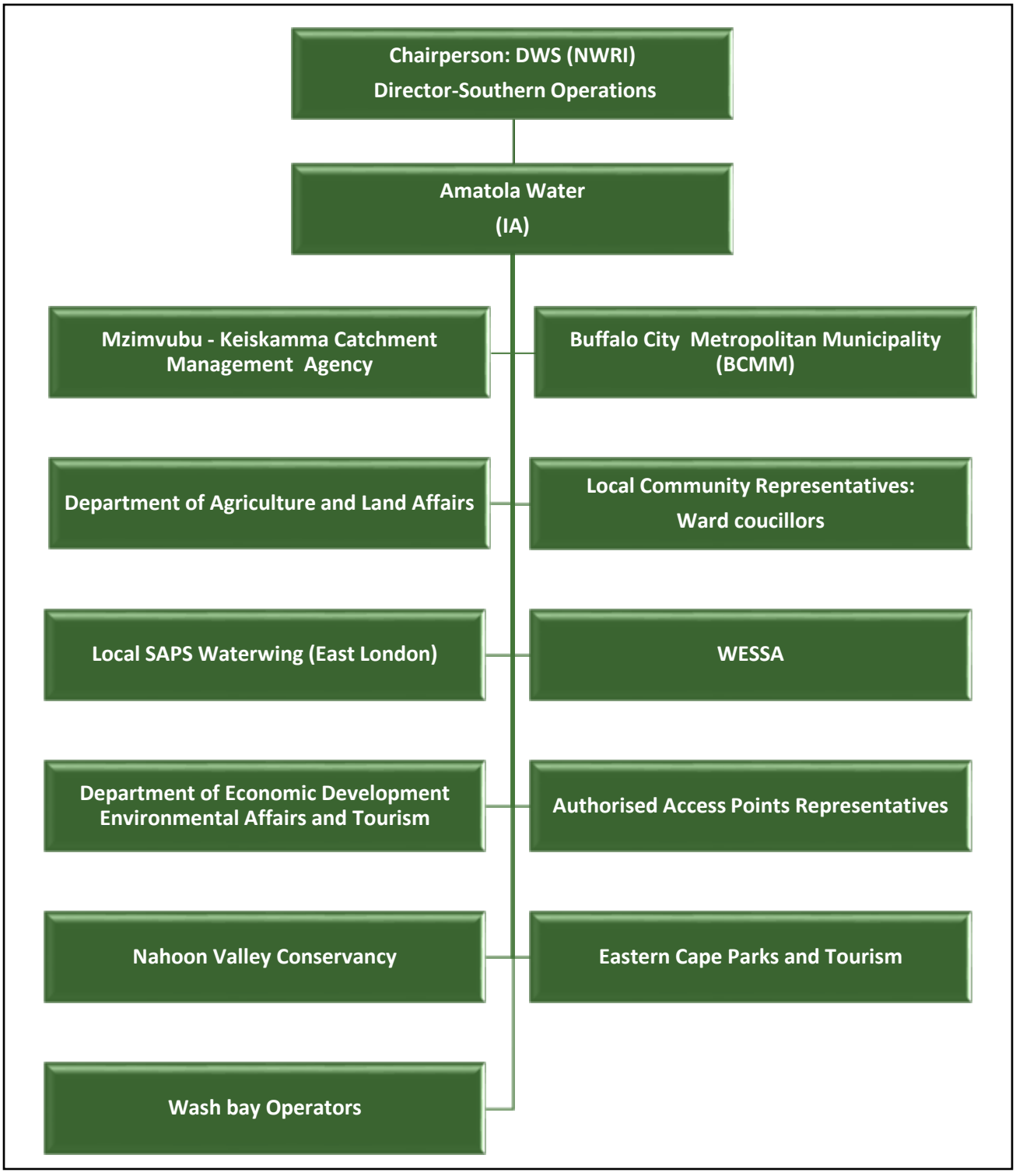

Figure 31: Proposed DMC

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 **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.

Agreements between DWS and Implementing Agency

Amatola Water will be appointed as an Implementing Agency (IA) for the RMP of Nahoon Dam. Amatola Water and DWS will sign a MOA, which is a legal binding document which will outline the roles and responsibilities and conditions to be followed by both parties in terms of managing the water resource for recreational use.

The minimum requirements of an IA include the following:

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

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

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

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

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 AtoN[3] for general navigation.

[3] AtoN refers to any sort of marker which aids the traveler in navigation; the term is most commonly used to refer to nautical or aviation travel, common types of such aids include lighthouses, buoys, fog signals and day beacons.

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.

Access Agreements

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

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

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

Event Applications

The canoeing competitions are often hosted at the dam. All events must be managed through an event application process. The events application will be submitted to the IA for approval and to DWS for commenting. These applications must follow a specific template and will include the following:

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

4.1.2 Operations Management Committee (OMC)

There is an existing Chief Director: Infrastructure Operations Management Committee (CD: IO MANCO) within Infrastructure Operations which comprises of all directors of four (4) operations (Northern, Southern, Eastern and Central) and is chaired by the Chief Director: Infrastructure Operations within NWRI as illustrated in **Figure 32**.

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

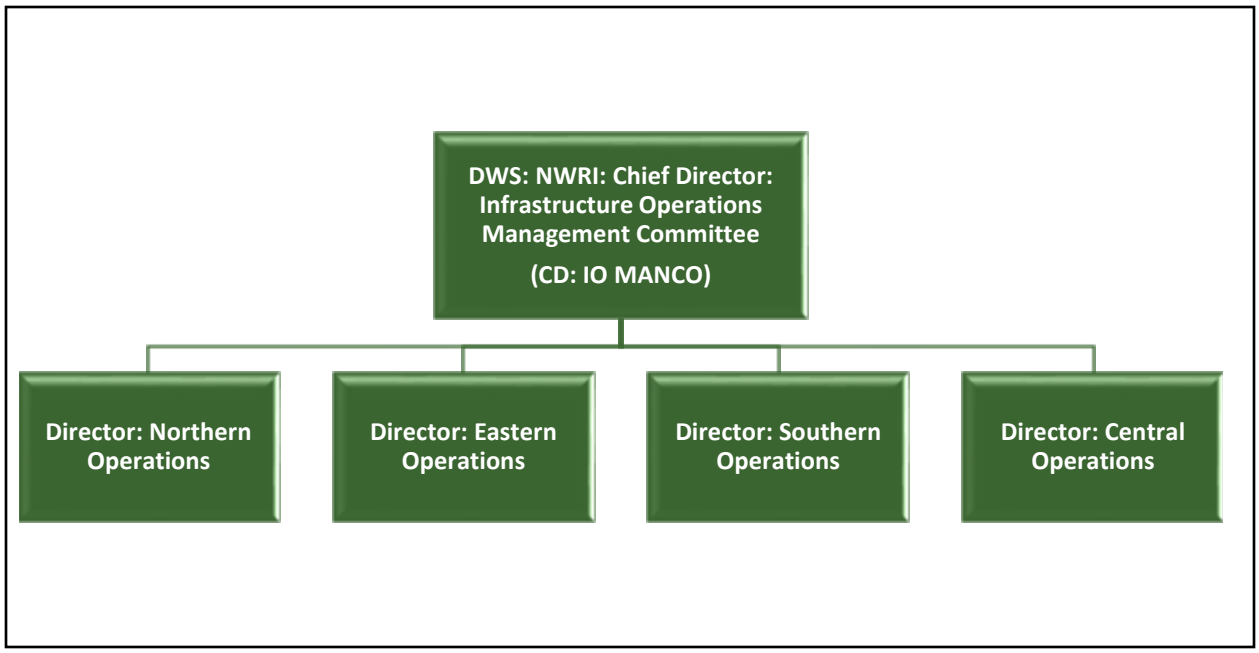

Figure 32: Existing CD: IO MANCO

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 33** illustrates a typical example of Governmental Departments that will form part of the NPSC:

Figure 33: 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.

Culture, Arts, Tourism, Hospitality, Sport Sector, Education and Training Authority (CATHSSETA):
CATHSSETA deals with the approval and financing of training relating to culture, hospitality, tourism and sport sectors.

Department of Agriculture, Forestry and Fisheries (DAFF):
The purpose of DAFF includes sustainable development and management of resources to maximizing the economic potential of the fisheries sector while protecting the integrity and quality of the country's aquatic ecosystems.

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

Department of Corporative Governance and Traditional Affairs (CoGTA):
Its function is to develop national policies and legislation with regard to Provinces and Local government, and to monitor their implementation. Other function of the Department is to support Provinces and Local Government in fulfilling their constitutional and legal obligations.

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

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

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

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

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

Department of Transport (DoT):
Responsible for legislation, policy and regulations for all transportation in South Africa, including shipping and other transport by water or sea, including small vessels and inland waterways.

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

National Treasury (NT):
The Department is mandated to support the optimal allocation and utilisation of financial resources in all spheres of government. As part of the RMP, The National Treasury Public Private Partnership (PPP) Toolkit for Tourism (2005), will assist the process of tourism-based businesses development on State-owned Land. The Toolkit make it easier for Institutions and the Private Sector to enter into tourism related partnerships on State Property managed by National, Provincial and Local Government Institutions.

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

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

South African Sports Confederation and Olympic Committee (SASCOC):
SASCOC is mandated to promote and develop high performance of sports as well as to act as a controlling body for sports in South Africa. It can also assist to coordinate 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 18: Proposed Water Surface Zoning Description

Zone Name	Permissible Activities	Non Permissible Activities	Recommendation
• Safety and Security Zone.	• Alien invasive species clearing • Management of dam infrastructure • Management and maintenance activities by DWS and authorised personnel	• Public access	• Area should be demarcated by dermacation makers and AtoN.
• Conservation Zone.	• None	• Public activities (to prevent disturbance of aquatic habitats disturbance)	• Area should be demarcated by demarcation makers and AtoN. • Strict management and control of these areas.
• Low Impact Activity Zone.	• Activities associated with no or little water wakes such as: ○ Angling ○ Sailing ○ Rowing ○ Canoeing ○ Wind surfing ○ Kayaking ○ Paddling boat ○ Float tubes • Slipway • Floating Jetty	• Motorised boating • Water skiing • House boats • Para-sailing • Kite-surfing • Jet Skis	• Area should be demarcated by demarcation markers and AtoN. • No private slipways/ floating jetties to be built without approval from DWS. • Launching and mooring of vessels should take place at this zone. • Motorised boating are allowed to launch at this zone but no water wake should be formed until the designated area for motorised recreational boating is reached.
• High Impact Activity Zone.	• Activities associated with water wakes such as: ○ Motorised boating ○ Water skiing ○ House boats ○ Para-sailing ○ Kite-surfing ○ Jet Skis	• Angling • Sailing • Rowing • Canoeing • Wind surfing • Paddling boat • Float tubes	• Area should be demarcated by demarcation makers and AtoN. • All activities within the high impact zone shall take place beyond 70m from the shoreline. • Activities within this zone must be evaluated to determine their impact on the water resources and other dam users before they are allowed into the dam.

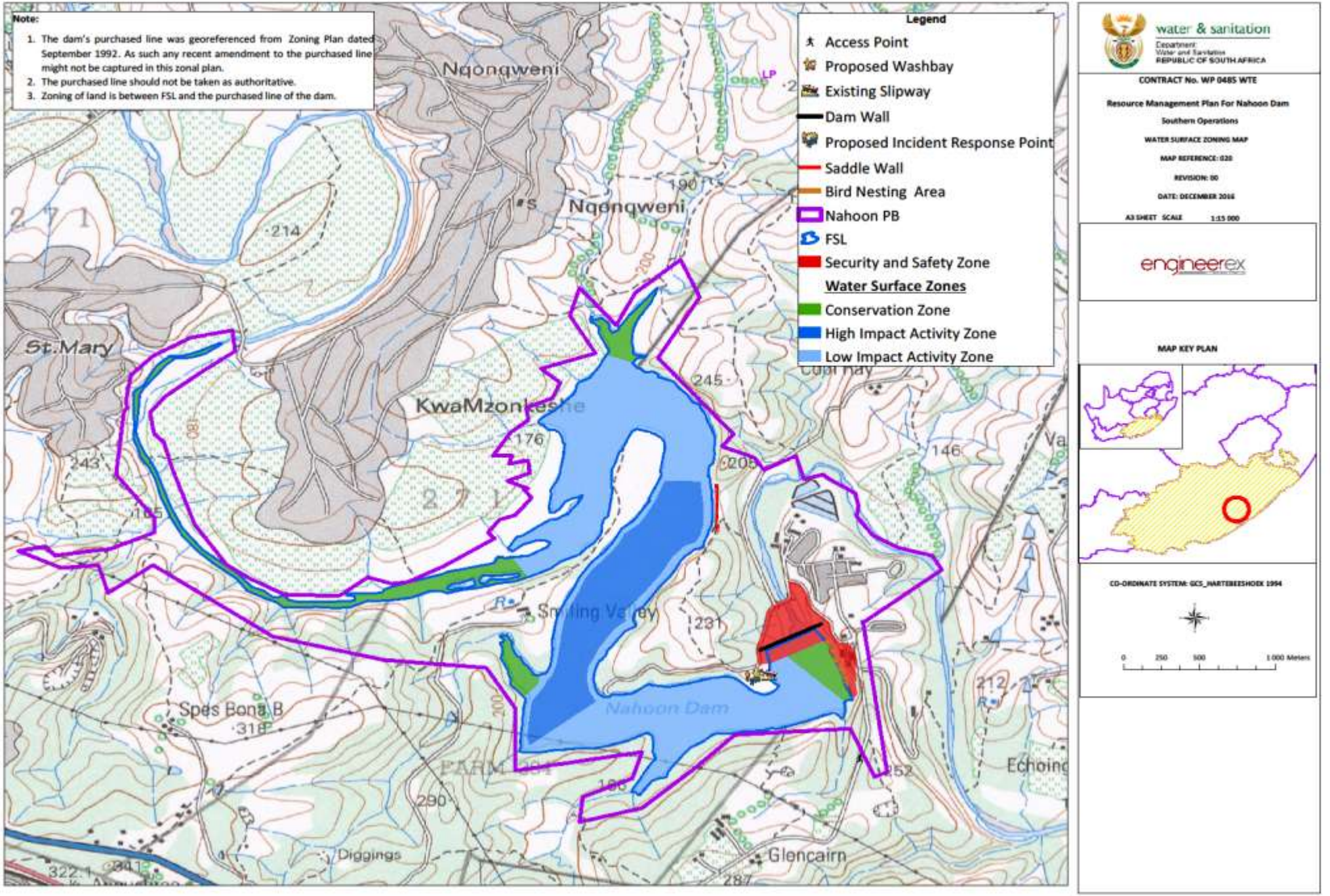

Figure 34: Proposed Water Surface Zoning Map

4.2.2 Shoreline Zoning[4]

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:

Safety and Security Zone (dam wall and associated DWS infrastructure):

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

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

Conservation / Low Density Activity Zone:

This zone consists of ecologically sensitive areas and areas with high biodiversity. It also includes the area around the inlets of the dam. Access to this area is limited to low impact activities such as hiking, bird watching, etc. This area is reserved to prevent ecological damage due to development activities hence high impact development not permitted.

Medium Density Activity Zone:

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

High Density Activity Zone:

This area is reserved for large scale activities including chalets, recreational club houses, infrastructure for services, and Land Based Aquaculture.

Community Resource Zone:

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

The shoreline zoning colour coding 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

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

Table 19: Proposed Shoreline Zoning Description

Zone Name	Permissible Activities	Non Permissible Activities	Recommendation
• Safety and Security Zone.	• Fire management • Alien invasive species clearing • Management of dam infrastructure • Management and maintenance activities by DWS and authorised personnel	• Public access	• A minimum area of 100m wide downstream the dam wall should be demarcated preventing public access and use.

• Conservation/ Low Density Activity Zone.	• Conservation management activities such as:
	  ○ Bird watching
	  ○ Hiking
		• Development	• Permissible activities may only be permitted provided that they are approved by relevant Authorities and they are conduct as per the relevant Legislations or Regulations, such as National Hiking Way Rules.

• Medium Density Activity Zone.	• Camping (tent and/or caravan) • Day visitors • Picnic Area • Shoreline fishing • Braai facilities • Swimming pools • Ablution facilities • Boat House • Slipways for vessel launching • Floating Jetty for vessel mooring • Infrastructure for services	• Permanent structures • Chalets • Recreational club houses	• The management of this area should follow the PPP process in terms of National Treasury. • All developments must be approved by IA and DWS. • Requirements of NWA and NEMA must be taken into account in all developments. • No private slipways/ floating jetties to be built without approval from DWS. • All developments should have an approved Environmental Management Plan (EMP) to ensure construction does not impact on dam and must blend in with the natural environment. • Camping, picnicking, shoreline fishing and access to the water must be done in accordance to access agreements. • Camping and picnicking is allowed only in designated areas. • Noise levels to be kept at a minimum. • No littering at Camping and Picnic spots.

Zone Name	Permissible Activities	Non Permissible Activities	Recommendation
• Amatola Water Property.	• Authorised access to the dam • Wash Bay	• Camping (tent and/or caravan) • Day visitors • Picnic Area • Shoreline fishing • Braai facilities • Swimming pools • Ablution facilities • Boat House • Slipways for vessel launching • Floating Jetty for vessel mooring • Infrastructure for services • Chalets • Recreational club houses	• The dam is only accessible through this property. A wash bay is proposed to be constructed on the authorised access point. • The development of a wash bay must be approved by IA, DWS and DEA. • Requirements of NWA and NEMA must be taken into account in the development of a wash bay. • All developments should have an approved Environmental Management Plan (EMP) to ensure construction does not impact on dam and must blend in with the natural environment.

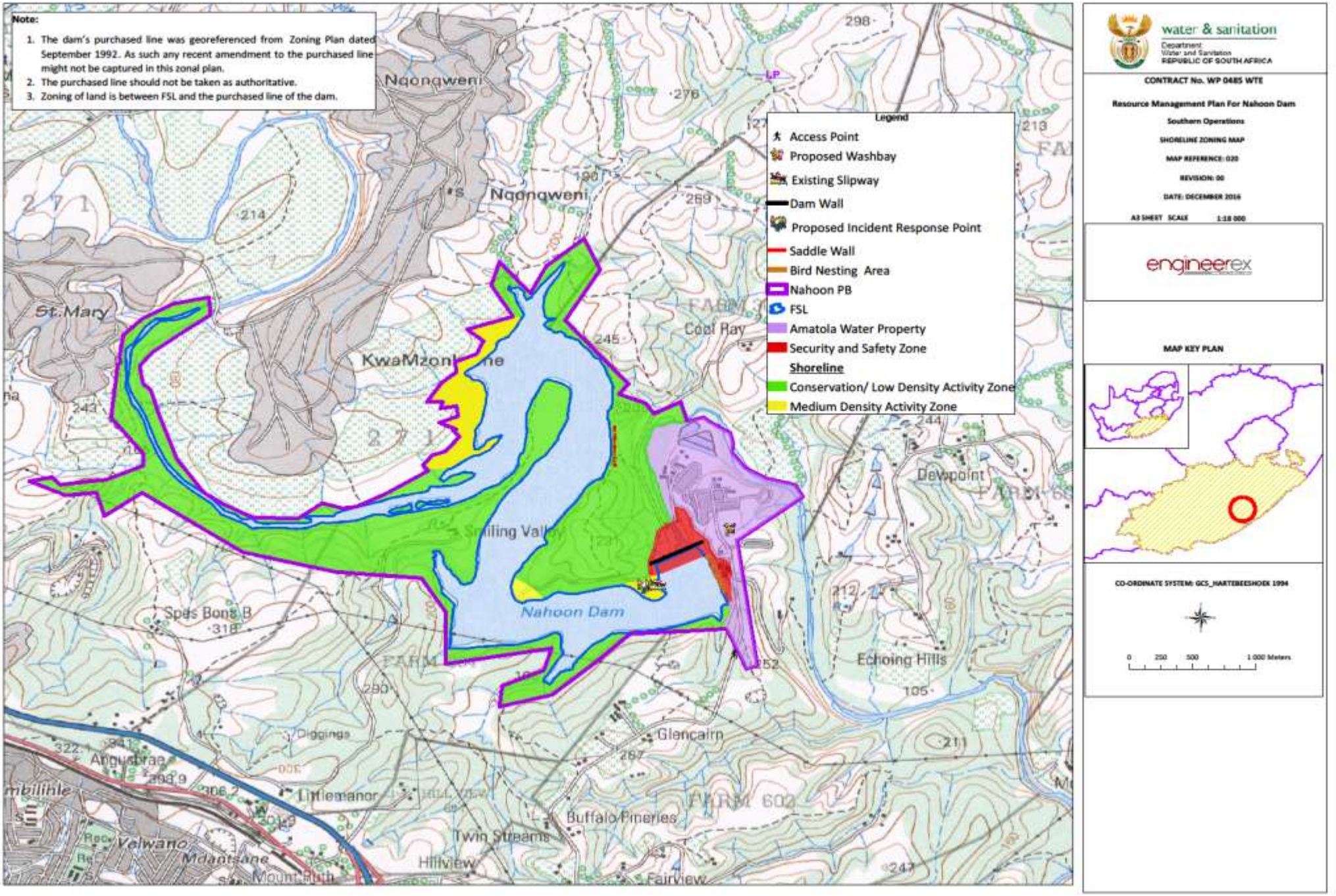

Figure 35: Proposed Shoreline Zoning Map

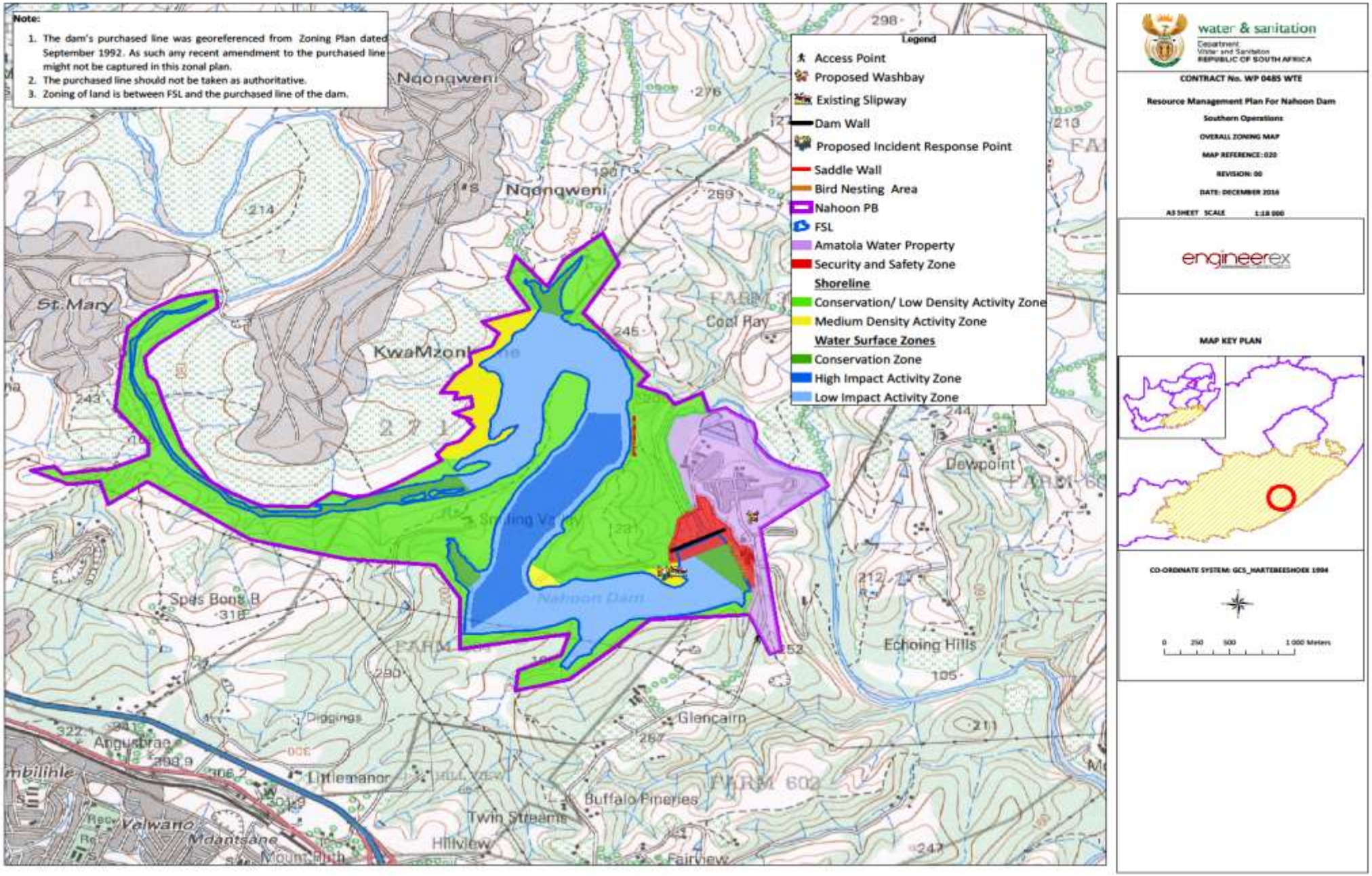

Figure 36: Proposed Overall Zoning Map

4.2.3 Carrying Capacity

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

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

There are three kinds of carrying capacity:

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

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

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

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

Physical Carrying Capacity (PCC)

PCC is calculated as PCC = A ÷ U/a x Rf

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

A is calculated as the area of the water surface available for public use: **237.7 ha**

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

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

Craft	U/A (ha/craft)
Canoes	0.5
Rowing	0.5
Yachts	2.0
Fishing	4.0
Average	**1.75**

Based on the fact that most activities do not require much space, the average hectare per user is 2.1 ha (21000 m^2), the value of 5.0 ha (50 000 m^2) can be acceptable area per user. This has been chosen in order to ensure that the dam is not overcrowded, as such impacting on the sense of the area.

The PCC for Nahoon Dam can further be calculated as:

PCC = A ÷ U/a x Rf
=237.7 x 1/5 x 1
= 48 crafts on the dam

Real Carrying Capacity (RCC)

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

- Safety Areas/ No go Zones (**3.4 ha**); and
- Conservation Areas (**79.6 ha**).

The above factors results in 35% decrease in water surface available for recreation at the dam,

therefore 65% of the surface area of the dam is still available for recreation.

RCC for Nahoon Dam is therefore:

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

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

RCC = 48 x (100 – 35) %/100
=31 crafts can be allowed on the dam at any given time based on water surface.

Effective Carrying Capacity (ECC)
The maximum number of visitors that a site can sustain, given the management capacity (MC) available:

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

Infrastructure Capacity
It takes approximately 20 minutes to launch or retrieve a boat during the day. There is currently 1 slipway at the dam; on the left bank adjacent to the boat house= [12 hours available per day/20 min] x 1 slipway for public use, therefore:

[720/20] x 1 = 36

As 20 minutes would apply either to launching or retrieving a vessel from the water, 36 is divided into: 36 / 2 = 18. This is the maximum amount of vessels that can be launched on a given day.

Management Capacity
The current management capacity consists of 3 people: consisting of an Area Manager, Dam Control officer, Gate Attendant etc.

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

Management Capacity:

= current capacity/ required capacity x 100
= 3/6 x 100
= 50.0%

Therefore:

ECC = (18 x 0.5) x 100/RCC
= (18 x 0.5) x 100/ 31
= 29.02%

Therefore the ECC for the dam remains at **9** Vessels. In order to avoid user conflicts.

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 20 – 22**, the Strategic Plan on how to achieve the identified objectives identified regarding the dam is outlined.

Table 20: Strategic Plan for KPA 1**:** Resource Management

KPA 1: Resource Management			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
Water Quality: • To improve water quality of the dam so that recreational activities such as swimming can take place.	• The Newlands informal settlement and surroundings on the left bank of the dam are potential sources of sediments that currently cause siltation to the dam. As sedimentation increases in the dam the life span of the dam decreases. • Pit toilets pollute the dam through underground seepage. • Eutrophication is a major concern and a threat to the dam due to the presence of water hyacinth in the Nahoon River. The growth of hyacinth is primarily as a result of high nutrient level in the Nahoon River impounded by the Nahoon Dam due to industrial and domestic effluent discharge. • Algal blooms will reduce the recreational value of the dam. Amatola Water highlighted that recreational activities are closed during algal blooms. • Due to the poor water quality in the dam, direct interactive activities like swimming cannot be proposed for recreation as part of the RMP process.	• All the Wastewater Treatment Works (WWTWs) discharging effluent in the rivers need to comply with DWS's general or special standards for effluent discharge. If there is non-compliance the WWTW should be subjected to penalties. There should be discharging permits in place. • To improve the WWTW to avoid water contamination in the rivers feeding dams. • To promote community participation in the protection, use, development, conservation, management and control of the water resources. • The construction of a wash bay to eliminate the transfer of aquatic weeds from other dams.	• DWS, with the support of IA (Amatola Water), BCMM and DMC to address the water pollution challenge caused by all red flags pollution sources (Abattoirs, Land fill sites, lack of proper sanitation systems, overgrazing etc).

KPA 1: Resource Management			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
Flora and Faunal Species: • To promote conservation to all endangered and protected flora and faunal species during developments at areas where these species exist.	• The right bank at the main dam wall is regarded as an ecological sensitive area and protected plants like Cycad occur at such cliffs. Threatened and endangered species must be protected so that future generations can experience and benefit from their presence and value. • The birds nesting area on the cliffs at the main dam wall were reported to be disturbed by the members of the publics and their vessels.	• Zoning Plan will be established as part of the RMP process. The ecological areas will be zoned as conservancy areas and public access should be limited. • Conservation should be intensive towards species of concern. Their habitat should not be destructed or transformed. Conserving these species extends their life span and prevents the element of extinct. • There should be enforcement officers monitoring activities taking place in and around the dam and its surroundings to ensure the visitors are abiding by the rules.	• IA (Amatola Water) as the dam management authority with the support of the DMC should prohibit any recreational developments on the ecological sensitive areas. • DWS with the support of an IA (Amatola Water) to recreationally zone the dam to protect ecological sensitive areas and to prevent user conflicts.
Conservation and Sustainable use of the dam: • To promote and maintain sustainable utilization of the dam and its surrounding environment.	• The dam has a scenic view and from the right bank it has an attractive view of the dam wall. This dam has a potential for tourist attraction.	• Informing the I&APs through the environmental management awareness programmes about the value of the dam and the community involvement in ensuring sustainable use of the dam. • Ensure that the I&APs gain physical access to the dam and that they benefit from the water based recreation economy. This will encourage their contribution to the sustainability of the dam. • Through Community Public Partnerships (CPPs) and Public Private Partnerships (PPPs), communities can become actively	• DWS with the support of an IA (Amatola Water) and DMC through awareness programmes should guide the I&APs to understand the objectives of the National Water Act section 2 and the purpose and extent to which the dam can be utilized. • IA (Amatola Water) should develop an awareness programmes based on their vision and objectives. Awareness programmes should also focus strongly on the dam as an open and inclusive recreational facility.

KPA 1: Resource Management			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
		involved in the development projects aimed at further unlocking the potential of the dam.	
Development: • To ensure potential future developments of municipal LED does not degrade the attractiveness of the dam and its surroundings.	• Currently there are no projected LED recreational developments for the dam.	• Any recreational developments within the DWS purchased boundary will be guided by the RMP and should be authorised by IA and DWS.	• DWS with the support of an IA (Amatola Water) and DMC.

Table 21: Strategic Plan for KPA 2: Resource Utilisation

KPA 2: Resource Utilisation			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
Access: • To have an alternative access point to the dam from surrounding communities.	• The existing access point to the dam is very far from other communities namely KwaMzonkeshe, Eluxolweni, Newlands, Cuba and Nxarhuni. There is also lack of transport to shuttle communities to the dam to enjoy recreational activities.	• To construct an alternative road from the nearby community to the dam namely: KwaMzonkeshe & Nqonqweni Communities to the dam.	• BCMM • DWS • IA (Amatola Water) • DMC
Safety of navigation: • To improve safety of navigation through the implementation of standardised and harmonised AtoN and demarcation markers as directed by SAMSA.	• There is no adequate standardised and harmonised AtoN and demarcation markers available on the dam.	• To improve safety of navigation through the implementation of standardised and harmonised AtoN and demarcation markers as directed by SAMSA.	• DWS to facilitate the process. • Agreements between SAMSA, IA (Amatola Water), DWS, LAAPs and other relevant parties to be concluded.

KPA 2: Resource Utilisation			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
Recreational Clubs: • To have formalized recreational clubs such as authorized boating clubs.	• There are no formalized recreational clubs registered with the management authority, however, there are no limitations in having formalized boat clubs.	• As part of the RMP process, all recreational clubs to be formed e.g boating clubs will be formalised only when they have entered into an agreement with DWS. • Boat clubs offer advantages such as group and on-water trainings. The boat clubs also offer maintenance, cleaning, storage, insurance and slip fees.	• DWS with the support of IA (Amatola Water) and DMC
Fishing activity: • To encourage the youth to participate in fishing as this will eliminate issues of crime and poverty within the community.	• The local youth are not participating in fishing activities taking place at the dam. The dam is only known to the surrounding communities for its primary use of water provision.	• Awareness programs on subsistence fishing will support the livelihood of the surrounding communities and promote community participation and beneficiation.	• Department of Agriculture and Land Affairs (Eastern Cape), DEA, IA (Amatola Water) and DMC.

Table 22: Strategic Plan for KPA 3**:** Benefit Flow Management

KPA 3: Benefit Flow Management			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
Job Opportunities: • To uplift the local economy and increase benefit flows to the surrounding communities through employment empowerment, skills transfer and environmental education programmes.	• The rate of poverty and unemployment results to communities becoming less active within the tourism sector. Affordability to tourism facilities may impact the tourism development in an area.	• Entrepreneurs from within the communities should be provided the opportunity to undertake developmental initiatives through the establishment of partnerships and concessions. • IA (Amatola Water) should strengthen community participation and beneficiation by ensuring that communities are involved in the planning of	• BCMM (LED) • IA (Amatola Water) • DMC

KPA 3: Benefit Flow Management			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
		every projects relating to the dam. • Any job opportunities emanating from any developments at the dam should be beneficial to the local communities as well. • IA (Amatola Water) should assist in identifying resources to be utilized for environmental education so that environmental can be established and skills to be transferred to the locals. • Communities to be taught about sustainable fishing.	
<u>Tourism Potential:</u> • To see the dam recreationally marketed as it is only known to the communities for its primary function of water provision.	• The dam is attractive and it is located in a well-established indigenous vegetation. The dam's socio-economic potential could be unlocked as part of the RMP process.	• Utilise photos of the dam, its attractive surrounding and recreational activities taking place as marketing material in local newspapers and other media. • All the applications of interest to develop the dam should be submitted to IA(Amatola Water) and forwarded to DWS for consideration. • Involve media by inviting them to the dam and afford them the opportunity to view the site, take pictures of the beautiful site of the dam and publish articles about exciting experiences they had whilst visiting the dam.	• BCMM (LED) • IA (Amatola Water) • DMC

KPA 3: Benefit Flow Management			
Objective (What do we want)	**Motivation (Why do we want to achieve this)**	**Action Projects (How do we achieve this)**	**Management Support (Who will be involved)**
Institutional Planning: • To have an effective and suitable organizational structure that will effectively manage the recreational utilization of the dam and its surrounding land	• The current management structure comprises of the management authority and DWS, however other institutions such as the municipality, Department of Environmental Affairs (DEA), SAMSA etc. needs to form part of the structure as they can play a vital role in assisting to effectively manage the dam.	• Amatola Water to be appointed as the Implementing Agency. • Ensure that roles and responsibilities of the IA are well defined and clear.	• DWS

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 non-economic objectives will not feature in the BP.

The BP provides a good description of possible economic recreational activities and the methods that can be used or enhanced to achieve the ultimate vision and the key objectives of Nahoon 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 37** illustrates the RMP & BP review framework.

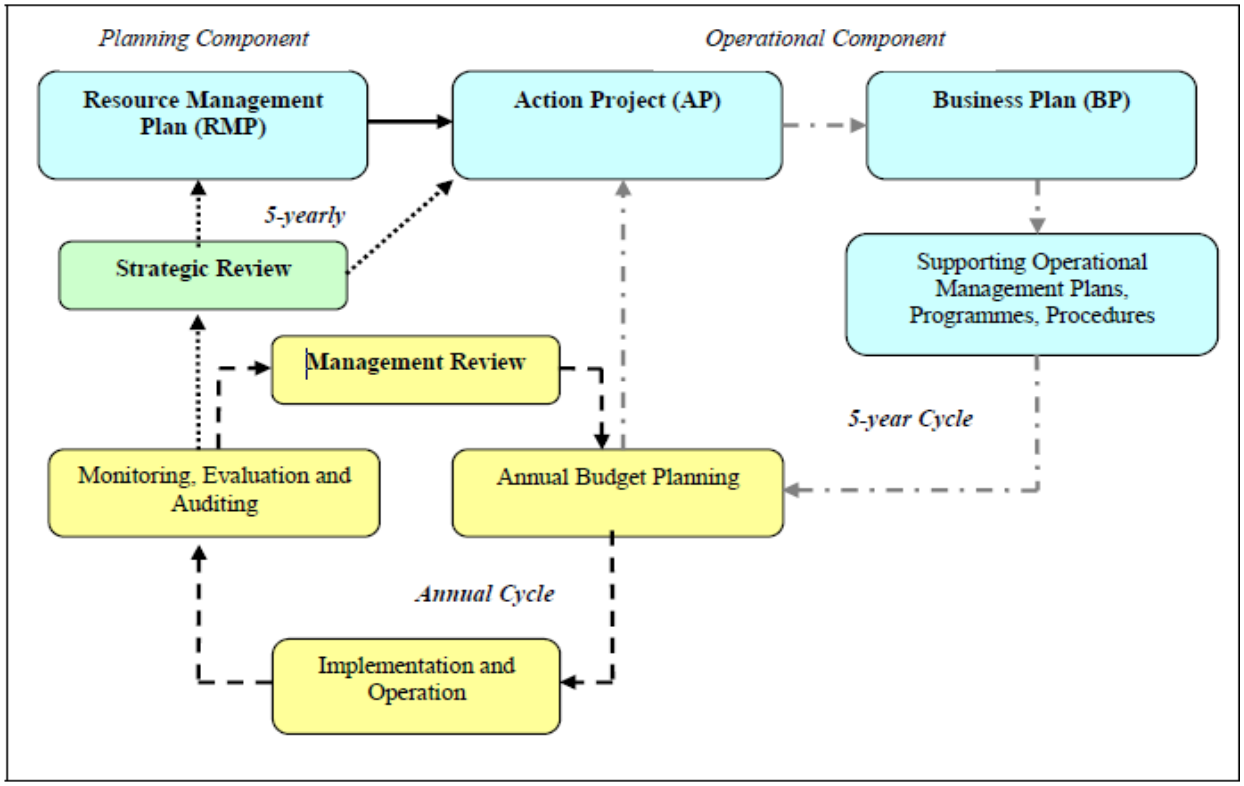

Figure 37: RMP and BP Review Framework

CONCLUSIONS

The RMP documents the challenges that exists within the Nahoon 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 participation and beneficiation, through Stakeholders engagement which 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 Nahoon 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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APPENDICES