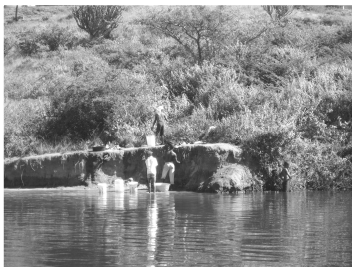


# Resource Management Plan for Inanda Dam Final Draft

June 2008



water & forestry

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Water Affairs & Forestry  
REPUBLIC OF SOUTH AFRICA

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This Resource Management Plan for Inanda Dam was compiled and recommended by a Technical Task Team, a multi-disciplinary team consisting of stakeholder representatives from *inter alia* Government; the local communities; user groups and the business sector. Contributions made by the larger stakeholder group (refer Appendix A) are also recognised.

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### ANNUAL REVIEW

Due date: April 2009, 2010, 2011, 2012

### FIVE (5) YEARLY REVIEW

Due date: April 2013

## **EXECUTIVE SUMMARY**

This Resource Management Plan is the management, development and institutional plan for Inanda Dam and is reviewed based on the framework set out in page 13.

The Inanda Dam which is referred to in this document consists of the water body and the water surface as well as the surrounding State land, utilised by the Department of Water Affairs and Forestry (DWAF) for National State domestic purposes, in the context of a Precinct Plan within the Development Framework of the eThekweni Municipality.

Compiled through the Resource Management Plan procedure, the plan is based on the principles underlying sustainability addressing environmental, industry and community involvement aspects.

As a document to guide the management of Inanda Dam, based on the inputs of all stakeholders, the plan also serves as the basis for monitoring both performance and compliance regarding the following Key Performance Areas (KPA) as well as meeting the objectives of the National Water Act, (Act No. 36 of 1998):

- Resource management;
- Utilisation; and
- Benefit flow management.

Land and water use options identified as possibilities in and around Inanda Dam include:

- Conservation;
- Agriculture;
- Aquaculture;
- Fishing (food security and recreation);
- Sport and recreation;
- Accommodation and leisure activities, and
- Tourism.

The primary purpose of the Inanda Dam is to provide drinking water to eThekweni Municipality. However, the need to realise the full potential of the dam including sport, recreational and tourism related development requires the compilation of a Resource Management Plan (RMP).

The structure of the RMP consists of three sections, the first addressing the background; aims and objectives; encumbrances to the plan, and challenges facing the management authority ("The Place").

The second section consists of an integrated environmental management plan and a zoning plan ("The Plan").

The third section outlines the proposed institutional structure ("The People").

"The Plan" deals with the three KPAs – Resource management; Utilisation, and Benefit flow management (community involvement and beneficiation). Within each area the plan provides insight into the specific rationale regarding the KPA, the objectives, the policy and strategies, as well as operational guidelines and action projects which will focus the management decisions, actions and initiatives.

Various zones have been proposed in the Master Plan for both the water surface of Inanda Dam and the State land within the expropriation boundary for which DWAF is the user

department, and includes management interventions pertaining to access, utilisation, development and infrastructure.

Only access via one of the designated access points or in terms of access agreements or permits will be deemed legal. All opportunities will be subject to a fair and open procurement procedure, and will be dependent on the successful finalisation of PPPs.

To effectively and efficiently manage the implementation of the plan, a proposal regarding the management authority as well as institutional structuring and arrangements is made, although the ultimate responsibility regarding the implementation of the RMP will resort with DWAF.

Undertaken in this manner it is believed that the sustainable utilisation of Inanda Dam can and will be attained.

The process for the compilation of the RMP is summarised Figure 1.

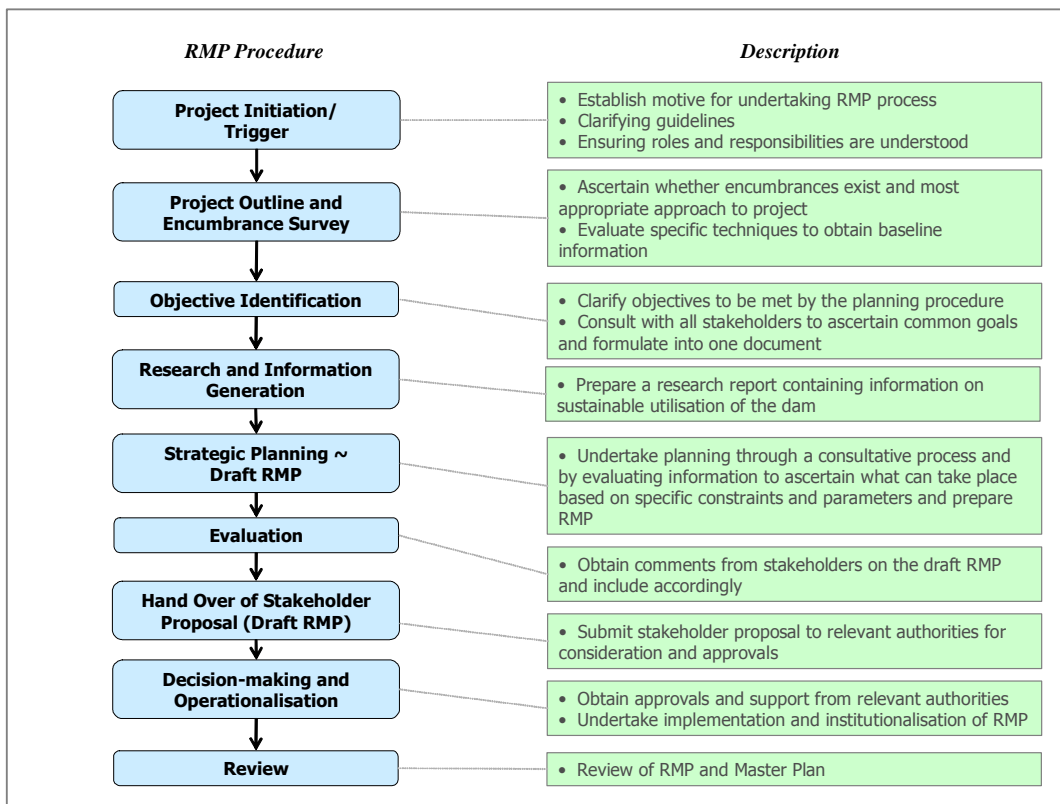


Figure 1: RMP Compilation Procedure

## **RMP REVIEW FRAMEWORK<sup>1</sup>**

### **Overview**

The Resource Management Plan (RMP) process has an integrated planning component and operational planning component, each with a five (5)-year time frame that is reviewed annually.

### **Integrated Planning Components**

A *RMP* is the primary overarching planning document that describes the administrative and legal framework, contextual background, public participation process followed, vision / mission statements, prioritised management objectives, zoning as well as management policy framework and guidelines. The RMP forms the framework within which all the other planning components are developed. Within the framework of the RMP, a *Master Plan* provides a strategic guideline for the management, utilisation and development of the water resource and water resource infrastructure within the constraints of the receiving environment. Operational plans, programmes and procedures that support the RMP are either in place or will be compiled where these do not exist.

### **Authorisation of RMPs**

These plans are authorised by the relevant Regional Chief Director and the Deputy Director General of the National Water Resource Infrastructure Branch of the Department of Water Affairs and Forestry (DWAF) in terms of Section 113 of the National Water Act (Act No. 36 of 1998) and operationalised through the following two operational planning components.

### **Operational Planning Components**

A 5-year *Strategic Plan (SP)* that operationalises (or actions) the management authority's management objectives and any projects identified in the RMP and Business Plan. The SP is an operational management component that identifies the activities and tasks that need to be undertaken in the achievement of the RMPs objectives and attaches responsibilities, timeframes, budgets and resources to each activity. The SP is a key planning document that also informs the management authority's Annual Budgeting Estimates and provides information for Annual Reports.

With expenditure estimates drawn from the SP a *Business Plan (BP)* will be developed. The BP is primarily aimed at describing the manner in which the RMP are to be financially resourced. It may address issues of operational efficiency and the optimisation of income generation opportunities in order to bridge any possible shortfalls between required operational expenditure and committed budget allocations.

### **Authorisation of BP**

Once the BP has been approved by DWAF, the SP is finalised according to the committed budget allocations and other expected financial income.

### **RMP Planning & Review**

The RMP requires both annual and 5-yearly revisions to ensure that management objectives remain relevant and management actions are continually improved. Figure 2 illustrates the annual and 5-yearly planning and review cycles.

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<sup>1</sup> This review framework is based on Ezemvelo KZN Wildlife's approach to Integrated Management Plans prepared in terms of the National Environmental Management: Protected Areas Act (Act. No. 57 of 2003).

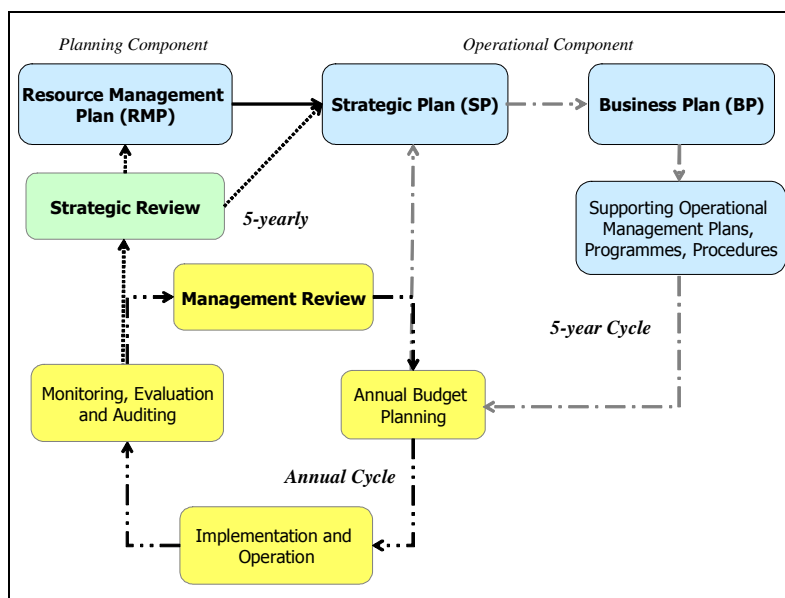


Figure 2: RMP Review Framework

## Planning Process

The rationale of a RMP is to assist DWAF and the management authority in ensuring sustainability by protecting the integrity and value of water resources, providing measurable benefits to host communities, and enhancing the satisfaction of users.

By addressing the needs and expectations of resource managers; communities, and users by defining the processes that contribute to sustainability and monitoring the performance of these processes, DWAF and the management authority can ensure that their objectives, as well as those of relevant stakeholders are attained in an acceptable and appropriate manner, consistently.

Continual improvement can be achieved by using an ISO 9000 based management system as framework, and the system provides DWAF and the management authority with confidence that their policies are relevant and acceptable to all stakeholders.

The procedure used during the planning process is based on DWAF's *Guidelines for the Compilation of Resource Management Plans* ensuring the involvement of all stakeholders, as well as interested and affected parties. Opportunity was provided to all participants to actively participate in the planning, discussions and compilation of the management plan, compliant to the prescripts of the National Environmental Management Act (Act 107 of 1998), as well as Chapter 3 of the Constitution of South Africa (Act No. 108 of 1996). This approach ensures inclusivity, transparency and builds trusts between all participants. See Appendix A for a stakeholder list.

The planning procedure for Inanda Dam's First Edition RMP consisted of three distinct phases, namely:

**Phase 1:** The first phase aimed at ensuring the support of key stakeholders. This phase mainly addressed the encumbrances to the process, attaining institutional support and identifying participants to the process.



Phase 2: The second phase aimed at ensuring broad stakeholder involvement, building capacity within the stakeholders and providing the stakeholders with relevant information to assist in decision making.

Phase 3: The third aimed at achieving recommendation for the RMP, prior to submitting the plan to DWAF for approval and implementation.

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## **ABBREVIATIONS**

BBBEE	Broad Based Black Economic Empowerment
DWAF	Department of Water Affairs and Forestry
ECHOS	Ecotourism Characteristics Opportunity Spectrum
I&AP	Interested and Affected Parties
IDP	Integrated Development Plan
ISO	International Standards Organisation
KPA	Key Performance Area
MAR	Mean Annual Runoff
NGO	Non-Governmental Organisation
NWA	National Water Act (Act No. 36 of 1998)
PFMA	Public Finance Management Act (Act No. 1 of 1999)
PPP	Public Private Partnership
PSB	Public Sector Body
RMP	Resource Management Plan

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## **SECTION 1 THE PLACE**

### **1.1 INTRODUCTION**

eThekwini Municipality, together with Department of Water Affairs and Forestry (DWAF) and Umgeni Water have indicated a need to promote development initiatives, and promote the responsible future management of the water resource and its surrounding natural environment. eThekwini Municipality has identified traditional areas that were incorporated into eThekwini Municipality but have not yet been spatially planned as yet. The area around the Inanda Dam falls within these areas and it is because of this area's great potential for economic (esp. tourism) development in this area that eThekwini Municipality has decided to prioritise spatial planning of the Inanda Dam area. This is meant to ensure equitable access, compatible use, public safety, resource protection and to unlock the potential of Inanda Dam and effect the sustainable management thereof.

To this end the formulation of the **Inanda Dam Precinct and Resource Management Plan** was commissioned. This study is meant to ensure equitable access, compatible use, public safety, resource protection and to unlock the potential of Inanda Dam and effect the sustainable management thereof. It is anticipated that the Precinct and Resource Management Plan (RMP) for the dam should provide detail on the following areas:

- Establishing and understanding of the study area, including its opportunities and constraints taking into account the current Tourism Feasibility Study.
- Establishing a vision and conceptual framework for the area;
- Establishing synergies with proposed developments in the immediate vicinity;
- Establishing detail implementation plan for the area
- Ensuring the sustainable and equitable development, utilisation and management of the Inanda Dam by compiling a RMP, based on the *DWAF Guidelines on Integrated Resource Planning for the Use of Water for Recreational purposes* through a facilitated and consultative planning process;
- Efficient allocation of land uses within the study area as per existing and projected demands, and
- Undertaking the above exercises through a managed participation exercise.

Not only is it expected that Hazelmere Dam will be able to serve as an attraction during the 2010 FIFA Football World Cup, but also serve as an anchor for watersport development within the province extending far beyond this once off event.

### **1.2 PURPOSE AND SIGNIFICANCE OF THE INANDA DAM**

#### **1.2.1 Purpose**

The stakeholders of Inanda Dam acknowledges the importance of the dam as an impoundment to store water, yet place extremely high value on the economic catalyst effect that the dam can have within the host community, and recognise the recreational value of the dam, as well as the benefits that can accrue to the region as a result of improved infrastructure, Community Public Private Partnerships; and environmental education.

#### **1.2.2 Significance**

As an economic catalyst, Inanda Dam is recognised as being significant within the region, specifically in terms of employment and income generation. The dam's role as a tourist attraction, as well as local economic development driver is seen as a significant contributor to poverty alleviation and eradication, with slightly less emphasis on agriculture.

The value of Inanda Dam as sporting and recreation destination is recognised and acknowledged by all stakeholders, yet most stakeholders envisage that the dam contribute more directly to local economic development, through the establishment of partnerships between landowners, DWAF, Umgeni Water, operators and investors. Refer Table 1 and Figure 3.

**Table 1: Purpose and Significance of Inanda Dam**

NO	VERBATIM STAKEHOLDER COMMENTS	INTERPRETED AS	PURPOSE
1	Job opportunities - the place of out canoe development club	Employment and Income (18%)	Economic Purpose (46%)
2	To provide a sustainable income for those employed to manage it		
3	Create job opportunities		
4	Job creation		
5	Employment		
6	Employment		
7	employment opportunity, economic development		
8	Benefit - the community benefits from economic development		
9	Provide employment		
10	to provide employment to locals		
11	Purpose is community development and job creation		
12	Tourism & Local Economy	Tourism Attraction (14%)	Activity Purpose (29%)
13	Tourism & Local Economy		
14	Tourism		
15	Tourism attraction		
16	Betterment of environment improving tourism		
17	Introduce tourism to this community		
18	To prepare for 2010 & afterward		
19	Tourists - come & buy our traditional "crafts"		
20	Local Economic Development	Local Economic Development (9%)	
21	Economic development in the country		
22	Community upliftment		
23	Benefit - community benefits from tourism projects		
24	To improve the rural life in terms of development		
25	Purpose of the dam - Sustainable development	Land Development Potential (3%)	
26	Land development		
27	Irrigation	Agricultural Development (2%)	
28	Boating	Water sport (17%)	
29	Sport Swimming		
30	Water sports		
31	Water sports		
32	Swimming		
33	Fishing		
34	Fishing		
35	Sport		
36	Opportunity for a sailing development programme		
37	Canoeing		
38	Recreation	Recreation (12%)	
39	Driver of the recreational industry		
40	Recreation		
41	Recreation		

NO	VERBATIM STAKEHOLDER COMMENTS	INTERPRETED AS	PURPOSE
42	To provide recreation for the greater Durban and surrounding areas		
43	Recreational facility		
44	For wealthy people who have lots of money to go and have fun		
45	For human consumption		
46	To store water	Water supply (14%)	Consumptive Purpose (14%)
47	Large amounts of water stored for local community		
48	Water		
49	Water supply		
50	Provision of water		
51	Storage of water		
52	Watering of gardens for communities situated near the dam		
53	Infrastructure - to benefit local people	Infrastructure & facility upgrading (5%)	Social Purpose (7%)
54	Community facilities development		
55	Social activities		
56	Opportunity for partnerships with stakeholders	Establishment of partnerships (2%)	Biophysical Purpose (4%)
57	Conservation	Conservation (2%)	
58	Youth get a chance to learn about nature/water conservation	Environmental Education (2%)	

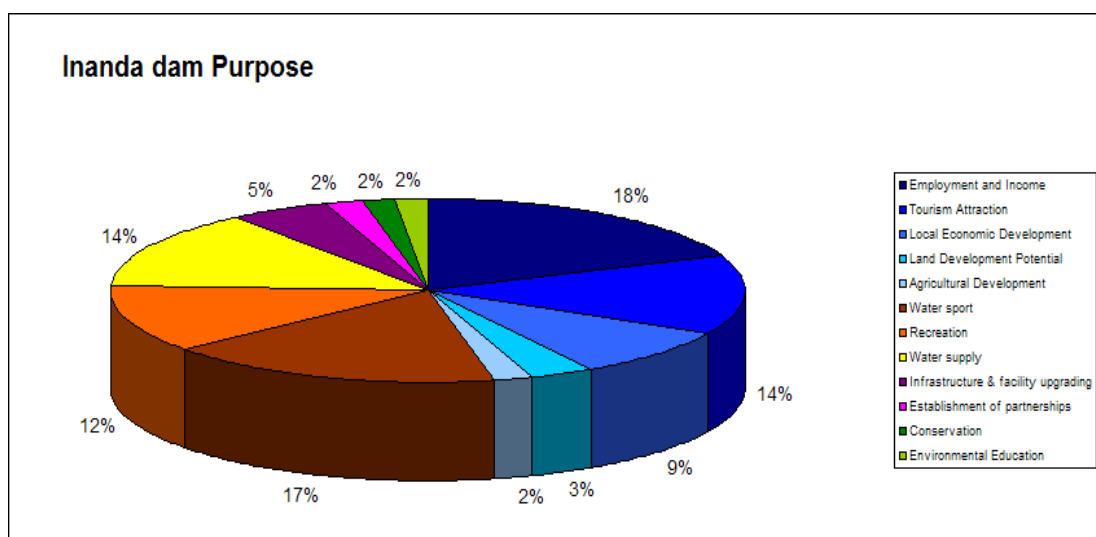


Figure 3: Purpose and Significance of Inanda Dam

### 1.2.3 The Challenge

Sustainability is a term that is often used, yet seldom understood in terms of its complexity and implications and is thus the overarching challenge facing the management authority of Inanda Dam. Without a focus on sustainability, Inanda Dam will never reach its optimal potential nor contribute to the attainment of the objectives set out in the RMP and legislation such as the NWA. Through the protection and sustainable utilisation of the resource of Inanda Dam it is believed that substantial financial, social and environmental benefits will be generated, making the management thereof both meaningful and viable.

However, the following **broad encumbrances** exist and will have to be overcome in planning and operationalisation of the RMP, including:



- Raised expectations regarding the contribution that the dam can make to poverty alleviation and eradication;
- Changes to the water quality emanating from both the catchment and immediate surrounding land use;
- Alien vegetation encroachment within the region and along the shoreline;
- The lack of understanding regarding the dam boundary line, compensation and management responsibility;
- The lack of clarity regarding the relationship between the land owners, DWAF, Umgenit Water, and Ingonyama Trust; and
- The lack of development and access in and around the dam.

### **1.3 LEGAL FRAMEWORK, CONCEPTS AND PRINCIPLES FOR UTILISATION AND SUSTAINABILITY PLANNING**

The principles underlying the RMP for the Inanda Dam are based on general principles guiding the attainment of sustainability – sound resource management; equitable and appropriate community involvement and beneficiation; the creation of viable and sustainable business opportunities, and clear policies, objectives and operational guidelines.

A legal survey illustrated that within the South African context, ensuring compliance with relevant legislation is pivotal to the attainment of sustainability. At the Inanda Dam, not only the NWA is applicable, and is it imperative that all actions are compliant with relevant legislation, regulations and planning frameworks such as:

#### **Biodiversity and Cultural Resource Management and Development**

- The Constitution of South Africa (Act No. 108 of 1996)
- Kwa-Zulu Natal Nature Conservation Management Act (Act No. 9 of 1997)
- Environmental Conservation Act (Act No. 73 of 1989) [ECA];
- National Environmental Management Act (Act No. 107 of 1998) [NEMA];
- National Environmental Management: Protected Areas Act (Act No. 57 of 2003)[PAA];
- National Environmental Management Act: Biodiversity Act (Act No.10 of 2004);
- Conservation of Agricultural Resources Act (Act No. 43 of 1983)[CARA];
- National Water Act (Act No. 36 of 1998) [NWA];
- National Heritage Resources Act (Act No. 25 of 1999);
- AMAFA aKwaZulu-Natali / Heritage KwaZulu Natal: Kwazulu-Natal Heritage Act (Act No. 10 of 1997); and,
- Traditional Healers Act (Act No. 10 of 2004).

#### **General Management**

- Development Facilitation Act (Act No. 67 of 1995)
- Disaster Management Act (Act No. 57 of 2002)
- Fire Brigade Services Act (Act No. 99 of 1987)
- Municipal Services Act (Act No. 32 of 2000)
- National Road Traffic Act & Regulations (Act No. 93 of 1996)
- National Building Standards Act & Regulations (Act No. 103 of 1977)
- Natal Town Planning Ordinance (no. 27 of 1949)
- Occupational Health and Safety Act (Act No. 85 of 1993)
- KwaZulu-Natal Planning & Development Act (Act No 5 of 1998)
- Water Services Act (Act No. 108 of 1997)
- Broad-based Black Economic Empowerment Act (Act No. 53 of 2003);
- Occupational Health and Safety Act (Act No. 85 of 1993);
- Communal Land Rights Acts (Act No. 11 of 2004);

- KwaZulu Ingonyama Trust Act (Act No. 3 of 1994);
- Restitution of Land Rights Act (Act No. 22 of 1994);
- State Land Disposal Act (Act No 48 of 1961);
- Intergovernmental Relations Framework Act (Act No. 13 of 2005), and,
- Local Government: Municipal Systems Act (Act No. 32 of 2000).

### **Financial Management**

- Public Finance Management Act (Act No. 1 of 1999) [PFMA]
- Municipal Finance Management Act [MFMA]

### **Human Resource Management**

- Basic Conditions of Employment Act (Act No. 75 of 1997)
- Compensation for Occupational Injuries and Diseases Act (Act No. 130 of 1993)
- Employment Equity Act (Act No. 55 of 1998)
- Labour Relations Act (Act No. 66 of 1995 as amended)
- Occupational Health and Safety Act (Act No. 85 of 1993)
- Pension Funds Act (Act No. 24 of 1956)
- Skills Development Act (Act No. 97 of 1998)
- Skills Development Levies Act (Act No. 9 of 1999)
- Unemployment Insurance Act (Act No. 36 of 2001)

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.

## **1.4 ALIGNING THE RMP TO RELATED REGIONAL INITIATIVES**

The Rural Development Framework (RDF) indicates that the study area accommodates a great variety of tourism and recreation opportunities, which are severely underutilised. It is stated that Inanda Dam and its spectacular hinterland has opportunities within the rural periphery to be integrated into a wider metropolitan tourism system adding a new component to the attraction of the Metro and providing income to the rural areas.

In terms of the eThekweni Rural Framework, the study area has been identified as a local service centre. It has been suggested that the rural areas of eThekweni provide a range of tourism opportunities relating to natural areas, the dam, culture and recreation. A key objective in the development of the tourism industry in the rural areas will be to encourage local entrepreneurs to become involved in the tourism industry as opposed to local communities only benefiting from job opportunities created in the sector. Some key actions include identification and agreement on rural tourism lead projects (section 4.5, RDF Strategies and Frameworks). The local level service centre KwaNgcolosi (Ward 2) to be one of the several rural investment and service nodes that have been identified within the rural sub-region area in order to create linkages between areas and to facilitate co-ordinated delivery in each area. The Rural Development Framework (RDF, 2003) states clearly the importance of appropriate protection, management and utilisation of environmental resources of the rural periphery. Integration into the development of the rural areas forms one of the structuring elements of the SDF, and includes several projects and initiatives including:

- **eThekweni Rural Road Links:**

The study area that the eThekweni Rural Road Link deals with encompasses all rural areas of the eThekweni Municipality between the old Durban “urban edge” and the Municipal boundary. The total population of the study area is 660 000, accommodated in an area roughly 1 500km<sup>2</sup> in extent. Planned developments have been identified for the rural periphery of the Municipality and they are the Mixed Investment Nodes, Rural Investment

Nodes and the Local Service Nodes. Tourism development is proposed within the rural peripheral areas, as the tourism/recreation potential is largely under-exploited. Inanda Dam has been included within these areas. Regarding roads, the KwaSondela and KwaNgcolosi nodes have been identified for northwards upgrading.

- **Proposed Shembe Village:**

The proposed project lies within Ward 3, which falls, under the Qadi Traditional Authority area north of the Inanda Dam. The Nazareth Baptist Church approached the Dept. of Traditional and Local Government Affairs and eThekweni Municipality to prepare a planned and co-ordinated environment for accommodating church members and development of the Shembe Village area, addressing the expansion of religious and tourism activities. The project intends to guide the development of tourism potential and to establish an institutional framework within which development can be implemented. This framework will give a clear understanding and unique identity to the area and will lead to the improvement of natural and cultural resource management.

- **Intathakusa:**

Intathakusa an initiative by eThekweni Municipality to integrate communities living within eThekweni's urban edge, aims at establishing a rural community tourism facility, which would create small business opportunities in the area, comprising a retreat facility, conference centre, business functions, social events, tourist destination and leisure activities. The objectives for Intathakusa are as follows:

- To disperse eThekweni visitors to new and unexplored places of interest;
- To create linkages between the natural resources area, the emerging organic farming scheme within Intathakusa and the Inanda Tourism Trail;
- To establish a rural community tourist facility which would create small business opportunities in the area.

- **Rural ABM Tourism Strategy (2006):**

The purpose of the Rural ABM Tourism Strategy is to develop tourism strategies for the rural areas of the eThekweni Municipality. The interventions suggested aim to facilitate and enhance economic livelihoods and improve systems of governance in the rural areas. The Rural ABM covers a variety of areas outside the eThekweni's urban edge, which includes the Inanda Dam and is therefore an important study to align with the Inanda Dam RMP.

The Rural ABM identified that a wide variety of tourism and recreation opportunities, which are severely underutilized. It suggested that many of these opportunities identified have limited success and remain as isolated events. It is important to recognise that the opportunities in the rural periphery be integrated into a wider metropolitan tourism system adding on a new component to the attraction of the Metro, while also providing expertise and income to the rural areas. The significance of local tourism and recreational development was also recognised and highlighted because of the economic upliftment it will bring, and that in order for any local tourism development to be successful it will require local public partnerships with the relevant rural communities.

## **1.5 BACKGROUND TO INANDA DAM**

Inanda Dam, located in the valley of a thousand hills approximately 42km north of Durban, was completed in 1989 and took two years to fill with water. The dam is 23km long from the bridge to the dam wall and is 1.5km at the widest point and 50 meters deep at its deepest point. The water surface of the dam covers 1440 hectares and has a shoreline of approximately 100km at full capacity. Table 2 below provides a summary of relevant statistics pertaining to Inanda Dam.

**Table 2: Inanda Dam Statistics**

<b>Component</b>	<b>Description</b>
Maximum height of dam wall	57m
Length of dam wall	610m
Length of spillway	140m
Approximate length of dam	29km
Approximate width of dam	1.5km
Spillway discharge at high flood level (1:200yr)	4000 m <sup>3</sup> /s
Maximum capacity of outlet works (river outlet)	34.4 m <sup>3</sup> /s
Maximum capacity of outlet works (service outlet)	14.2 m <sup>3</sup> /s
Maximum spillway capacity (including emergency spillway)	11 100 m <sup>3</sup> /s
Gross storage capacity	256 million m <sup>3</sup>
Annual yield	96 million m <sup>3</sup> /annum
Full drawdown level/FSL	147.00m
Lowest drawdown level	115.75m
Non-overspill crest level	157m
Lowest foundation level	92m
High flood line	
Surface area at FSL	1426hectares
Full drawdown level	
Catchment Area	3949km <sup>2</sup>
MAR (mean annual runoff) natural	60.09 million m <sup>3</sup>
MAR (mean annual runoff) observed	57.96 million m <sup>3</sup>
MAP (mean annual precipitation)	870 mm
1:5 year flood	
1:20 year flood	
1:50 year flood	
1:100 year flood	
Regional maximum flood	8100 m <sup>3</sup> /s
Safety evaluation flood	
Instream flow requirements as % of present MAR	

### **1.5.1 Physical Environment**

#### *1.5.1.1 Climate*

The Inanda Dam is situated in a high, summer rainfall region, with an annual precipitation level of between 800mm - 1125mm. Summers are very warm, temperatures range from 25°C to 38°C. Winters are moderate with relatively cool days, with rare cold spells in the morning and at night, with temperatures ranging from 9°C to 19°C. (Refer Figure 14, Appendix B).

#### *1.5.1.2 Geology*

The underlying geology of the Inanda Dam and its surroundings, forms part of the Natal Group. The rock overlying the Natal Group is a thick unit of Tillite that was deposited in a glacial environment by retreating ice sheets about 300 million years ago. At this time South Africa was part of the super-continent Gondwana, which was situated near the south pole and covered with ice. Rocks imbedded in the slowly moving ice sheets scoured and polished the underlying older rocks giving rise to glacial pavements. The main rock types in the area include, Gneiss, Arenite, Shale and Tillite. (Refer Figure 15.)

### 1.5.1.3 Topography

The topography of the Inanda Dam is characterised by rolling hills, incised valleys and kloofs leading into the dam. There is a large change in height from the top of the hills, the highest point being 571m above sea level and the dam wall, being the lowest point at 171m above sea level. (Refer Figure 16.)

### 1.5.1.4 Hydrology

The hydrology of the Dam and its surroundings is characterised by a large amount of perennial tributaries flowing in from the surrounding hills with the main inlet and outlet being the Umgeni River.

### 1.5.1.5 Soils

Soils in the area are characterised by a small percentage of clay, between 0% and 35% with an average depth of between 450mm and less to 750mm. (Refer Figures 17 and 18.)

### 1.5.1.6 Water Quality

The water quality of the dam is accepted as being of a high quality, providing for excellent bass fishing conditions. However, there are localised nutrient problems at the in-flow of the dam due to pollution and organo-phosphates. Various testing points are in operational use.

Water quality of the Inanda dam is satisfactory. The dam is predominantly eutrophic but mesotrophic closer to the dam wall. This trophic status is typical of dams downstream of large urban areas. The major risk to eutrophication is associated with wastewater treatment plants not operating optimally while rainfall related runoff, abattoir discharges and poor sanitation pose a moderate risk. The main source of the nutrients is the Msundusi river upstream of its confluence with the Umgeni river.

Excessive hyacinth growth at the inflow is a symptom of nutrient enrichment of the dam. Another major problem is that of the *Microcystis* blooms (blue-green algae) during the warmer seasons. This results in:

- Potential potable water treatment problems from taste and odor causing algae
- Potential toxicity to humans and livestock & aquatic ecosystem during especially warmer weather, although this is not a common occurrence there have been a few incidents of odors caused by decaying algal and organic matter.

Sources of pollution that affects the water quality in the dam could be classified in two groups for the purpose of the RMP.

- a) "External sources" This implicate the "given" water quality that is received from "upstream". This is not part of the area that is included in the RMP, but a management of this part of the water resource is imperative for the success of any water quality management plan (or WRMP) of the Dam. Management of this "upstream" component should link with the RMP through institutional arrangements with the DWAF and the CMAs. The major sources of pollution to the dam is:

- The Msundusi river via the Umgeni river inflow.
- The Mgceweni stream which from drains the Cato-ridge area into the Umgeni River.
- The Mshazi river which flows directly into the dam.

The three major streams mentioned above are characterised by sewage pollution from overflowing manholes and inefficient sewage treatment pants, diffuse pollution and also extensive invasion with alien vegetation.

- b) "Internal" sources – Sewage disposal (including French drains, package plants and poorly serviced septic tanks) from developments, informal agriculture (cattle, chicken farms) and diffuse pollution sources that is generated within the purchase line, all impact adversely on the water quality of the dam.
- c) Sand mining operations currently carried out on the banks of the Umgeni and Mshazi rivers. These activities are conducted close to the inflow of the dam and affect the water quality by raising the suspended solids at these points as well as aid in spreading the aquatic alien invasive weeds along there area of operation

#### 1.5.1.7 Flora

The flora of the area consists of Eastern Valley bushveld, KwaZulu-Natal Sandstone Coastal Sourveld, Natal Hinterland Thornveld, Ngongoni Veld and Scarp Forest. The main land cover consists of Forests, unimproved grassland, thicket and bushveld with numerous disturbed areas based on settlements and subsistence farming.

#### 1.5.1.8 Fauna

The Inanda Dam is characterised with a very high abundance of birdlife due to the habitat diversity despite the presence of human settlements. Smaller species of animals have been observed but large game remains absent. The reptile population is diverse and includes skinks, snakes and monitor lizards.

### 1.5.2 Socio-economic Environment

#### 1.5.2.1 Population Dynamics

Census 2001 information is set out in Table 3 below:

**Table 3: Population**

Ward	Population
Ward 2	37 325
Ward 3	42 148
Ward 8	32 943
Ward 9	32 192

Source: Stats SA, 2001

The number of households and average household size are set out in Table 4.

**Table 4: Number of Households**

No. of people	No. of Households	Average Household Size
144 608	29 398	4.9

Source: Stats SA, 2001

Figure 4 shows that the study area is made up of 47% males and 53% females. Children make up 34%, which highlights people who are still dependant on their parents. There is a high percentage of people that fall within the labour force which at the same time identifies the youth (16 – 35 years) of the area. They make up 43% of Umzinto community. These are people who seek employment opportunities and can create an economically stable environment within the area. The elderly (>65 years and above) only make 5% of the population.

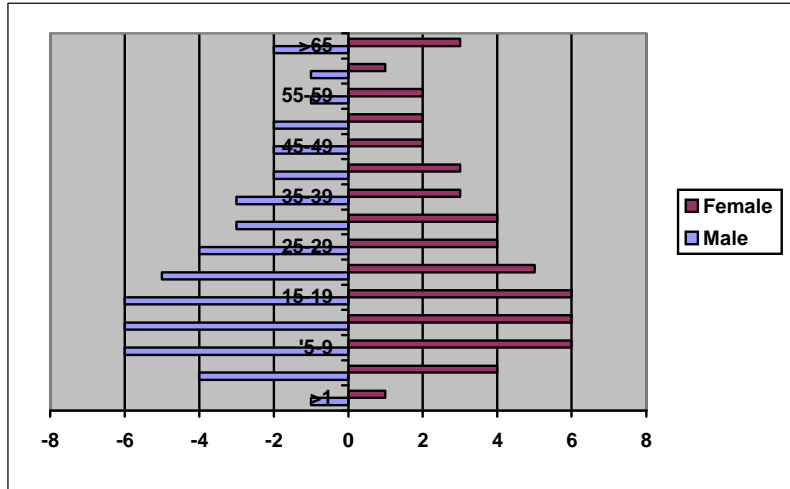
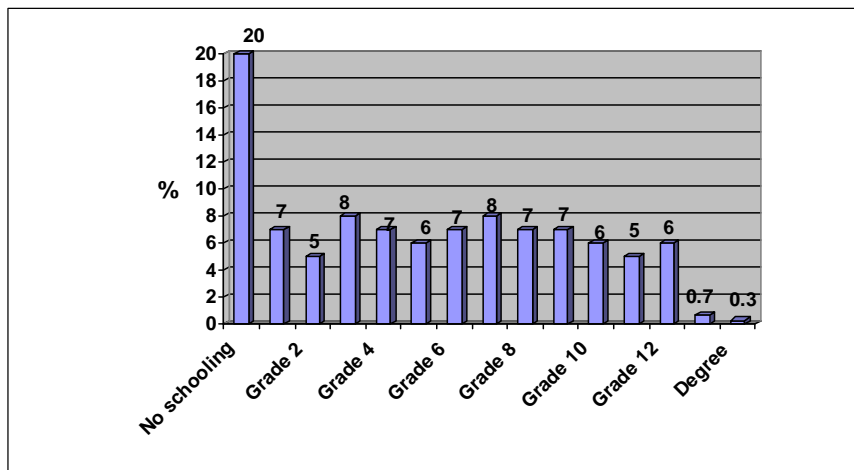


Figure 4: Age and Gender Breakdown

1.5.2.2 Educational and Health Facilities

According to Census 2001 information, 20% of the population have no formal schooling. People with high school qualifications, this being grade 8 to grade 12 make up 31% of the population. Tertiary education level was only reached by 1% of the population (refer Figure 5). Wards 2, 3, 8 and 9 fall under semi-rural areas of the eThekweni Municipality. The study area has limited access to services and has unplanned arrangements. Facilities do exist around the dam, yet also within the wider area.

- The educational facilities within the study area comprise of 13 primary schools and 7 high schools scattered evenly around the four wards.
- Inanda Dam surrounding areas have three health facilities for its residents. Ward 9 has one clinic (KwaNgcolosi Clinic) whilst Ward 3 has two clinics namely, Hlengimpilo and Qadi clinics. There is no hospital servicing the community, Gandhi Hospital is the closest.
- There are two pension pay points located within Ward 3 and one within Ward 2.

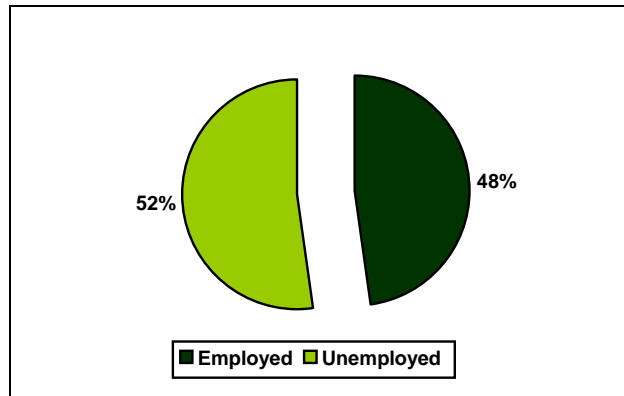


**Figure 5: Educational Levels**

Source: Stats SA, 2001

*1.5.2.3 Current Employment Status*

Figure 6 below highlights the employment status of the population surrounding Inanda Dam, 53% of the population is unemployed whilst 47% is employed.

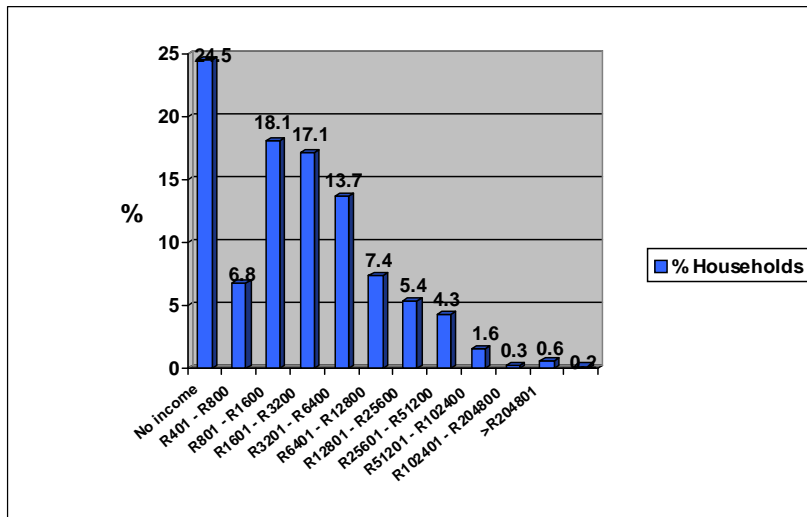


**Figure 6: Employment Status**

Source: Stats SA, 2001

*1.5.2.4 Monthly Household Income*

Households with no income make up 24.5% of the community of the study area. Most people fall within R801 – R1600 range (refer Figure 7).



**Figure 7: Monthly Household Income**

Source: Stats SA, 2001

*1.5.2.5 Occupation Types*

Most people in the study area fall within the unspecified group category for occupation type. They make up 75% of the population. Clerical & Sales make up 10%, which is the second highest occupation practised by the community.



The category, which has the least number of people, is the category for artisan & apprentice. It only has 0.6% or 656 people that practice the skill within and around the Inanda Dam area. Refer Figure 8.

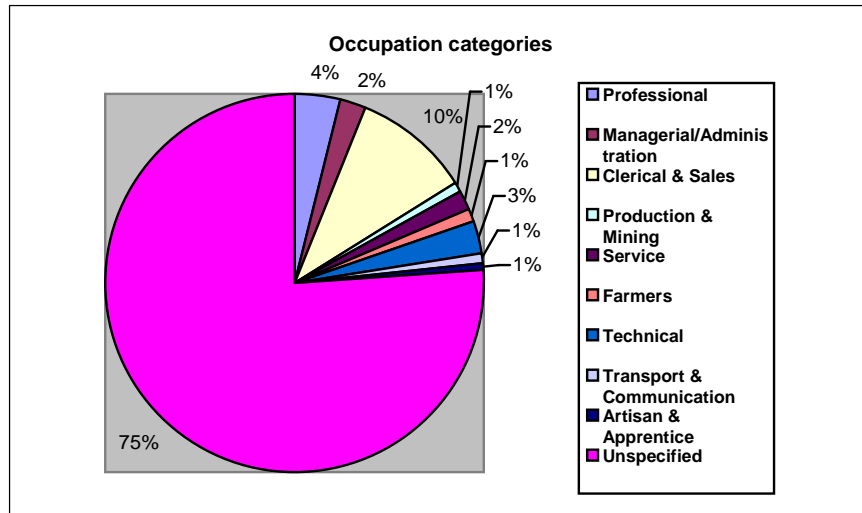


Figure 8: Occupation Types

1.5.2.6 Types of Housing

Approximately 57% of the population lives in formal housing and 8.5% living in informal structures. Traditional houses make up 34.3% of the households. Refer Figure 9.

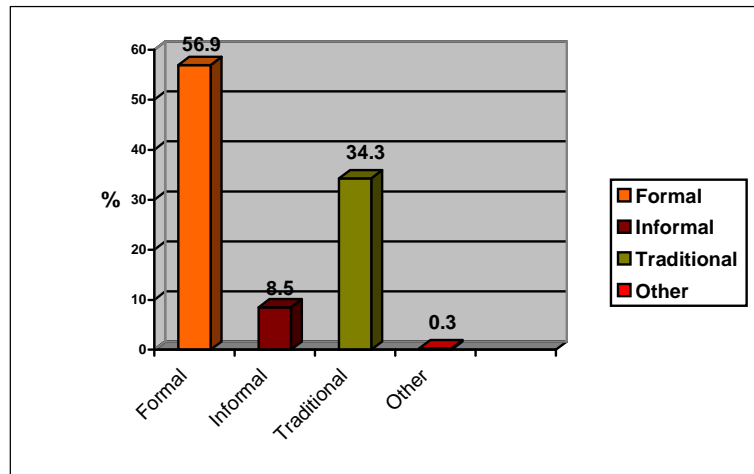


Figure 9: Housing Typology

Source: Stats SA, 2001

## **SECTION 2 THE PLAN**

### **2.1 OVERARCHING FRAMEWORK**

DWAF is the custodian of South Africa's water and forestry resources and is primarily responsible for the formulation and implementation of policy governing this sector and also promotes effective and efficient water resources management to ensure sustainable economic and social development.

#### **2.1.1 DWAF's Vision**

DWAF has a vision of being:

*'a country that uses water ... productively and in a sustainable manner for social and economic activities; in a manner that promotes growth, development and prosperity of all people to achieve social justice and equity.'*

#### **2.1.2 DWAF's Mission**

As sector leader, the mission of DWAF is to serve the people of South Africa by:

- guiding, leading, developing a legislative framework for regulating and controlling the water sector;
- conserving, managing and developing water resources in a scientific and environmentally sustainable manner in order to meet the social and economic needs of South Africa, both now and in the future;
- educating the people of South Africa on ways to manage, conserve and sustain water resources;
- cooperating with all spheres of Government, in order to achieve the best and most integrated development, and
- creating the best possible opportunities for employment, the eradication of poverty and the promotion of equity, social development and democratic governance.

#### **2.1.3 Key Objectives of the Department**

The Department's key focus areas and strategic objectives are as follows:

- Ensure reliable and equitable supply of water for sustainable economic and social development including the eradication of poverty.
- Ensure the protection of water resources.
- Develop effective water management institutions.
- Align staff, stakeholders and general public to a common vision for Integrated Water Resource Management (IWRM) and develop, capacitate and empower them in best practices thereof.
- Ensure provision of basic water supply and sanitation for improved quality of life and poverty alleviation.
- Ensure effective & sustainable delivery of water services to underpin economic and social development.
- Ensure effective Water Services Institutions.
- Ensure effective local-level operations and management of DWAF water services schemes.
- Promote and support sound policy and practice of water supply and sanitation to achieve millennium targets in Africa.
- Promote IWRM in Africa in support of the New Partnership for Africa's Development (NEPAD).

To guide initiatives aimed at attaining DWAF's vision, mission and objectives, an operational policy regarding the use of water for recreational purposes has been developed. This policy addresses planning, safety, authorisation, equity, communication, capacity building, institutions and linkages, legislative and legal framework, and monitoring and information management, and provides strategic direction to the Inanda Dam RMP.

## **2.2 VISION, MISSION AND OBJECTIVES FOR INANDA DAM**

### **2.2.1 Vision**

It is envisaged that Inanda Dam, through effective partnerships between the adjacent land owners, DWAF, Umgeni Water, users and investors, will contribute significantly to regional economic growth and poverty eradication in an environmentally and socially sustainable manner.

### **2.2.2 Mission**

As a regionally significant water resource, the stakeholders around Inanda Dam accept their mission as being:

- The creation of a conducive environment for investment and operation;
- The incremental value adding to the recreation and sporting industry in and around the dam;
- The equitable management of social, commercial and environmental benefits emanating from the dam;
- The improvement of infrastructure and services; and
- The conservation of both the water resources and adjacent land.

### **2.2.3 Key Management Objectives**

To attain the mission for the Inanda Dam, and accept the challenges, the following key objectives for the dam's management, utilisation and development were acknowledged by the stakeholders:

- To improve access to the dam;
- To ensure equitable access, both to the dam and the recreation industry based on the resource;
- To ensure effective intergovernmental co-operation;
- To ensure improved infrastructure and services;
- The establishment of Community Public Private Partnerships to unlock the potential of the dam; and
- The provision of clear guidelines and zones to regulate the use of both the water and land surrounding the dam.

Additional to these key objectives and for its implementation is the appointment of a management authority to manage the dam and its surrounding State land that is dynamic, focused and representative of the stakeholders and landowners of the host community, where the host community is defined as the community directly affected by and adjacent to the water resource. The performance of this institution in its endeavours to attain these objectives will be constantly audited and reviewed, to ensure that DWAF can assist wherever necessary and appropriate.

## **2.3 MANAGEMENT APPROACH**

To ensure that the RMP contributes to the attainment of the objectives set by its stakeholders, a process approach based on the ISO 9000 management system forms the basis of the management approach for the Inanda Dam. The rationale for this approach is to assist DWAF

and the management authority in ensuring sustainability by protecting the integrity and value of environmental resources, providing measurable benefits to host communities, and enhancing the satisfaction of users (refer DWAF's *Guidelines for the Compilation of Resource Management Plans*).

Without a plan it will be impossible to co-ordinate and manage the activities required to unlock the potential of the Inanda Dam. Only by measuring the performance of specific actions and operational guidelines against objectives will it be possible to effectively manage the water resource. The structure of the plan is based on Key Performance Areas (KPAs), refer Figure 10, aimed at attaining the key management objectives set for Inanda Dam by the stakeholders, namely:

- **KPA 1: Resource Management** – natural and cultural resource management and land expansion and incorporation;
- **KPA 2: Utilisation** – public private partnerships; public access; infrastructure and marketing, and
- **KPA 3: Benefit Flow Management.**
- **KPA 4: Institutionalisation.**

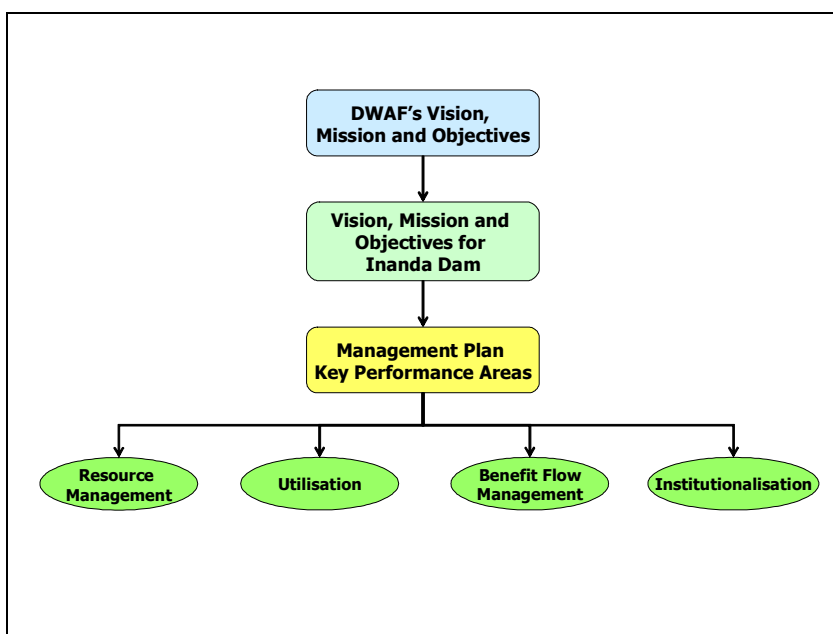


Figure 10: Management Framework

Specific objectives aimed at unlocking the potential of Inanda Dam were set by individual sector groups, based on access, use, development, and infrastructure requirements. Table 5 lists these objectives within the various KPAs.

Table 5: Management Objectives According to KPAs

OBJECTIVES	KPA
<ul style="list-style-type: none"> <li>• To identify conservation worthy areas and manage the shoreline of the dam in terms of alien plant removal and pollution control.</li> </ul>	KPA 1
<ul style="list-style-type: none"> <li>• To establish a system of peace officers to enforce regulations around the dam.</li> <li>• To develop a ferry system at the dam for both community mobility and tourist activities.</li> </ul>	KPA 2
<ul style="list-style-type: none"> <li>• To promote controlled access to the activity nodes within the wider area as well as the current Mhlabatini / Mnsinsi peninsula area.</li> </ul>	
<ul style="list-style-type: none"> <li>• To constantly ensure that water uses and operations are verified, registered</li> </ul>	

OBJECTIVES	KPA
and regularised (by among other initially undertaking an audit of existing access, use, development, and infrastructure).	
<ul style="list-style-type: none"> <li>• To promote, accommodate and manage a variety of uses on and around the dam e.g.: picnic/braai, hiking, boat sailing, kayaking, bird watching, model boats, swimming, fishing, baptisms etc. (jet skiing should be encouraged at other dams such as Inanda Dam).</li> </ul>	
<ul style="list-style-type: none"> <li>• To manage the use of the water surface through demarcated zones for, but not limited to, Canoeing, Ski boating, Sailing, Fishing, No wake (launch) zones.</li> </ul>	
<ul style="list-style-type: none"> <li>• To promote the sustainable development of the area through strategically phased and prioritised developments in terms of infrastructure provision and private investment alike, including: <ul style="list-style-type: none"> <li>– additional and improved camping sites</li> <li>– additional ablution facilities at the peninsula development node</li> <li>– accommodation such as hotels, lodges etc, in close proximity to the dam.</li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>• To ensure that key public access routes to the dam are upgraded and constantly maintained and that additional access roads are provided in order to unlock the development potential in the proposed areas of: <ul style="list-style-type: none"> <li>– Bridge (Nyuswa side)</li> <li>– Enyoni</li> <li>– Eskebheni</li> <li>– From Kwazini store to the end of dam</li> <li>– KaMatshitshana</li> <li>– Mapengana</li> <li>– Matshitshana</li> <li>– Mbhanana</li> <li>– Mnsinsi (the proposed commercial hub on the Mhlabatini peninsula</li> <li>– Mshazi</li> <li>– Mthontofela</li> <li>– Ngcukwini School</li> <li>– Wushwini</li> <li>– Zamokuhle store</li> <li>– The 'Madhouse'</li> <li>– Next to the police station</li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>• To provide a level of services (bulk and internal water, electricity and sewerage infrastructure) in line with affordability and in an equitable manner to the various areas around the dam, though sufficient to accommodate intended future developments.</li> </ul>	
<ul style="list-style-type: none"> <li>• To promote sufficient and shared access roads, slipways and moorings for use by various users in order to effectively use and limit access points (specifically permanent boats on the dam).</li> </ul>	
<ul style="list-style-type: none"> <li>• To fence off key activity areas for control and safety.</li> </ul>	
<ul style="list-style-type: none"> <li>• To ensure Local Black Economic Empowerment (BEE) benefits during the provision of all infrastructure and the private developments.</li> </ul>	KPA 3
<ul style="list-style-type: none"> <li>• To improve safety and security for users around the dam, especially upstream.</li> </ul>	
<ul style="list-style-type: none"> <li>• To investigate and address outstanding reparations issues related to the construction of the dam.</li> </ul>	
<ul style="list-style-type: none"> <li>• To clarify the delineation of management boundary and specific responsibilities between government role players and to communicate this to the various stakeholders and communities.</li> </ul>	KPA 4
<ul style="list-style-type: none"> <li>• To ensure that regulatory and management responsibility related to the dam be appropriately institutionalised and communicated to all role players.</li> </ul>	
<ul style="list-style-type: none"> <li>• To ensure the protection of water resources within the catchment areas and inlet of the dam through effective institutional structures and arrangements.</li> </ul>	
<ul style="list-style-type: none"> <li>• To affect intergovernmental co-operation through the alignment of "development" and "use" approvals and permissions through appropriate institutional governance arrangements.</li> </ul>	
<ul style="list-style-type: none"> <li>• To establish a single joint association of aquatic sport users with a single control body for localised sporting codes.</li> </ul>	

OBJECTIVES	KPA
<ul style="list-style-type: none"> <li>To discuss and conclude tourism co-management agreements between the State and relevant community structures.</li> </ul>	

The management objectives are subsequently discussed within each of the KPAs by addressing the following aspects:

- Rationale
- Management Support (Funding, human resources, policies and protocol etc.)
- Plans and Programmes (Operational guidelines, Action projects)
- Performance Indicators

Undertaken in this manner, the RMP can be implemented based on clear policies and objectives within each KPA, and with operational guidelines to facilitate the co-ordination of actions to a common vision. Decisions are based on objectives and vision, guided by policy statements. In this way the management authority, host community and users will clearly understand why certain activities are allowed or prohibited.

A *Master Plan* (refer section 3 and Appendix C, Figure 25) provides strategic direction for the management, utilisation and development of the dam within the constraints and opportunities of, as well as vision, objectives and policies for the receiving environment.

## 2.4 KPA 1: RESOURCE MANAGEMENT

### 2.4.1 Natural Resources

#### 2.4.1.1 Alien Plant and Pollution Control

To identify conservation worthy areas and manage the shoreline of the dam in terms of alien plant removal and pollution control, the following ISO management interventions are recommended:

**Table 6: Alien Plant and Pollution Control**

<b>Objective</b>
To have the Inanda Dam and area surrounding the dam free of alien vegetation
<b>Rationale</b>
Alien plants and pollution, both pose a major threat to the region's sport, recreation and tourism potential. Without effective control the region's biodiversity will be affected, and without high quality of water the recreational potential is depleted.
<b>Management and Support</b>
<ul style="list-style-type: none"> <li>• Planning and execution of eradication programmes must be done in cooperation with Working for Water.</li> <li>• Synchronise eradication projects in the catchment by engaging adjacent landowners and local environment initiatives.</li> </ul>
<b>Policy and Guidelines</b>
<u>Remediation</u> <ul style="list-style-type: none"> <li>• The control of invasive plant species is addressed under the Conservation of Agricultural Resources Act (CARA Act No 43 of 1983). Relevant legislation as well as municipal by-laws must be complied with.</li> </ul>

- Combating must be based on the latest alien plant control technology and knowledge. Preference should be given to non-chemical eradication methods wherever possible. Due to the negative impact of aerial spraying on riparian vegetation, such spraying may only be used as a last resort.
- Allow only weed free vessels to enter or exit the dam.

**Horticulture**

- Exotic species must be removed and replaced with appropriate indigenous trees, where appropriate.
- No alien vegetation may be introduced anywhere within the dam boundary line and only indigenous planting schemes will be permitted.

**Action Projects**

- I. Determine the success of current Working for Water initiatives to eradicate water hyacinths, identify opportunities and constraints.
- II. Ensure that required resources are available for the removal of water hyacinths when action is required, especially during December and January.
- III. Quantify and qualify the extent of invasive alien vegetation in order to have a base line survey.
- IV. Continuous removal of problem plants within the dam boundary line.
- V. Rehabilitate infested areas with suitable endemic species.
- VI. Continuous monitoring of occurrence of problem plants on the dam surface and within the dam boundary line.
- VII. Develop an inspection and cleaning mechanism to ensure that vessels entering the dam do not contaminate it with alien vegetation.

**Indicators**

Use the base line survey to measure the effectiveness of the eradication programme and adapt actions accordingly. Indicators for the effectiveness can be measured as:

- I. A decrease in stands of alien species within the dam boundary line; and
- II. Water surface free of water hyacinth.

**Roleplayers**

- DWAF
- Department of Agriculture and Environmental Affairs
- eThekweni Municipality

**2.4.2 Cultural Resources**

*2.4.2.1 Cultural Heritage Resource Management*

To identify and protect the cultural heritage resources which might exist around the dam, the following ISO management interventions are recommended:

**Table 7: Cultural Heritage Resource Management**

<b>Objective</b>
To identify, acknowledge and conserve resources of palaeontological, archaeological, historical, cultural and religious significance.
<b>Rationale</b>
Despite the degree of development in the region, the area around Inanda Dam has certain cultural heritage resources, both tangible and intangible, worthy of protection, albeit of local significance.  These resources need to be identified, documented, conserved and utilised to ensure their relevance and protection. Cultural tourism within eThekweni is an important catalyst for development and the region around Inanda Dam should strategically link up with established cultural heritage routes and products.
<b>Management and Support</b>

- The South African Heritage Resources Agency (SAHRA) is the national body responsible for the protection of South Africa's cultural heritage resources.
- Community representatives and organisations as well as the Ward Councillor
- Faith Based Organisations
- Research Institutions
- Involvement of local conservation and social initiatives (BVC, MPA, RGKB, etc)

#### Policy and Guidelines

##### Conservation

- Cultural and heritage resources need to be conserved and managed in line with the National Heritage Resources Act (NHRA).
- Conservation management needs to continuously update and expand the knowledge base regarding cultural resources, through research, documentation and protection, as well as training and capacitation.
- Conservation work should not only be undertaken where the cultural resource is threatened, but also where the resource can contribute to enhancing the tourism experience.
- Human remains that are less than 60 years old are protected by the Human Tissue Act (Act 65 of 1983 as amended). Human remains older than 60 are protected by the NHRA.
- Identification and documentation
- Staff of operators, contractors and the management authority need to be trained in identifying possible cultural resources.
- A data base of cultural resources should be available and updated by properly trained and accredited researchers.

##### Utilisation

- Reasonable access must be ensured to grave sites for ancestors.
- Controlled access to the dam should be provided for practice of baptism or similar religious activities.
- Both tangible and intangible heritage and cultural resources can be incorporated into a visitor experience programme ensuring an authentic and culturally appropriate experience.

#### Action Projects

- I. Confirm the presence of the possible grave sites and implement protection measures.
- II. Establish a relationship with the faith based organizations and develop a procedure with regards to the use of the dam for ritual activities.
- III. Formalise a relationship with the South African Heritage Resource Authority (SAHRA).

#### Indicators

For effective management of cultural and heritage resources it is essential that performance be monitored utilising techniques and procedures based on good heritage practice, cost efficiency and applicability, appropriateness, compliance with heritage guidelines and consistency over time. Among others the following indicators can be used:

- Condition of physical resources (for example damage to grave sites).
- Amount of heritage sites discovered.
- Successful use of the dam.
- Implementation of conservation measures and other recommendations.

#### Roleplayers

- AMAFA

## 2.5 KPA 2: UTILISATION

### 2.5.1 Access, Use and Development



### 2.5.1.1 Ferry System

To develop a ferry system at the dam for both community mobility and tourist activities, the following ISO management interventions are recommended:

**Table 8: Ferry System**

<b>Objective</b>
To improve access of the dam through the establishment of a ferry service.
<b>Rationale</b>
The establishment of the dam severely impacted on the movement patterns of the affected community, an impact that can be mitigated through the establishment of a ferry service for the local community and tourists.
<b>Management and Support</b>
<ul style="list-style-type: none"> <li>Municipality to provide access and availability for funding of project</li> </ul>
<b>Policy and Guidelines</b>
<ul style="list-style-type: none"> <li>SAMSA Regulations for inland vessels</li> </ul>
<b>Action Projects</b>
<ul style="list-style-type: none"> <li>Investigate the possibilities of offering this service as a public system, run by the municipality or as a private initiative.</li> <li>Appoint Operator</li> <li>Safety checks</li> <li>Begin Operation</li> </ul>
<b>Indicators</b>
<ul style="list-style-type: none"> <li>Ferry system is established and operational in a viable manner</li> </ul>
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>DWAF</li> <li>Department of Transport</li> <li>eThekweni Municipality</li> </ul>

### 2.5.1.2 Access Control

To promote controlled access to the activity nodes within the wider area as well as the current Mhlabatini/Mnsinsi peninsula area, the following ISO management interventions are recommended:

**Table 9: Access Control**

<b>Objective</b>
To enable broad public and private enjoyment of the water resource and surrounding State land through controlled authorized access and associated infrastructure development.
<b>Rationale</b>

Access to both the development nodes and water surface must be controlled to enable effective monitoring of compliance and safety. Any access other than at the specified points must be deemed unlawful.

**Management and Support**

- The necessary authorisations for access, use and development within the boundary line must be approved by DWAF prior to any actions.
- Linkages must be established with relevant government departments and federations where appropriate.

**Policy and Guidelines**

Access and Use

- The dam must remain available for broad public recreational access and use, above commercial or private interests.
- Public access and use should be equitable, compatible and safe.
- Fees for access & use should be determined as prescribed in terms of Section 113 of the NWA.
- Entry fees may be levied for public access and use. However, fees need to be reasonable to ensure the dam remains an affordable destination.
- Access and use must be in accordance with the Zoning Plan (Figure 8) contained herein.

Existing Use

- For most users and operators, the necessary agreements and authorisations are either outdated or non-existent.
- Existing use must be regularized.

**Action Projects**

- I. Pending the finalisation of the NDPW"s vesting process, evaluate the development potential in terms of the Zoning plan and prepare and implement a development strategy.

**Indicators**

- I. The development strategy must be finalized within four months of the finalization of the vesting process.
- II. The implementation of the development strategy must be as defined therein.

**Role-players**

- DWAF
- Umgeni Water
- eThekweni Municipality

*2.5.1.3 Sustainable Development*

To promote, accommodate and manage a variety of activities and facilities in and around the dam in a strategically phased and prioritised manner in terms of infrastructure provision and private investment alike including:

- Tourism (additional and improved camping sites and ablution facilities; accommodation such as hotels, lodges etc.)
- Recreation and sport (hiking, bird watching, swimming, sailing, kayaking, model boats, fishing etc.)
- Cultural activities (baptisms),

the following ISO management interventions are recommended:

To achieve the objective of sustainable development, facilities in and around the dam will be incorporated into marketing initiatives such as the Inanda Heritage Trail, as well as aligned to schools education programmes.

**Table 10: Sustainable Development**

<b>Objective</b>
To promote sustainable development around the dam
<b>Rationale</b>
Unlocking the potential of Inanda Dam requires compatible use and development aimed at establishing a local economy that can sustain itself. This will require accommodation, increases access, activities and employment opportunities without negatively impacting on other economic sectors such as agriculture which can also contribute to the local economy.
<b>Management and Support</b>
<b>Policy and Guidelines</b>
National Environmental Management Act
<b>Action Projects</b>
<ul style="list-style-type: none"> <li>• Compile database of all tourism and related facilities.</li> <li>• Develop training and support programmes</li> </ul>
<b>Indicators</b>
<ul style="list-style-type: none"> <li>• Increase in tourism products and programmes</li> <li>• Support for tourism in region</li> </ul>
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• eThekweni Municipality</li> <li>• Department of Education</li> </ul>

*2.5.1.4 Access and Use Regulation*

To constantly ensure that water uses and operations are verified, registered and regularised (by among other undertaking an audit of existing access, use, development and infrastructure), the following ISO management interventions are recommended:

**Table 11: Access and Use Regulation**

<b>Objective</b>
To evaluate the existing access and uses of the dam basin and adjacent state and privately owned land to ensure that usage is lawful and that the necessary permits and authorizations are in place.

<b>Rationale</b>
Without clarity regarding authorised access and use of water based on a clear regulatory environment neither DWAF, potential investors and users can take informed decisions, resulting in problems regarding the attainment of the specific objectives of any of these sectors, sustainably.
<b>Management and Support</b>
<ul style="list-style-type: none"> <li>The management authority is responsible for overall management and co-ordination of the proposed action project.</li> <li>Various national, provincial and local government departments must provide information regarding land and water use authorisations.</li> </ul>
<b>Policy and Guidelines</b>
<ul style="list-style-type: none"> <li>The data obtained during the process of the RMP compilation, as documented in the Research Report, should be used as a starting point.</li> <li>DWAF should be consulted with regard to water use authorization, as contained in the DWAF's authorization and management system.</li> </ul>
<b>Action Projects</b>
<ol style="list-style-type: none"> <li>Embark on a project to evaluate the current use of the dam basin and adjacent state and privately owned land and regularize unlawful usage.</li> </ol>
<b>Indicators</b>
<ol style="list-style-type: none"> <li>A database of all permits and authorizations for water surface and land use, highlighting whether use is legal or illegal. If illegal, time frames for regularization must be stated.</li> </ol>
<b>Roleplayers</b>
DWAF eThekweni Municipality

### 2.5.1.5 Zoning

To manage the use of the water surface through demarcated zones for, but not limited to, canoeing, ski boating, sailing, fishing, no wake (launch) zones, the following ISO management interventions are recommended:

**Table 12: Zoning**

<b>Objective</b>
Effective zonation and compliance aimed at unlocking the dam's potential sustainably.
<b>Rationale</b>
Inanda Dam, as a water resource of local significance, yet subject to National legislation, requires the involvement of all spheres of government working towards a common goal. This intergovernmental co-operation regarding the development and use of Inanda Dam needs to be formalised within a legislative environment to support Government's commitment to the region and its people.
<b>Management and Support</b>
<ul style="list-style-type: none"> <li>DWAF to clarify Government Notice Regulation 654 as regulatory framework.</li> </ul>

Policy and Guidelines
<ul style="list-style-type: none"> <li>• Utilise Regulation 654 to enforce zonation</li> <li>• Provide clarity regarding penalties regarding non-compliance</li> <li>• Inland Vessel Regulations</li> </ul>
Action Projects
<ol style="list-style-type: none"> <li>I. Demarcate zones with buoys, and provide clear zonation maps at entrance and launch sites</li> <li>II. Monitor compliance with zonation</li> </ol>
Indicators
<ol style="list-style-type: none"> <li>I. Compliance with zonation plan</li> <li>II. Record of breaches</li> </ol>
Roleplayers
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• eThekweni Municipality</li> </ul>

## 2.5.2 Infrastructure

### 2.5.2.1 Access Roads and Facilities

To ensure that key public access routes to the dam are upgraded and constantly maintained and that additional access roads are provided in order to unlock the development potential in the proposed areas of:

- Bridge (Nyuswa side)
- Enyoni
- Eskebheni
- From Kwazini store to the end of dam
- KaMatshitshana
- Mapengana
- Matshitshana
- Mbhanana
- Mnsinsi (the proposed commercial hub on the Mhlabatini peninsula)
- Mshazi
- Mthontofela
- Ngcukwini School
- Wushwini
- Zamokuhle store
- The 'Madhouse'
- Next to the police station, and

to promote sufficient and shared access roads, slipways and moorings for use by various users in order to effectively use and limit access points (specifically permanent boats on the dam), the following ISO management interventions are recommended:

**Table 13: Access Roads and Facilities**

Objective
Increased accessibility for various modes of transport around the dam in order to maximize potential opportunities and benefits from it.

<b>Rationale</b>
Without easy access, visitors will not utilise the dam and its resources, inclusive of signage to and from the dam.
<b>Management and Support</b>
Provision and upgrading of access roads falls under the functions of eThekweni Municipality and thus the management programmes and support services (e.g. maintenance & cleaning) will be guided by the roads management programme within the relevant department.
<b>Policy and Guidelines</b>
eThekweni Policies & Guidelines (To be included)
<b>Action Projects</b>
<ul style="list-style-type: none"> <li>• Main access road upgrading</li> <li>• Secondary Road Maintenance</li> </ul>
<b>Indicators</b>
<ul style="list-style-type: none"> <li>• Additional Access points created</li> <li>• Length of Roads upgraded</li> <li>• Increase in traffic volumes</li> <li>• General condition of the roads and satisfaction of the users</li> </ul>
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>• eThekweni Municipality</li> </ul>

### 2.5.2.2 Services

To provide a level of services (bulk and internal water, electricity and sewerage infrastructure) in line with affordability and in an equitable manner to the various areas around the dam, though sufficient to accommodate intended future developments, the following ISO management interventions are recommended:

**Table 14: Services**

<b>Objective</b>
Constant expansion and maintenance of service networks (especially Water & Sanitation) to the highest public and private affordable standards which would accommodate current densities and future intended development around the dam in an ecologically sustainable manner.
<b>Rationale</b>
The lack of services severely hampers investment and development. By providing these requisite services Government implements its commitment to the creation of a conducive environment for investment and development.
<b>Management and Support</b>
Provision and upgrading of sanitation falls under the functions of eThekweni Municipality and thus the management programmes and support services (e.g. maintenance & cleaning) will be guided by the sanitation programme within the relevant department. Of particular importance is the minimisation of a pollution risk to the water.

<b>Policy and Guidelines</b>
Require municipal policies and guidelines on sanitation alternatives outside of the urban edge to consider the potential benefits of nodal development around the dam as well as safer technologically advanced on site sanitation options.
<b>Action Projects</b>
<ul style="list-style-type: none"> <li>Alternative Sanitation Solutions</li> </ul>
<b>Indicators</b>
<ul style="list-style-type: none"> <li>Increased number of households with access to improved sanitation</li> <li>All development nodes with high level of sanitation facilities</li> </ul>
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>eThekwini Municipality</li> </ul>

### 2.5.2.3 Fencing

To fence off key activity areas for control and safety, the following ISO management interventions are recommended:

**Table 15: Fencing**

<b>Objective</b>
Clearly defined areas for development
<b>Rationale</b>
Each of the development nodes must be secured to create an environment conducive for investment and operation, a necessity to attain the broader objectives set for Inanda Dam.
<b>Management and Support</b>
Access control management and resources as well as long term maintenance of the fence(s).
<b>Policy and Guidelines</b>
Fencing act
<b>Action Projects</b>
<ul style="list-style-type: none"> <li>Identify areas requiring fencing</li> <li>Develop fencing protocol</li> </ul>
<b>Indicators</b>
Effectively managed areas Breaches
<b>Rpleplayers</b>
<ul style="list-style-type: none"> <li>DWAF</li> </ul>

## 2.6 KPA 3: BENEFIT FLOW MANAGEMENT

### 2.6.1 Local BEE

To ensure local BEE benefits during the provision of all infrastructure and the private developments, the following ISO management interventions are recommended:

**Table 16: Local BEE**

<b>Objective</b>
To ensure that local communities participate and benefit in local economic development initiatives occurring in and around the dam.
<b>Rationale</b>
Without equitable benefits to the host community the developments envisaged for Inanda Dam will not be sustainable. Despite the excellent guidelines provided by National Treasury regarding Public Private Partnerships and BEE, it is critical that local entrepreneurs be afforded opportunity to participate in the development initiatives.
<b>Management and Support</b>
<ul style="list-style-type: none"> <li>• The management authority is responsible for overall co-ordination and flows.</li> <li>• The local community user group must provide relevant input.</li> <li>• Linkages must be established with relevant government departments.</li> </ul>
<b>Policy and Guidelines</b>
<ul style="list-style-type: none"> <li>• Recognise, train, capacitate and empower individuals from the surrounding community with proven interest and entrepreneurial skills.</li> <li>• Through regular communication with community groups, it will be possible to become more sensitized to community perceptions, as well as to expose entrepreneurs to the opportunities that are available.</li> </ul>
<b>Action Projects</b>
<ol style="list-style-type: none"> <li>I. Compilation of a database of job seeking individuals and SMMEs from the local community and ensure that it is regularly updated and monitored.</li> <li>II. Implement skills development programmes where opportunities exist.</li> <li>III. Ensure that BEE is attained in any PPP projects.</li> </ol>
<b>Indicators</b>
<ol style="list-style-type: none"> <li>I. Measure capacitation of individuals and SMMEs through database mentioned previously.</li> </ol>
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• eThekweni Municipality</li> </ul>

### 2.6.2 Safety and Security

To improve safety and security for users around the dam, especially upstream, the following ISO management interventions are recommended:

**Table 17: Safety Security**



<b>Objective</b>
A safe and secure environment within which recreational water use can take place.
<b>Rationale</b>
Without a safe environment visitors will not utilise Inanda dam, opting for water resources which are safer and more secure.
<b>Management and Support</b>
<ul style="list-style-type: none"> <li>• Water Safety – lifesaving provision and equipment.</li> <li>• Visible policing</li> <li>• Budget</li> </ul>
<b>Policy and Guidelines</b>
<ul style="list-style-type: none"> <li>• eThekweni Rural safety strategy</li> <li>• Crime Prevention Through Environmental Design guidelines</li> </ul>
<b>Action Projects</b>
<ul style="list-style-type: none"> <li>• Security and Safety Plan</li> </ul>
<b>Indicators</b>
<ul style="list-style-type: none"> <li>• Reduction in crime occurrences.</li> <li>• Increase sense of safety experienced by users.</li> </ul>
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>• South African Police Service</li> <li>• eThekweni Municipality</li> <li>• SAMSA</li> <li>• Lifesaving South Africa</li> <li>• Swimming South Africa</li> <li>• NSRI</li> </ul>

### 2.6.3 Reparatons

To investigate and address outstanding reparations issues related to the construction of the dam, the following ISO management interventions are recommended:

**Table 18: Reparations**

<b>Objective</b>
Obtain clarity regarding reparations
<b>Rationale</b>
The shadow of disputed reparations hangs over Inanda Dam, and without clarity regarding the State's official stance this matter will severely affect plans, projects and programmes envisaged for the region. The State needs to review and reassess the reparations regarding compensation awarded to affected individuals and communities to ensure effective implementation.
<b>Management and Support</b>

DWAF providing guidance in this regard
<b>Policy and Guidelines</b>
National Water Act
<b>Action Projects</b>
<ol style="list-style-type: none"> <li>I. DWAF to convene IGF meeting to clarify this matter</li> <li>II. Communication campaign ensuring all stakeholders are clear on government's approach.</li> </ol>
<b>Indicators</b>
Satisfied stakeholders
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• Department of Land Affairs</li> <li>• eThekweni Municipality</li> <li>• Reparations Forum</li> </ul>

## 2.7 KPA 4: INSTITUTIONALISATION

### 2.7.1 Management Boundary and Responsibility

To clarify the delineation of management boundary and specific responsibilities between government role players and to communicate this to the various stakeholders and communities, and to ensure that the regulatory and management responsibility related to the dam is appropriately institutionalised, the following ISO management interventions are recommended

**Table 19: Management Boundary and Responsibility**

<b>Objective</b>
To implement co-management agreements and where appropriate service contracts to unlock the economic and conservation potential of the Inanda Dam.
<b>Rationale</b>
Without effective co-management agreements it will not be possible for DWAF to unlock the potential of Inanda Dam, nor will the land owners be able to add value to the their land without access to the water. By clarifying the management boundary through effective co-management agreements these joint objectives can be attained.
<b>Management and Support</b>
<ul style="list-style-type: none"> <li>• Clarity on boundary for stakeholders and co-management agreements</li> <li>• Budget</li> </ul>
<b>Policy and Guidelines</b>
<ul style="list-style-type: none"> <li>• National Water Act</li> <li>• PFMA</li> <li>• State Land Disposal Act</li> </ul>
<b>Action Projects</b>
<ul style="list-style-type: none"> <li>• Agreements to be drafted</li> </ul>

<ul style="list-style-type: none"> <li>• Constitutions to be agreed upon</li> </ul>
<b>Indicators</b>
<ul style="list-style-type: none"> <li>• Co-management agreements successfully implemented</li> </ul>
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• eThekweni Municipality</li> </ul>

### 2.7.2 Catchment Management

To ensure the protection of water resources within the catchment areas and inlet of the dam through effective institutional structures and arrangements, the following ISO management interventions are recommended:

**Table 20: Catchment Management**

<b>Objective</b>
<i>DWAF Regional office to provide inputs</i>
<b>Rationale</b>
Effective resource management requires a catchment based approach, rather than focusing on the local management interventions only. Inanda Dam management must play an active role in the catchment forum and other institutional structures and arrangements as they are established.
<b>Management and Support</b>
<i>DWAF Regional office to provide inputs</i>
<b>Policy and Guidelines</b>
<i>DWAF Regional office to provide inputs</i>
<b>Action Projects</b>
<i>DWAF Regional office to provide inputs</i>
<b>Indicators</b>
<i>DWAF Regional office to provide inputs</i>
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• eThekweni Municipality</li> </ul>

### 2.7.3 Intergovernmental Co-operation

To affect intergovernmental co-operation through among other the alignment of “development” and “use” approvals and permissions through appropriate institutional governance arrangements, the following ISO management interventions are recommended:

**Table 21: Intergovernmental Co-operation**

<b>Objective</b>
Unlocking the economic potential of the dam requires a close working relationship between all spheres of Government.
<b>Rationale</b>
Inanda Dam, as a water resource of local significance, yet subject to National legislation, requires the involvement of all spheres of government working towards a common goal. This intergovernmental co-operation regarding the development and use of Inanda Dam needs to be formalised within a legislative environment to support Government’s commitment to the region and its people.
<b>Management and Support</b>
Commitment by all spheres of government and departments
<b>Policy and Guidelines</b>
Intergovernmental Framework Relationship Act
<b>Action Projects</b>
Formalise relationship in terms of IGfRA
<b>Indicators</b>
Meetings and efficiency
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• eThekweni Municipality</li> <li>• Intergovernmental Forum</li> </ul>

#### **2.7.4 Industry Association**

To establish a joint association of aquatic sport users with a single control body for localised sporting codes, the following ISO management interventions are recommended:

**Table 22: Industry Association**

<b>Objective</b>
Establishment of an Association for all aquatic sport users
<b>Rationale</b>
Various recreation and sport organisations will be involved in providing activities at Inanda Dam. To ensure compliance with local operational rules and code of conduct on Inanda Dam and Industry Association, representing both the sport and recreation operators as well as federations must be established. This Association will serve as conduit for communication between Government and Industry.
<b>Management and Support</b>

- Linked to Municipal departments and units regarding the use of public areas for sport & recreation.
- Provision of dedicated gathering and sport areas and support facilities (e.g. launch sites)

#### Policy and Guidelines

SRSA Guidelines

#### Action Projects

Convene working sessions between sporting and Industry Associations

#### Indicators

- Harmony between users
- Conflict reduction

#### Roleplayers

- DWAF
- Sport and Recreation South Africa
- eThekweni Municipality
- Lifesaving South Africa
- Swimming South Africa

### 2.7.5 Co-management

To discuss and conclude tourism co-management agreements between the State and relevant communities structures, the following ISO management interventions are recommended:

**Table 23: Co-management**

<b>Objective</b>
Equitable benefits and sharing of responsibilities between state and community structures
<b>Rationale</b>
DWAF's policy of acquiring only enough land to manage the water resources effectively necessitates co-management agreements with surrounding landowners to ensure sufficient land for development. Undertaken in this way the community as <i>de facto</i> landowners can benefit tremendously from the asset jointly created between the state and themselves. This relationship must be formalised prior to agreements being finalised with private sector partners.
<b>Management and Support</b>
DWAF and National Treasury to provide support
<b>Policy and Guidelines</b>
PPP Toolkit for Tourism
<b>Action Projects</b>
Compile co-management agreements between state and community structures
<b>Indicators</b>
<ul style="list-style-type: none"> <li>• Concluded co-management agreements</li> <li>• Investment facilitated</li> </ul>
<b>Roleplayers</b>

- DWAF
- Sport and Recreation South Africa
- eThekweni Municipality

**2.8**

## 2.9 MASTER PLAN

### 2.9.1 Process

The planning of the Inanda Dam has been undertaken to ensure organised development, equitable visitor access, sound resource management and optimal community beneficiation. This approach also minimises the potential conflict that could arise between the various stakeholder groups.

The zoning system is based on the Ecotourism Characteristics Opportunity Spectrum (ECHOS) as set out in the DWAF *Guidelines for the Compilation of Resource Management Plans*. To effectively zone a resource an assessment of all relevant information must be undertaken to ascertain both habitat and landscape sensitivity. Following this sensitivity analysis, an assessment of the environmental characteristic must be undertaken. This assessment entails the determination of current environmental character status, opportunity for ecotourism development based on a spectrum of the environmental limitations and stakeholder objectives.

Both the environmental sensitivity analysis and ECHOS zonation guide management interventions required to achieve resource management, social and economic objectives. Management interventions such as access, utilisation, development nodes and infrastructure are selected and planned for accordingly.

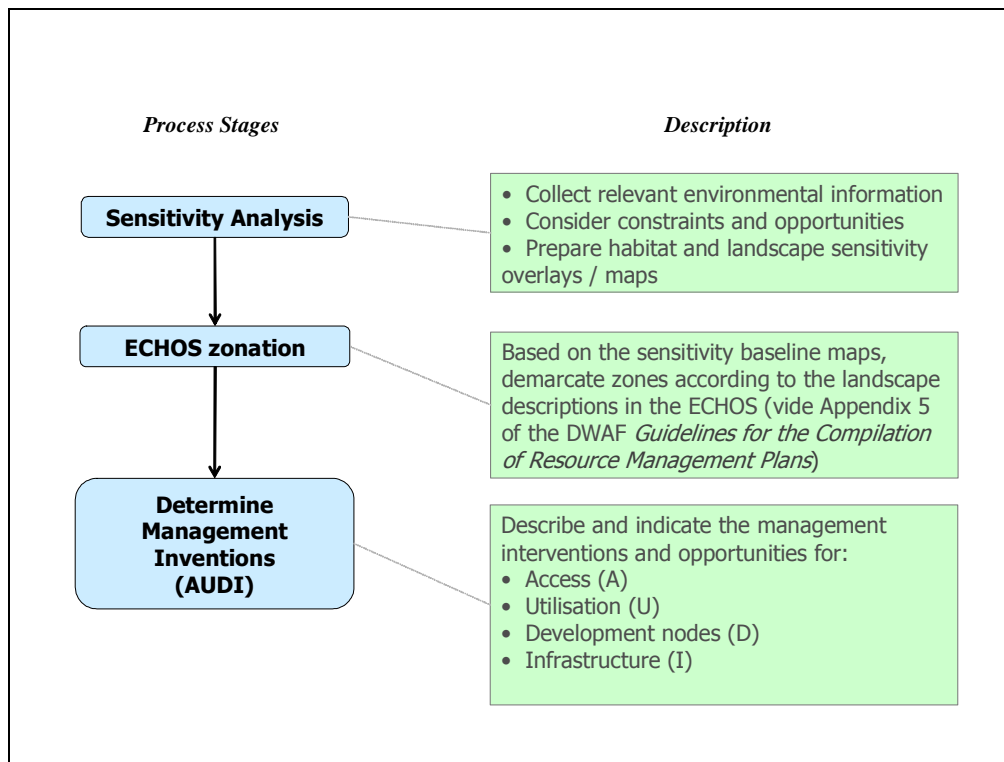


Figure 11: Zoning Process

### 2.9.2 Master Plan

Based on a variety of factors, including the conservation objectives of the IGR, as well as the objectives of stakeholders the Inanda Dam master plan was compiled. This master plan summarises access, use, development and infrastructure requirements for the Dam. See Figure 24.

### *2.9.2.1 Access*

Effective access to the water resources is essential, and requires specific control measures since the dam is almost entirely surrounded by a road network. Only access via one of the approved accesses will be deemed lawful. Currently, the only lawful access is via the Mnsinsi site. Until future accesses have been provided the current access will function as a multiple recreational user access site. Once the focused accesses have been developed, the current access can be limited to the concessionaire at the peninsula.

Currently lawful access to the dam is limited to the Mnsinsi Holdings site on the Mhlabatini peninsula, despite the area being traversed by numerous tar roads. Proposed access points include sites close to the dam wall, the eastern shore below the Shembe Village, two accesses from the north, a limited access into the fishing zone and an access along the southern shore line. These additional accesses will greatly increase the utilisation of the dam, and establish the dam as an important economic catalyst. Several road sections need to be upgraded to allow for access from the coastal region north of Durban, Pietermaritzburg etc.

A network of ferries is recommended to increase accessibility for communities affected by the dam.



### *2.9.2.2 Utilisation*

Besides the safety zone around the dam wall, Inanda Dam has four broad water use zones, the first being an area dedicated to water skiing, the second an area for sailing, the third being for motor boats, and the fourth a fishing concession area.

Within the motorised boating zone, and the sailing zone two training areas linked to the local schools are to be established. These training facilities should target all water based activities including kayaking, rowing, sailing, swimming, fishing bank and boat based, skiing and power boating. These facilities should target school children, as well as offer training to the broader community. Sporting federations must be requested to partner with these facilities, have a clear annual programme, and establish Inanda Dam as a leading player in the field of transformation, training and development.

Land based zonation includes areas for day visitors, overnight visitors, marinas, residential, agricultural and training facilities.

Several small entrepreneurial activities of local relevance do occur on the State land surrounding the dam. These activities must be regularised in a manner appropriate to the level of impact and duration.

Commercial ventures such as lodges, marinas, conferencing facilities etc. must comply with National Treasury Regulations and procurement practice.

### *2.9.2.3 Development Cores, Nodes and Sites*

Development nodes around Inanda Dam include the Mhlabatini peninsula, DWAF offices, Shembe Village, and northern and southern shores.

The existing Mnsinsi Holdings site is proposed to be developed as a yacht club and marina, and could include aspects such as day visitor facilities, overnight accommodation, clubhouse, restaurant and possibly even a small hotel, fractional ownership houses, etc. as well as facilities to manage sailing vessels, yachts etc.

The existing houses at the dam wall could be utilised as base infrastructure for the water skiing development area. This could include accommodation for children and guests who participate in training courses and competitions.

Below the Shembe Village land based developments will include an orientation centre for visitors planning to visit the Shembe Village. This site could include a small hotel, conference centre and infrastructure for a proposed cable car to the top of the hill on which the Shembe Village is located. Close to this node is a smaller node focusing on organic farming, as well as a lodge targeting the fishing community.

Two other small lodges targeting the fishing community are located on the northern shore line, one below Inanda Hill and the other on the upper reaches of the dam.

A low density residential resort is located on the northern peninsula. This resort will target the power boating and bass fishing market. A marina and associated accommodation in the form of sole use houses or fractional ownership is proposed for the southern peninsula, south west of the Mnsinsi Site.

These two developments can provide a major capital investment in to the region, and if correctly marketed, form the foundation of all development around the dam.

Three agricultural development nodes exist around the dam, and it is envisaged that these projects should evolve from subsistence projects to higher value crops – organic vegetables, volatile oils, etc. – to improve their viability. Aspects such as water pumps, composting etc. need to be developed to support these initiatives.

#### *2.9.2.4 Infrastructure*

Requisite infrastructure to unlock the potential of Inanda Dam, includes upgrading of the road from the Umgeni River to the tar road, several short link roads, and a tourism ring road from the dam to the top of Inanda Hill.

Infrastructure for the ferry service must be provided similar to what eThekweni Municipality does for its bus service.

To increase safety a pedestrian bridge is required at the top end of the dam to link the community to the schools, on opposite sides of the river. The bridge will reduce drowning as a result of the children swimming or wading across the Umgeni River.

### **2.9.3 Precinct Plan**

#### *2.9.3.1 Purpose of the Precinct Plan*

The Precinct Plan cover the area directly adjacent to the dam and potentially impacting on the basin of the dam as well as being directly influenced by the activities and development around the dam. It is therefore the purpose of the precinct plan to also guide issues of access, land use and development and infrastructure outside of the State owned land of the dam. The intention is to ensure that the precinct around the dam is developed and managed in a manner which will support and benefit directly from developments around the dam. (Refer Figure 30).

#### *2.9.3.2 Precinct Context & Boundary*

The precinct area around Inanda dam is characterised by tribal ownership and used mainly for residential purposes and some subsistence farming activities. There are also pristine, undeveloped areas all around the dam shoreline and especially towards the northern parts of the precinct. The nearest settlements are the traditional settlement areas of Qadi, KwaNgcolosi, Phephetha and Manyuswa TAs especially concentrated towards the east and south-west. The boundary of the precinct was determined by an initial 500 m buffer around state land boundary, but extended in the south to include facilities and development nodes anticipated to directly impact on development around the dam.

#### *2.9.3.3 Access*

Access was discussed within the Concept Development Plan and within the wider context of the precinct it will be important to upgrade and maintain these access routes to a level suitable to service the intended developments and uses at the dam. It should be noted that these routes will be promoted as routes for development access, it will be developed only to a level which will be affordable to the economic potential of the areas within the identified investment nodes.

#### *2.9.3.4 Land Use*

Apart from key development nodes which will contain residential, social and economic facilities, there are only three broad land use categories proposed. Firstly, all environmentally valuable areas (including high value combined sensitivity zones as well as buffer areas around water runoff areas) are identified. Where potential agricultural pockets of smaller than 20 Ha were surrounded by environmentally valuable areas, these were also included under the latter. Within these areas it is envisaged that conservation efforts will be encouraged, although limited

subsistence agriculture could be allowed. Secondly the areas with agricultural potential are identified based on topography and soil conditions as well as existing agricultural activities and identified high potential agricultural areas. These areas are envisaged to accommodate commercial and communal agriculture and in the case of Inanda these areas are most likely to include basic crop production with scattered high value initiatives. Lastly some low impact residential estates and tourism related activities area is proposed on the southern portions the dam. The proposed densities of these developments will be guided by infrastructure capacities and allowed mixed land uses prescribed by the municipality.

Apart from the said land uses, the development nodes of within the Phephetha, Qadi & KwaNgcolosi areas are all envisaged as rural service delivery centres under the rural development framework and will thus include a localised mix of residential developments and social facility provision as indicated.

#### *2.9.3.5 Infrastructure*

As the precinct area is located outside of the urban edge of the municipality the level of service reticulation might not emerge as the same levels found in the more densely populated urban areas. Especially sanitation would for now be the responsibility of the owner/ developer of land around the dam to provide on site sanitation at a level and standard acceptable to the eThekweni Municipality. The supporting infrastructure projects e.g. road access maintenance will be proposed as infrastructure projects to the relevant municipal departments.

## THE PEOPLE

### 2.10 ROLE PLAYERS

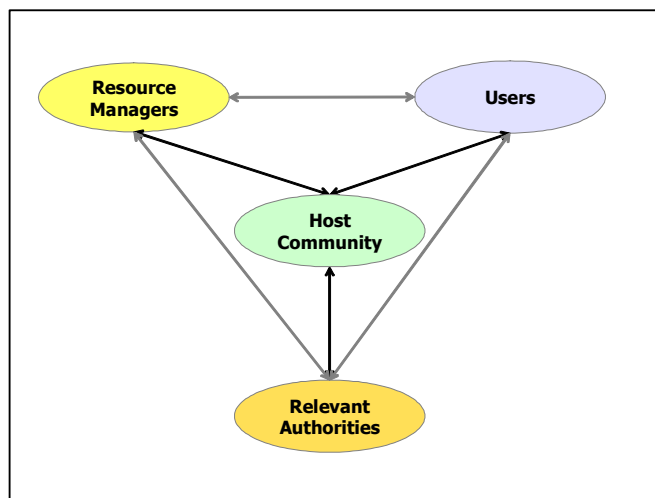
The success of the Inanda Dam RMP and its implementation is dependent on the level of involvement by stakeholders and beneficiation and as such, the Inanda Dam should not function in isolation from these stakeholders. Stakeholder categories include:

- Resource Managers;
- Industry or Users of the resource;
- Land Owners;
- Policy Makers (including DWAF and other relevant Government Departments at national, provincial and local spheres), and
- Other Interested and Affected Parties (I&APs), including Non-governmental Organisations, and Civil Society Structures.

(Refer Appendix A for a detailed stakeholder list.)

By forming close working relationships with resource managers and private sector operators and contractors, benefits can emanate from the management and utilisation of the dam, allowing the management authority the opportunity to disseminate these benefits to neighbouring communities in an equitable manner based on sound Government policy supported by the relevant authorities.

In an effort to optimise benefits to all role players (refer Figure 12), the implementation of the RMP for the Inanda Dam will be undertaken in an adaptive, dynamic and integrated manner based on sound ecological, social and economic principles. The policy will be to seek advice and support from DWAF regarding the key objectives of the NWA, and ensuring that the activities of the Inanda Dam enhance these objectives. Additionally, it will be the policy of the management authority of the Inanda Dam to document activities, accomplishments, problems and solutions, so that management of other similar water resources can be aided and guided regarding possible solutions and pitfalls.



**Figure 12: Role Players**

Without the alignment of Government plans – national; provincial, and local – it will be extremely difficult for Government to attain its broad objectives, as would it be difficult to achieve co-operative governance. For this reason DWAF and the Inanda Dam management authority will provide an opportunity for its Governmental planning partners such as Department of

Agriculture (DoA); Land Affairs (DLA), and Environmental Affairs and Tourism (DEAT), together with eThekweni Municipality to actively be involved throughout the planning and implementation of the management plan, guided by the principles contained in Chapter 3 of the Constitution.

Crucial to the success of the plan is the finalisation of a functional relationship between the State and the four traditional councils surrounding the dam. As the *de facto* landowners of the land surrounding the dam basin, these stakeholders are crucial partners in unlocking the economic potential of the dam. As co-asset creators these structures need to be recognised, respected and included in the institutional structure and proposal.

### 2.11 INSTITUTIONAL PROPOSAL

Currently the institutional arrangements for Inanda Dam consist of an arrangement between DWAF and Umgeni Water regarding bulk water supply.

In respect of dam basin management it is proposed that DWAF either delegates or concludes an agency agreement with a suitable Public Sector Body (PSB). An advisory committee, consisting of representatives of the stakeholders, should be constituted. The purpose of this committee will be to provide the PSB with insight into the needs and expectations of the host community and the various stakeholders while also serving as conduct to convey DWAF's objectives and decisions to community members.

Additionally, the advisory committee will use the RMP as an accountability tool to measure the performance of both DWAF and the PSB regarding the management of the dam and surrounding resources; the degree to which the economic potential has been unlocked; and, the benefits accruing to the stakeholders.

Individual contracts and permissions, co-management agreements and Public Private Partnerships will be managed by the PSB, compliant with relevant financial and procurement legislation, regulations and guidelines.

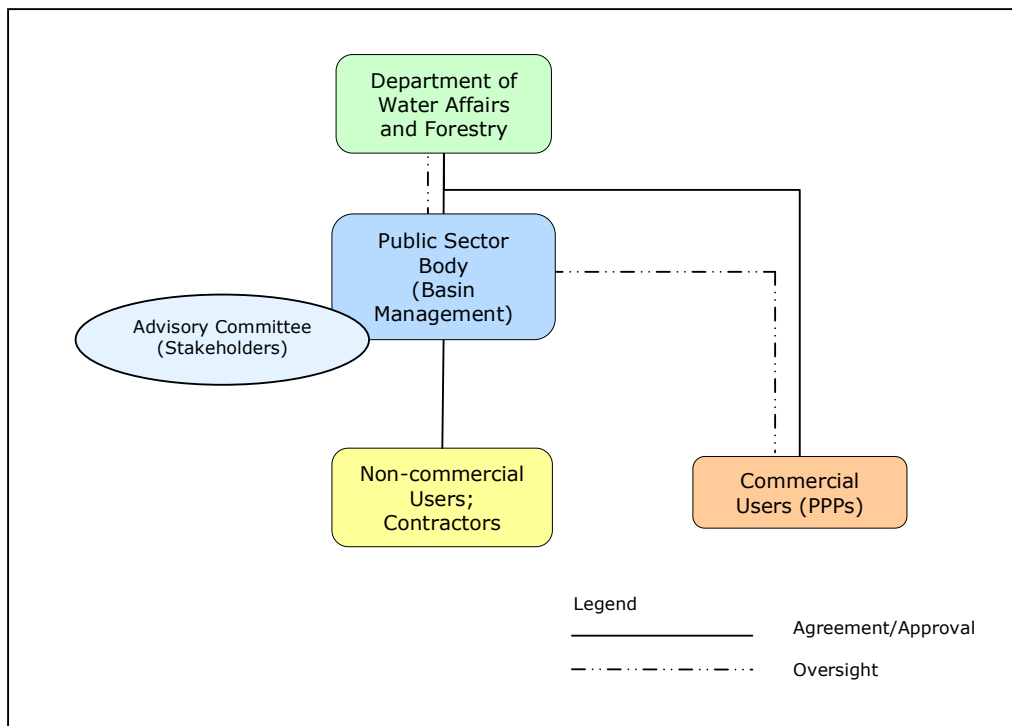


Figure 13: Institutional Proposal

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Umgeni Water (2007). *Resource Quality Objectives for the Inanda-Wiggins System, 2006/2007*.

**APPENDIX A: RMP PROCESS STAKEHOLDER LIST**

Table 24: Inanda Dam Stakeholder List

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Ward 2 Councilor		
Ward 3 Councilor		
Ward Councillor	Gill Noyce	"Gillian Noyce" <a href="mailto:gnoyce@africamail.co.za">gnoyce@africamail.co.za</a>
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## **APPENDIX B: BACKGROUND INFORMATION**

- Figure 14: Precipitation
- Figure 15: Geology
- Figure 16: Elevation
- Figure 17: Soil – Clay content
- Figure 18: Soil – Depth
- Figure 19: Vegetation
- Figure 20: Conservation Status
- Figure 21: Land Cover
- Figure 22: Land Use
- Figure 23: Vegetation - % Transformed
- Figure 24: Ward and Traditional Authority Boundaries

Figure 14: Precipitation

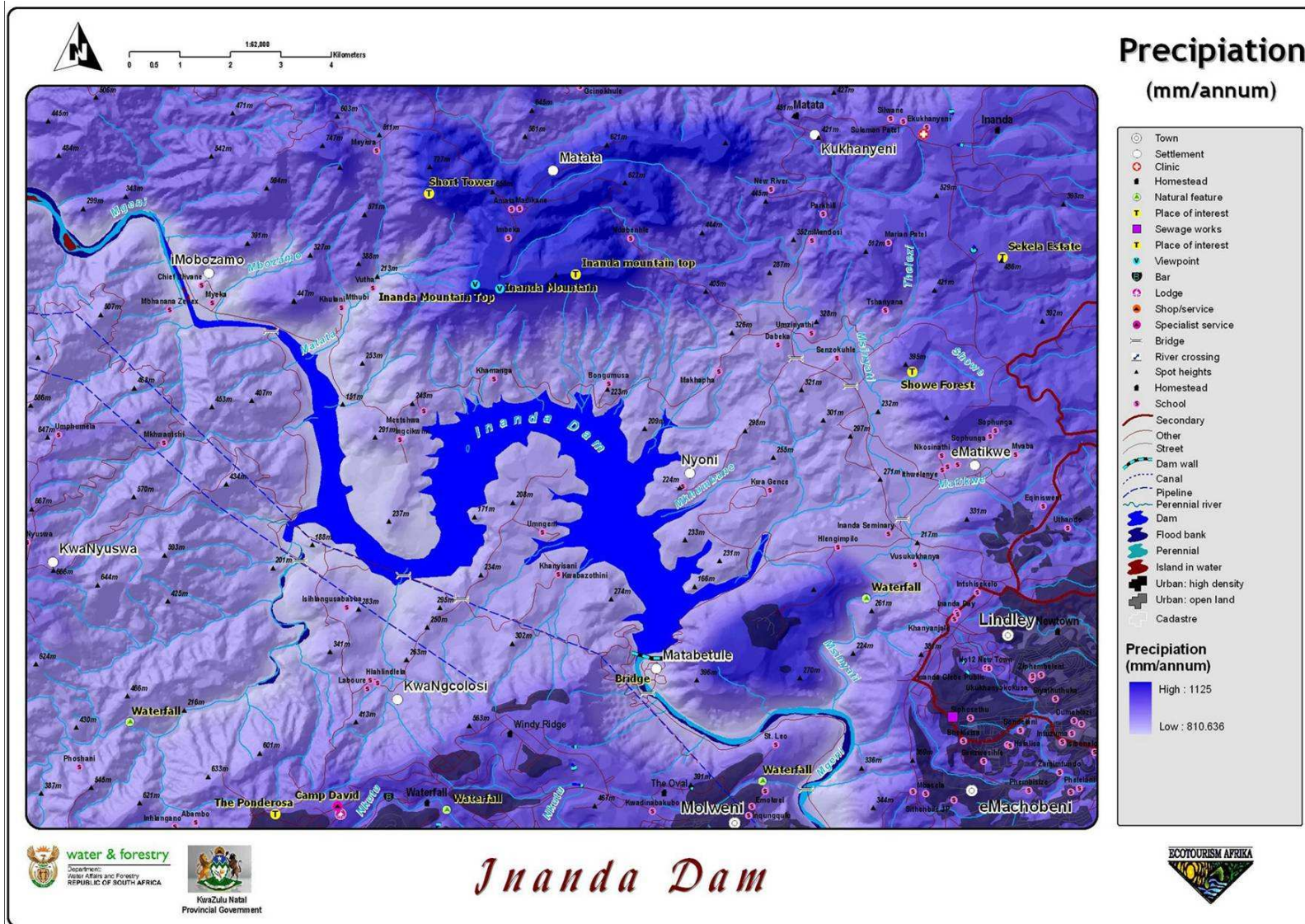


Figure 15: Geology

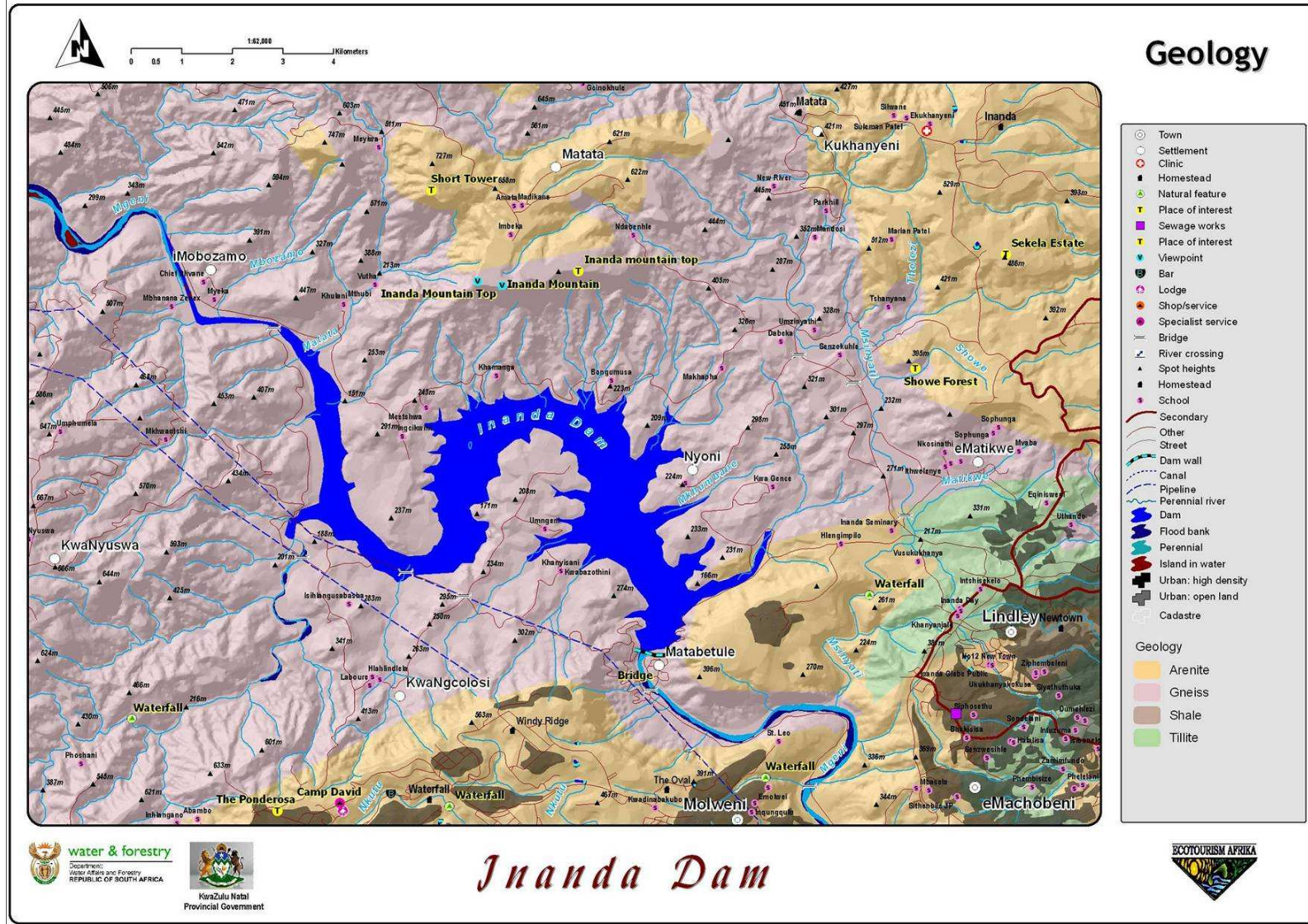


Figure 16: Elevation

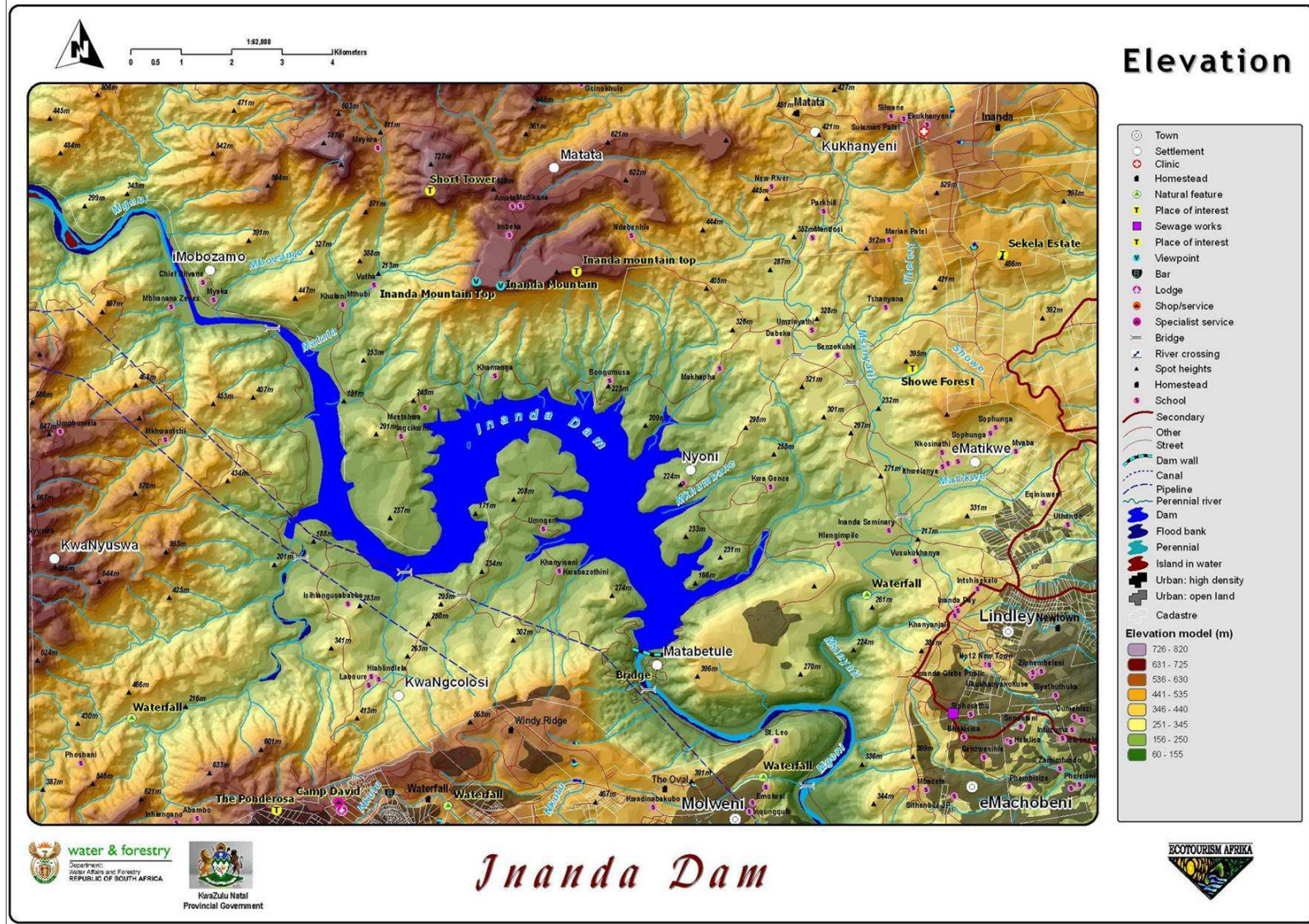


Figure 17: Soil – Clay content

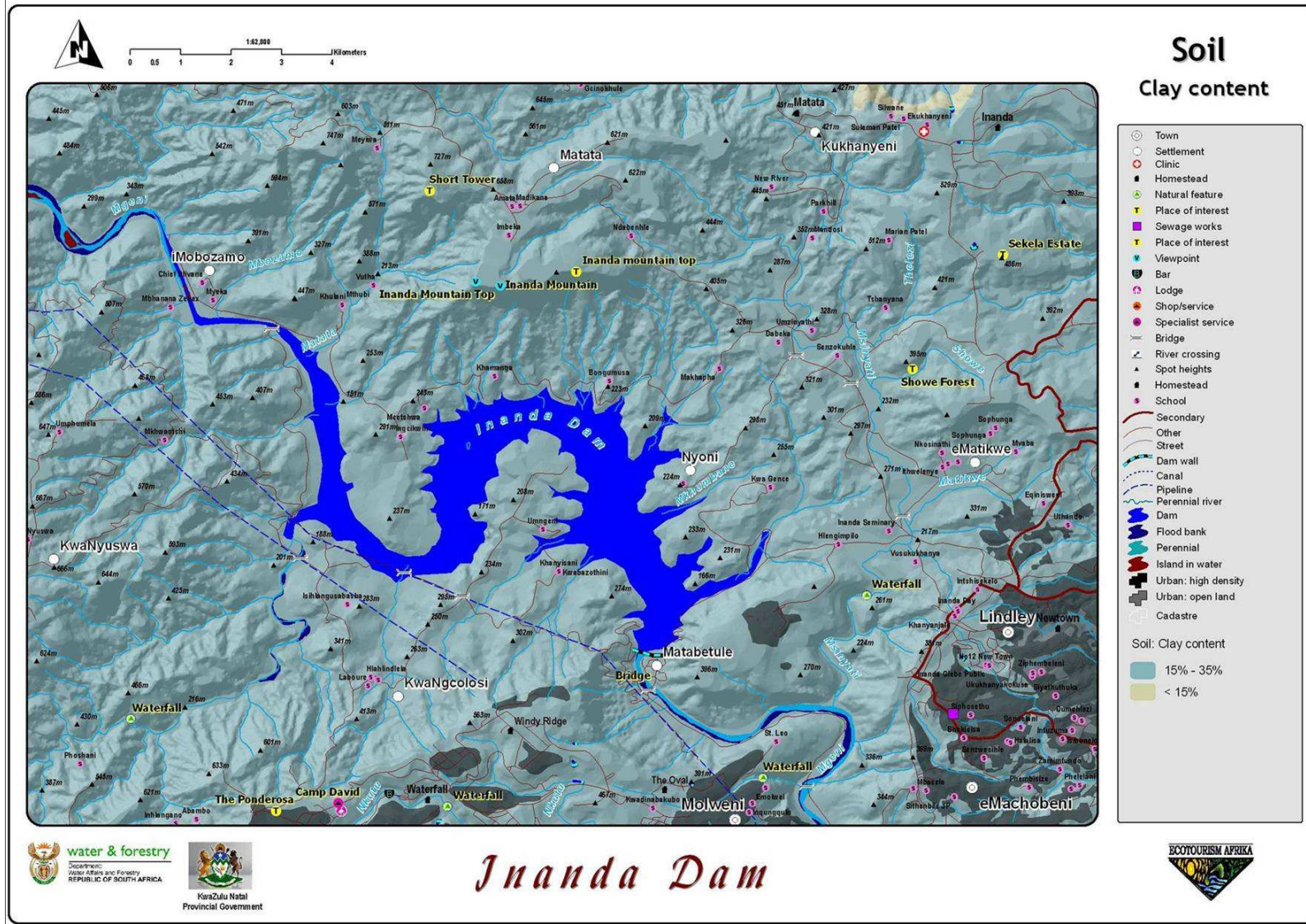




Figure 18: Soil – Depth

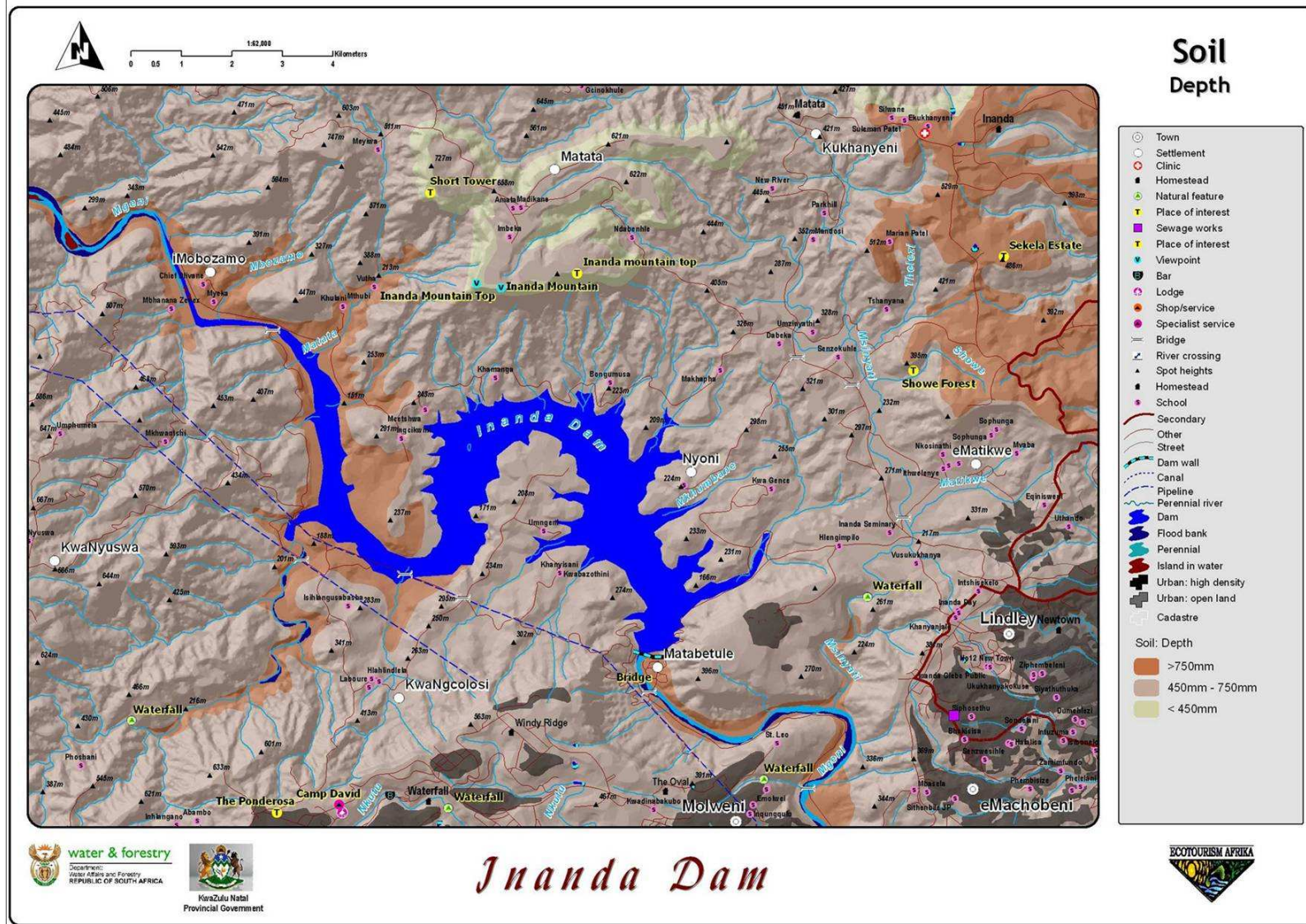


Figure 19: Vegetation

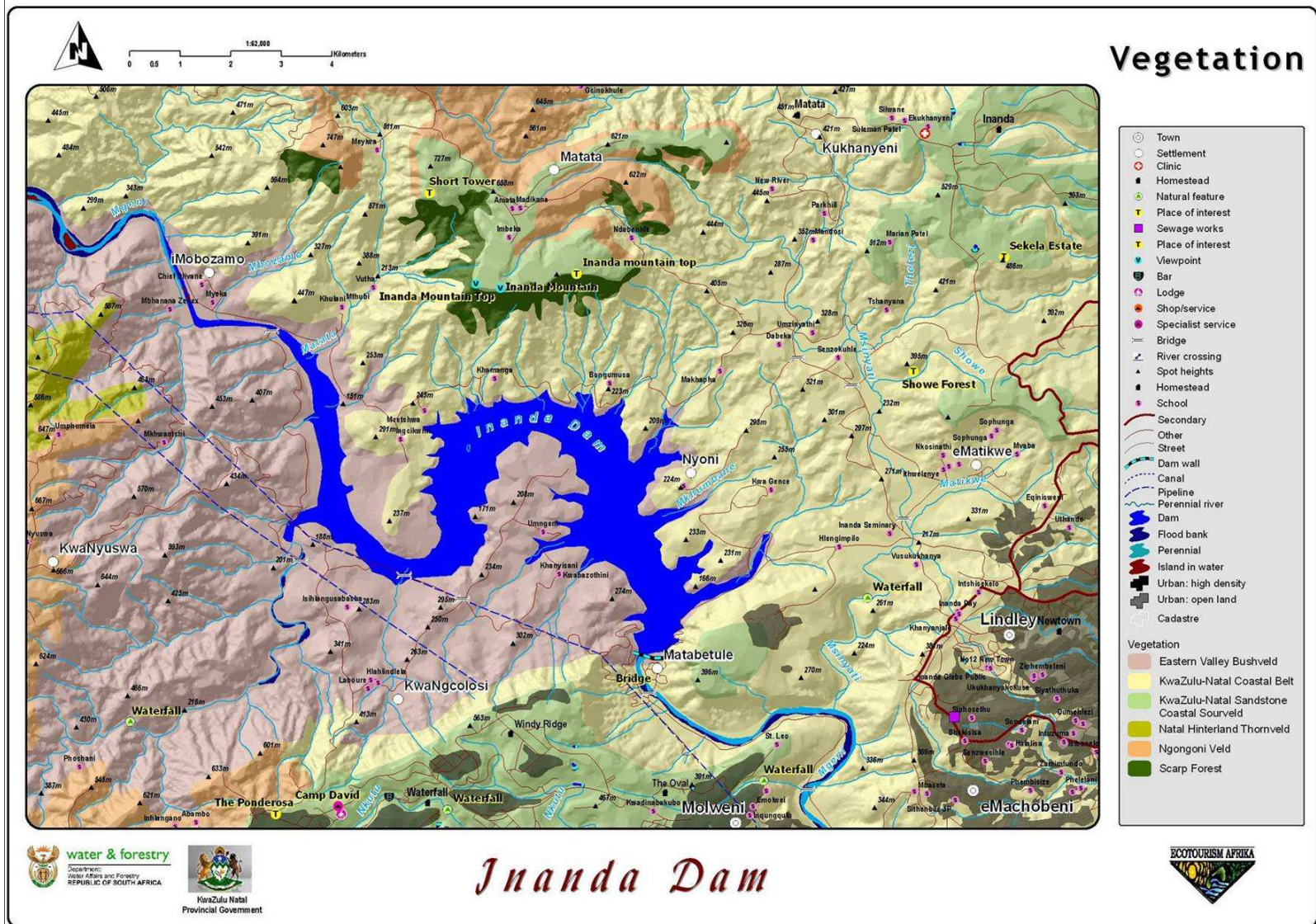


Figure 20: Conservation Status

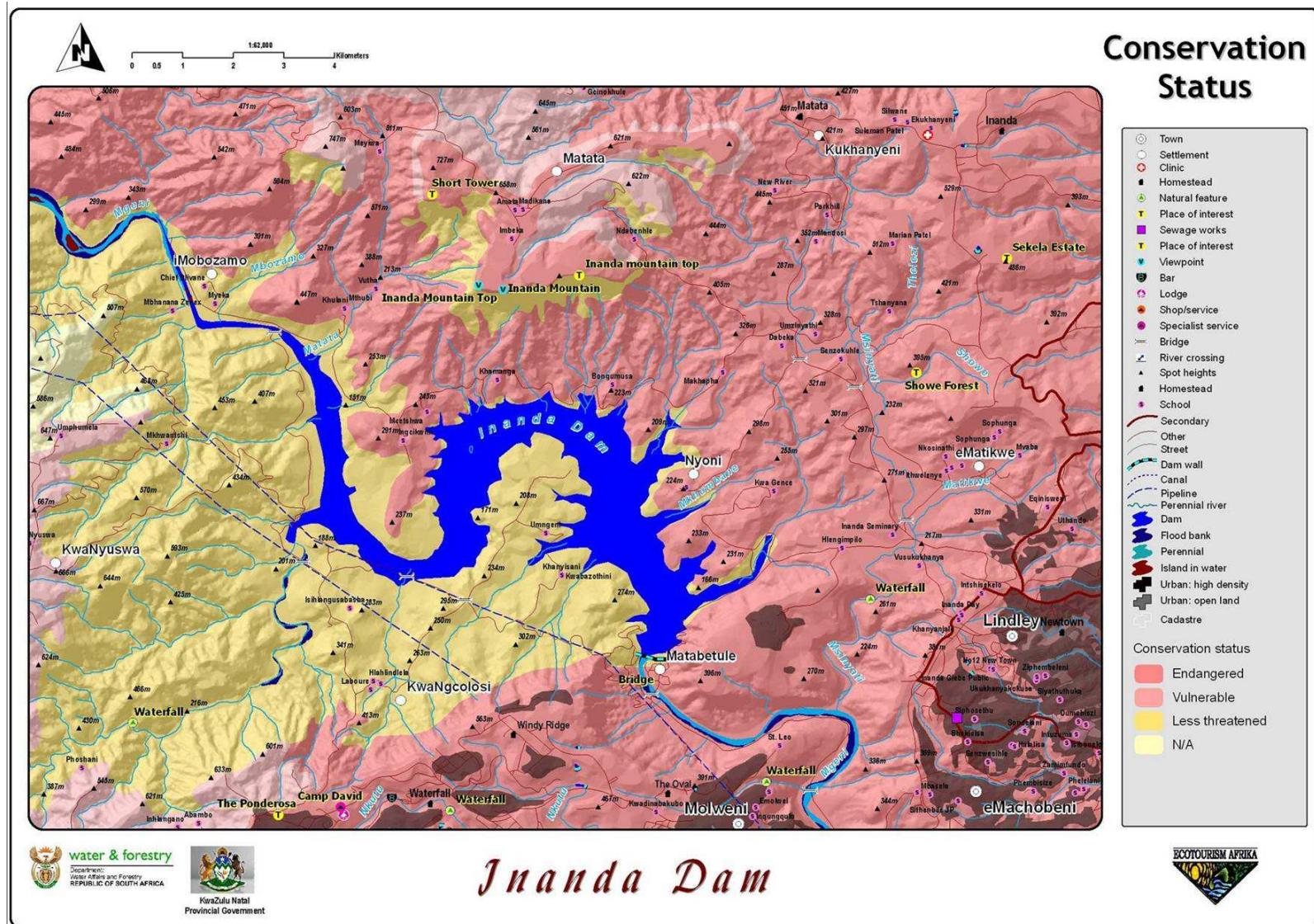


Figure 21: Land Cover

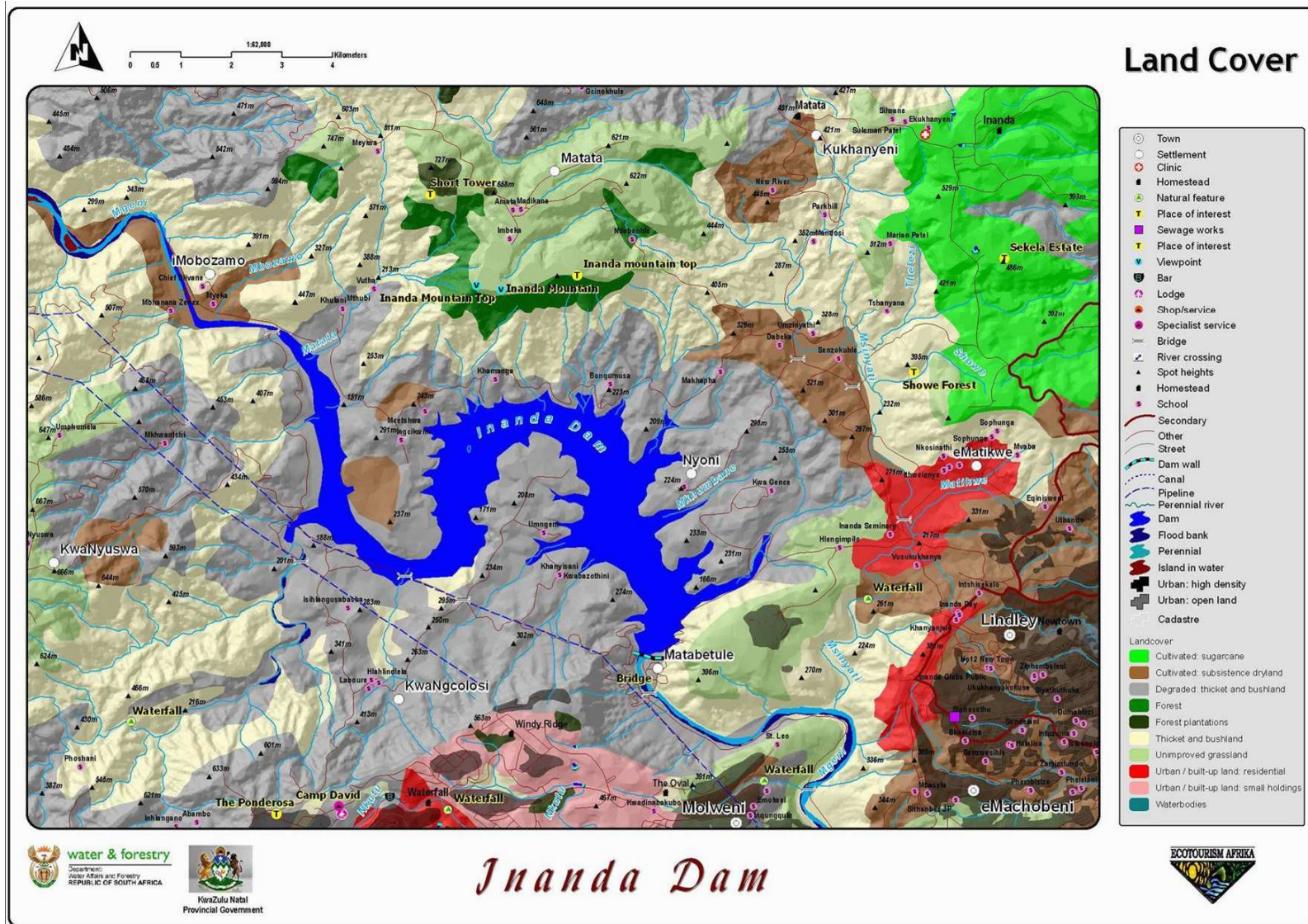


Figure 22: Land Use

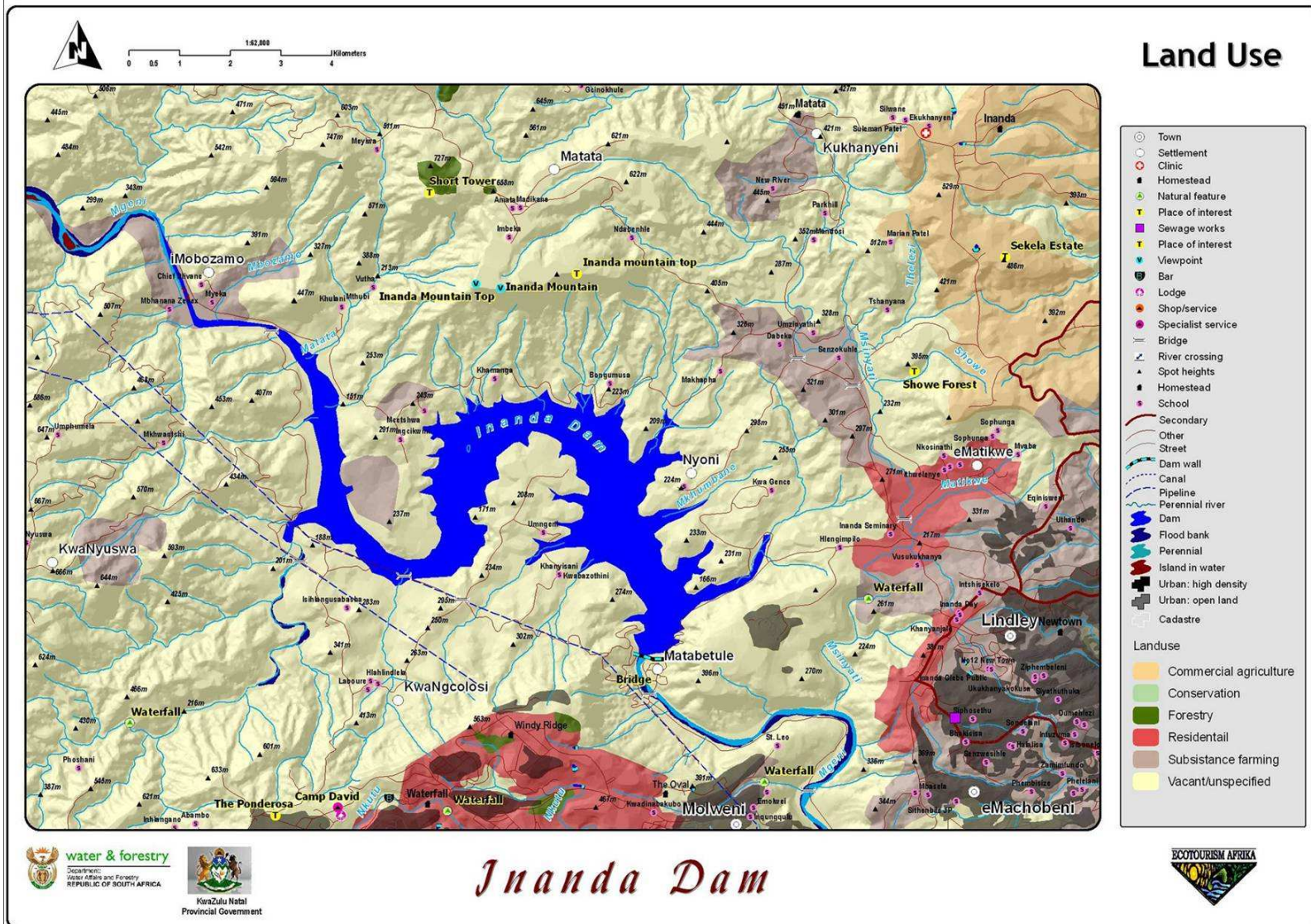


Figure 23: Vegetation - % Transformed

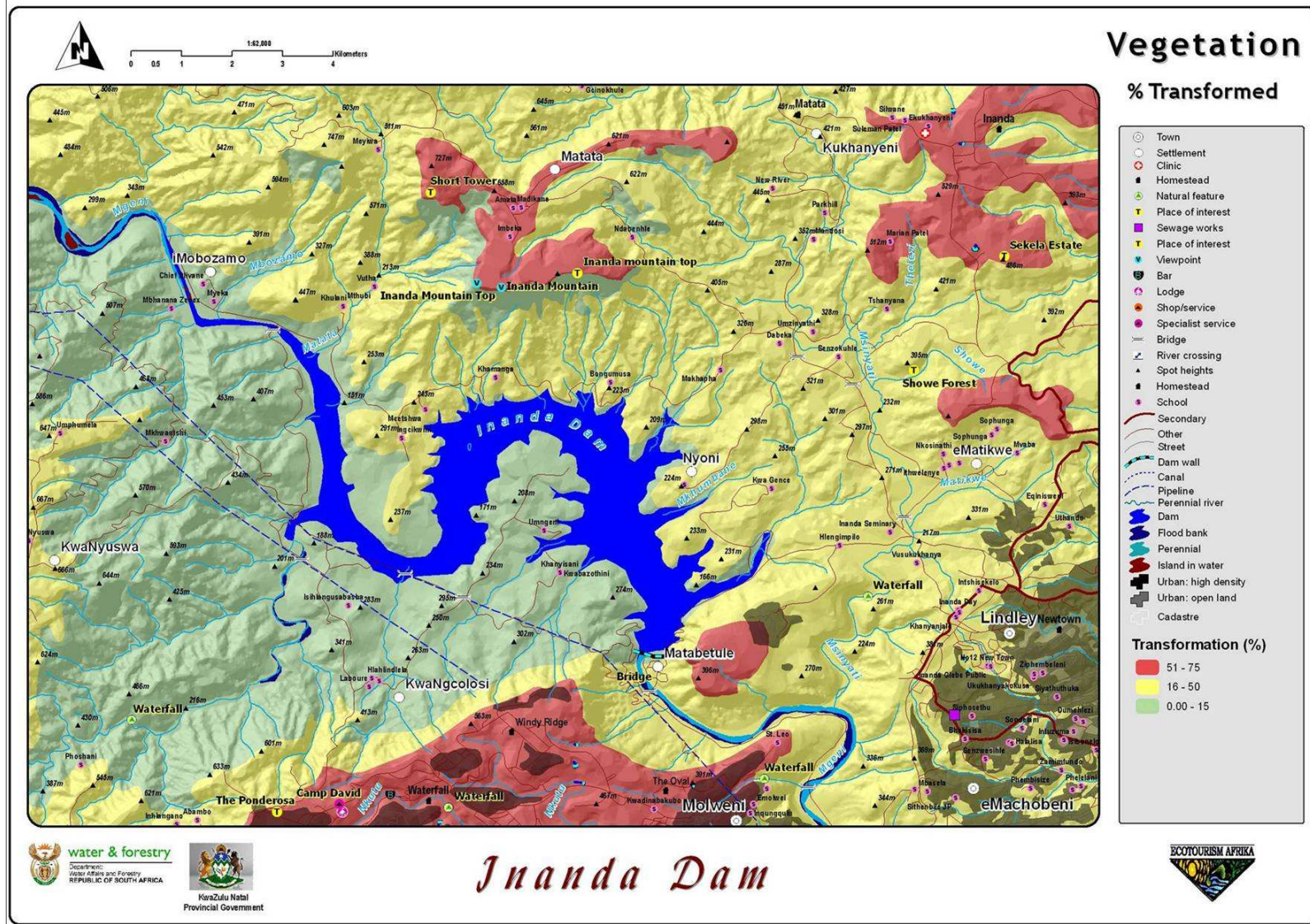
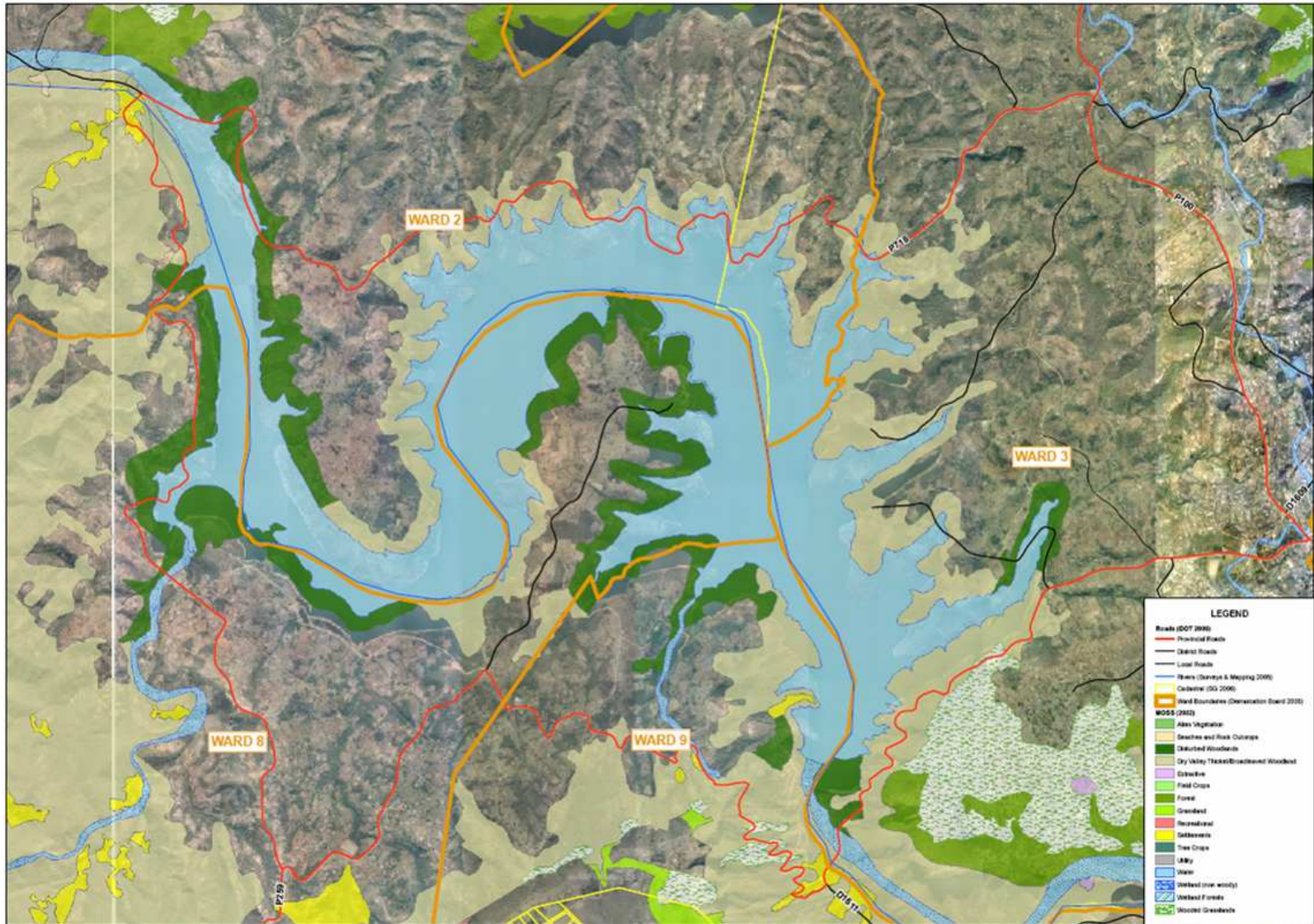


Figure 24: Ward and Traditional Authority Boundaries



## **APPENDIX C: MASTER PLAN**

- Figure 25: Inanda Dam Master Plan
- Figure 26: Inanda Dam Master Plan: Access
- Figure 27: Inanda Dam Master Plan: Use
- Figure 28: Inanda Dam Master Plan: Development
- Figure 29: Inanda Dam Master Plan: Infrastructure
- Figure 30: Inanda Dam Precinct Plan



Figure 25: Inanda Dam Master Plan

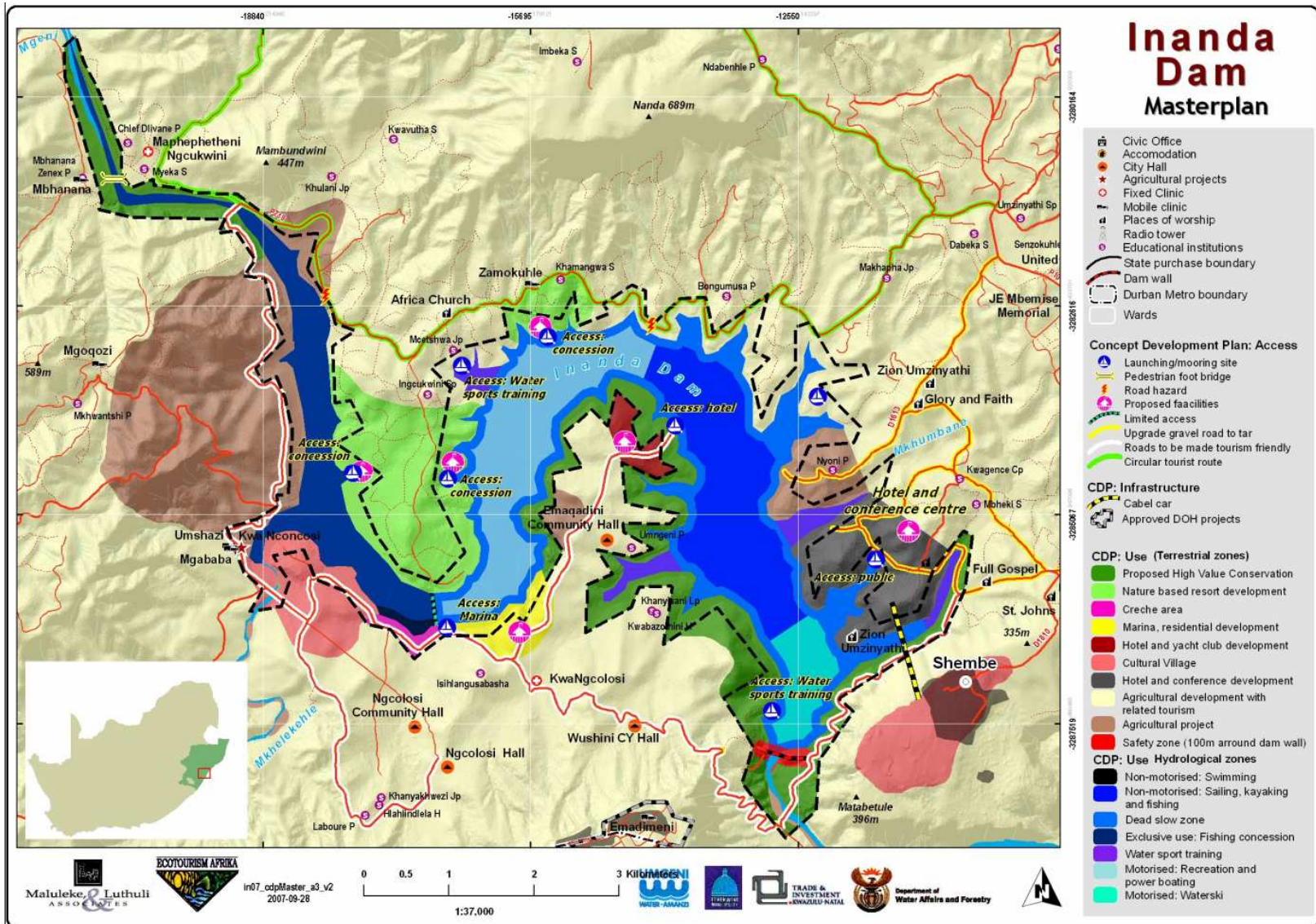


Figure 26: Inanda Dam Master Plan: Access

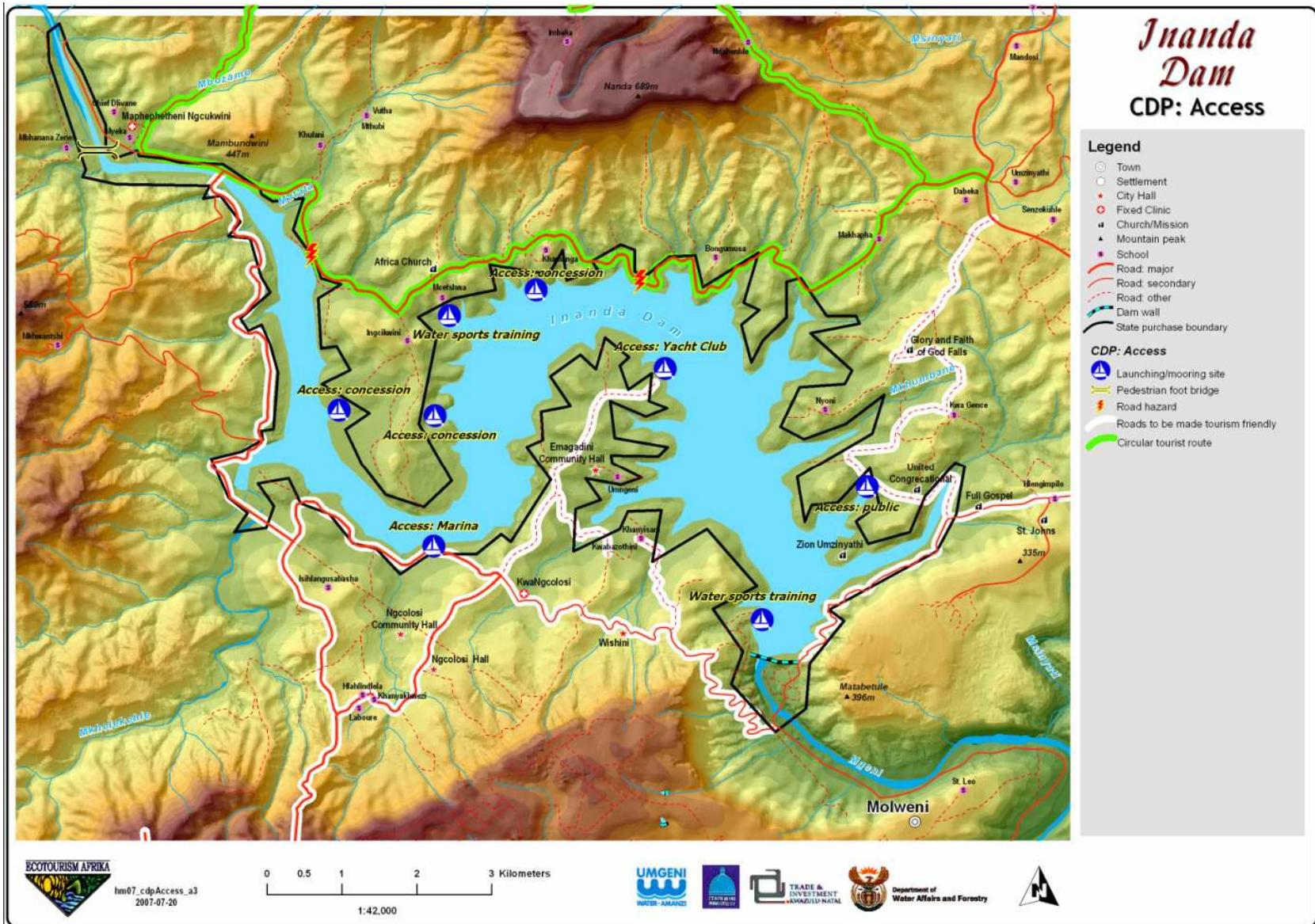


Figure 27: Inanda Dam Master Plan: Use

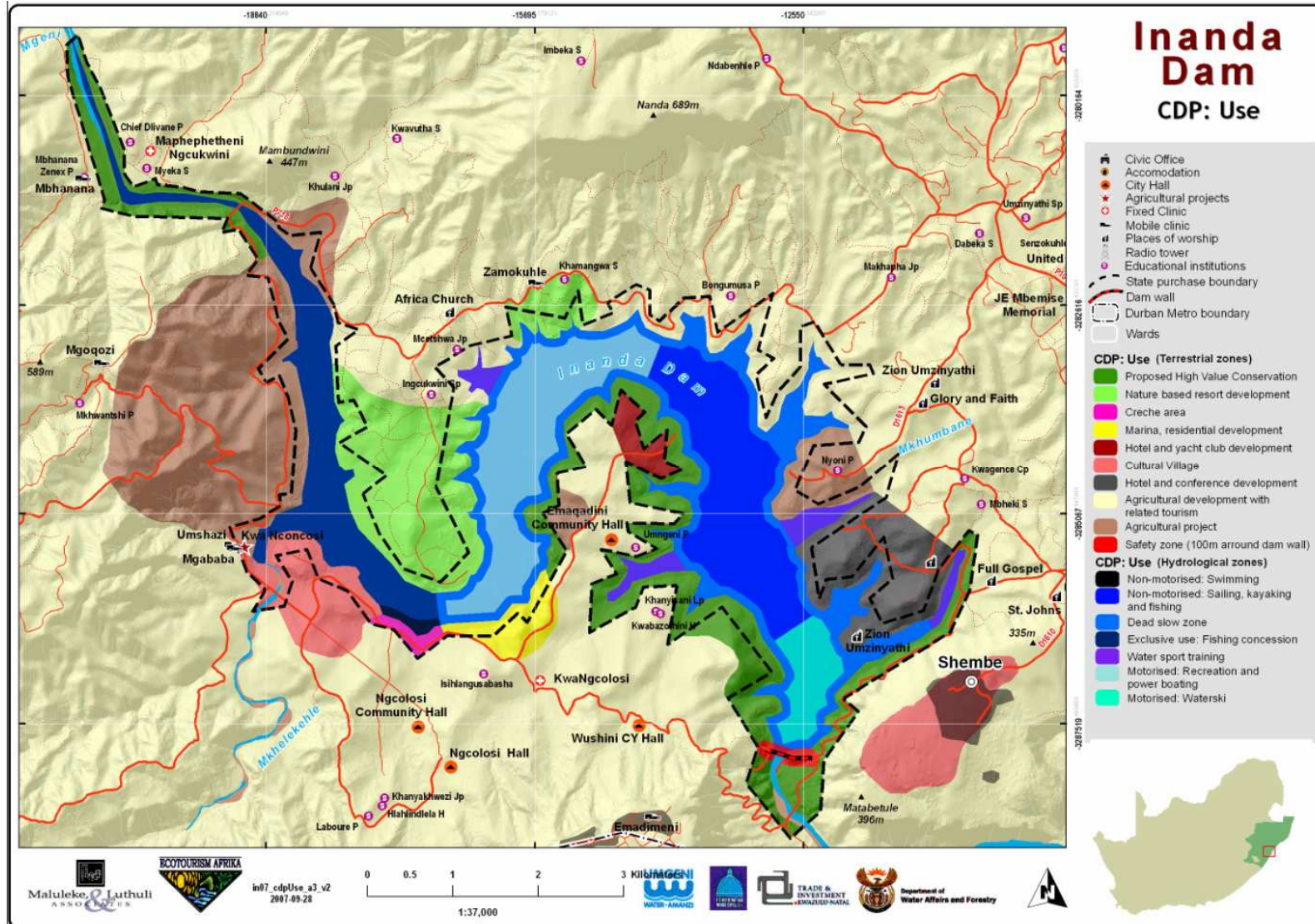


Figure 28: Inanda Dam Master Plan: Development

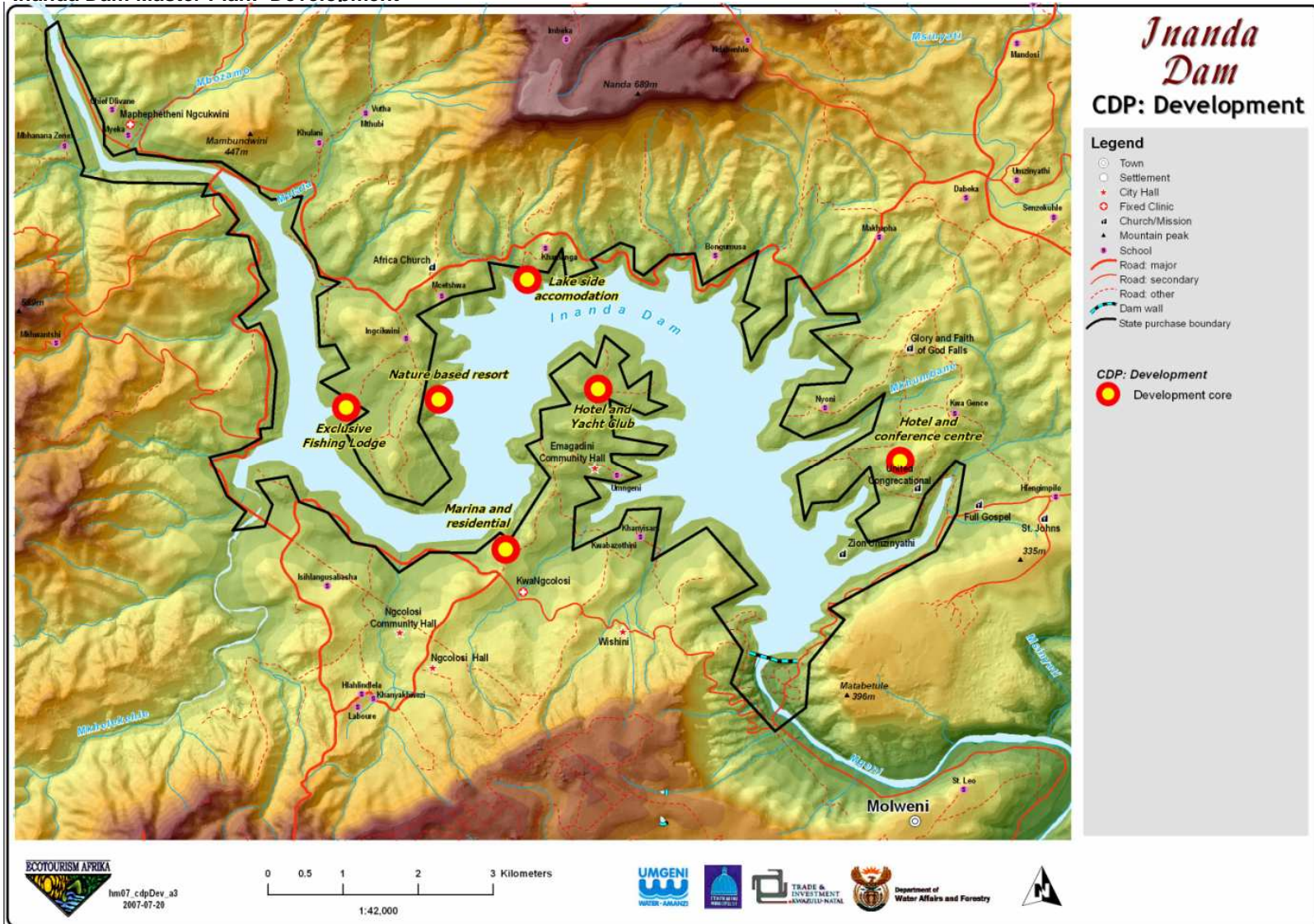


Figure 29: Inanda Dam Master Plan: Infrastructure

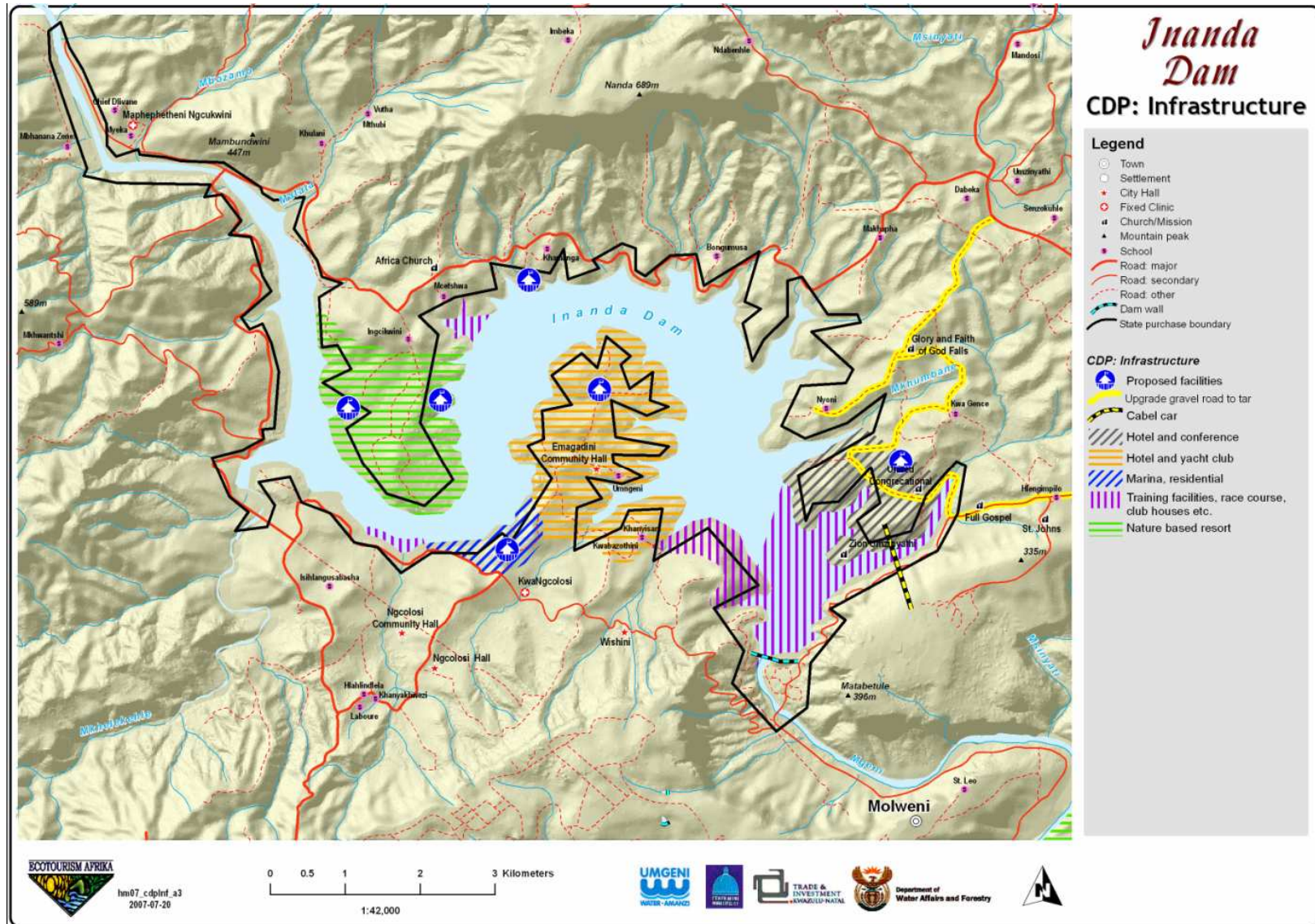
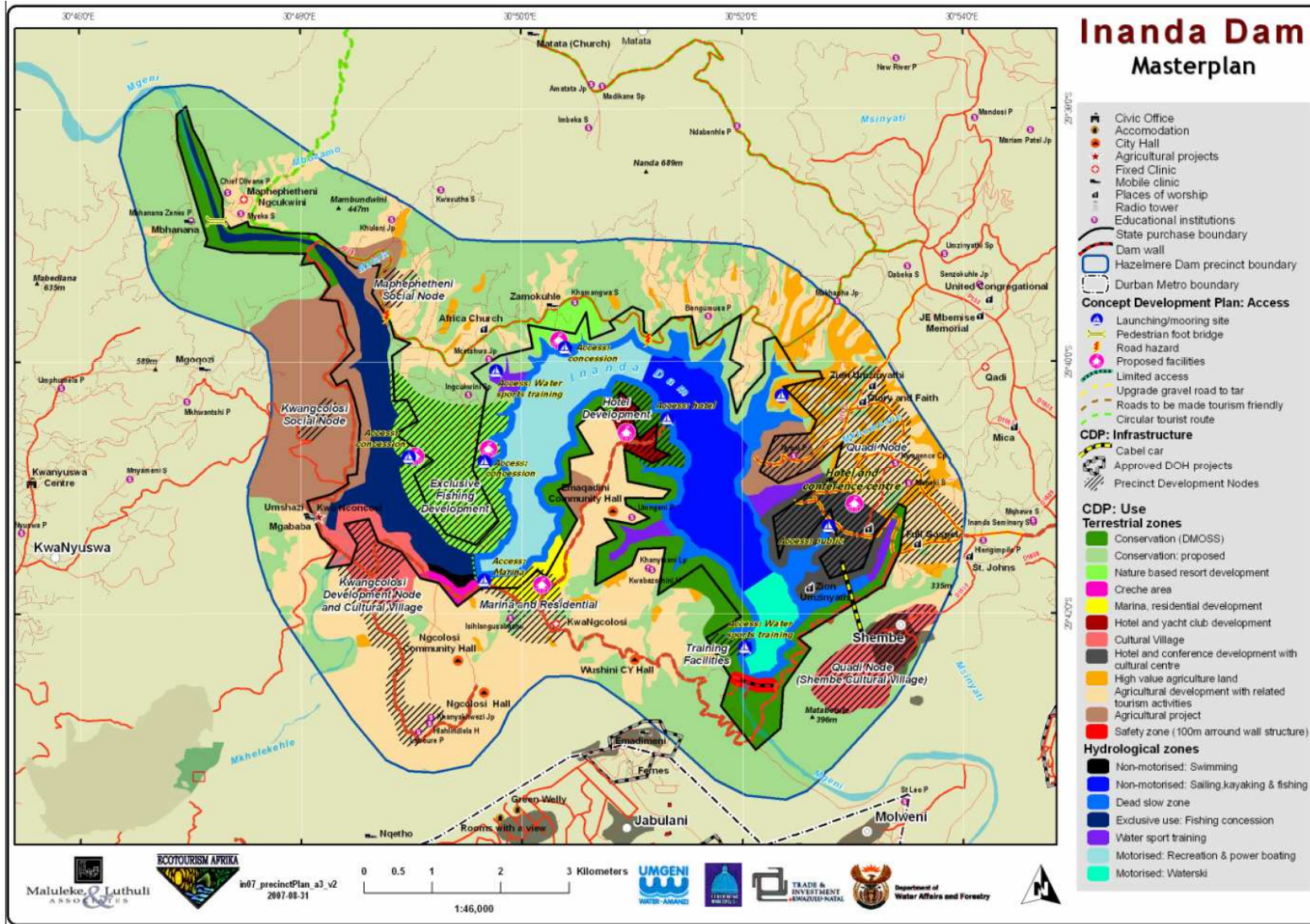


Figure 30: Inanda Dam Precinct Plan



**APPENDIX D – ACTIONPLAN**

No.	Projct Name	Description	Objective	Implementation Agent (s)	Estimated Budget	Priority	Y1	Y2	Y3	Y4	Y5
<b>Alien Plant and Pollution Control</b>											
1	<b>Working for Water Initiatives evaluation</b>	Determine the success of current Working for Water initiatives to eradicate water hyacinths, identify opportunities and constraints.	To have the Inanda Dam and area surrounding the dam free of alien vegetation	Msinsi, EtheKwini, DWAF	TBA	B					
2	<b>Removal of Water Hyacinths</b>	Ensure that required resources are available for the removal of water hyacinths when action is required, especially during December and January.	To have the Inanda Dam and area surrounding the dam free of alien vegetation	Msinsi, DWAF	TBA	A					
3	<b>Survey of Invasive Alien Vegetation</b>	Quantify and qualify the extent of invasive alien vegetation in order to have a base line survey.	To have the Inanda Dam and area surrounding the dam free of alien vegetation	Msinsi, DWAF	TBA	A					
4	<b>Problem plants Removal Campaign</b>	Continuous removal of problem plants within the dam boundary line.	To have the Inanda Dam and area surrounding the dam free of alien vegetation	Msinsi, DWAF	TBA	A					
5	<b>Rehabilitation of infested areas</b>	Rehabilitate infested areas with suitable endemic species.	To have the Inanda Dam and area surrounding the dam free of alien vegetation	Msinsi, DWAF	TBA	B					
6	<b>Invasive plant monitoring</b>	Continuous monitoring of occurrence of problem plants on the dam surface and within the dam boundary line.	To have the Inanda Dam and area surrounding the dam free of alien vegetation	Msinsi, DWAF	TBA	C					
7	<b>Alien Plant containment mechanism</b>	Develop an inspection and cleaning mechanism to ensure that vessels entering the dam do not contaminate it with alien vegetation.	To have the Inanda Dam and area surrounding the dam free of alien vegetation	Msinsi, DWAF	TBA	C					
<b>Cultural Heritage Resource Management</b>											
8	<b>Grave sites survey</b>	Confirm the presence of the possible grave sites and implement protection measures.	To identify, acknowledge and conserve resources of palaeontological, archaeological, historical, cultural and religious significance.	eThekwini	TBA	A					
9	<b>Management Procedure for Fatih based rituals</b>	Establish a relationship with the faith based organizations and develop a procedure with regards to the use of the dam for ritual activities.	To identify, acknowledge and conserve resources of palaeontological, archaeological, historical, cultural and religious significance.	Msinsi, EtheKwini	TBA	A					
10	<b>SAHRA Co-operation</b>	Formalise a relationship with the South African Heritage Resource Authority(SAHRA).	To identify, acknowledge and conserve resources of palaeontological, archaeological, historical, cultural and religious significance.	eThekwini	TBA	B					
<b>Ferry System</b>											
11	<b>Ferry Feasibility Study</b>	Investigate the possibilities of offering this service as a public system, run by the municipality or as a private initiative.	To improve access of the dam through the establishment of a ferry service.	Msinsi, EtheKwini	TBA	C					
12	<b>Operationalisation of Ferry</b>	Operationalisation of the ferry, including: Appointment of Operator, Safety Checks & Initialisation.	To improve access of the dam through the establishment of a ferry service.	Msinsi, EtheKwini	TBA	C					
<b>Access Control</b>											
13	<b>Access control plan and policy</b>	Pending the finalisation of the NDPW's vesting process, evaluate the development potential in terms of the Zoning plan and prepare and implement a development strategy.	To enable broad public and private enjoyment of the water resource and surrounding State land through controlled authorized access and associated infrastructure development.	Msinsi, EtheKwini, DWAF	TBA	A					
<b>Sustainable Development</b>											
14	<b>Database of Tourism related and supporting facilities</b>	Compile database of all tourism and related facilities.	To promote sustainable development around the dam	eThekwini	TBA	A					
15	<b>Tourism training programme</b>	Develop training and support programmes	To promote sustainable development around the dam	eThekwini	TBA	B					
<b>Use Regulation</b>											
16	<b>Regularisation of current surrounding uses</b>	Embark on a project to evaluate the current use of the dam basin and adjacent state and privately owned land and regularize unlawful usage.	To evaluate the existing access and uses of the dam basin and adjacent state and privately owned land to ensure that usage is lawful and that the necessary permits and authorizations are in place.	Msinsi, EtheKwini, DWAF	TBA	A					

Resource Management Plan: Inanda Dam

No.	Project Name	Description	Objective	Implementation Agent (s)	Estimated Budget	Priority	Y1	Y2	Y3	Y4	Y5
<b>Zoning</b>											
17	<b>Zones demarcation</b>	Demarcate zones with buoys, and provide clear zonation maps at entrance and launch sites	Effective zonation and compliance aimed at unlocking the dam's potential sustainably.	M sinsi, DWAF	TBA	A					
18	<b>Zonation Compliance Monitoring</b>	Monitor compliance with zonation	Effective zonation and compliance aimed at unlocking the dam's potential sustainably.	M sinsi, DWAF	TBA	A					
<b>Access Roads and Facilities</b>											
19	<b>Main access road upgrading</b>	Access road upgrading with associates sidewalk improvements (e..g lighting).	To provide safe and upgraded public road access to the main entrance of the dam area for both regular users and tourists.	eThekwini	TBA	B					
20	<b>Secondary Road Maintenance</b>	Maintenance of public access roads identified towards investment nodes.	To provide alternative access routes to additional water access points and development nodes around the dam.	eThekwini	TBA	C					
<b>Services</b>											
21	<b>Alternative Sanitation Solutions</b>	Investigation and provision of either standards or infrastructure towards alternative bulk sanitation solutions in order to accommodate the nodal development around the dam.	To provide sufficient bulk infrastructure to the dam area (especially investment nodes) in order to accommodate identified investment initiatives.	eThekwini	TBA	B					
<b>Local BEE</b>											
22	<b>Local BEE database</b>	Compilation of a database of job seeking individuals and SMMEs from the local community and ensure that it is regularly updated and monitored.	To ensure that local communities participate and benefit in local economic development initiatives occurring in and around the dam.	eThekwini	TBA	A					
23	<b>Skills Development Programme</b>	Implement skills development programmes where opportunities exist.	To ensure that local communities participate and benefit in local economic development initiatives occurring in and around the dam.	eThekwini	TBA	C					
24	<b>BEE policy on PPP projects</b>	Ensure that BEE is attained in any PPP projects.	To ensure that local communities participate and benefit in local economic development initiatives occurring in and around the dam.	M sinsi, Ethekwini, DWAF	TBA	B					
<b>Safety and Security</b>											
25	<b>Security and Safety Plan</b>	Provision of sufficient security and safety plan for public use areas of nodes along the dam.	A safe and secure environment within which recreational water use can take place.	eThekwini	TBA	B					
<b>Reparations</b>											
26	<b>Comprehensive verification of status of Reperation Process</b>	DWAF to convene IGF meeting to clarify this matter	Obtain clarity regarding reparations	DWAF	TBA	A					
27	<b>Reperation process feedback campaign</b>	Communication campaign ensuring all stakeholders are clear on government's approach.	Obtain clarity regarding reparations	DWAF	TBA	A					
<b>Management Boundary and Responsibility</b>											
28	<b>Management agreements</b>	Agreements to be drafted	To implement co-management agreements and where appropriate service contracts to unlock the economic and conservation potential of the Hazelmere Dam.	M sinsi, Ethekwini, DWAF	TBA	A					
29	<b>Mangament Constitutions</b>	Constitutions to be agreed upon	To implement co-management agreements and where appropriate service contracts to unlock the economic and conservation potential of the Hazelmere Dam.	M sinsi, Ethekwini, DWAF	TBA	A					
<b>Catchment Management</b>											
30	<b>DWAF Regional office to provide inputs</b>				TBA						
<b>Intergovernmental Co-operation</b>											
31	<b>IGF functions formalised</b>	Formalise relationship in terms of IGFRA	Unlocking the economic potential of the dam requires a close working relationship between all spheres of Government.	M sinsi, Ethekwini, DWAF	TBA	A					



Resource Management Plan: Inanda Dam

No.	Project Name	Description	Objective	Implementation Agent (s)	Estimated Budget	Priority	Y1	Y2	Y3	Y4	Y5
<b>Industry Association</b>											
32	<b>Industry Associations working sessions</b>	Convene working sessions between sporting and Industry Associations	Establishment of an Association for all water sport users	eThekwini	TBA	B					
<b>Co-management</b>											
33	<b>Co-Management Agreements</b>	Compile co-management agreements between state and community structures	Equitable benefits and sharing of responsibilities between state and community structures	Msinsi, Ethekwini, DWAF	TBA	A					