

# Resource Management Plan for Hazelmere 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 Hazelmere 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.

The project was made possible through the financial and resource support of the eThekweni Municipality, Umgeni Water & Department of Water Affairs and Forestry.

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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 Hazelmere Dam and is reviewed based on the framework set out in page 13.

The Hazelmere 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 Hazelmere 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 (KPAs) 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 Hazelmere Dam include:

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

The primary purpose of the Hazelmere 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 Hazelmere 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 Hazelmere Dam can and will be attained.

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

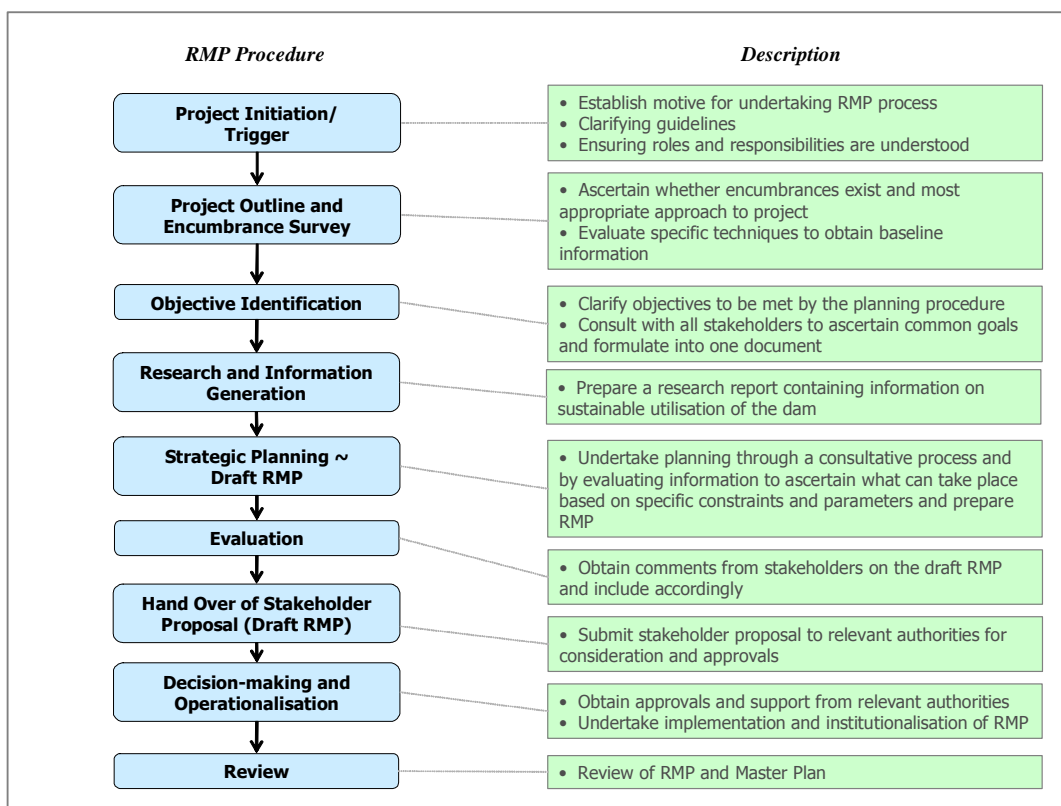


Figure 1: RMP Compilation Procedure

## **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**

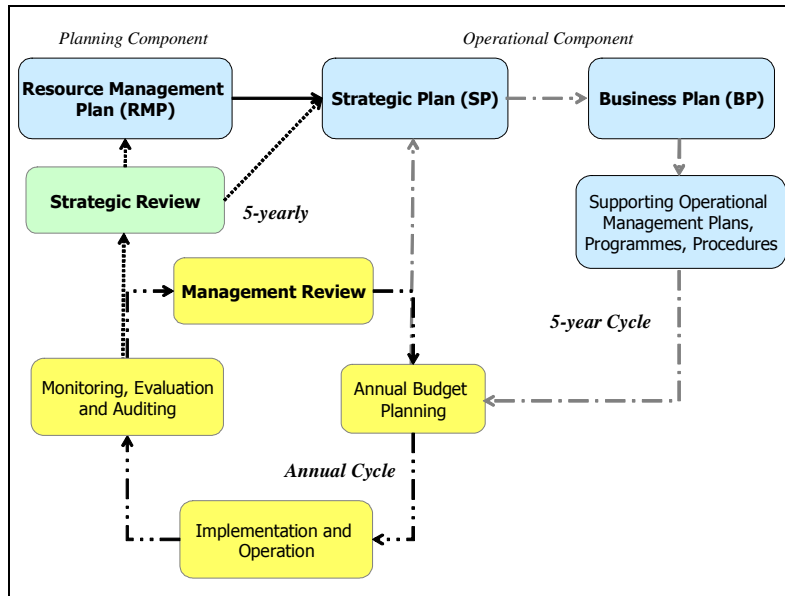
Once the BP has been approved by DWAF, the SP is finalised according to the committed budget allocations and other expected financial income.

### **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 Hazelmere 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
HFL	High Flood Line
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)
PSB	Public Sector Body
PPP	Public Private Partnership
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 Hazelmere 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 Hazelmere Dam area. This is meant to ensure equitable access, compatible use, public safety, resource protection and to unlock the potential of Hazelmere Dam and effect the sustainable management thereof.

To this end the formulation of the **Hazelmere 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 Hazelmere 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 Hazelmere 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 AND CHALLENGES OF THE HAZELMERE DAM**

#### **1.2.1 Purpose**

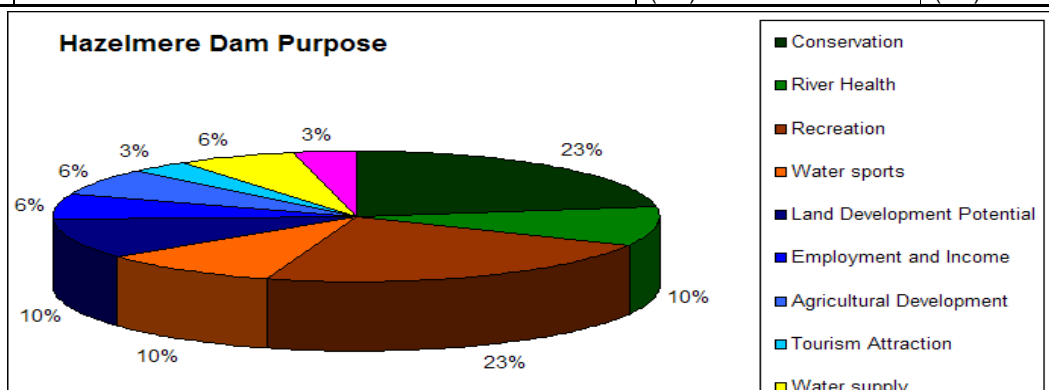
The stakeholders of Hazelmere Dam acknowledge the importance of the Dam as an impoundment to store water, yet place high value on the Purpose of the dam as contributor to conservation of both natural and cultural resources, as mechanism to improve river health, as a venue for recreation and water sport development, and as a catalyst for land development, employment and investment, agricultural and tourism development.

#### **1.2.2 Significance**

As a resource management tool, addressing both biophysical and cultural aspects, the stakeholders recognise the significant role the dam can play in conservation and preservation, yet place vast significance on the contribution that the dam can make regarding employment and income generation through sustainable land based development targeting the sport, recreation, tourism and agricultural sectors. Refer to Table 1 and Figure 3.

**Table 1: Purpose and Significance of Hazelmere Dam based on Stakeholder Inputs**

NO	VERBATIM STAKEHOLDER COMMENTS	INTERPRETED AS	PURPOSE	
1	Conservation of Flora and Fauna	Conservation (23%)	Biophysical Purpose (33%)	
2	Conservation (Safe protected area)			
3	Conservation of water			
4	Natural Heritage			
5	Conservation Economy			
6	Birding			
7	Conservation & Recreation			
8	Stops regular flushing of estuary			River health (10%)
9	Stops downstream flow			
10	Downstream water			
11	Recreation	Recreation (23%)	Activity Purpose (33%)	
12	Recreational use			
13	Family recreation			
14	Provide Recreational Opportunity			
15	Recreation			
16	Conservation & Recreation			
17	Peaceful			
18	Promote water sports	Water sport (10%)		
19	Water sports			
20	Sports			
21	Land value	Land Development Potential (10%)	Economic Purpose (25%)	
22	Create a huge development			
23	Sustainable development			
24	Creation of employment	Employment and Income (6%)		
25	Generates Income			
26	KZN agriculture create employment opportunity for our clients interested in agriculture, bearing in mind export opportunity, esp. La Mercy airport	Agricultural Development (6%)		
27	Agriculture			
28	Tourism	Tourism Attraction (3%)		
29	Store water	Water supply (6%)	Consumptive Purpose (6%)	
30	Storage for water supply			
31	For holding the African cultures	Cultural Preservation (3%)	Cultural Purpose (3%)	



**Figure 3: Hazelmere Dam Significance Graph**

### 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 Hazelmere Dam. Without a focus on sustainability, Hazelmere 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 Hazelmere 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:

- Concerns regarding resource management based on the impact of activities such as agriculture, sand mining and tourism on the natural and cultural resources of the area;
- The lack of clarity regarding access, the use of State land, co-management agreements and related issues pertaining to the purchase boundary (i.e. DWAF boundary line), DWAF's minimum required area and the disposal of surplus State land through leases, sale or agreements;
- The limited access to the dam, currently only available through the Mnsinsi Holdings initiative on the peninsula. Increased access, linked with security, control measures and co-management agreements is expected to contribute to unlocking the potential of the dam;
- Limited development of the dam as a tourism, recreation and residential area currently impacts on the economic potential of the dam, specifically the employment and investment opportunities in and around the dam; and
- Raised potential and community expectations regarding the potential of the dam and employment and investment.

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

The principles underlying the RMP for the Hazelmere 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 Hazelmere 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 Hazelmere 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 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:

### 1.5 BACKGROUND OF HAZELMERE DAM

Hazelmere Dam is situated in a gorge on the Mdloti River, about 5km upstream (north-west) of the town of Verulam. The dam is situated in the Magisterial District of Verulam (29°34' - 29°36'S; 31°00' - 31°02'E), and the relevant 1:50 000 scale topographical map is 2931CA VERULAM. (See Figure 15.) Access to Hazelmere Dam (northern bank only) is along a secondary (tarred) road (P100) which runs north from Verulam to Hazelmere for 8km, followed by 2km of minor (gravel) road. Access to the Mnsinsi Holdings Recreational Facility, on the southern bank of the reservoir and 8km from north of Verulam, is along a minor road (P239) that passes the Barnes Sewage Disposal Works.

Table 2 below provides a summary of relevant statistics pertaining to Hazelmere Dam.

**Table 2: Hazelmere Dam Statistics**

	<b>Based on Current dimensions</b>	<b>Info - after raising the wall</b>
<b>Component</b>	<b>Description</b>	<b>Description</b>
Maximum height of dam wall	42.5m	49.5m
Length of dam wall	463m	463m
Length of spillway	91m	91m
Approximate length of dam		
Approximate width of dam		
Spillway discharge at high flood level (1:200yr)		
Maximum capacity of outlet works (river outlet)	1.78 m <sup>3</sup> /s	
Maximum capacity of outlet works (service outlet)	42 m <sup>3</sup> /s	
Maximum spillway capacity (including emergency spillway)	950 m <sup>3</sup> /s	4600 m <sup>3</sup> /s
Gross storage capacity	17.9 million m <sup>3</sup>	36.1 million m <sup>3</sup>
Annual yield	22 million m <sup>3</sup>	35 million m <sup>3</sup>
Full drawdown level/FSL	86.0 MSL	93 MSL
Lowest drawdown level	10m	
Non-overspill crest level	94.0 MSL	99 MSL
Lowest foundation level	46.3 MSL	46.3 MSL
High flood line	93.82 MSL	94.8 MSL
Surface area at FSL	220 ha	328 ha
Full drawdown level	18m	
Catchment Area	381 km <sup>2</sup>	381 km <sup>2</sup>
MAR (mean annual runoff) natural	71.25 million m <sup>3</sup>	71.25 million m <sup>3</sup>
MAR (mean annual runoff) observed	78.67 million m <sup>3</sup>	70.67 million m <sup>3</sup>
MAP (mean annual precipitation)	967 mm	967 mm
1:5 year flood		
1:20 year flood		
1:50 year flood	1130 m <sup>3</sup> /s	1130 m <sup>3</sup> /s
1:100 year flood	1420 m <sup>3</sup> /s	1420 m <sup>3</sup> /s
Regional maximum flood	3200 m <sup>3</sup> /s	3200 m <sup>3</sup> /s
Safety evaluation flood	4600 m <sup>3</sup> /s	4600 m <sup>3</sup> /s
Instream flow requirements as % of present MAR	8%	

Various estimates have been made of the original storage capacity of Hazelmere Dam. These range from 21 million m<sup>3</sup> (Umgeni Water) to 24 million m<sup>3</sup>. The capacity has been reduced by sedimentation to an estimated 16,8 million m<sup>3</sup>, representing about 23% of the natural MAR (Table 1). While most of this loss has taken place on a gradual annual incremental basis, the 1987 flood resulted in a loss of some 2,5 million m<sup>3</sup> of storage capacity within a few days. The capacity of the raised dam is estimated to be 36 million m<sup>3</sup>, representing about 50% of the

natural MAR. In 1994 the historical firm yield of Hazelmere Dam was estimated to be 23 million m<sup>3</sup>/a. The estimated historical firm yield for a raised dam was 31 million m<sup>3</sup>/a. Estimates of future yield for the year 2050 range between 0 and 15.9 million m<sup>3</sup>/a, depending on whether or not irrigation demands and ecological flow requirements are met.

Hazelmere Dam has a low retention time and a high flushing rate. The average length of time that water was held in the reservoir (when full, and before sedimentation), is estimated to be 120 days. This gives an average flushing rate of three times per year when the reservoir is full. With sedimentation this was reduced to 86 days, with an average flushing rate of 4.2 times per year. The raised dam is likely to extend the theoretical retention time to 185 days, with a theoretical flushing rate of twice per year. The actual retention time may vary greatly, as water level and the operating rules determine this.

The planning of Hazelmere Dam, on the Mdloti River, culminated in a White Paper that was approved by Parliament in 1971 (White Paper K-'71). The white paper details the water availability and water requirements in the area at the time. In summary, the dam was needed to provide a reliable water supply to irrigation development and the rapidly growing urban and industrial users that were supplied at the time by the North Coast Regional Water Corporation, and today by Umgeni Water. A number of alternative dam sites were examined, and Hazelmere on Blocks A and B of the farm Cottonlands 1575 was found to be the most suitable site (White Paper K-'71). This was followed by an investigation of various types of dam including an earth/rockfill dam, a concrete buttress dam, a concrete gravity dam, and a concrete gravity dam with left bank earthfill embankment.

The studies concluded that the most suitable structure would be a concrete gravity dam that would be completed in two phases. The first phase would create a Full Supply Level (FSL) at 85,98 masl, and the second phase would raise the FSL by seven meters to 93,00 masl. Detailed studies that followed were summarised in a second White Paper that was approved by Parliament in 1974 (White Paper O-'74). The first phase of the dam was completed in 1976. No Environmental Impact Assessment was required at the time, but relevant socio-economic aspects of the environment were considered in the planning of the dam.

When Hazelmere Dam was planned, the greater part of the dam basin was expropriated taking into account the raised FSL of the dam of 93 masl. Although the full impact of the proposed raised dam on the surrounding land was anticipated, the Department of Water Affairs and Forestry decided not to expropriate land in the vicinity of the inflow into the dam. This decision was in keeping with state policy that dictates that land should only be expropriated when necessary, and that freehold owners should continue to enjoy the benefits of land ownership until such time. Concerns around acquisition of land in the Oakford Priory area was the reason for not originally purchasing all the land that might be required for the raising of the dam.

Floods in September 1987 introduced large volumes of sediment into the impoundment that reduced the storage capacity of the dam by 10%. This, together with normal rates of sedimentation, has reduced the storage capacity of Hazelmere Impoundment by 28% (Table 1). The reduced capacity of the impoundment, together with water shortages and growing water requirements along the coast north of Durban, prompted the Department of Water Affairs and Forestry and Umgeni Water to investigate the feasibility of raising the FSL of the dam's impoundment as one of the options for satisfying the water demand in northern KwaZulu-Natal.

Various options for raising the wall were considered and included various types of gates (radial, flap, fuse, and buoyancy) and raising the concrete wall. Radial gates were selected as the preferred option because of their low cost and reduced environmental implications. The main environmental advantage of radial gates is greater flexibility in controlling dam levels. Furthermore, the installation of radial gates is expected to have limited environmental impacts during construction, as it would involve a small labour force and can be done relatively quickly. The downside of radial gates is that they are not as safe as a concrete wall as their operation and maintenance is subject to human error and influence.

## **1.5.1 Physical Environment**

### *1.5.1.1 Climate*

The Hazelmere 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.

### *1.5.1.2 Geology*

The study area is underlain predominantly by Tillites and associated rocks of the Ecca group, Dwyka formation. This is overlain by the dark grey shales of the Pietermaritzberg foundation, with Natal Group Sandstones and conglomerates present, additionally a number of dolerite intrusions in the study area, as well as a geological fault extending through the study area from north-east to south west.

### *1.5.1.3 Topography*

The study area contains numerous major and minor river valleys and tributaries resulting in various degrees of fragmentation, while the area surrounding the Hazelmere Dam forms a large bowl shape with a gently sloped terrain.

The Hazelmere Dam and Umdloti River valley represent the topographical focal point of the study area, being approximately 40m above seal level, much of the steep topography is found on the river bends, while most of the flat slopes are located on the depositional side of the stream. (Refer Figure 18, Appendix C.)

### *1.5.1.4 Hydrology*

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

### *1.5.1.5 Soils*

The soils within the study area include those derived from Natal group sandstones, Dwyka conglomerates, lower Ecca shales, Karoo dolerites, Stormberg basalts and alluvium. The soils all belong to the Umzinto soil systems, specifically the coastal lowlands and river valleys. Soil forms include Cartref, Glenrosa, Westleigh, Milkwood and Rensberg. All these soils have moderate to high erosion potential, specifically gully erosion.

### *1.5.1.6 Water Quality*

The water quality of the dam is accepted as being of a high quality, providing for excellent bass water sport conditions. Various testing points are in operational use. Umgeni Water abstracts raw water from the Hazelmere Dam for treatment at the Hazelmere Water Works to produce approximately 38.5 Ml/day potable water. The quality of raw water from the dam is therefore vital for the sustainability of Umgeni water business. The main area of concern regarding the raw water quality from the Hazelmere Dam includes soil erosion which results in increased suspended solid in water.

The suspended solid loads entering the Dam is further elevated by the sand mining activities upstream of the dam. Removal of the Suspended Solids in raw water during the treatment process has significant cost implications for Umgeni Water.

Furthermore, during dam turnover, which occurs between April and June each year, soluble/reduced species of iron and manganese are present in water. These tend to be correlated with the high suspended solids present in this system. The water works is currently not designed to treat elevated soluble iron and manganese concentrations, as a result additional treatment processes have to be incorporated/introduced at the time which has cost implications for Umgeni Water. High concentrations of iron and manganese result in aesthetic impacts in the distribution water and lead to serious consumer complaints.

Umgeni Water is currently developing its Objectives for Resource Water Quality (UW-RWQOs) with the overall goal of ensuring that potable water produced at the works is of acceptable quality at all times. Umgeni Water needs to meet the South African National Standards (SANS 241) Drinking Water Specification. These RWQOs will define the quality of raw water that Umgeni Water requires to ensure we comply with this standard.

UW-RWQOs will have been developed by the end of September 2007 and these can then be submitted for consideration as a requirement of Umgeni Water in the development of Hazelmere Dam RMP.

#### *1.5.1.7 Flora*

Areas surrounding the dam contain remnants of indigenous vegetation, in particular on steep topography and cliff faces on the northern banks of the dam, the remainder of the natural area consists substantially of disturbed grassland. The steeper and therefore the less accessible valley sides of the river and the tributaries contain some indigenous vegetation, inclusive of the area surrounding the Priory.

#### *1.5.1.8 Fauna*

The dam is home to over 220 species of birds, a particularly large number considering the proximity to Durban. This is due to the excellent variety of habitat types, from water to forest to grassland to thorn-veld. White-backed Night Heron, Martial, Crowned and Black Eagle and even nesting Black Storks have been recorded.

Smaller mammals such as bushpig have been recorded, but larger mammals are absent.

The reptile population of the dam is diverse is diverse and consists of snakes, monitor lizards and skinks.

### **1.5.2 Socio-economic Environment**

The study area falls entirely within eThekweni Ward 60 as shown in Figure 4 below, with an edge impact on Ward 59.

Of key importance is the socio-economic analysis of Ward 60. However, the Oakford Priory, listed by all previous studies as possessing tourism potential, falls within Ward 59. But, as the priory is positioned very close to the boundary of Ward 60 this analysis is limited to the socio-economic analysis of Ward 60.

Through a socio-economic analysis of a given area, insight can be gained into specific needs in the area, socio-economic issues that need to be addressed for a development to overcome potential hurdles, and skills and education levels which can aid or hinder a local development. Finally, an understanding of socio-economic conditions of a given area can be used at a later stage to determine the impact a given development has had on a certain area in terms of changed socio-economic conditions.

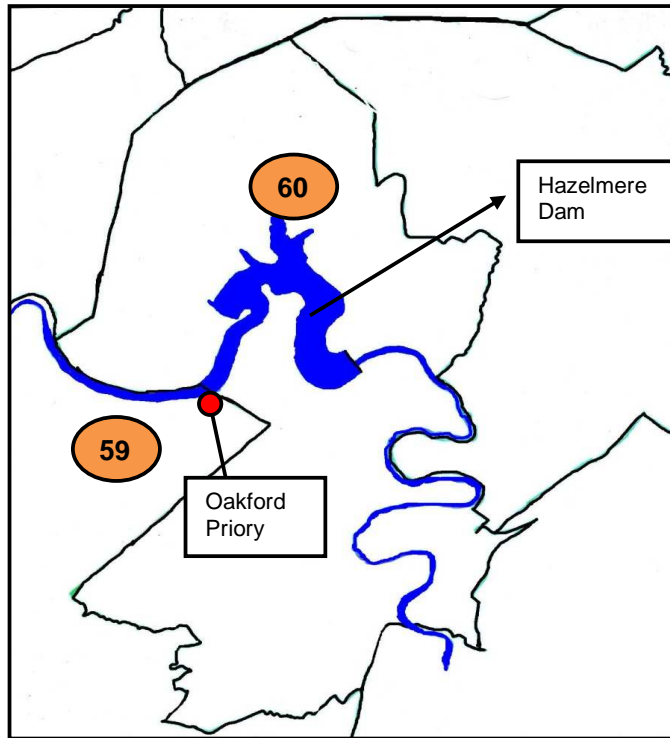


Figure 4: eThekweni Ward boundaries

1.5.2.1 Population Dynamics

In terms of age as per the graphs and tables below, the largest proportion of the population of Ward 60 is of working age. This bodes well for job opportunities which are labour intensive.

Table 3: Age Distribution

DESCRIPTION	NUMBER
0-4	2268
5-9	2265
10-14	2460
15-19	2679
20-24	2599
25-29	2783
30-34	2231
35-39	2124
40-44	1858
45-49	1399
50-54	1159
55-59	810
60-64	557
65-69	403
70-74	269
75-79	145
80 and over	106

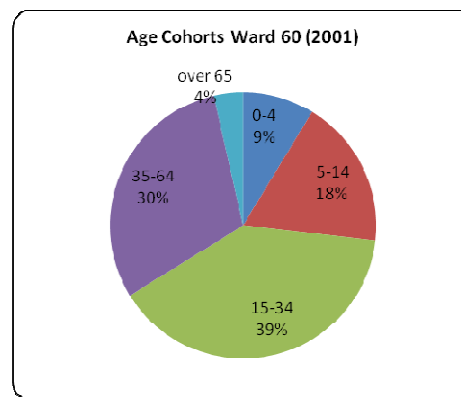


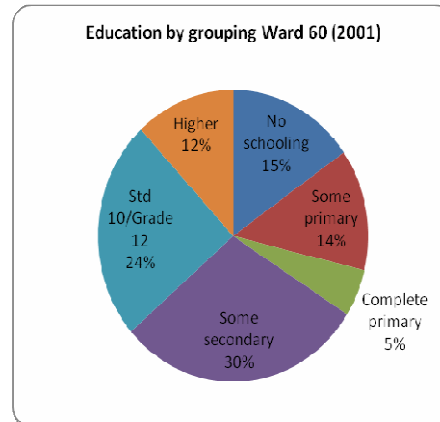
Figure 5: Age Cohorts

1.5.2.2 Educational and Health Facilities

The Census breaks down educational levels into each year of study. For the purpose of this report, the educational levels are grouped into key schooling and higher educational categories. As can be seen by the above charts the majority of residents in Ward 60 have some secondary education, but only a quarter have a grade 12 qualification. Of greater concern is that only 12% of the population have moved beyond schooling to receive some kind of higher education. The implication of this for this project is that the majority of residents in Ward 60 will not have received any kind of training to equip them to become active participants in the tourism sector.

**Table 4: Education Levels**

DESCRIPTION	WARD 60 (2001)
No schooling	2512
Some primary	2220
Complete primary	862
Some secondary	4870
Std 10/Grade 12	4011
Higher	1967



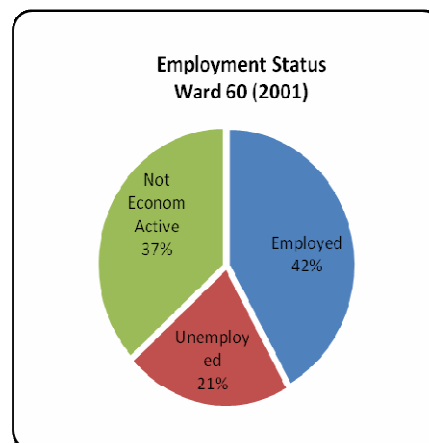
**Figure 6: Education by Grouping**

1.5.2.3 Current Employment Status

In terms of employment levels within Ward 60, the following graphs and tables are indicative. Only 42% of the residents of working age of Ward 60 are employed. Of greater concerned is that 37% of the residents are not economically active suggesting they no longer seek to become employed. This speaks to the fact that there is a large proportion of persons within Ward 60 who have limited income sources and few hopes that this situation will change in the future. The direct impact that this has for this study is that there is a large pool of potential labour should tourism development projects be implemented that are labour intensive. However, as shown above, it is unlikely that the unemployed in this region have the necessary skills to enter the tourism market. Another implication of such low employment figures in the area is that this is often accompanied by poverty and high crime levels, a strong deterrent for tourism in an area.

**Table 5: Employment Status**

DESCRIPTION	WARD 60 (2001)
Employed	7666
Unemployed	3912
Not Economically Active	6713



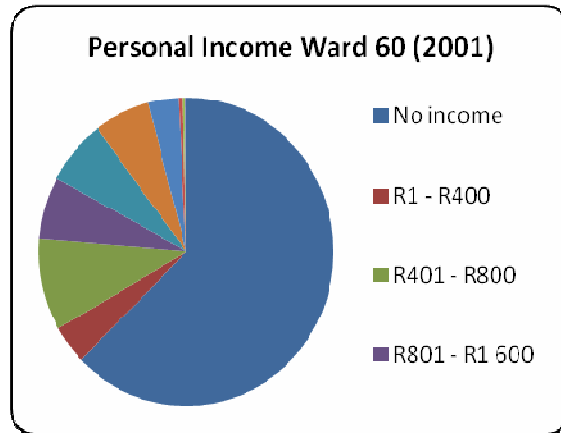
**Figure 7: Employment Status**

1.5.2.4 Monthly Household Income

The graph and table below reinforce the suggestion above that there are low income levels in Ward 60. More than half the residents receive no income at all.

**Table 6: Personal Income**

Description	2001
No income	16353
R1 - R400	1067
R401 - R800	2514
R801 - R1 600	1722
R1 601 - R3 200	1770
R3 201 - R6 400	1597
R6 401 - R12 800	867
R12 801 - R25 600	135
R25 601 - R51 200	56
R51 201 - R102 400	24
R102401-R204800	6
R204 801 or more	3



**Figure 8: Personal Income**

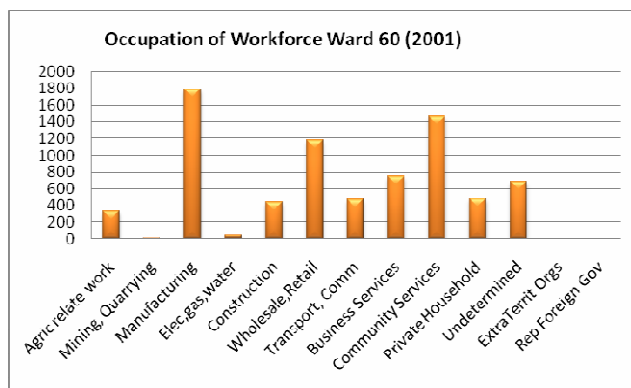
1.5.2.5 Occupation Types

Of those that are employed, it is important to have an understanding of the level of their work expertise in a project such as this. The graph and table below indicate this for Ward 60 of the eThekweni Municipality.

As can be seen in the table below, the majority of workers from Ward 60 are involved in manufacturing, wholesale and retail, and community services. However, as per the table above, the majority of these are menial, low skilled and low paying positions listed as elementary occupations. Again, this reinforces the assumptions above that skills, qualifications and experience in the local ward are not conducive to tourism development and interventions will be required to develop a skilled local labour force for this sector were it to be developed.

**Table 7: Level of Work Expertise**

DESCRIPTION	2001
Senior Officials	544
Professionals	653
Tech/Assoc Prof	847
Clerks	1157
Service workers	807
Skilled agric work	80
Other	904
Elementary occupation	1376
Occupations NEC	385
Plant Operators	913



**Figure 9: Occupation of Workforce, Ward 60**



### 1.5.2.6 Business and Economic Activities

This section examines in brief the business and economic activities in the area. The purpose of such an analysis is that it leads to an understanding of where the economic strengths and weaknesses are in the area, and where key economic activities take place. While a strong focus is on tourism, it must be remembered that the tourism sector is dependent on inputs from other economic sectors for its functioning. The table below is a summary of the key economic activities in the areas immediately surrounding the Hazelmere Dam. This is represented by key economic activities in the four quadrants of the area under study.

**Table 8: Key Economic Activities**

<b>ACTIVITIES</b>	<b>NW REGION</b>	<b>NE REGION</b>	<b>SW REGION</b>	<b>SE REGION</b>
<b>Tourism</b>	Mnsinsi resort Boat storage	Lakeside Lodge		Forest Lodge
<b>Agricultural</b>	Litchi trees	Furveron Poultry Farm Cow Pens	Litchi trees	
<b>Manufacturing</b>				Canelands Industrial Park
<b>Mining</b>			Sand Winning	
<b>Community Services</b>			Oakford School Oakford PRIORITY Islamic Mosque	Golden Steps School
<b>Retail</b>		Chicken Sales Petrol station Hairdresser Spazashop Phone container	General Superette	

## **SECTION 2 THE PLAN**

### **2.1 STRATEGIC 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 Hazelmere Dam RMP.

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

### **2.2.1 Vision**

It is envisaged that through effective co-management the economic potential of Hazelmere Dam can be unlocked in an equitable and sustainable manner.

### **2.2.2 Mission**

As an important water resource, the stakeholders around Hazelmere Dam accept their mission as being:

- The protection of the water and associated aquatic ecosystem through effective co-management;
- Unlocking the economic potential of the dam and surrounding precinct;
- The creation of a conducive environment for the involvement of the sporting, recreation and tourism industries; and
- The provision and management of benefits to the local, host and affected communities.

### **2.2.3 Key Management Objectives**

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

- To ensure equitable and controllable access to the dam that addresses the needs and expectations of the general public, as well as private users;
- To ensure an equitable balance between agriculture, recreation and residential use, through clearly demarcating areas, zones, time allocations and secure access;
- To ensure the promotion of compatible development between agriculture, recreation and residential initiatives based on effective co-management agreements, carrying capacities and environmental constraints; and
- To ensure improved and affordable access, services and infrastructure addressing the needs and expectations of local residents, farmers and investors as well as those of the sport and recreation industries.

Additional to these key objectives and for its execution 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 Hazelmere 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 Hazelmere 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 11, aimed at attaining the key management objectives set for Hazelmere 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**

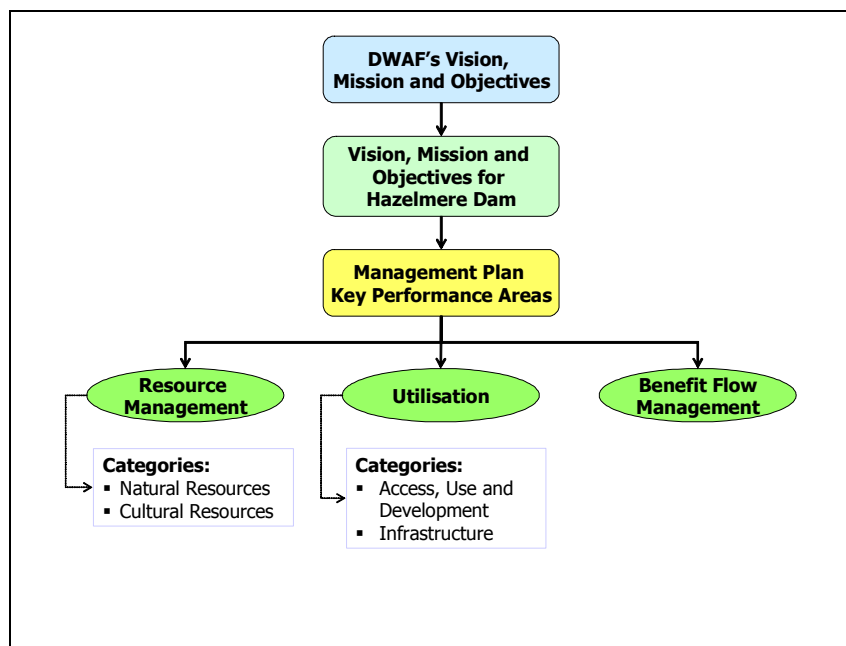


Figure 11: Management Framework

Specific objectives aimed at unlocking the potential of Hazelmere Dam were set by individual sector groups, based on access, use, development, and infrastructure requirements. Table 9 lists these objectives within the various KPAs.

Table 9: Management Objectives According to KPAs

OBJECTIVES	KPA
<ul style="list-style-type: none"> <li>• To effectively manage the dam shoreline in terms of among other alien plant removal and pollution control.</li> </ul>	KPA 1
<ul style="list-style-type: none"> <li>• To identify and protect the cultural heritage resources which might exist around the dam.</li> </ul>	
<ul style="list-style-type: none"> <li>• To ensure that water uses and/or users are verified, registered and regularised.</li> <li>• To have private access made possible to the dam by 2010.</li> <li>• To have sustainable and balanced development of the agricultural and tourism potential of the dam by 2010.</li> </ul>	KPA 2
<ul style="list-style-type: none"> <li>• To manage the use of the water surface through demarcated zones and co-ordinated time sharing including:                             <ul style="list-style-type: none"> <li>– Jet ski area</li> </ul> </li> </ul>	

OBJECTIVES	KPA
<ul style="list-style-type: none"> <li>- Ski boat area</li> <li>- Fishing areas (2)</li> <li>- No wake (launch) zones</li> <li>• To promote a single, controlled gate access to the commercial/activity node within the wider area of the current Mnsinsi area.</li> <li>• To promote and allow for private investment that will help better the lives of local people at a density that would be economically and environmentally viable.</li> <li>• To promote development around the dam of only activities compatible with agriculture, tourism and recreation opportunities to better the lives of local people.</li> <li>• To promote the sustainable development of the area through density controls determined by the carrying capacity set for various appropriate 'uses'.</li> <li>• To promote, accommodate and manage the following activities on and around the dam: <ul style="list-style-type: none"> <li>- Sport activities (Jet ski, water ski, model boats, fishing etc.)</li> <li>- Recreation activities (Swimming, hiking, running/cycle track, fishing, bird watching etc.)</li> <li>- Residential development</li> <li>- Agriculture (Commercial farms, organic farming, aquaculture)</li> <li>- Cultural activities (Baptisms, amphitheatre)</li> <li>- Tourism (Caravan, camping sites, lodges, hotels etc.)</li> </ul> </li> <li>• To provide an improved level of services in line with affordability determined by terrain topography, operations and management etc. that will accommodate intended future development and also benefit people residing adjacent to the dam, including: <ul style="list-style-type: none"> <li>- Improved roads</li> <li>- Bulk electricity</li> <li>- Bulk sewer services (treatment plant)</li> <li>- Water provision</li> <li>- Ablution facilities</li> <li>- Communications infrastructure.</li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>• To upgrade and maintain key public access roads to the dam (especially the proposed commercial hub and northern access road(s) in order to unlock the development potential for e.g. a conferencing centre, cultural village and residential developments.) as well as ensure proper directional signage to and from the dam. Additionally, to construct proposed roads to the dam, lodges etc. by 2010.</li> </ul>	
<ul style="list-style-type: none"> <li>• To clarify the mechanisms for benefit flow to disadvantaged communities in the area.</li> </ul>	KPA 3
<ul style="list-style-type: none"> <li>• To ensure that equitable public access to the dam is provided balanced with private and commercial access.</li> </ul>	
<ul style="list-style-type: none"> <li>• To have a community housing programme that will promote subsistence farming by 2010.</li> </ul>	
<ul style="list-style-type: none"> <li>• To have improved policing for increased safety and security thereby enhancing quality of life for the local community and tourists at Hazelmere Dam.</li> </ul>	
<ul style="list-style-type: none"> <li>• To clarify the delineation of management boundary and specific responsibilities between government role-players.</li> </ul>	KPA 4
<ul style="list-style-type: none"> <li>• To effect intergovernmental co-operation through the alignment of "development" and "use" approvals and permissions and appropriate institutional governance arrangements.</li> </ul>	
<ul style="list-style-type: none"> <li>• To ensure the protection of water resources within the catchment area of the dam through effective institutional structures and arrangements.</li> </ul>	
<ul style="list-style-type: none"> <li>• To establish relationships with donor funding organisations and relevant government partners to support implementation of the resource management plan, including providing financial support to present commercial farming for broader trading by 2010.</li> </ul>	
<ul style="list-style-type: none"> <li>• To have a streamlined and supported land rezoning processes in place for the establishment of lodges residential, conference centres etc. by 2010.</li> </ul>	

The management objectives will be discussed within each of the KPAs by addressing the following aspects:

- Rationale
- Management Support (Funding, human resources, policies and protocol etc.)
- Policy and Legislation
- Operational Guidelines
- 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 D, Figure 22 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 effectively manage the dam shoreline in terms of among other alien plant removal and pollution control, the following ISO management interventions are recommended:

**Table 10: Alien Plant and Pollution Control**

<b>Objective</b>
To have the Hazelmere 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> <li>• 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.</li> </ul>

- 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

- Umgeni Water
- DWAF
- Department of Agriculture and Environmental Affairs
- eThekweni Environmental Management

## **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 11: 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 Hazelmere 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 Hazelmere 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 Hazelmere 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 Sterkstroom inlet.
- 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 Regulation

To ensure that water uses and other operations are verified, registered and regularised, the following ISO management interventions are recommended:

**Table 12: Regulation**

<b>Objective</b>
To evaluate the existing 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>
Throughout the RMP compilation process, it has been alleged that for certain land and wateruses, the necessary permits and authorizations are not in place. For other utilisation KPA"s to be achieved, it is imperative that all usage is regularized.
<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 authorisations, as contained in the DWAF"s authorisation and management system.</li> <li>• Legal advice should be obtained to ensure that the recommended methodology is in the data obtained during the process of the RMP compilation.</li> <li>• DWAF should be consulted with regard to water use authorisations, as contained in the DWAF"s authorisation and management system.</li> <li>• Legal advice should be obtained to ensure that the recommended methodology is in the devel</li> </ul>
<b>Action Projects</b>
<ol style="list-style-type: none"> <li>I. 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>I. 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>
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• Department of Agriculture and Environmetnal Affairs</li> </ul>

### 2.5.1.2 Access, Use and Development Management

To promote access, use and development around the dam of only activities compatible with agriculture, tourism and recreation opportunities to better the lives of local people, and promote, accommodate and manage the following activities on, in and around the dam:

- Sport activities (Jet ski, water ski, model boats, fishing etc.)
- Recreation activities (Swimming, hiking, running/cycle track, fishing, bird watching etc.)
- Residential development

- Agriculture (Commercial farms, organic farming, aquaculture)
- Cultural activities (Baptisms, amphitheatre)
- Tourism (Caravan, camping sites, lodges, hotels etc.),

the following ISO management interventions are recommended:

**Table 13: Access, Use and Development Management**

<b>Objective</b>
To evaluate the existing 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>
Unlocking the potential of Hazelmere 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>
<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 authorisations, as contained in the DWAF's authorisation and management system.</li> <li>• Legal advice should be obtained to ensure that the recommended methodology is in 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 authorisations, as contained in the DWAF's authorisation and management system.</li> <li>• Legal advice should be obtained to ensure that the recommended methodology is in line with all relevant policies and legislation.</li> </ul>
<b>Action Projects</b>
I. Embark on a project to evaluate the current use of the dam basin and adjacent state and privately owned land and regularize unlawful usage
<b>Indicators</b>
I. 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.
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• Sport and Recreational South Africa</li> <li>• AMAFA</li> <li>• Department of Agriculture and Environmental Affairs</li> </ul>

### 2.5.1.3 Carrying Capacities and Density Controls

To promote the sustainable development of the area through density controls determined by the carrying capacity set for various appropriate 'uses', the following ISO management interventions are recommended:

**Table 14: Carrying Capacities and Density Controls**

<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>
Uncontrolled development and use within the region will negatively affect investment and employment, necessitating strict control measures regarding the number of boats, jet skis and other vessels, as well as visitor carrying capacities. By clarifying the carrying capacities and setting density controls creates a conducive environment for investors and operators.
<b>Management and Support</b>
<ul style="list-style-type: none"> <li>The involvement of the relevant industry with regards to user experience and other aspects such as safety is imperative.</li> <li>Environmental and other planning institutions including relevant government departments need to be consulted when establishing density controls.</li> </ul>
<b>Policy and Guidelines</b>
<p><u>Permitted uses</u></p> <ul style="list-style-type: none"> <li>This section describes the uses which are generally permitted in the Dam basin.</li> <li>These may be subject to further requirements and restrictions (spatial, operational, etc) as mentioned elsewhere in the RMP.</li> <li>Water based activities will include fishing, swimming, water skiing, windsurfing as well as vessels such as canoes, paddling vessels, rowing boats, sailing dinghies and vessels and motorised boating. Tiller-bar operated vessels, large vessels such as houseboats and activities such as para-sailing, kite-surfing should not be considered at the Dam. Jet ski's may only be considered once sufficient management capacity is in place and under certain conditions.</li> <li>Land based activities can include high activity recreation such as tourism development and accommodation, events and sport as well as low impact activities such as hiking, fishing, picnicking etc.</li> </ul> <p><u>Density controls</u></p> <ul style="list-style-type: none"> <li>Density controls have been established for the fundamental utilisation aspects. In order to address future concerns regarding the over exploitation of the resource and user experience, further density controls may be required. This should be addressed as the need arises. A variety of visitor management techniques need to be considered, broadly based on what the available natural, infrastructural and human resources can accommodate.</li> <li>The density controls are established for normal operational use and may only be relaxed for certain organised events and if sufficient management control can ensure safe operation and minimal environmental impact. Consent would be required from DWAF in each case.</li> </ul> <p><u>Vessels</u></p> <ul style="list-style-type: none"> <li>Vessel area requirements, relationships and classification is based on the Guidelines for the Compilation of Zoning Plans for Government Waterworks. The procedure is based on the Methodology for Carrying Capacity Assessment for the Use of Water for Recreational Purposes.</li> <li>Vessels need to be counted at the primary launching facility. Other vessels have different area requirements and adjustments would need to be made accordingly.</li> <li>Over and above the ECC for boats an additional ECC for other non-motorised vessels that are smaller than 7m has been made (canoes, rowing boots, etc). This is to accommodate low risk vessels that can be launched from other launching facilities.</li> <li>Primary and Secondary Launching sites as well as equal quotas for each of the land management zones.</li> <li>As the water level drops, pro rata changes would need to be made based on the water surface</li> </ul>

<p>area of the High Activity and Low Activity Zones. Tables indicating surface area and adjusted ECC should be prepared based on Dam levels.</p> <p><b>Infrastructure</b></p> <ul style="list-style-type: none"> <li>There will be only one development core, which will be situated in the northern section of the Active Recreation Zone. No other development cores or built up environments will be permitted anywhere else on state land.</li> </ul> <p><b>Other</b></p> <ul style="list-style-type: none"> <li>As the pedestrian use increases, density controls should be established for pedestrian numbers. Thresholds should be considered for the Active Recreation Zone, the Passive Recreation Zone as well as the Conservation Zone. Limitations on use may further be considered in terms of source: public, commercial or private domain.</li> <li>Thresholds in the Active Recreation Zone should further make specific reference to building footprint and numbers, amount and type of accommodation facilities, size of picnic area, etc. Thresholds should be considered for organised events, especially when the events are large public events, which may have a regular impact on other uses or on the resource.</li> <li>Other carrying capacity assessments should be undertaken as the need arises. Where local guidelines not be available, international publications should be consulted. Where it is anticipated that limits of acceptable change could be exceeded, carrying capacity assessments should be undertaken prior to the activity being undertaken or facility being developed.</li> </ul>
<p><b>Action Projects</b></p> <ol style="list-style-type: none"> <li>I. Implement density controls for the various utilization aspects.</li> <li>II. Develop and implement a customised control and monitoring programme for each of the various carrying capacity aspects. This can include systems of self-regulation as well as physical control infrastructure.</li> <li>III. Establish density controls for activities and facilities that require carrying capacity assessments.</li> </ol>
<p><b>Indicators</b></p> <p>Thresholds need to be strictly monitored according to the control and monitoring programme. Indicators for the effectiveness of density controls can be measured as:</p> <ul style="list-style-type: none"> <li>Physical presence versus the specified carrying capacity.</li> <li>Compliance of users with regards to the thresholds.</li> <li>Amount and seriousness of incidents.</li> <li>Responsiveness, satisfaction of and awareness among users.</li> <li>Realisation of control and monitoring systems.</li> </ul>
<p><b>Roleplayers</b></p> <ul style="list-style-type: none"> <li>DWAF</li> <li>eThekweni Municipality</li> <li>Department of Agriculture and Environmental Affairs</li> </ul>

#### 2.5.1.4 Access Control

To promote a single, controlled gate access to the commercial/activity node within the wider area of the current Mnsinsi Holdings area, the following ISO management interventions are recommended:

**Table 15: Access Control**

<p><b>Objective</b></p> <p>To create a safe and secure environment through ensuring controlled access through a single access gate.</p>
<p><b>Rationale</b></p> <p>Creating a safe and secure environment is of paramount importance to investors and users. Without this, sustainability will not be achievable. By controlling access to the dam through a single access gate promotes confidence while simultaneously increasing affordability.</p>

<b>Management and Support</b>
<ul style="list-style-type: none"> <li>• Location of single access gate needs to be determined and agreed upon by all stakeholders.</li> <li>• The necessary authorisations for access, use and development within the boundary line must be approved by DWAF prior to any actions.</li> <li>• Linkages must be established with relevant government departments and federations where direct access to the water on the dam is required.</li> </ul>
<b>Policy and Guidelines</b>
<p><u>Access and Use</u></p> <ul style="list-style-type: none"> <li>• The dam must remain available for broad public recreational access and use, above commercial or private interests.</li> <li>• Public access and use should be equitable, compatible and safe.</li> <li>• Fees for access &amp; use should be determined as prescribed in terms of Section 113 of the NWA.</li> <li>• Entry fees may be levied for public access and use. However, fees need to be reasonable to ensure the dam remains an affordable destination.</li> <li>• Access and use must be in accordance with the Zoning Plan.</li> </ul> <p><u>Existing Use</u></p> <ul style="list-style-type: none"> <li>• For most users and operators, the necessary agreements and authorisations are either outdated or non-existent.</li> <li>• Existing use must be regularized.</li> </ul>
<b>Action Projects</b>
<p>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.</p>
<b>Indicators</b>
<p>I. Access gate is developed</p>
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• eThekweni Municipality</li> </ul>

### 2.5.1.5 Private Access

To promote and allow for private investment that will help better the lives of local people at a density that would be economically and environmentally viable and to have private access made possible to the dam by 2010, the following ISO management interventions are recommended:

**Table 16: Private Access**

<b>Objective</b>
To enable adjacent landowners and residents access to and use of the resource in their private capacity.
<b>Rationale</b>
Through effective co-management agreements, private access can be ensured while complying with National Treasury's regulations regarding the use of State property.
<b>Management and Support</b>

- In order to simplify the administration, management and monitoring, agreements with adjacent landowners will be handled with three associations, each representing one and management zone.
- DWAF will enter into an agreement with each of the associations separately. Once finalised, the contracts however will be administered by the management authority.
- In turn each of the three associations would require an internal agreement regulating matters between the property owners and residents within each land management zone. This agreement may contain specific requirements from DWAF or from the management authority.

## Policy and Guidelines

### Access and use

- Access onto state land will only be from one designated point per property for farms and smallholdings. Townships and small accommodation facilities will each receive one designated point.
- Access onto the state land will only be into the Passive Recreation Zone and the Conservation Zone. Only pedestrian, including cycling and horseback access and use will be permitted.
- Access onto the water surface will only be into the Low Activity Zone, after having transported the vessel via the Passive Recreation Zone or the Conservation Zone by hand to the nearest designated Tertiary Launching Facility.
- Such vessels will only be limited to small non-motorised vessels (such as canoes and rowing boats; less than 7m). Sailing vessels will also be excluded unless these are wind surfing craft.
- Further access into the Active Recreation Zone or the High Activity Zone is not automatically possible.

### Development

- No infrastructure development on state land by adjacent land owners, residents or relevant management zone associations will be allowed.
- All existing unauthorised infrastructure within the Passive Recreation Zone and the Conservation Zone, including that located along the shoreline, must be removed. New infrastructure, as is described elsewhere for the Passive Recreation Zone,
- Conservation Zone and the Low Activity Zone will be developed by the management authority after consultation with the relevant land management associations.
- However the task of maintenance of the infrastructure (hiking trails, Tertiary Launching Facilities, etc) can be performed by the relevant land management associations, subject to the conditions of contract.

### Establishment and Implementation

- The intention is to provide a strategy so that a sensible agreement between the adjacent property owners and DWAF can be established and implemented, bearing in mind that private access and use should not interfere with other uses. According to the National Water Resource Strategy (NWRS), which highlights the management priorities required when allocating water licenses, the provision of the reserve is listed as the highest priority compared to private use which is listed as the lowest priority.
- Co-management should form the basis of an agreement which should include fees as well as service functions in return for access to and use of the resource.
- In addition to relevant DWAF policy, contracts will have clearly defined limits placed on sizes, numbers and levels of access and use and restrictions of zones.
- Such co-management agreements are implemented in a cost-effective, socially responsible, equitable and environmentally acceptable manner, maximising local employment, skills development and local economic benefit.
- Adjacent land owners, residents and relevant management zone associations must operate within defined codes of conduct and specific rules as provided by the management authority, and amended as required. Relevant associations are responsible for compliance.
- Fees and functions may vary, depending on aspects such as environmental impacts, amount of people gaining access, intensity of adjacent land use (farm, small holding, township or small tourism accommodation).
- Additional fees may be charged for and special conditions attached to townships and small accommodation facilities.
- All fees levied and all income earned will be paid to the management authority, for disbursement and utilisation regarding inter alia the development and operational costs of infrastructure, development and management costs of conservation, and the contribution to community beneficiation projects and programmes.

<b>Action Projects</b>
<ol style="list-style-type: none"> <li>I. Prepare a strategy to procure and award co-management agreements with landmanagement associations.</li> <li>II. Develop and establish agreements for property owners within a land management association.</li> <li>III. Develop and establish agreements for the individual land management associations.</li> <li>IV. Plan and implement infrastructure required to support approved land management agreements.</li> </ol>
<b>Indicators</b>
<p>Land management associations will be required to submit annual reports to the management authority regarding performance and compliance with conditions of contract and environmental sound practices. Monitoring should apply performance indicators such as:</p> <ul style="list-style-type: none"> <li>• Updated database of all adjacent landowners and residents within a land management zone.</li> <li>• Own user satisfaction as well as satisfaction levels of other users</li> <li>• Record of incidents regarding visitors.</li> <li>• Compliance with specific rules as well as with Dam rules.</li> <li>• Environmental impact</li> <li>• Number of tourism accommodation facilities</li> <li>• Payment of fees</li> <li>• Performance of functions</li> </ul>
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• eThekweni Municipality</li> </ul>

#### 2.5.1.6 Zoning

To manage the use of the water surface through demarcated zones and co-ordinated time sharing including:

- Jet ski area
- Ski boat area
- Fishing areas (2)
- No wake (launch) zones,

the following ISO management interventions are recommended:

**Table 17: Zoning**

<b>Objective</b>
To provide an effective zoning to unlock the economic potential of the dam in a sustainable manner.
<b>Rationale</b>
The dam has been divided into use areas or zones to facilitate compatibility between user groups. Recognising the difficulties associated with enforcing local rules, in an effort to ensure safety, Hazelmere Dam will primarily accommodate motorised water sport activity within clearly demarcated zones. No motorised boats will be allowed in fishing zone though, while speeds will be restricted in the no-wake zones.
<b>Management and Support</b>
<ul style="list-style-type: none"> <li>• DWAF to clarify Government Notice Regulation 654 as regulatory framework.</li> </ul>
<b>Policy and Guidelines</b>
<ul style="list-style-type: none"> <li>• Utilise Regulation 654 to enforce zonation</li> <li>• Provide clarity regarding penalties regarding non-compliance</li> </ul>

<ul style="list-style-type: none"> <li>Inland Vessel Regulations</li> </ul>
<b>Action Projects</b>
<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>
<b>Indicators</b>
<ol style="list-style-type: none"> <li>I. Compliance with zonation plan</li> <li>II. Record of breaches</li> </ol>
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>DWAF</li> <li>Sport and Recreational South Africa</li> <li>eThekwini Municipality</li> </ul>

## 2.5.2 Infrastructure and Services

### 2.5.2.1 Access Roads

To upgrade and maintain key public access roads to the dam (especially the proposed commercial hub and northern access road(s) in order to unlock the development potential for e.g. a conferencing centre, cultural village and residential developments.) as well as ensure proper directional signage to and from the dam and to construct proposed roads to the dam, lodges etc. by 2010, the following ISO management interventions are recommended:

**Table 18: Access Roads**

<b>Objective</b>
Increased accessibility 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 eThekwini 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>
eThekwini 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>



- eThekwini Municipality

### 2.5.2.2 Services

To provide an improved level of services in line with affordability determined by terrain topography, operations and management etc. that will accommodate intended future development and also benefit people residing adjacent to the dam, including:

- Improved roads
- Bulk electricity
- Bulk sewer services (treatment plant)
- Water provision
- Ablution facilities
- Communications infrastructure,

the following ISO management interventions are recommended:

**Table 19: 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 proves 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 eThekwini 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>

## 2.6 KPA 3: BENEFIT FLOW MANAGEMENT

### 2.6.1 Benefit Flow Mechanisms

To clarify the mechanisms for benefit flow to disadvantaged communities in the area, the following ISO management interventions are recommended:

**Table 20: Benefit Flow Mechanisms**

<b>Objective</b>
To improve the livelihoods of the surrounding communities by enabling access to the benefits that can accrue due the existence of the Dam.
<b>Rationale</b>
Benefits are often spoken about, yet ensuring that these benefits accrue to the targeted beneficiaries is difficult if agreements, policies, methodologies and mechanism are not timeously addressed. Clarifying the roles of specific structures and organisations between the state, industry and community is required to serve as guideline regarding the formalisation of relationships.
<b>Management and Support</b>
<ul style="list-style-type: none"> <li>Existing social initiatives as well as government departments and related organs can be involved with social and /or and labour matters.</li> <li>Representation from the local community including the 'fishing for food' user group.</li> </ul>
<b>Policy and Guidelines</b>
<p><u>Economic Upliftment</u></p> <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 institutions, it will be possible to become more sensitized to community perceptions, as well as to expose entrepreneurs to the opportunities that are available.</li> <li>In order to ensure benefits accrue to the region, it is essential that a database be established and regularly updated consisting of service providers that are local and representative. Not only can the management authority draw on this pool of expertise, but all contractors and operators should be encouraged to do the same.</li> <li>The needs and requirements of the management authority should be provided to service providers so that a synergistic and effective partnership can be established.</li> </ul> <p><u>Fishing for food</u></p> <ul style="list-style-type: none"> <li>According to the National Water Resource Strategy (NWRS), uses relating to social needs, such as poverty eradication, primary domestic needs and uses that will contribute to the maintaining of social stability and achieving greater racial and gender equity, receive a much higher ranking in terms of the priorities for allocating water than uses relating to leisure. Fishing for food needs to be prioritised and formalised as an activity at the Dam.</li> <li>Although this activity may broadly be classified as public use, additional arrangements can be considered which may include alternative access points, permits and also conditions of use.</li> </ul>
<b>Action Projects</b>
<ol style="list-style-type: none"> <li>Develop a database of preferred service providers and make use of these service providers as required.</li> <li>Formalize an agreement with the local fishing for food community regarding access and use of the Dam for subsistence fishing.</li> </ol>
<b>Indicators</b>

Although social aspects are at times complex to quantify, the following broad performance indicators can be considered:

- Amount of service providers that are local and representative.
- Jobs created as a result of the existence of the Dam and in which sector.
- Satisfaction among the Fishing for Food community

**Roleplayers**

- DWAF
- eThekwini Municipality

**2.6.2 Safety and Security**

To have improved policing for increased safety and security thereby enhancing quality of life for the local community and tourists at Hazelmere Dam, the following ISO management interventions are recommended:

**Table 21: Safety and 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 Hazelmere dam, opting for water resources which are safer and more secure.
<b>Management and Support</b>
<ul style="list-style-type: none"> <li>• Visible policing</li> <li>• Budget</li> </ul>
<b>Policy and Guidelines</b>
<ul style="list-style-type: none"> <li>• eThekwini 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>Role players</b>
<ul style="list-style-type: none"> <li>• South African Policy Service</li> <li>• eThekwini Municipality</li> <li>• SAMSA</li> <li>• Lifesaving South Africa</li> <li>• Swimming South Africa</li> <li>• NSRI</li> </ul>

### 2.6.3 Public Access

To ensure that equitable public access to the dam is provided balanced with private and commercial access, the following ISO management interventions are recommended:

**Table 22: Public Access**

<b>Objective</b>
To enable broad public enjoyment of a variety of recreational uses at the Dam supported by appropriate infrastructure.
<b>Rationale</b>
Access to resources by the general public is being restricted throughout South Africa due to development on private land adjoining dams. Equitable access for the public is important to ensure that Hazelmere Dam remains locally relevant and valuable.
<b>Management and Support</b>
<ul style="list-style-type: none"> <li>• DWAF support is required to sanction any kind of public access, use and development.</li> <li>• A minimum amount of infrastructure and safety measures need to be in place and maintained.</li> </ul>
<b>Policy and Guidelines</b>
<p><u>Access and Use</u></p> <ul style="list-style-type: none"> <li>• The Dam must remain available for broad public recreational access and use, above commercial or private interests.</li> <li>• Public access and use should be equitable, compatible and safe.</li> <li>• Entry fees can be levied for public access and use; however these need to be reasonable to ensure the Dam remains an affordable destination.</li> <li>• Public access other than at specified points must be deemed unlawful.</li> </ul> <p><u>Development</u></p> <ul style="list-style-type: none"> <li>• Any development within the Dam basin is subject to various DWAF policies, environmental legislation and relevant municipal planning requirements.</li> <li>• Infrastructure for public use should be of a satisfactory standard and have an aesthetic that blends in with the regional context.</li> </ul> <p><u>Operation</u></p> <ul style="list-style-type: none"> <li>• Although the public facility is currently being operated by the BDMC and DWAF , the operation or components thereof can be outsourced to an operator or a contractor.</li> <li>• Such a process must be an open and transparent procedure compliant with the requirements of the PFMA, NEMA, National Treasury Regulations and Public Private Partnership (PPP) Toolkit for Tourism.</li> </ul>
<b>Action Projects</b>
<ul style="list-style-type: none"> <li>• Upgrade public facilities to meet the users' needs and expectations whilst employing sound ecological planning principles and environmental best practice.</li> <li>• An agreement needs to be formalized between DWAF and the public facilities manager outlining the control, operation, management, use and development of the public facility.</li> <li>• Should the design, development and operation of the public facility be outsourced, then contracts need to be procured.</li> </ul>
<b>Indicators</b>
<p>In order to ensure that user's needs and expectations are met, satisfaction levels should be monitored by applying among others the following performance indicators:</p> <ul style="list-style-type: none"> <li>• Obtain feedback from users (suggestion box).</li> <li>• Maintain a record of incidents regarding visitors.</li> <li>• Compliance with Dam rules.</li> <li>• Compatibility of users and uses.</li> <li>• Acceptance of infrastructure facilities.</li> </ul>
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• Sport and Recreational South Africa</li> </ul>

- eThekweni Municipality

## 2.7 KPA 4: INSTITUTIONALISATION

### 2.7.1 Management Boundary and Responsibilities

To clarify the delineation of management boundary and specific responsibilities between government role-players, the following ISO management interventions are recommended:

**Table 24: Management Boundary and Responsibilities**

<b>Objective</b>
To implement co-management agreements and where appropriate service contracts to unlock the economic and conservation potential of the Hazelmere Dam.
<b>Rationale</b>
Without effective co-management agreements it will not be possible for DWAF to unlock the potential of Hazelmere Dam, nor will the land owners be able to add value to 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> <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 area of the dam through effective institutional structures and arrangements, the following ISO management interventions are recommended:

**Table 25: 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. Hazelmere 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>• Umgeni Water</li> <li>• eThekweni Municipality</li> </ul>

### 2.7.3 Intergovernmental Co-operation

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

**Table 26: 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>
Hazelmere 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 Hazelmere Dam needs to be formalised within a legislative environment to prove 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 Streamlined Administrative Processes

To have streamlined and supported land rezoning processes in place for the establishment of lodges residential, conference centres etc. by 2010, the following ISO management interventions are recommended:

**Table 27: Streamlined Administrative Processes**

<b>Objective</b>
To ensure a seamless interaction between all spheres of government and stakeholders
<b>Rationale</b>
By linking the land zoning to the water zoning within a broader city plan significantly benefits investors, developers and operators by establishing a clear regulatory framework, while allowing for effective decision making. This 'promise' also limits uncontrolled and unauthorised use, and serves as an accountability tool for stakeholders to ascertain the degree to which DWAF and Umgeni Water have complied with the RMP.
<b>Management and Support</b>
Functional Intergovernmental Framework
<b>Policy and Guidelines</b>
Intergovernmental Framework Relations Act
<b>Action Projects</b>
I. Efficient handling of application guideline to be developed
<b>Indicators</b>
Programmes successfully concluded and implemented

Roleplayers
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• eThekweni Municipality</li> <li>• Intergovernmental Forum</li> </ul>

### 2.7.5 Commercial Farming Support

To support present commercial farming financially for broader trading by 2010, the following ISO management interventions are recommended:

**Table 28: Commercial Farming Support**

Objective
Effective utilization of area for Agricultural Programmes
Rationale
Commercial farming, including organic farming, orchards etc. contributes significantly to the region. Supporting emerging farmers undertaking commercial ventures, by facilitating access to markets (and water) and providing financial support, will increase the viability of the ventures allowing for the establishment of a labour intensive industry in a region that has a high unemployment rate.
Management and Support
Agricultural Extension Officers. Agricultural Research Institute.
Policy and Guidelines
High value agricultural survey data.
Action Projects
<ul style="list-style-type: none"> <li>• Agricultural high value projects</li> <li>•</li> </ul>
Indicators
Number of high value agricultural projects established. Total income generated from high value agricultural production.
Roleplayers
<ul style="list-style-type: none"> <li>• eThekweni Municipality</li> <li>• Department of Agriculture and Environmental Affairs</li> </ul>

### 2.7.6 Donor Funding Support

To establish relationship with donor funding organisations for support for the implementation of the RMP, the following ISO management interventions are recommended:

**Table 29: Donor Funding Support**

Objective
Effective support from donors for programmes and projects
Rationale



In an effort to unlock the inherent potential of the region surrounding Hazelmere Dam, it is imperative that a functional relationship be established between the state, donors, community structures and industry role-players. Having a clear operational relationship aimed at ensuring and maximising equity for community structures, without exposing these structures to risks which should be undertaken by private sector operators, supported by government and donors creates a conducive environment for all role-players.
<b>Management and Support</b>
Central co-ordinator of available investors / donors and opportunities.
<b>Policy and Guidelines</b>
Public Finance Management Act Distribution of Revenue Act (DORA) Municipal Finance Management Act
<b>Action Projects</b>
<ul style="list-style-type: none"> <li>• Establishment of Project Co-ordination Structure</li> </ul>
<b>Indicators</b>
<ul style="list-style-type: none"> <li>• Number of donor support programmes concluded and implemented</li> <li>• Impacts measured in region</li> </ul>
<b>Roleplayers</b>
<ul style="list-style-type: none"> <li>• DWAF</li> <li>• eThekweni Municipality</li> </ul>

## 2.8 MASTER PLAN

### 2.8.1 Process

The planning of the Hazelmere 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.

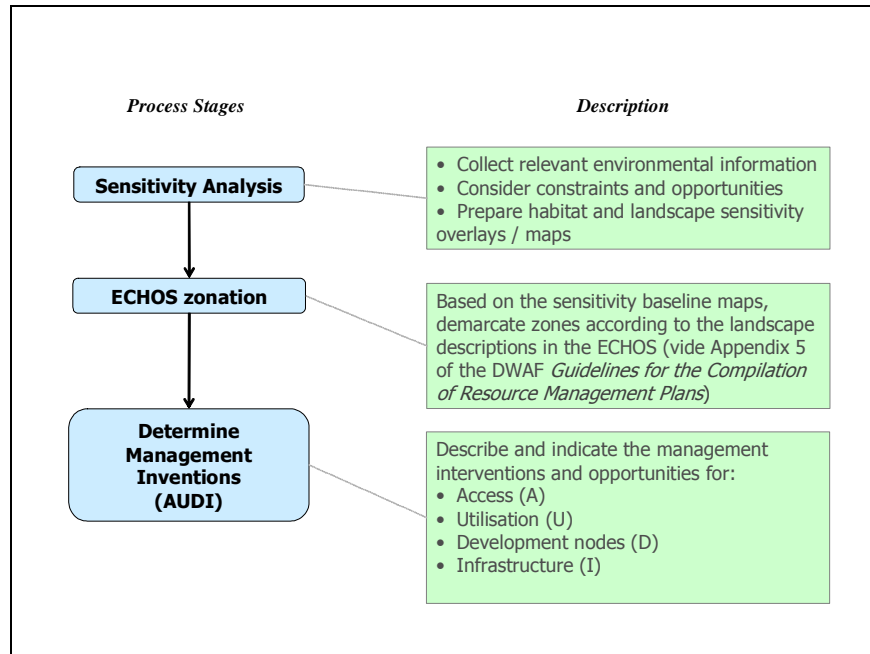


Figure 12: Zoning Process

## 2.8.2 Master Plan

The Concept Development Plan (CDP) for Hazelmere Dam addresses issues related to access, utilisation, development nodes and sites, and infrastructure requirements.

### 2.8.2.1 Access

Due to the size of the dam, it is recommended that the main access to the dam be limited to the southern peninsula, with limited access for concessionaires from the northern and western bank.

The northern and western access will be limited to concession operators for specified activities on both land and water accessing the dam close to the dam wall, at the deep valleys and from the orchards on the northern side.

Access from the southern peninsula will include both public and private developments ensuring equitable access. A single control gate, shared by all the properties will allow for strict enforcement and compliance with the operational rules of the dam regarding the recreational use of water. Additionally, this will enable affordability by reducing the cost of access control. The stakeholders recommended the creation of a secure area incorporating both State and private land, co-managed as a residential/tourism node.

Seamless access will be allowed for properties directly adjacent to the State land along the peninsula compliant with the rules and regulations for the public access area.

### 2.8.2.2 Utilisation

The southern peninsula, due to its gentle slope, soils and easy access will be used as the primary development area, while the steeper, less accessible northern bank will primarily be used as a conservation area with nature based adventure accommodation within a visual buffer.

The water use requirements of Hazelmere Dam necessitate the establishment of distinct areas. Closest to the dam wall will be a safety area, excluding any access except for officials from DWAF and Umgeni Water. Adjacent to this will be an area for use by powerboats, excluding jet skis, which have an area on the north-western side of the peninsula. Within this zone a jet ski course will be established to address the specific requirement of this sporting community.

A no wake zone along the shoreline ensures the safety of recreational users on the bank. The upper reaches of the dam will be set aside for fishing and non-motorised recreational water use.

Within the two deep bays on the northern bank of the dam, use will be restricted to no-wake speed for both jet skis and powerboats. This area will be used primarily for bird watching, adventure activities and possible the establishment of an adventure camp within the indigenous bush.

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

The primary development node will be on the southern peninsula, while developments on the northern and western shore will be limited to low impact facilities which must be hidden within the indigenous bush, ensuring the visual integrity of the northern bank.

No overnight accommodation will be allowed within the DWAF HFL and buffer zones, thus necessitating effective co-management agreements within adjacent land owners aimed at unlocking the potential of the dam.

#### *2.8.2.4 Infrastructure*

Requisite infrastructure needs to be aligned with the access, use and development areas. Since the primary development core is along the southern shoreline the roads, sewerage, and electricity services should be focused in this area, while secondary road access along the northern shore should enable operators to service the low impact developments without changing the visual character of the area.

The main access road needs to be upgraded and possibly realigned to bypass the industrial development area close to the dam. This road should be tourist friendly with adequate signage both to and from the development core of the dam.

## **2.8.3 PRECINCT PLAN**

### *2.8.3.1 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.

### *2.8.3.2 Precinct Context & Boundary*

The precinct area around Hazelmere dam is characterised by private ownership and used mainly for sugarcane and fruit production. There are also pristine, undeveloped areas towards the northern parts of the precinct and scattered single residential housing units found on the peninsula area on the south. The nearest settlements are the KwaSomubi and New Glasgow areas towards the east and south-east. The boundary of the precinct was mainly determined by the P100 and D521 Routes to identify development nodes along those routes which will be in close proximity to the dam.

### *2.8.3.3 Access*

Access was discussed within the Concept Development Plan and within the wider context of the precinct is 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 not be developed to a level which will either detract from the untouched nature of the dam or encourage uncontrolled development and settlements along these routes outside of identified investment nodes.

### *2.8.3.4 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 that 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 Hazelmere these areas are most likely to include high value crops targeted at the Agri Processing Hub planned as part of the nearby Dube Tradeport initiative. Lastly a low impact residential estate and tourism related activities area is proposed on the southern peninsula of the dam. This proposed densities of this development 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 KwaSomubi, Oakford and Emona are als 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.

#### *2.8.3.5 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.

## SECTION 3 THE PEOPLE

### 3.1 ROLEPLAYERS

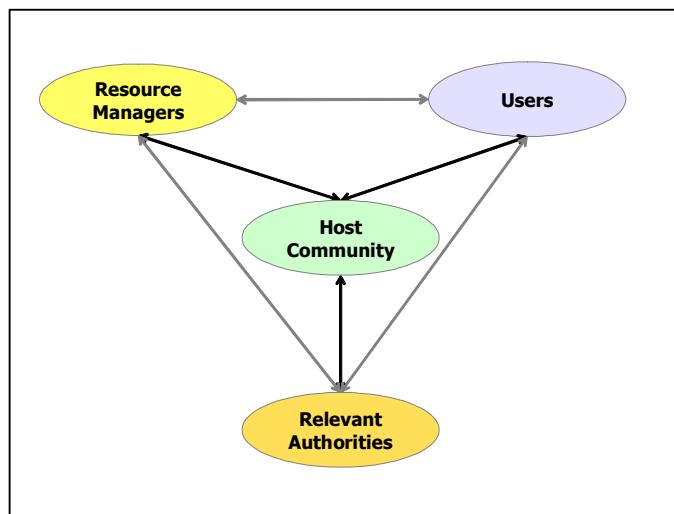
The success of the Hazelmere Dam RMP and its implementation is dependent on the level of involvement by stakeholders and beneficiaries and as such, the Hazelmere Dam should not function in isolation from these stakeholders. Stakeholder categories include:

- 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 13), the implementation of the RMP for the Hazelmere 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 Hazelmere Dam enhance these objectives. Additionally, it will be the policy of the management authority of the Hazelmere 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 13: 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 Hazelmere 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.

### 3.2 INSTITUTIONAL PROPOSAL

Currently the institutional arrangements for Hazelmere 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.

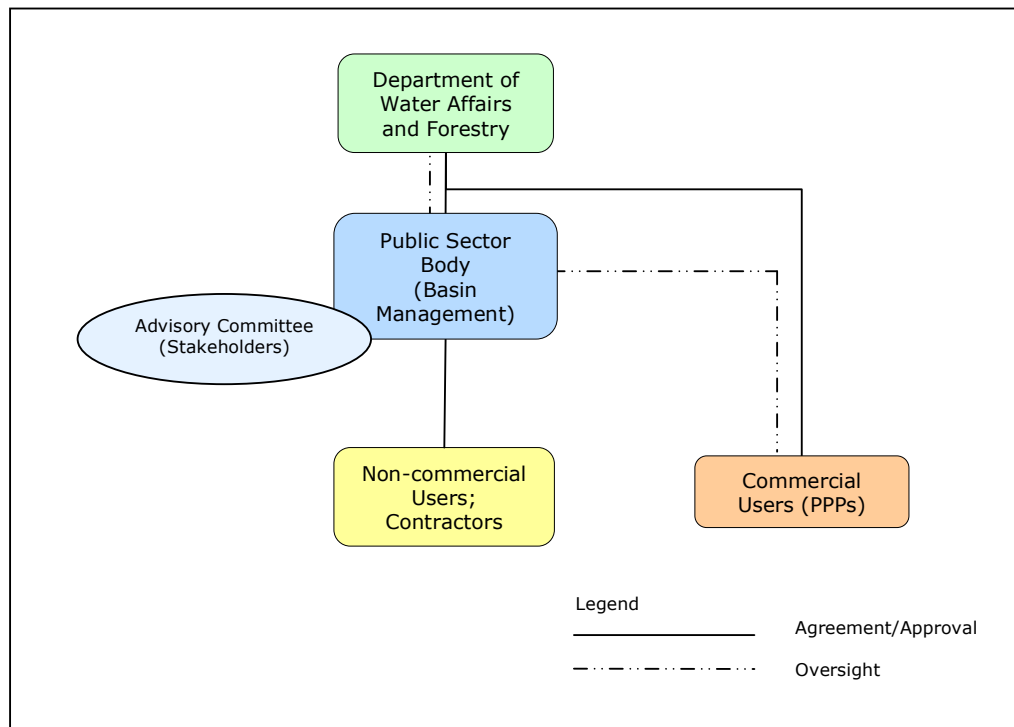


Figure 14: Institutional Proposal

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**APPENDIX A: RMP PROCESS STAKEHOLDER LIST**

Table 30: Hazelmere Dam Stakeholder List

INDUSTRY	CONTACT PERSON	CONTACT DETAILS
<b>SKIING</b>		
	Eric Cornhill	031-7851874 0847851874 <a href="mailto:cornhill@pop.co.za">cornhill@pop.co.za</a>
<b>MODEL BOATING</b>		
KZN Model Power Boat Club	Andre Prittorius	Tel. 031 266 1832 and mail <a href="mailto:actap@mweb.co.za">actap@mweb.co.za</a> (Subsequently withdrew from participation)
<b>POWER BOATING:</b>		
Private Water Craft Association: Hazelmere	Andrew Ensor-Smith/carol sally	031-5021922 0824508720 <a href="mailto:Andrew@esbrokers.co.za">Andrew@esbrokers.co.za</a> <a href="mailto:sally@esbrokers.co.za">sally@esbrokers.co.za</a>
<b>JETSKI</b>		
Liquid Jetsports	Justin Windsor	0829211391 <a href="mailto:liquidjetsports@yahoo.com">liquidjetsports@yahoo.com</a>
<b>ADVENTURE SPORT:</b>		
	George Forder	<a href="mailto:george@vcx.co.za">george@vcx.co.za</a> , 082 774-7530
Sports Marketing	Max Cluer or Bex Max Cluer  Max Cluer Sports Marketing Tel / Fax: 033 345 7075 Cell: 083 7447 103 Email: <a href="mailto:max@maxcluer.com">max@maxcluer.com</a> Web: <a href="http://www.maxcluer.com">www.maxcluer.com</a>	Tel: 033 345 7075 Cell: 083 7447 103 Fax: 033 345 7075 Email: <a href="mailto:max@maxcluer.com">max@maxcluer.com</a> Skype: <a href="https://www.skype.com/user/max_cluer">max_cluer</a>
	Sakkie Meyer	0845555086 <a href="mailto:sakkie@mail.com">sakkie@mail.com</a>
MUDMAN SERIES	Charn Swart  George Forder	0834534843 <a href="mailto:charn@trustsure.co.za">charn@trustsure.co.za</a>  0827747530 <a href="mailto:george@spindrift.co.za">george@spindrift.co.za</a>
<b>HOSPITALITY INDUSTRY</b>		
FEDHASA KZN		Physical Address: Sky Bridge Office Royal Hotel Smith Street Durban  Postal Address: PO Box 37165 Overport 4067  Tel: 031 301 5385 Fax: 031 301 5384  Warren Ozard – Operations Manager Kim Johnson – Administrator <a href="mailto:fedhasakzn@fedhasa.co.za">fedhasakzn@fedhasa.co.za</a>
Holiday Leisure	Krishen Harisuran	0823704337

		031-7017076 <a href="mailto:krishen@holidayleisure.co.za">krishen@holidayleisure.co.za</a>
<b>ENVIRONMENTAL GROUPS</b>		
WESSA: Wildlife and Environment Society of S.A. KZN Region	Do Dold	Di Dold Environmental Co-ordinator WESSA KZN Region 100 Brand Road Durban. 4001 Tel: 031 2013126 Fax: 031-2019525 <a href="mailto:conservation@wessakzn.org.za">conservation@wessakzn.org.za</a> Web: <a href="http://www.wildlifesociety.org.za">www.wildlifesociety.org.za</a>  Michael Taylor: Regional Chairman 0827720771 <a href="mailto:wstadler@wessakzn.org.za">wstadler@wessakzn.org.za</a>
EZEMVELO KZN WILDLIFE	GENERAL ENQUIRIES <a href="mailto:ronphysick@kznwildlife.com">ronphysick@kznwildlife.com</a> KZN Wildlife Switchboard: 033 845 1999	Durban Office-Coastal Region: Telephone: 031 274 1150 Fax: 031 205 1547 Planning Development Dept: Head - Roger Porter 033-8451464 fax:0866696445 / email: <a href="mailto:rogport@kznwildlife.com">rogport@kznwildlife.com</a> commercial operations dept. Gladmen Buthelezi executive director comm. ops: <a href="mailto:GBUTHELEZI@KZNWILDLIFE.COM">GBUTHELEZI@KZNWILDLIFE.COM</a>
Balanced Environment	Sue George	Balanced Environment 082 961 5750 P.O. Box 1634, Wandsbeck 3631 <a href="mailto:balancedenviro@xsinet.co.za">balancedenviro@xsinet.co.za</a>
<b>COMMUNITY STRUCTURES</b>		
Ward councillor	Chocks Arunajallam  Geof Pullan	031-3112676 0823021925 <a href="mailto:chocks@telkomsa.net">chocks@telkomsa.net</a> 0836959190 <a href="mailto:geoffpullan@iafrica.com">geoffpullan@iafrica.com</a>
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Kwasonubi Development Committee	Nathi Miya	0835928207 03254113900
Lake Vict. Conservancy	Havicker	0834543090

Area Leader	M.J. Buthelezi	0837206317 0325335016
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Sub 255	Krishna Prahalad	032-5338558
Harris Properties	Frank Drennan	032-9463434 0762105090 <a href="mailto:frankd@hprop.co.za">frankd@hprop.co.za</a>
Ignatius Nehore		031-3117705 032-5333781 (h) <a href="mailto:nehorei@durban.gov.za">nehorei@durban.gov.za</a>
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Land Owner	S. Naidoo	0837999112 / 0325334486
	Kevin Hegtisr	0827097816
Hotel Developer	Wendy	<a href="mailto:wendy@notaegroup.com">wendy@notaegroup.com</a>
Phumula Co-op Ltd	Lucky Gcabashe Kwazi Zungu	0725495888/0325331027 0725495888
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## **APPENDIX B: BACKGROUND INFORMATION**

- Figure 15: Locality (Regional)
- Figure 16: Locality (Local)
- Figure 17: Elevation (Regional)
- Figure 18: Elevation (Local)
- Figure 19: Vegetation
- Figure 20: Land Cover
- Figure 21: Land Use

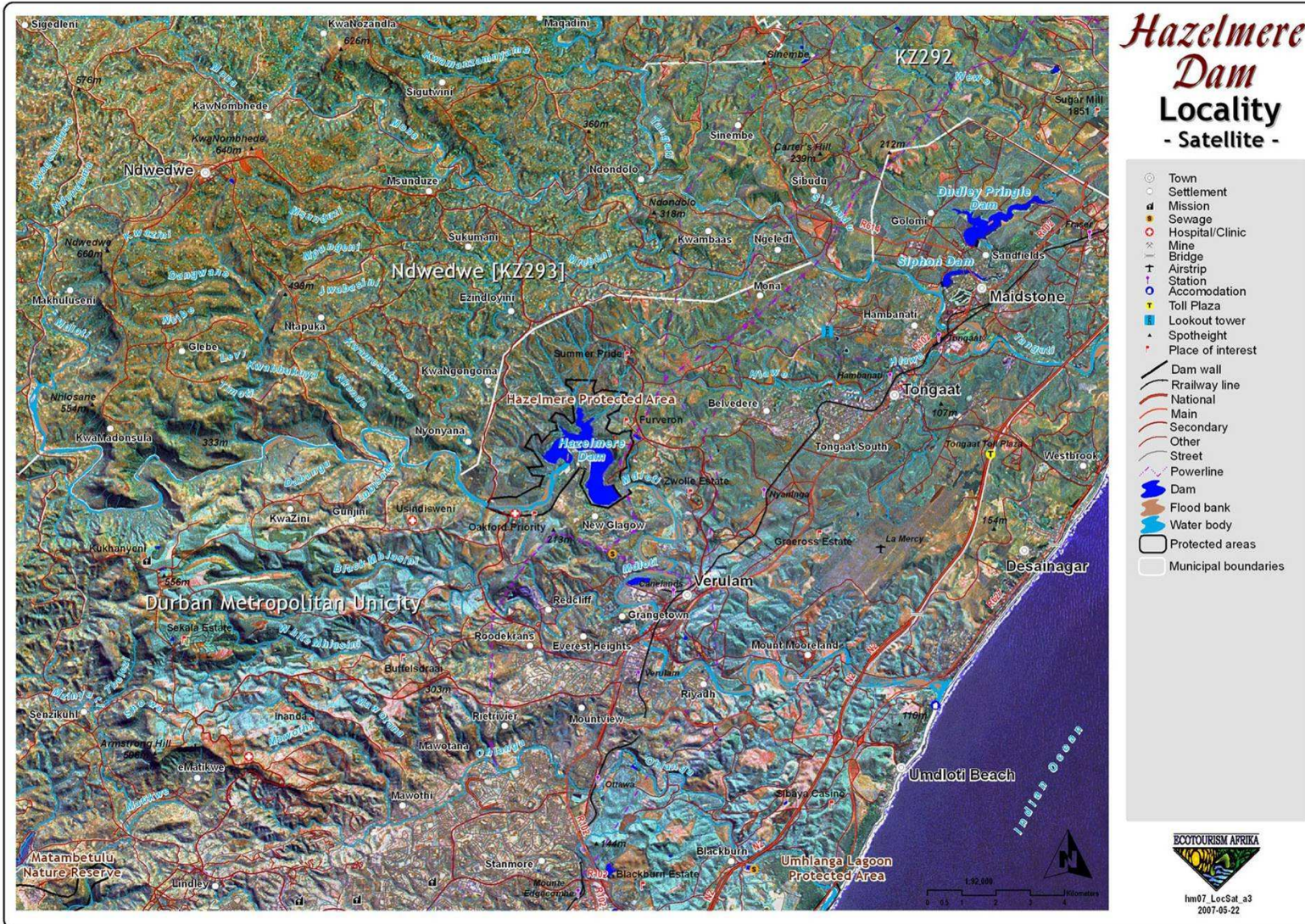


Figure 15: Locality (Regional)

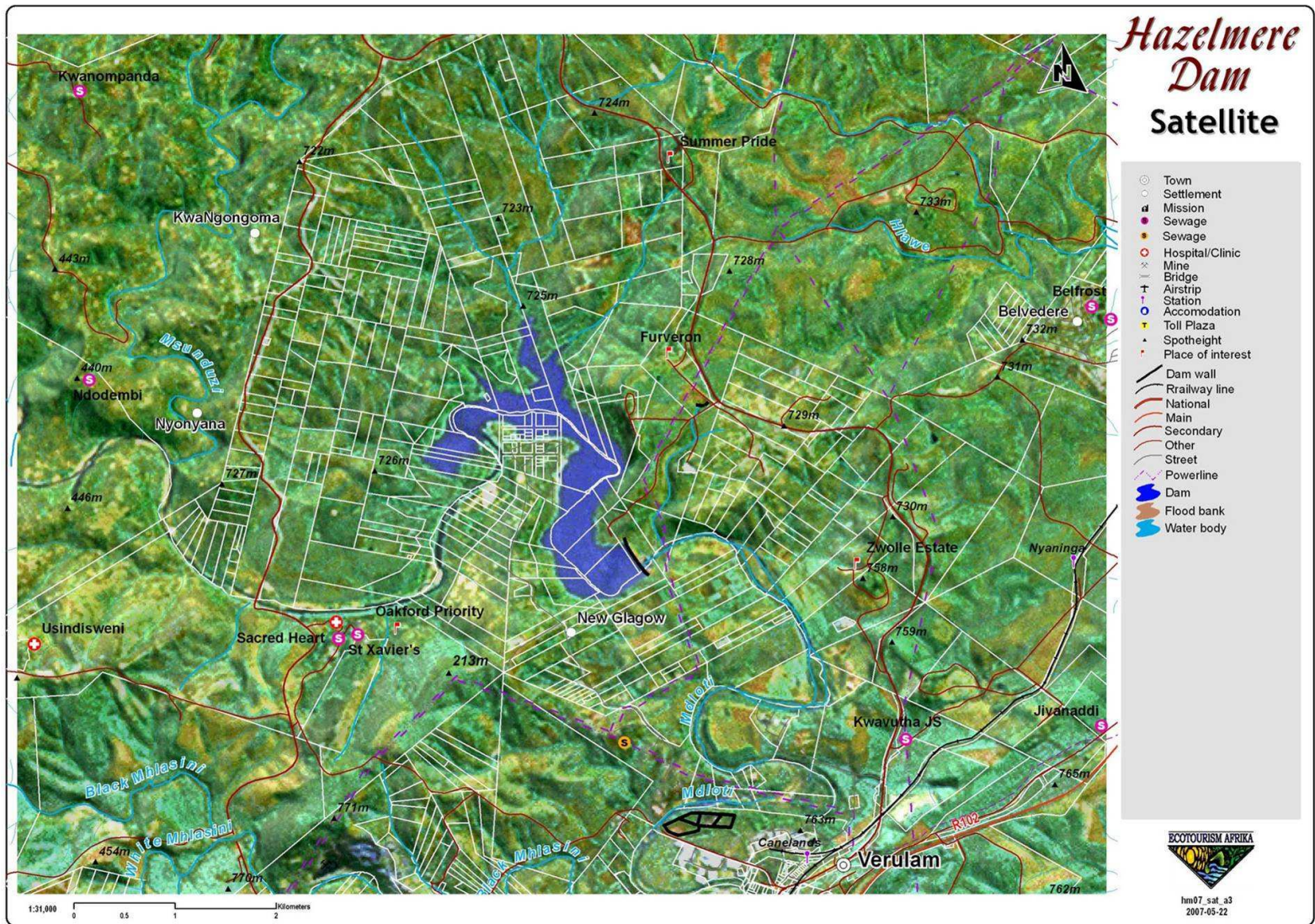


Figure 16: Locality (Local)

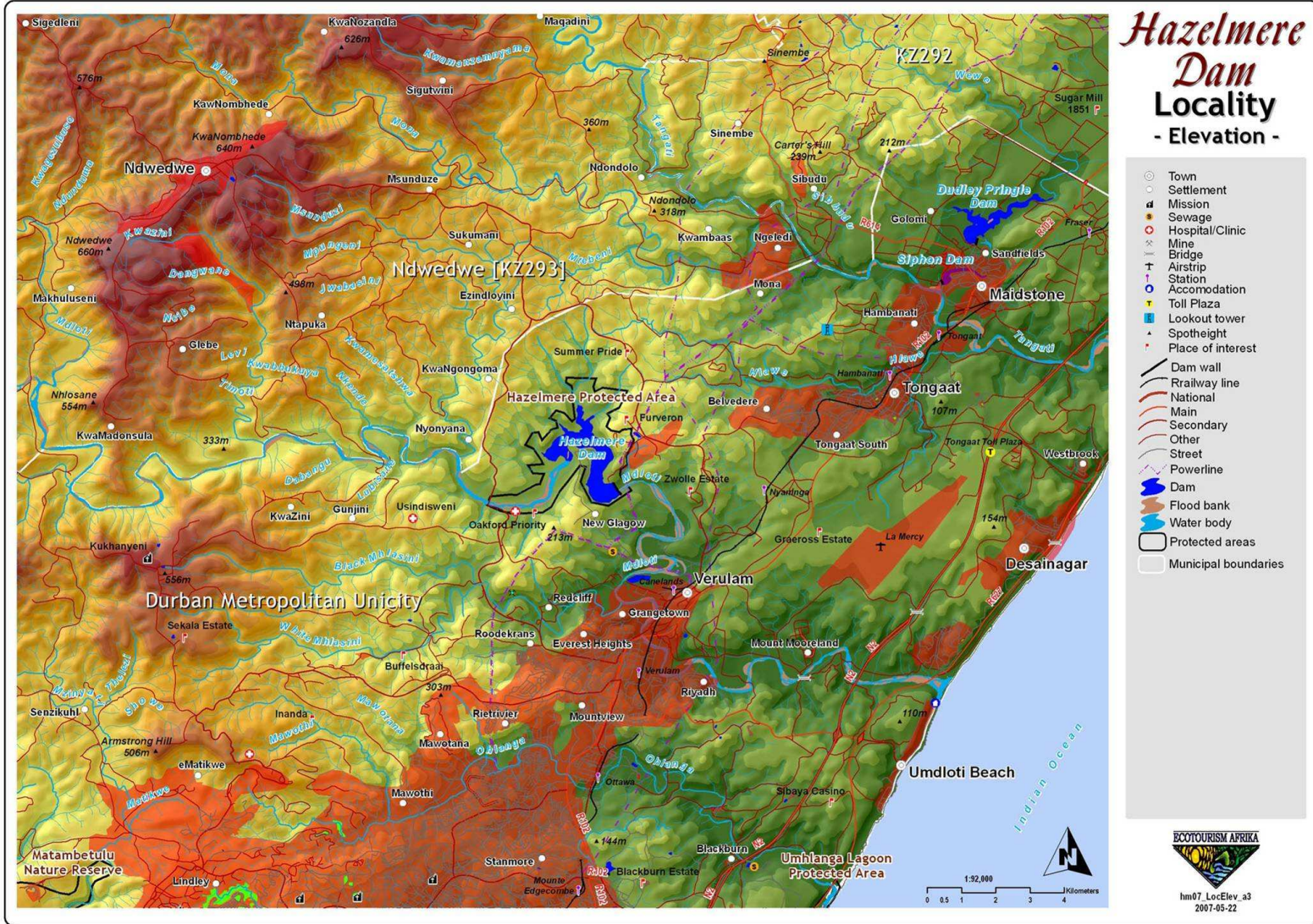


Figure 17: Elevation (Regional)



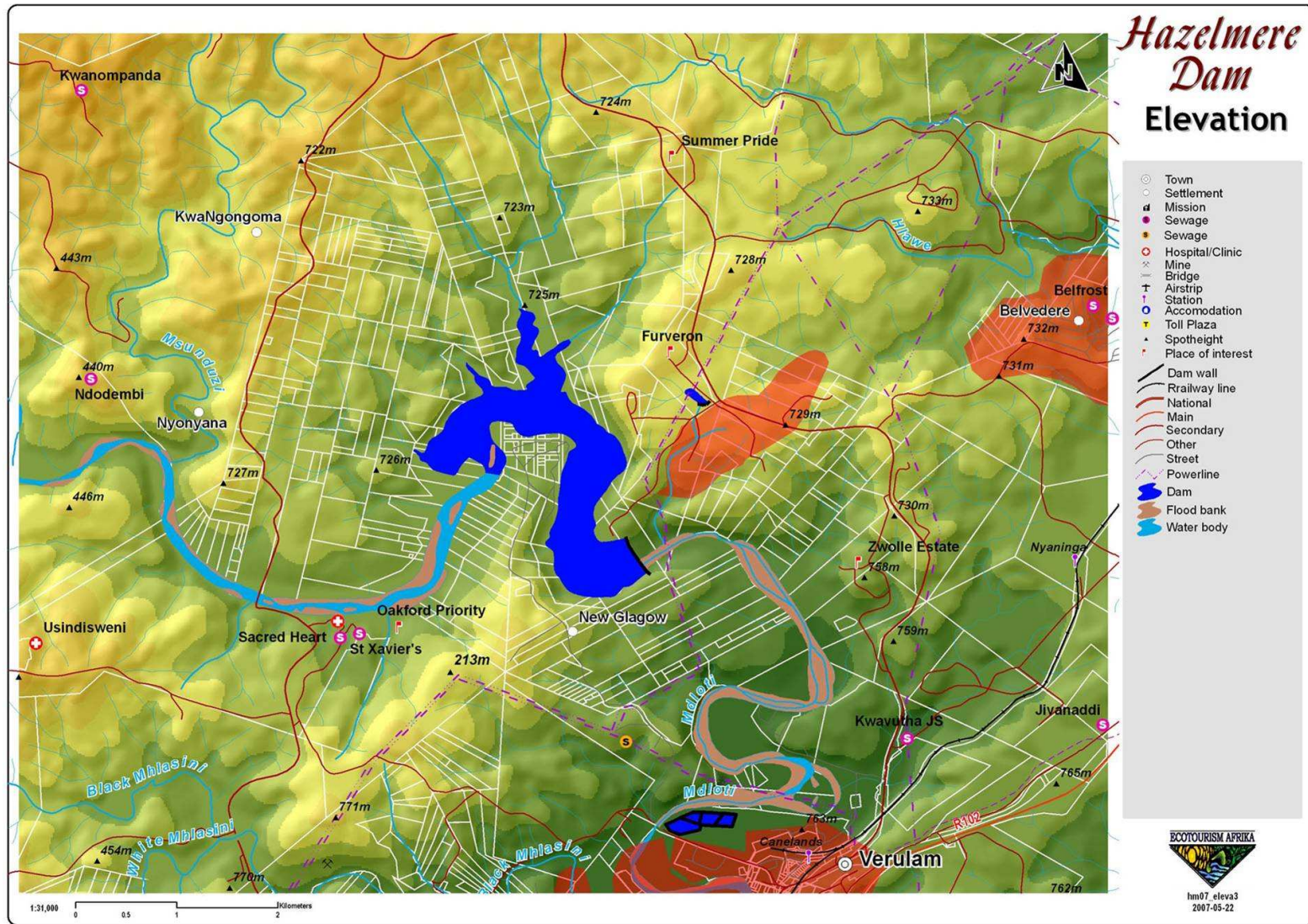


Figure 18: Elevation (Local)

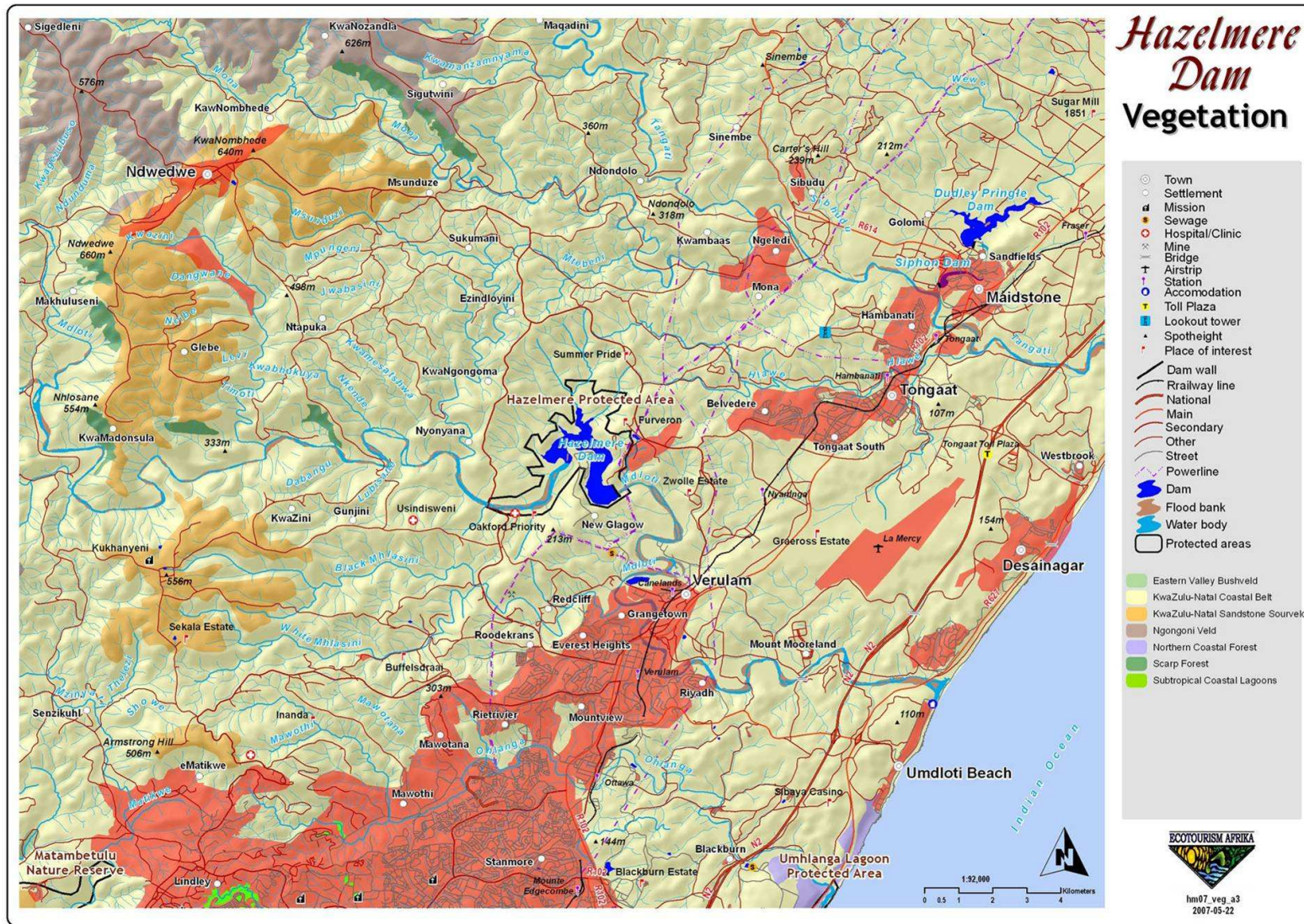


Figure 19: Vegetation

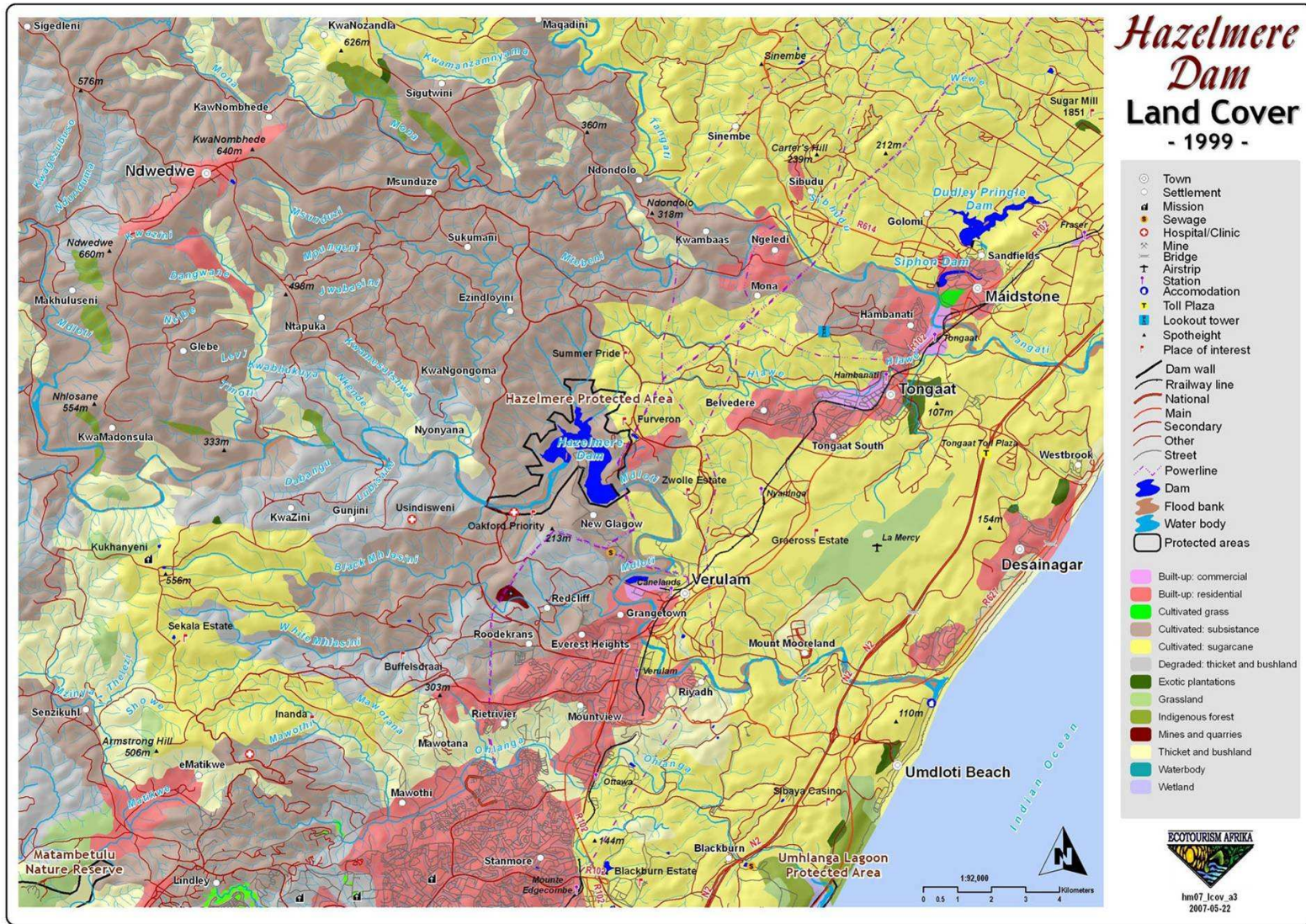


Figure 20: Land Cover

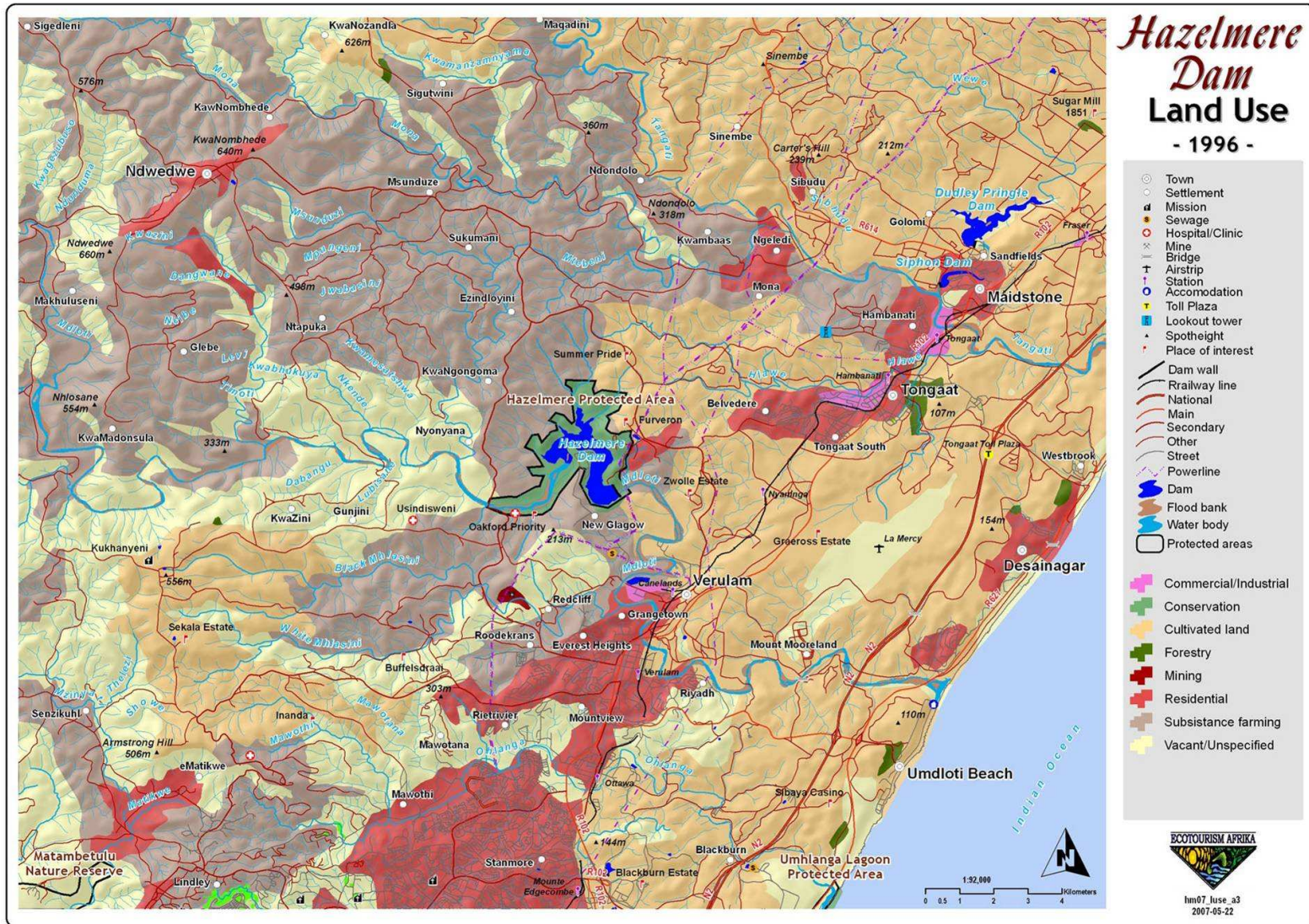


Figure 21: Land Use

## **APPENDIX C: MASTER PLAN**

- Figure 22: Hazelmere Dam Master Plan
- Figure 23: Hazelmere Dam Master Plan: Access
- Figure 24: Hazelmere Dam Master Plan: Use
- Figure 25: Hazelmere Dam Master Plan: Development
- Figure 26: Hazelmere Dam Master Plan: Infrastructure
- Figure 27: Hazelmere Dam Precinct Plan

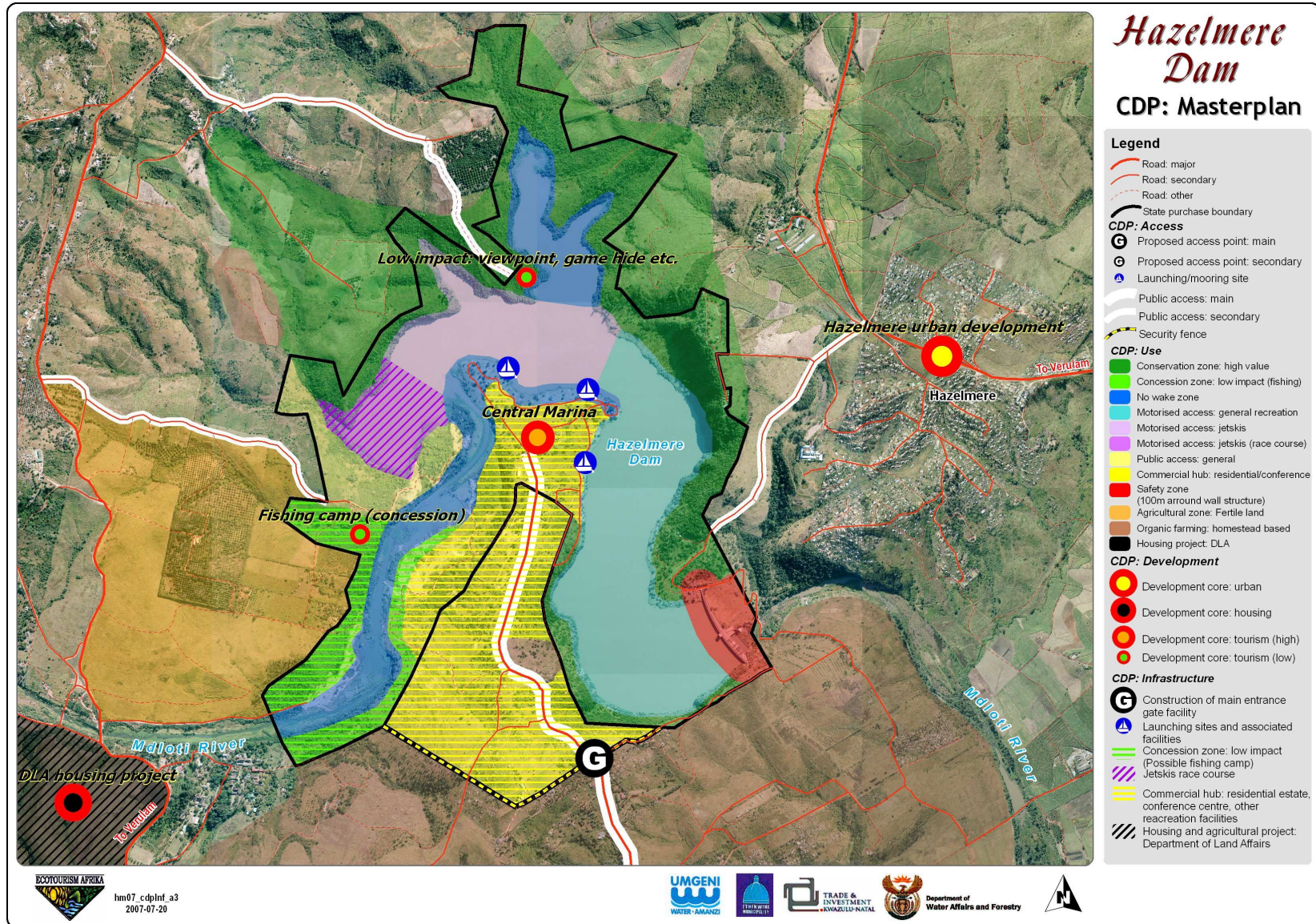


Figure 22: Hazelmere Dam Master Plan

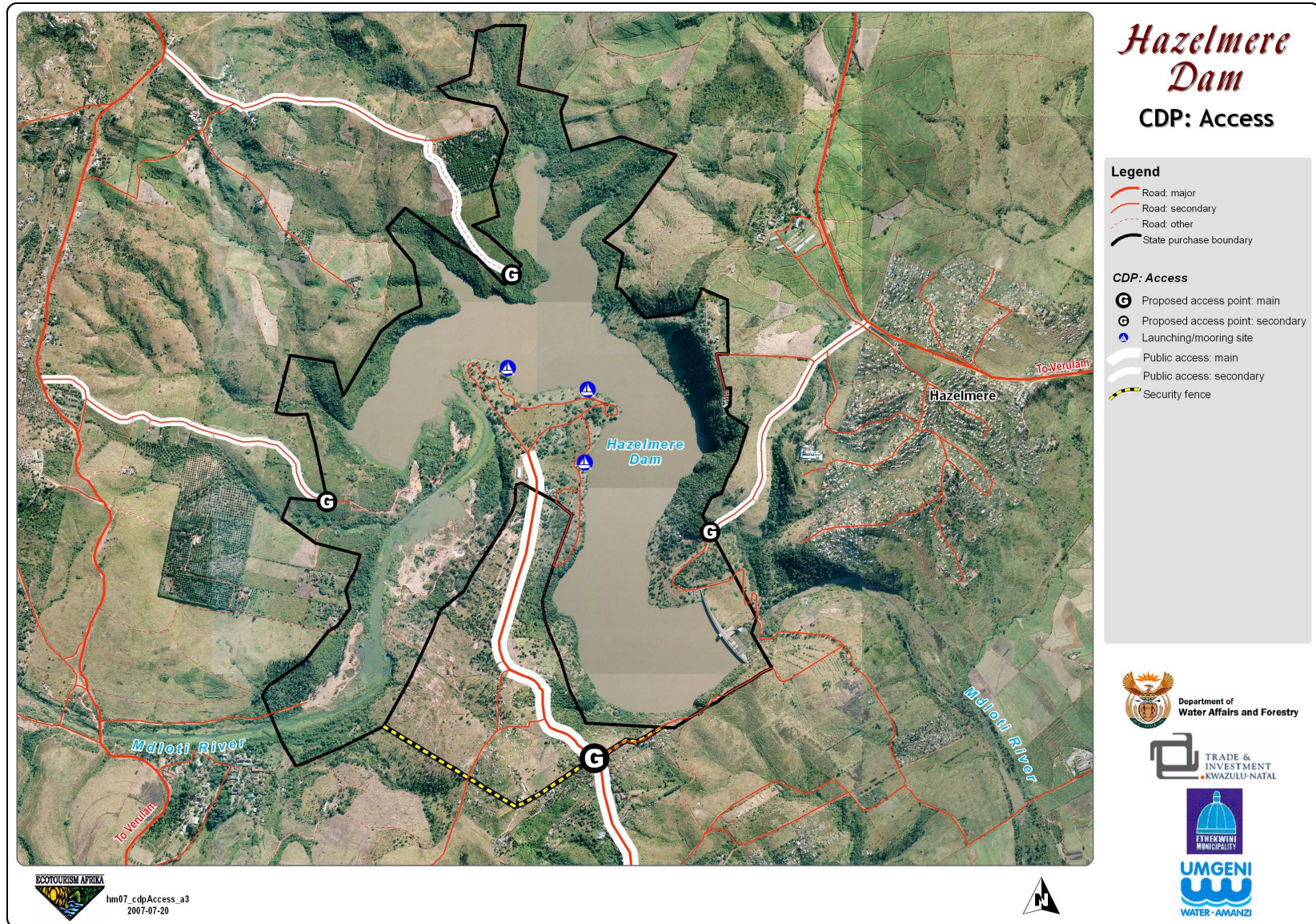


Figure 23: Hazelmere Dam Master Plan: Access

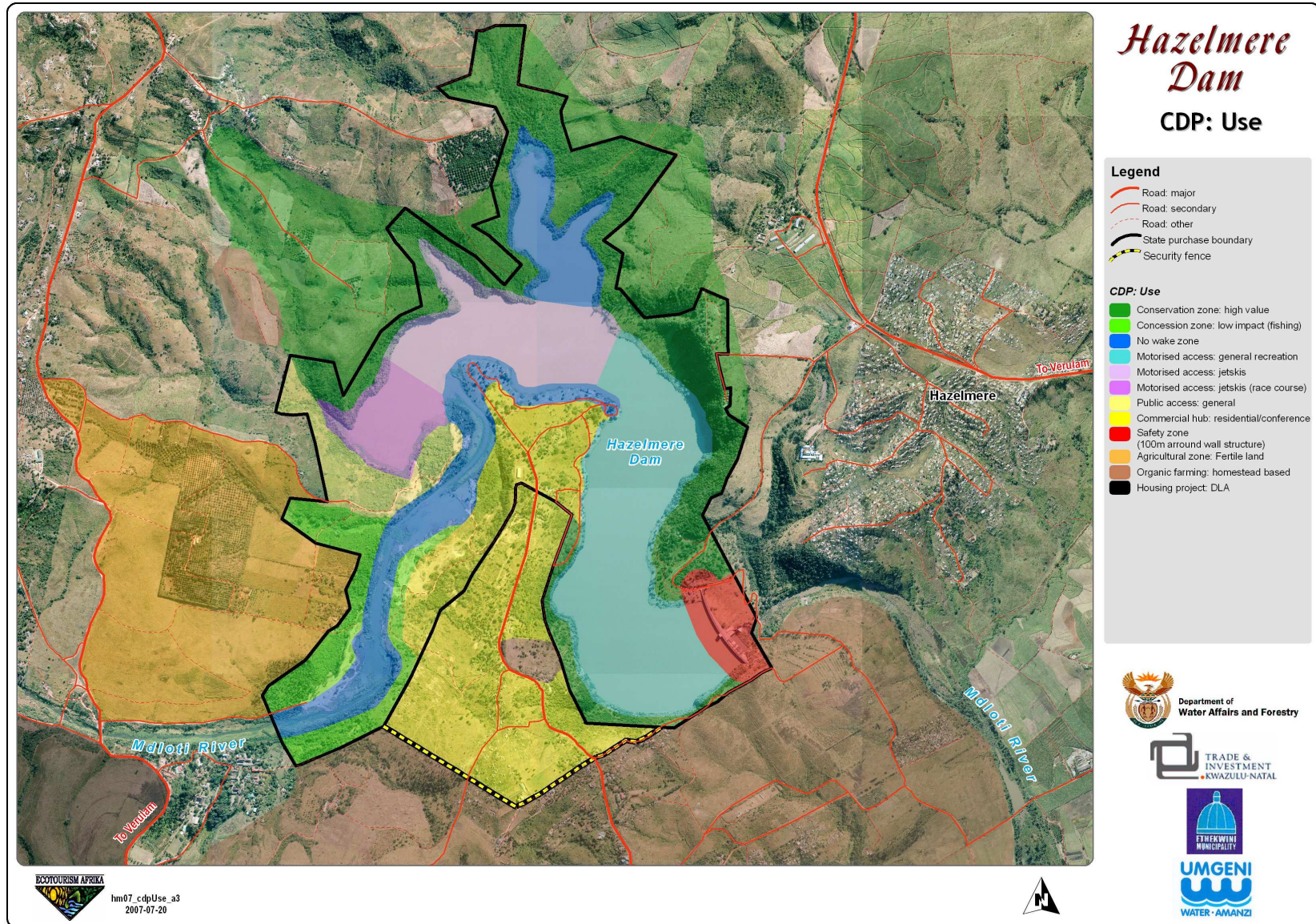


Figure 24: Hazelmere Dam Master Plan: Use



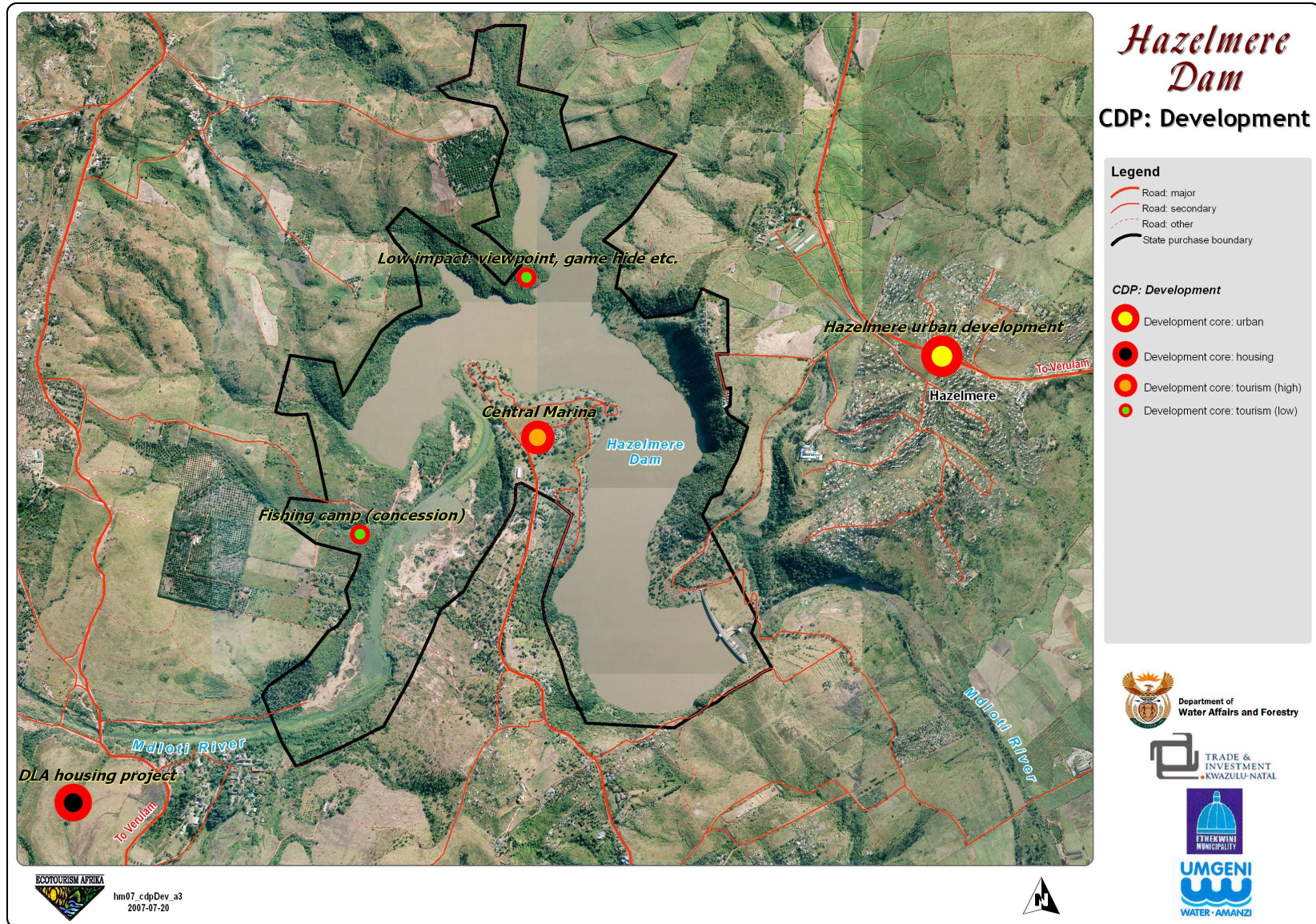


Figure 25: Hazelmere Dam Master Plan: Development

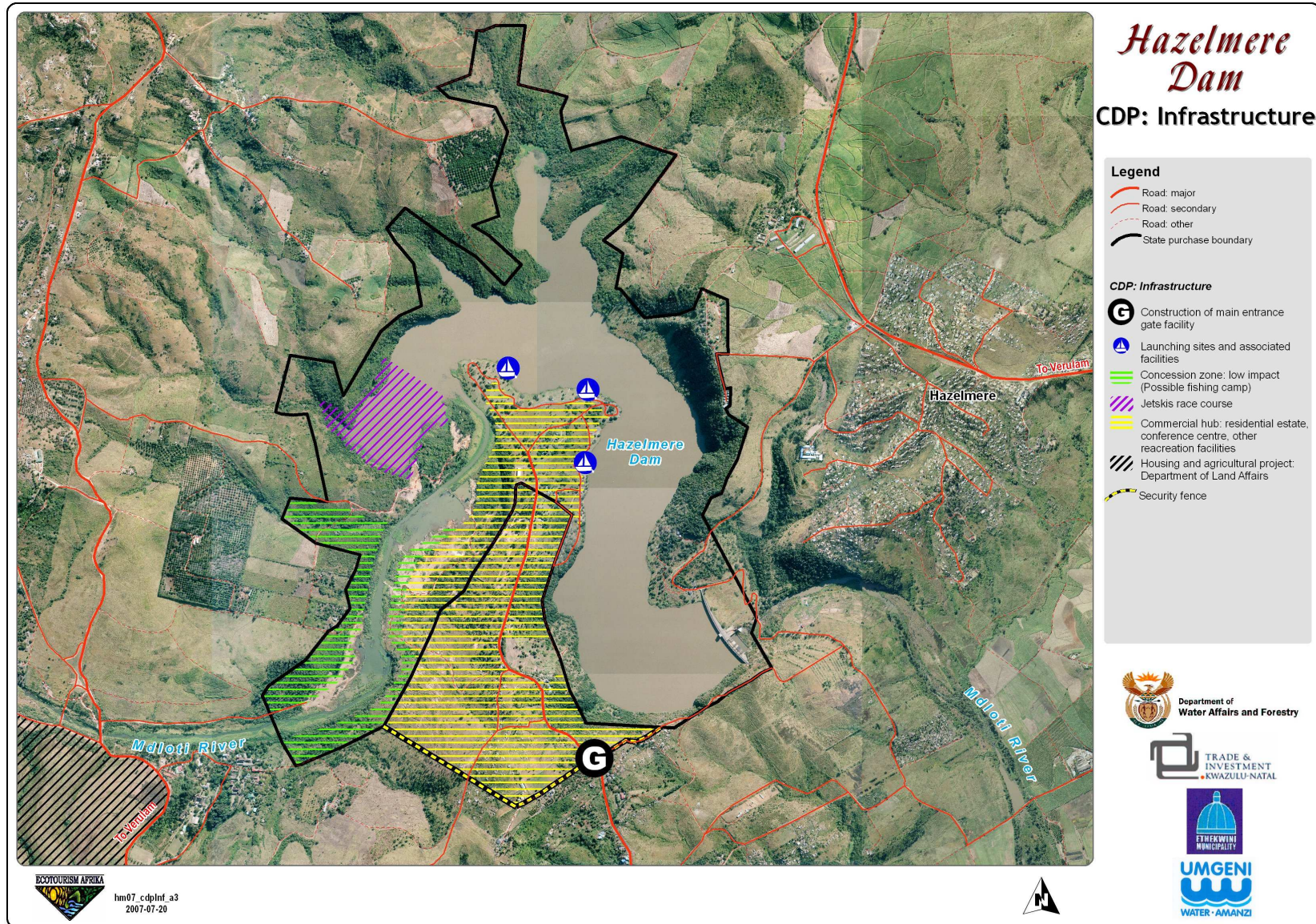


Figure 26: Hazelmere Dam Master Plan: Infrastructure

