ENVIRONMENTAL MANAGEMENT FRAMEWORK
FOR THE
ALBERT FALLS DEVELOPMENT NODE

ENVIRONMENTAL MANAGEMENT FRAMEWORK

Volume I

Strategic Environmental Management Plan

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VOLUME I
Strategic Environmental Management Plan

Prepared For

Umshwathi Local Municipality

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OCTOBER 2013

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1. INTRODUCTION

1.1 Background

The uMshwathi Municipality has identified an area with development potential. The area is approximately 20 000 ha in extent and draws on its strategic location around the junction of the R33 and R614, its close proximity to Pietermaritzburg and the tourism and recreational opportunities provided by the Albert Falls Dam (AFD). The Municipality held local development summits in 2007 through which they established broad political, economic and investor support for a concept titled 'uMshwathi City' that proposed the establishment of mixed urban, tourism and recreational infrastructure in the area. The attraction of the node has subsequently been expressed through the relatively high number of development applications that have recently either been lodged or approved. In keeping with the Municipality's responsibility to promote '*sustainable development*' the Municipality in consultation with the Department of Agriculture and Environmental Affairs (DAEA) selected an Environmental Management Framework (EMF) as the tool to guide development in the node in a sustainable manner. The Municipality appointed the Institute of Natural Resources (INR) to develop the EMF on their behalf.

1.2 Project Purpose and Structure

The aim of the EMF is to: "*Guide development within the Albert Falls Development Node towards Sustainability" by:*

- *Informing development planning*
- *Informing the EIA process for specific development applications, and*
- *Providing management guidance for responding to key sustainability issues.*

This is in line with the aims of an EMF as defined below in the extract from the EMF regulations.

PURPOSE OF AN ENVIRONMENTAL MANAGEMENT FRAMEWORK

The EMF regulations (Section 2) list the purpose of the regulation as: *Compilation of information and maps specifying the attributes of the environment in a particular geographical area:*

a) For such information to inform environmental management, and
b) For such maps and information to be used as environmental management frameworks in the consideration of applications for environmental authorisations in or affecting the geographical areas to which those frameworks apply.

Section 2 (3) further explains that EMFs are aimed at:

a) Promoting sustainability.
b) Securing environmental protection.
c) Promoting cooperative environmental governance.

The project is structured into four phases each of which builds on the outcomes of the preceding phase in working towards the overall outcomes. The objectives and deliverables of each phase are summarised below.

INCEPTION

Purpose – To document the required outcomes of the project, how they will be achieved and the mechanisms for managing the process.

- ***i.*** A common understanding and the purpose, nature and format of desired project outcomes for each phase,
- ***ii.*** The relationship between each phase and the associated outcomes,
- ***iii.*** The approach and methods for achieving these outcomes,
- ***iv.*** Project management mechanisms required to efficiently and effectively achieve the outcomes.

Output – Inception Report

STATE OF ENVIRONMENT

Purpose - Establish a baseline understanding of the state of the environment within the development node and more specifically:

- ***i.*** Map the location and extent of land-use, natural systems and features in the receiving environment.
- ***ii.*** Classify the mapped systems and resources within different components of the receiving environment (social, cultural, biophysical).
- ***iii.*** Establish the present state (PS) of resources within the different components of the environment.
- ***iv.*** Document the factors responsible for the current state of the environment components.

Output – State of Environment Report

STRATEGIC ENVIRONMENTAL ASSESSMENT

Purpose - Establish a desired future state.

- ***i.*** Summarise the state of natural systems and discuss their socio-economic value.
- ***ii.*** Identify, analyse and discuss the implications of key environmental issues – how the current state of natural systems is affecting people's well-being and economic prosperity.
- ***iii.*** Establish a Desired Future State – objectives, targets and thresholds that will minimise/reverse negative impacts of the current situation and/or enhance positive aspects.

Output – Strategic Environmental Assessment Report

ENVIRONMENTAL MANAGEMENT FRAMEWORK

Purpose – Guide the municipality in planning and implementing sustainable development in the development node, through a range of tools that comprise the EMF including:

- ***i.*** Strategic Environmental Management Plan (SEMP) - provides guidance on how to move from the Present to Desired future state by detailing the actions, methods and responsibilities for addressing key environmental issues and maximizing opportunities.
- ***ii.*** Environmental Information Management System (EIMS) – spatial tool for data management and decision support.
- ***iii.*** Development Planning Zones & Guidelines – guides location of development types & conditions for planning approval. Also informs the update of other planning instruments like the SDF and LUMS.
- ***iv.*** Environmental Sensitivity Zones & EIA Guidelines – defines the sensitivity of areas in relation to natural systems and guides the nature and level of investigation during the EIA process.
- ***v.*** Training and guidelines for use of the EMF.

Output – Volume 1: Strategic Environmental Management Plan
Volume II: Environmental Assessment Guideline
Volume III: Environmental Guideline for development Planning
GIS: Spatial Information System

1.3 Location and Extent of the Development Node

The EMF study area is approximately 20 684ha in extent or 11.4% of the total municipal area (Figure 1). The boundaries of the study area are detailed in Figure 2. The node is located within the south-western section of the uMshwathi Municipality and is bordered by the Mgeni Municipality in the West and the Msunduzi Municipality in the south. The Mpolweni River forms the eastern boundary until its confluence with the Umgeni River downstream of AFD. From this point, the boundary runs roughly parallel to the R33 until it intersects the boundary of the Msunduzi Municipality above Copesville.

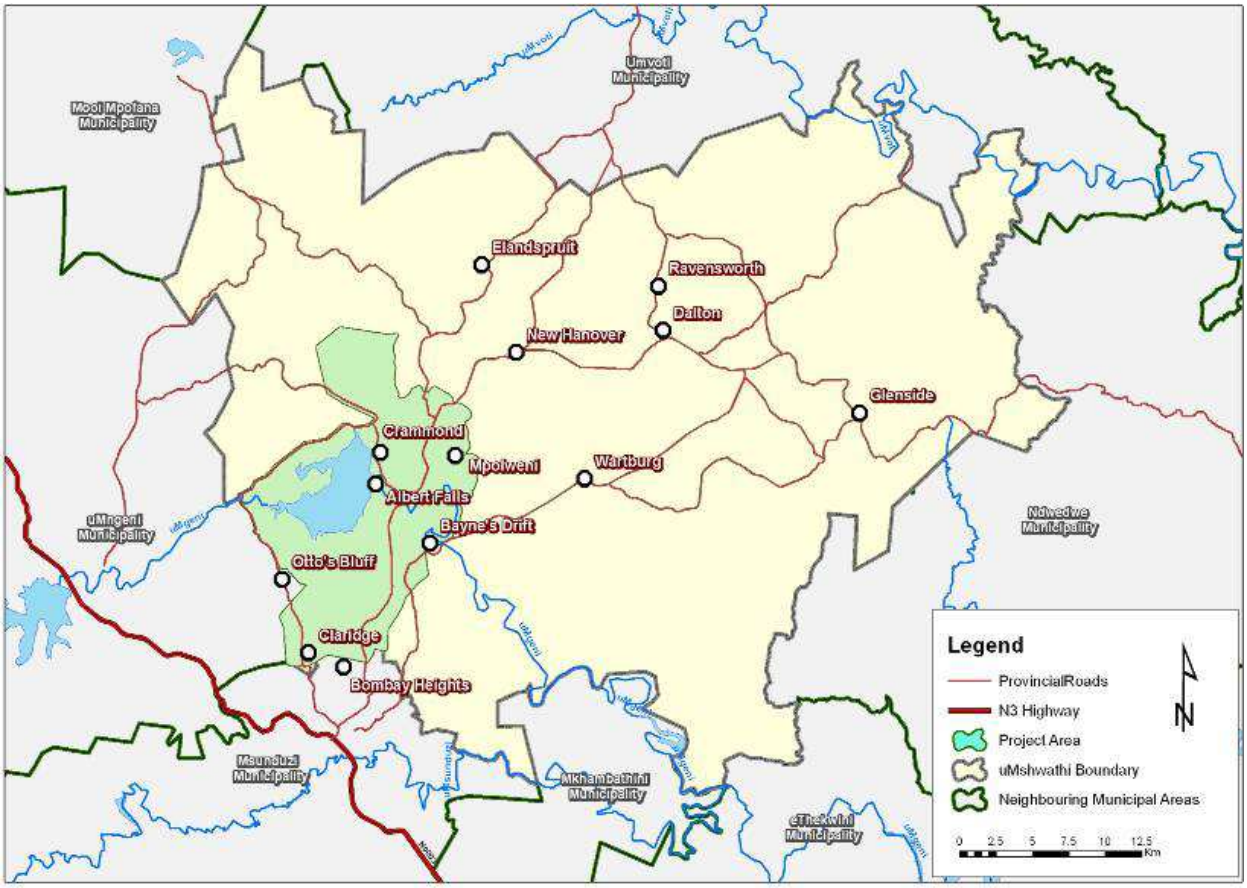

Figure 1 Location of the study area in relation to the municipality

The study area is larger than that of the original area defined for the uMshwathi City Development Node. The node boundary was extended to include the Mpolweni area in the East. It was also extended in the West, from the boundary of the AFD to the Otto's Bluff Road to account for the development pressure being exerted on the area surrounding the dam. It is important to note that 2 826 ha or 13.4% (including a 730ha section of AFD) of the study area south west of AFD is located within the Mgeni Municipality. This area was included because it forms the immediate catchment to AFD and the dam is recognised as a strategic asset to both municipalities in terms of its value for tourism and recreation, and to the province in terms of its role as a water storage facility.

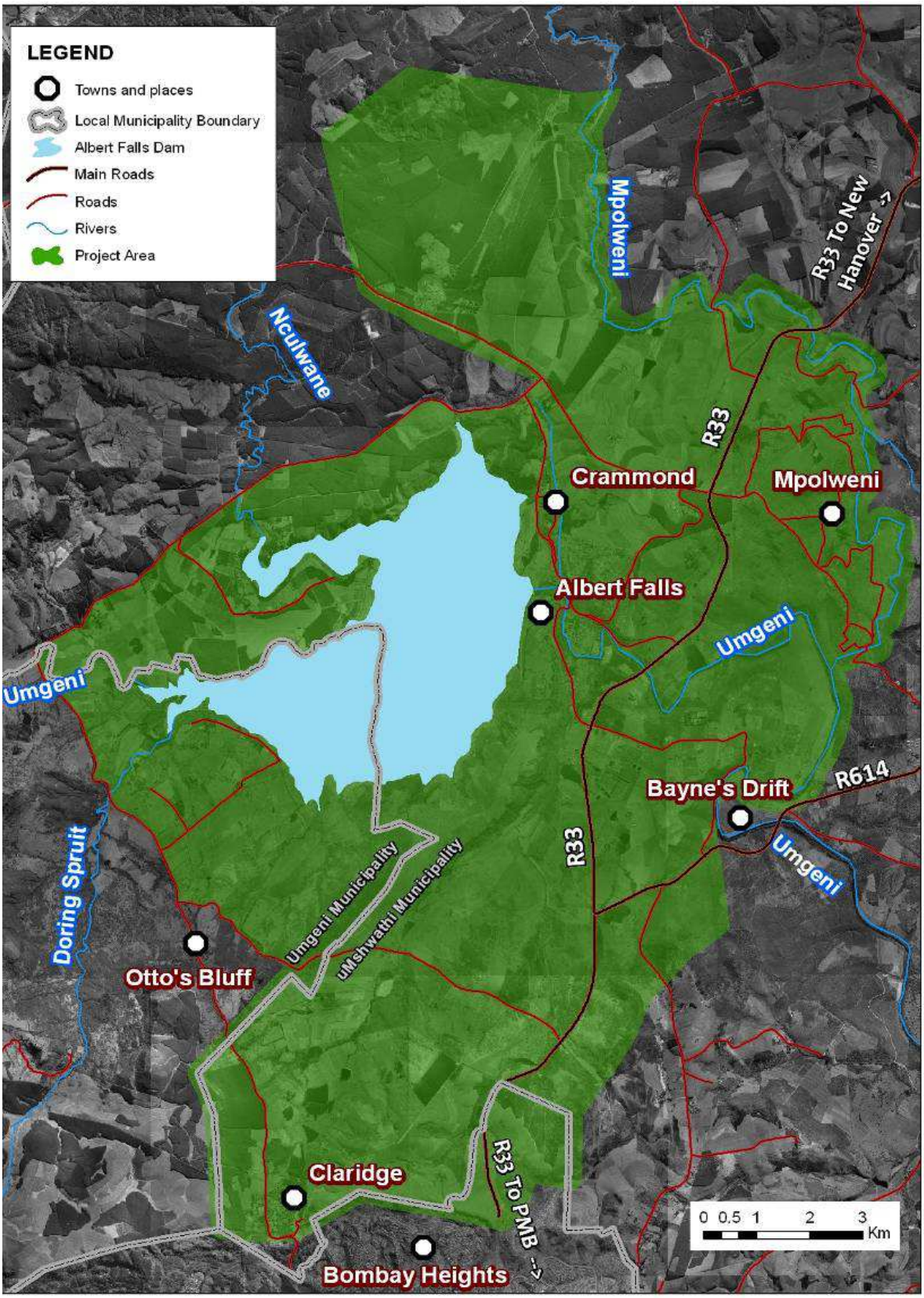

Figure 2 Study area and spatial context

2. STRUCTURE OF THE EMF

The broad aim of the Environmental Management Framework (EMF) is to "*Inform sustainable development planning for the Albert Falls Development Node and to streamline the EIA process for specific development applications",* while the EMF regulations include more specific requirements. The four outputs summarised in the figure below constitute the EMF and all have a role to play in meeting the project aims and the legal requirements. ***This document is Volume I*** of the EMF outputs.

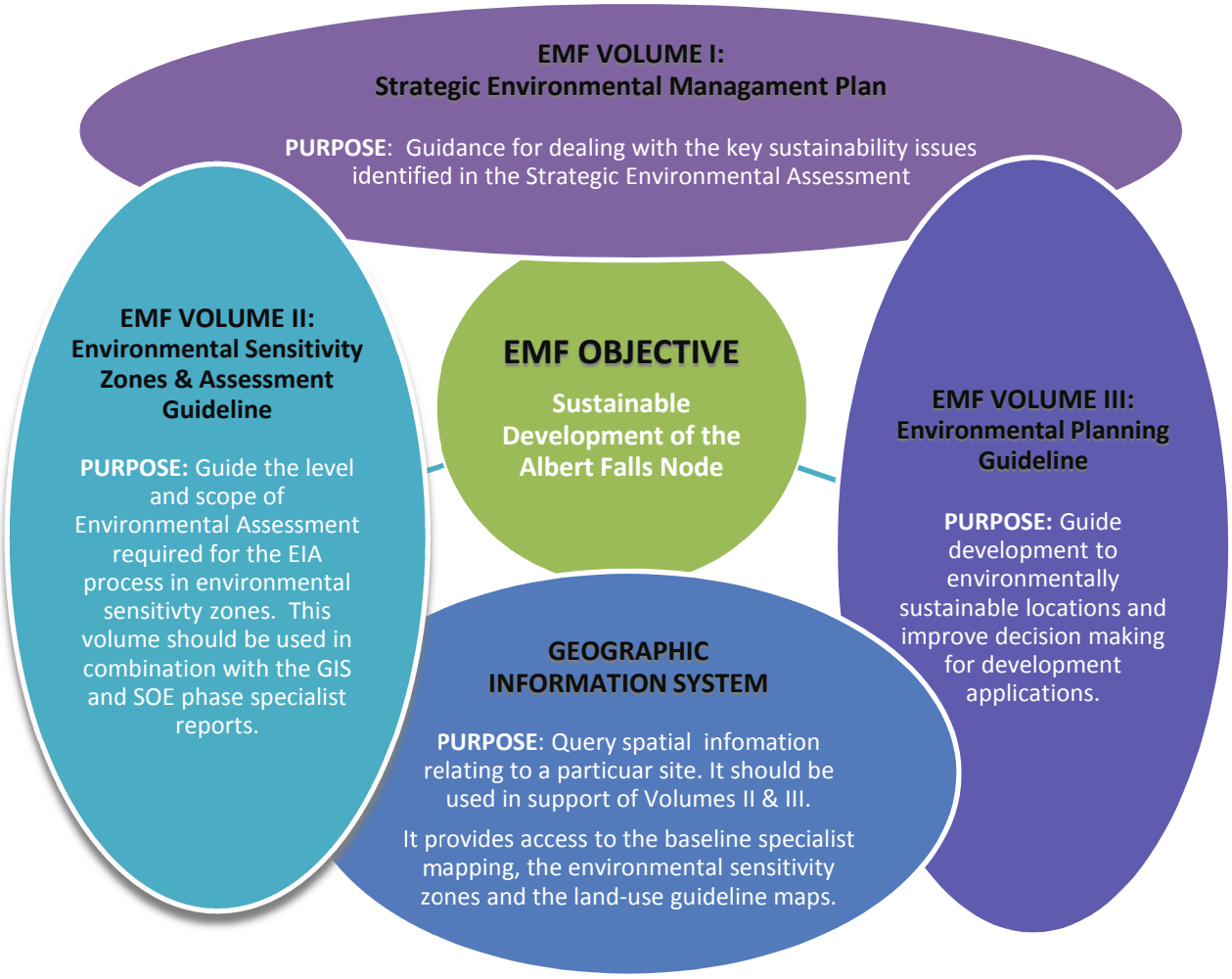

Figure 3 Structure and components of the EMF

2.1 Purpose of this Guideline

The sustainability issues identified in the strategic environmental assessment reflect the cumulative impact and this understanding has informed the level of sensitivity built in to both Volume I and II. The guidance in these volumes assists in moving towards the desired future state by guiding new development in terms of where and how it should be established and operated. Due to the specific scale of the guidance in volumes II and III, and the fact that it is considering new development, it is not designed to target the existing sustainability issues or the causes of these.

It is therefore the purpose of this guideline to list, describe and prioritize sustainability actions (SAs) required to address key sustainability issues and thereby move towards the desired future state.

These SAs vary in character and may:

- Be proactive in nature, such as amending planning zones to protect high value natural resources delineated in the EMF that are under threat. They may also be re-active, such as rehabilitating degraded areas to improve the habitat and functional value of natural systems.
- Vary in their nature. They may either include physical actions such as rehabilitation interventions or involve changes to planning instruments and conditions. They may also be actions required to address current shortcomings in the environmental governance framework, like training of municipal staff. In most cases, a combination of these types of SAs is required.
- Be the responsibility of the municipality alone, such as amending the spatial planning instruments to provide improved protection to valuable natural resources. Alternatively they may require involvement of a wide range of stakeholders, as in the case of establishing a catchment management plan.

2.2 Who should Use this Guideline

This tool is designed to assist the municipality in meeting their responsibility to facilitate 'sustainable development' within their jurisdiction by addressing the key sustainability issues. Environmental management is a shared responsibility. In many cases, neither the cause, nor the overall responsibility for addressing these issues is the municipality's alone. Co-operative governance is therefore an important focus of dealing with key issues, and the actions outlined list the other role-players that need to be involved in assisting to implement these actions. It is up to the municipality to use the information generated in the EMF, and particularly the SEA as motivation for involving the required role-players in designing the SAs in more detail and then implementing them.

2.3 Structure of the Guideline

The following is provided for each issue:

- A summary of the issue.
- The social and economic implications of the issue.
- The sustainability objective set by stakeholders.
- Recommended 'sustainability actions' (SAs) for addressing the issue including responsibilities for implementing these.
- Indicators for monitoring progress towards addressing the issues.

In many cases, the Sustainability Actions (SAs) recommended to address a particular issue will also contribute to addressing another issue. The sustainability actions are therefore numbered to allow for cross referencing where they do address more than one issue. As management resources are often limited, it is necessary to prioritize which actions need to be undertaken as a matter of urgency, which are important, and which can be planned to undertake in the medium to long term. The concluding section of the guideline prioritizes SAs.

2.4 Applying the Guideline

The value of this guideline lies in its implementation which requires that the following takes place:

i. Development of Detailed Programmes and Projects

Certain of the SA's listed can be implemented without further planning. An example would be the municipality identifying a representative to attend the Catchment Management Forum meetings to express their concerns with regards the impact of declining water quality. However, as this is a strategic level plan, certain management responses require the development of more detailed programmes and projects. Guidance is provided on the role-players to involve at each step required to convert the strategic level action to detailed programmes and projects.

ii. Monitor and Evaluation

If a management response is not being effective then the resources allocated to its implementation are being wasted. Monitoring and evaluation is therefore an essential aspect of effective management. The guideline provides draft indicators that should be monitored to evaluate success of the actions. The monitoring and evaluation programme must be formalised and implemented as a key component of each SA. This includes detailing specifically, what will be monitored, what information will be collected as the measure of success, how often it will be analysed and reported, and who will be responsible for each of these.

In order to institutionalize the EMF within the municipal operating framework, it is necessary to review progress towards its implementation on an annual basis with the rest of the IDP. Similarly, the entire EMF should be revised on five yearly basis in association with the IDP revision cycle to account for the changing legal, institutional and development framework. The summarized list of SAs in the final section of the report provides a useful check list against which overall progress can be measured.

3. GUIDANCE FOR SUSTAINABILITY ISSUES

The following section presents a range of actions for addressing each of the seven main sustainability issues identified in the assessment process.

3.1 Poor and Rapidly Declining Water Quality

Declining water quality due to high generation of nutrients and bacterial levels throughout the Mgeni River catchment is negatively impacting people's health, increasing costs of treating water and poses a significant risk to the economy in terms of loss in the existing and potential value of the tourism, recreation and real estate associated with Albert Falls Dam.

Sustainability Objective

Improve water quality to levels which sustain ecological functioning, and human and economic users/uses.

Motivation: Capacity of the system (rivers and Albert Falls Dam) to dilute and treat nutrients and bacteria levels has been exceeded.

Implications for Development: Simply maintaining the status quo is not adequate – it must improve. An improvement has implications for both future and current development activities.

- **Future development**: Need to treat nutrients and bacteria to levels above current standards to limit the increase in the cumulative impact.
- **Existing economic activity**: Increase targets for nutrients and bacteria generated by existing polluters and implement management measures to achieve improved standards.

These measures are necessary to reverse current trends in the face of growing pressure.

Sustainability Criteria

Water Quality - nutrient and bacterial contamination

Indicators and Data Sources	Targets
1. Water Quality monitoring data Collected as per a routine water quality monitoring programme.	Not to exceed South African Water Quality Guidelines standards for Ph and Faecal Coliform/Ecoli concentrations for domestic and recreational use. ▪ Ph: 6.5 - 8.5 /100ml ▪ Faecal Coliforms (Ecoli): 130 – 400 /100ml.
2. Water use license monitoring data Provided as per licensing requirements by licensed polluters.	100% compliance with standards.
3. Green drop reports Performance of waste water treatment facilities within study area and upstream of Albert Falls Dam.	100% compliance with standards.

Sustainability Actions

ACTION	ACTIVITIES/Process	RESPONSIBILITIES
1. Set Appropriate Water Quality Standards in the Catchment ***Motivation***: In order to meet the desired future state of improved water quality, appropriate standards for water quality need to be set and maintained.	**Engage in National Water Classification Process for the Mvoti-Mzimkulu Water Management Area.** The national water resource classification process involves the setting of the environmental management class (EMC). The EMC expresses the type of river that society desires i.e. a healthy system or a hardworking system (lower quality). The environmental reserve (how much water is required for people and ecosystems within the catchment to maintain the desired EMC) is then set along with Resource Quality Objectives (RQOs). RQOs are the specific standards for both human and ecological users that the system must be managed for. These are the primary mechanisms within the National Water Act (NWA) for managing all water resources (including groundwater and wetlands). The outcomes of this process: EMC, Reserve, and RQOs are legally binding on all users. The classification process for the Umvoti-Umzimkulu Water Management Area has been initiated and includes public participation in setting the quality standards. It is essential for the municipality and other role players in the catchment to inform appropriate quality objectives through this process. Importantly the Classification Process requires that any existing 'visions' are considered in setting the EMC. The desired future state (DFS) set during the SEA phase (and the supporting motivation) is therefore appropriate and needs to be brought to the attention of those responsible for running the process.	**Responsibilities** The municipality along with other members of the local catchment management forum must register their involvement in and participate in the process of setting appropriate EMC and RQOs. Given that the process has already commenced, this is a priority action. The classification process is run by the Resource Directed Measures office of the National Department of Water Affairs (DWA). http://www.dwa.gov.za/rdm/WRCS/default.aspx **Contact Person:** Nyamande Tovhowani "Tovho" (Ms) Pr.Sci.Nat Department of Water Affairs; Zwamadaka 204; P/Bag X313; Pretoria; 0001 Tel: 012-336 7521; Fax2e-mail: 0862128660; E-mail: NyamandeT@ dwa.gov.za
2. Develop a Resource Management Plan for Albert Falls Dam ***Motivation***: There is no resource management (RMP) plan for the dam. This a clear gap in terms planning policy given that the RMP would will guide and control impacting activities immediately bordering the dam which are currently understood to be negatively impacting the state of the resource – such as pollution from no/inappropriate sanitation infrastructure and water craft spreading alien invasive	**Prioritise the Initiation of a Resource Management Plan for Albert Falls Dam** It is DWA's policy that water resources and government waterworks are managed, controlled, conserved, protected, developed and utilised for recreational purposes in a sustainable and equitable manner, where appropriate based on integrated water RMPs developed in association with stakeholders. Without such plans it is difficult for informed decisions to be made, necessitating a precautionary approach to access, utilisation and development proposals around major dams. Four main key performance areas are addressed in these plans, namely: - resource management; - utilisation management; - benefit flow management; and,	**Responsibilities** The DWA is responsible for Resource Management Plans. The municipality needs to engage Msinsi, Umgeni Water, the regional DWA office, via the Catchment Management Forum to prioritize the initiation of a RMP process for AFD. The DWA head office are: ***Water Resources*** Sub-directorate Environment and Recreation Tel: 012-336 8224 Fax: 012-336 6608 E-mail: deb@dwaf.gov.za

aquatic weeds.	- institutionalisation. The RMP will provide the managing body (Msinsi) and the municipality with an additional tool for commenting on development applications within the scope of the RMP.	***Government Waterworks (State dams)*** Directorate Integrated Environmental Engineering Tel: 012 336 8681 Fax: 086 215 1589 E-mail: govenderm@dwa.gov.za
3. Improve the Capacity of Natural Systems to Ameliorate/dilute poor water quality ***Motivation*:** Natural systems like grasslands and particularly wetlands intercept and naturally remove pollutants. The study has shown that health of the majority of wetlands and grasslands is moderate to poor. Improving the health of these systems will improve their capacity to reduce current levels of bacteria and nutrients in the Mgeni catchment.	**Establish a Resource Inventory and Rehabilitation Programme for the Development Node** The inventory should build on the mapping undertaken for the EMF, but will need to be more detailed in defining the condition of systems and prioritizing those for rehabilitation. Prioritization would be based on: - Conservation value of the system (where it supports high value species and/or habitat) - Functional value, such as a wetland upstream of Albert Falls that can intercept and treat water quality, or downstream of a point source of pollution, like a feedlot or waste water treatment facility. The inventory should include both aquatic systems (rivers and wetlands) and terrestrial areas (grasslands and woodland). This specific plan should form part of the Integrated Catchment Management Plan (see SA 6).	**Responsibilities** The municipality should work with the following role-players and programmes: Landowners – through the relevant farmers and ratepayers associations. KwaZulu-Natal Working for Wetlands Programme : Mbali Kubheka Provincial Coordinator - KZN Working for Wetlands Programme South African National Biodiversity Institute (SANBI) 2 Swartkops Road, Prestbury, Pietermaritzburg Tel: 033 - 344 3585, Fax: 086 585 4670 Cell: 072 819 4895 E-mail: M.Goge@sanbi.org.za The Mondi Wetlands Programme should also be approached as they have developed a sustainable farming programme (SusFarms) with the local Cane Growers Association that involves appropriate wetland management. The contact person is: Vaughan Koopman: Co-ordinator, Sugarcane Farmers Programme, Tel: 012 667 6597 The South African National Biodiversity Institute (SANBI) have recently (November 2013) launched the Umgeni Ecological Infrastructure Partnership (UEIP). The partnership is focussed on investing in the rehabilitation and maintenance of ecological infrastructure to improve their functional value to society and

		also protect large state infrastructure such as Albert Falls Dam from the impacts of resources degradation like pollution and siltation. The initial focus of the partnership is to develop projects. They are working through the District Municipality as the Water Services Authority to coordinate the identification and prioritisation of projects. The Umshwathi Municipality needs to register as a partner or member of the partnership and engage with the District Municipality in order to identify projects within the development node surrounding AFD. Uthungulu District Municipality Contact: Mr Riaz Jorgat: riaz.jogiat@gmail.com Mr. Mahlodi Tau SANBI: Grasslands Programme Tel: 012 843 5000 Fax: 0865559839 Email: m.tau@sanbi.org.za www.grasslands.org.za
4. Appropriate Municipal Planning ***Motivation***: Natural systems play an important role in ameliorating water quality impacts. New development needs to be both sensitive to wetland, riparian and terrestrial systems (grasslands, forests) and contributes to their improved health. The lack of, or inappropriate sanitation infrastructure is one of the sources of the bacterial contamination in the catchment. This requires that gaps in existing sanitation infrastructure are addressed, and that there are strict controls on new development in terms of the capacity and type of sanitation that is implemented.	**Integrate Natural Resources into Development Planning** *i. Wetland/Riparian Systems* It must be a condition of the authorisation or planning approval for any development on a property that includes a wetland, river or stream with riparian habitat that a wetland rehabilitation and management plan is developed and implemented. *ii. Establishment of an open Space System* The delineation of an open space system (OSS) and inclusion of this within the municipal spatial planning outputs such as the SDF and LUMS, with development conditions such as those above would provide an important mechanism for improved consideration of green infrastructure within development planning and implementation. The OSS will be informed by the mapping undertaken in the EMF, but will require additional work to refine and combine the various natural systems in a coherent plan. In addition, conditions will need to be built into this zoning definition to protect these areas from degradation.	**Responsibilities** It is the responsibility of the municipal planning department to establish an open space system and ensure that the proposed conditions protecting these areas are built into development applications and authorisations. It is recommended that that specialist environmental expertise are contracted to develop the OSS in collaboration with municipal planning section. The technical services and engineering department are responsible for ensuring that any municipal sanitation infrastructure or complies with these recommendations. They are also responsible through a review process to ensure that all new development proposals

	iii. Sanitation Infrastructure The following considerations should be taken into account when authorising development applications: - There must be a high level of confidence that the capacity and type of sanitation, or Waste Water Treatment Works (WWTW) developed for new projects will be able to treat waste water to the standards set in terms of the RQO **(see SA 1)** - Contamination of groundwater is avoided. Pit latrines and VIPs are not recommended due to the impact on groundwater – particularly in the case of high density, large scale low cost housing. Alternative technologies should be investigated such as Urine Diversion Dehydration (UDD) toilets as those utilised in eThekwini. - Conservancy tanks rather than septic tanks are used in the case of isolated dwellings with regular removal and treatment at a WWTW. - The selection and location of all sewage containment and treatment facilities is informed by a detailed geo-hydrological investigation and layout indicating the location of facilities in relation to natural water resources.	comply with these recommendations.
5. Development and Management of Appropriate Sanitation Services by the Municipality ***Motivation***: The municipality builds new infrastructure that requires sanitation infrastructure. The municipality also manages existing sanitation infrastructure. As, indicated in 4 above, the lack of existing and inappropriate sanitation infrastructure in new developments is a major source of the high levels of bacterial contamination in the catchment. In the case where the municipality is the developer of new, or responsible for existing infrastructure, they need to ensure that appropriate sanitation infrastructure is implemented.	**Development of Appropriate Sanitation Infrastructure and Maintenance or Existing Infrastructure** In the case where the municipality is responsible: *i. Development of appropriate sanitation infrastructure for new projects* in line with guidance provided in SA 4 iii. *ii. Maintenance of existing Municipal projects* needs to adhere to the requirements of the green drop programme.	**Responsibilities** The municipal planning and technical services are responsible for ensuring that appropriate infrastructure is planned and implemented by the municipality and that existing infrastructure is operating appropriately, and replace it where its capacity has been exceeded and is negatively impacting the condition of the receiving resource.
6. Development of Integrated Catchment Management Plans ***Motivation***: A catchment management plan is required to prioritise issues and establish	**Apply Guidelines in Developing Integrated Catchment Management Plan** The ICMP should document the causes of the current issues (water quality and other) and document an integrated water quality and river health monitoring system that will inform management responses. Ideally the CMP	**Responsibilities** This should be a catchment management forum driven process with support from the DWA as the responsible government agency. It should

an integrated approach to addressing the aims and objectives.	should be an extension of the Upper Mgeni CMP prepared by Groundruth[1] and similarly include a comprehensive suite of responses including some of the key actions listed above as the development of an RMP for AFD **(SA 2),** and a resource rehabilitation programme and projects. It should comply with the DWA guidelines for developing CMPs, and the associated guidelines for integration of stakeholders in this process.	involve representatives from all stakeholders within the catchment. The Catchment Management forum is good vehicle through which to initiate the consultation process. The upper Mgeni ICMP is also relevant because it deals with the same land-use and water quality issues. The ICMP must also integrate the outcomes of the classification, reserve and RQO process.
7. Representation by the Municipality in the Catchment Management Forum ***Motivation***: In order to raise awareness and drive action to address the negative impacts of water quality, the municipality needs to be represented and participate in the CMF on a regular basis.	**Attend and Participate in Catchment Management Forum Meetings and Initiatives** The SAs discussed above have highlighted the need for the permanent and regular involvement by the Municipality on the Catchment Management Forum. It is through the CMF that many of the SAs listed above will be raised and initiated. The CMF also involves the broad range of stakeholders that need to be engaged and/or involved in developing the ICMP. This involvement will also contribute to capacity building for the official selected to represent the municipality on the CMF.	**Responsibilities** The Municipality need to identify an appropriate person/position to represent them in the CMF. Bernice C. Cullis Becker Assistant Director: Catchment Management Institutional Establishment DWA : KZN Tel: 031 – 336 2772 Fax: 031 – 336 2853 Cell: 082 889 7924

[1] Groundtruth. 2012. *Upper uMngeni Integrated Catchment Management Plan: Investigation of water quality drivers and trends, identification of impacting land use activities, and management and monitoring requirements*. Reference: GT0165-0812

3.2 Increasing Pressure to Transform High Value Agricultural Resources and Activities

Sustainability Objective

Secure the Existing and Potential value of the Agricultural Sector to the economy and food security.

Motivation: There is diverse, but integrated and well developed Agricultural System that optimises available natural resources. This sector is the cornerstone of the local and regional economy which is in decline. Loss of primary production (sugar, timber) will impact on associated secondary activities (mills) with significant impacts to the local and regional economy. Shrinking of the sector will increase unemployment, and reduce the capacity of the sector to improve the economic situation i.e. expand. This also increases social vulnerability. The identification and protection/optimization of high value agricultural land is a policy requirement. Having identified this land in the EMF –loss of this resource would be in contravention of this policy imperative.

Implications for Development:

- **Future Developments**: Future development must not result in the loss or degradation of productive land for primary production. Land-use that is sensitive to impacts from secondary agricultural processing or intensive production activities should be located at a distance from such enterprises in order to limit impact on operations and/or expansion.
- **Existing Land-use**: Optimise productive land and secondary activities to maximize the economic potential of the sector.

CRITERIA - Area of land under primary and secondary agriculture use & contribution of the sector to the economy

Indicators	Targets
1. Area of productive land under primary agricultural production – analysed using provincial land-use maps against the area mapped during the EMF as being of high potential or and/or current use for agricultural production.	100% of all land defined as suitable for agricultural production.
2. Contribution to Municipal Economy - as established through census data. a. Number of jobs generated within the agricultural sector. b. Proportion of GDP growth attributed to agricultural sector.	a. Increase in number of jobs created by the agricultural sector. b. Increase in the proportion of municipal GDP attributed to agriculture.

Sustainability Actions

ACTION	ACTIVITIES/Process	RESPONSIBILITIES
8. Appropriate Municipal Planning ***Motivation***: It is a policy requirement that productive agricultural land is delineated at as fine a scale as possible and retained for agricultural production.	**Integrate the Delineation of Productive Land Mapped in the EMF Process in Municipal Planning Outputs** The high value primary production land delineated in the EMF and associated secondary agricultural activities must be defined/zoned accordingly in the next version of the SDF and LUMS. Appropriate planning conditions and restrictions need to be built into the zoning.	**Responsibilities** It is the responsibility of the municipal planning section to ensure that productive agricultural land is defined as such in spatial planning outputs. The National and Provincial Departments of Agriculture need to be consulted regarding the drafting of planning restrictions and conditions.

3.3 Degraded State of Natural Systems

Sustainability Objective

Improve the Health and Ecological functioning of all natural Systems

Motivation: The degraded state of most natural systems (notably rivers, grasslands and wetlands) is reducing their capacity to provide key ecosystems services. This is significant because many systems are beyond their ecological or legal thresholds so they are no longer able to cope with negative inputs. This imposes costs on society to provide the services no longer supplied by the natural capital, for example, water purification. It also reduces the potential for economic activities supported by well-functioning natural systems – notably recreation and tourism activities.

Development Implications

- *Future Developments: Applications for future development must show how they will contribute to improved state of natural systems.*
- *Existing Land-use: Increased resources allocated to rehabilitation and management of natural systems in line with relevant legislation e.g. Conservation of Agricultural Resources Act pertaining to weed and erosion control.*

CRITERIA - Ecological Health of Natural Systems

Indicators	Targets
1. Proportion of land cover classes defined as eroded or degraded land Established via analysis of provincial land cover compared with previous version. Undertaken on 5 yearly basis.	1. 5% reduction every 5 years.
2. Resources allocated to land rehabilitation and management by government programmes Budget allocated to natural resources restoration and management.	2. Increase in the funds and number of management interventions instrumented in the node (number of working for programmes operating in the node).

Sustainability Actions

ACTION	ACTIVITIES/Process	RESPONSIBILITIES
9. Integrated Natural Resources Management Programme ***Motivation***: The only way to restore a level of functioning is to rehabilitate and then institute management plans to retain the restored functioning of natural systems. Such a programme would also generate employment - an added benefit.	**Develop and Implement an integrated Natural Resource Restoration and Management Plan** Relevant national and provincial working programmes should be engaged in establishing a co-ordinated approach to prioritizing systems for restoration and rehabilitating them. This includes wetland rehabilitation (as per **SA3**), alien species eradication and restoration/control of eroded areas.	**Responsibility** The municipality should approach relevant government programmes and NGOs to develop a co-ordinated approach dealing with the restoration of natural resources at a landscape level – covering terrestrial systems, wetland sand rivers. Likely partners include: ▪ Working for wetlands (see SA3). ▪ Working for water[2]

[2] Ryan Brundvig Working for Water DWA Midmar (Regional Office) 082 417 8886 brudvigR@dwa.gov.za

		▪ DAEA – Alien invasive species programme[3]. ▪ DAEA KZN LandCare Programme[4] ▪ Duzi-Umgeni Conservation Trust (DUCT)[5]
10. Develop a Suite of Standard Planning Conditions and Policy - as per SA4.	As per SA4	**Responsibility** As per SA4.
11. Operationalize Incentives for Improved natural Resource Management on Private Land ***Motivation:*** With limited application of punitive measures for poor land management, another mechanism is necessary. An incentive presents a beneficial option which aims to stimulate a positive landowner approach to natural resource management. The KZN Biodiversity Stewardship Programme operated by Ezemvelo KZNWildlife provides a range of incentives that increase with the level of management and protection agreed to by landowners. One of the incentives available to landowners is the rates rebates available to landowners in terms of the Local Government: Municipal Property Rates Act, No. 6 of 2004.	**Develop the policy and Instruments (processes, forms, audit procedures and content etc) to Operationalize Incentives for Improved Natural Resource Management** The option for incentivising land management through rates falls within the jurisdiction of the municipality. The requirements for qualification and associated requirements (processes, forms etc) for operationalizing the benefits should be investigated and developed accordingly.	**Responsibility** The responsibility for making the rates rebate incentive available to landowners should be the responsibility of the municipal planning section with assistance from a specialist and relevant government agencies - notably EKZNW[6] and the department of agriculture. This mechanism is being applied in other municipalities so examples of the mechanisms and processes for implementing the option exists and should be adopted/adapted for Umshwathi.

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3.4 Lack of Formal Protection for High Conservation Value Biodiversity

Sustainability Objective

Increase the proportion of areas with high conservation value under formal protection mechanisms.

Motivation: All municipalities have a responsibility to contribute to meeting provincial biodiversity targets. While there are areas that are managed for conservation, notably the Msinsi managed nature reserve, there are no formally protected areas in the development node despite high value biodiversity (habitats & species) – rated as irreplaceable, occurring in the area. The lack of formal protection reduces the ability of the municipality to contribute to attaining provincial protection targets. Securing the protection through appropriate tenure for high value, well managed natural systems is also necessary to support the opportunities this creates for tourism and recreational activities.

Development Implications

- *Future Developments:* Where relevant applications for development on areas identified as high value biodiversity options for securing the biodiversity within the constraints of the land-use must be considered.
- *Existing Land-use:* Engage areas presently managed for conservation purposes such as Msinsi (Albert Falls Nature Reserve) to have such areas proclaimed under the appropriate mechanism for ensuring long term protection.

CRITERIA - Conservation Targets

Indicators	Targets
1. Area of High Conservation Value land under formal Protection Analyse the proportion of areas defined in the EMF as having high biodiversity value in terms of their protection status. Undertaken on frequency of 5 years.	1. 100% of all areas defined as CCA1/irreplaceable.

Sustainability Actions

ACTION	ACTIVITIES/Process	RESPONSIBILITIES
12. Develop Protected Area Expansion programme for the Development Node ***Motivation***: The formal conservation of land will ensure the development node has made an appropriate contribution to achieving provincial targets, with potential socio-economic benefits through the potential created for associated tourism and recreational use.	**Identify Appropriate Mechanisms for Protection of High Value Biodiversity Areas** The first action is to identify high conservation value areas. This has been done in the EMF at the scale of the development node Critical Conservation Areas 1/irreplaceable). The next step is to identify the most appropriate mechanism for securing these areas based on the biodiversity it supports, its size and landowner support.	**Responsibility** The municipality should approach EKZNW Stewardship Programme and planning sections to assist in developing such a programme. It will require with landowners and other key role players - notably Msinsi who manage a large area of the land classified as having high value biodiversity that would represent the best option for meeting this need because it is already managed with the purposes of conservation.

13. Appropriate Planning ***Motivation:*** The municipality can through conditions of planning approval and development of policy - in their case 'bylaws' influence the way in which natural systems are integrated in developments, and or negative impacts, such as pollution is managed.	**Develop a Suite of Standard Conditions and Policy that Contribute to Improving the state of Natural systems** The development of planning conditions that are made specific to any properties with high value natural systems such as; ▪ Need to delineate natural systems, rehabilitate degraded systems and establish a management plan for such areas. ▪ The need for an integrated waste management plan based on recycling. ▪ The use of indigenous species lists in landscaping.	**Responsibility** This should be the responsibility of the Municipal Planning section with guidance from EKZNW an environmental specialist.

3.5 Lack of Understanding Regarding the State and Value of Certain Environmental Components

Sustainability Objective

Establish baseline understanding and appropriate management plans for environmental components

Motivation: There is a lack of data and understanding documenting the location, nature, and value of cultural resources in the region. There is therefore a risk to cultural resources being lost and assets eroded. In the case of air quality, point sources have been identified and areas of high cumulative impact in terms of nuisance issues have been identified. The state of ambient air quality in relation to thresholds relating to human health have however not been established. The lack of baseline understanding regarding the state of air quality and heritage resources in the development node reduces the ability to plan accordingly or make informed decision on specific development applications in terms of cumulative impacts

Development Implications

- *Future Developments:* A baseline is required against which the direct and cumulative impact on heritage resources and air quality can be assessed. This is a challenging task that is not appropriate to be undertaken at the scale of an individual application.
- *Existing Land-use:* Establish the contribution of existing land-use on the state of these resources.

CRITERIA - Integrated understanding of sustainability thresholds and development of management plans for heritage resources and air quality

Indicators	Targets
1. Baseline Understanding and Management Plan in place Baseline inventory/quality levels established and appropriate management plans developed.	Baseline and management plans in place within 2 years.

Sustainability Actions

ACTION	ACTIVITIES/Process	RESPONSIBILITIES
14. Develop Management Plans for Air Quality and Heritage Resources ***Motivation***: The baseline is required to inform planning policy and decision making. In the case of air quality is also a legislated requirement of the NEMA:Air Quality Act that municipalities prepare air quality management plans that are included in their IDP.	**Establish Baseline Understanding** Undertake baseline monitoring and investigation to establish the ambient air quality within the development node, documenting both levels in relation to health standards and the extent and severity of nuisance issues such as odour and noise. Establish an inventory documenting the location, state and conservation value of built infrastructure (that older than 60 years) occurring in the study area. **Develop Management Plan** The AQMP needs to comply with the requirements set out in section 16 of the NEMA: Air Quality Act. Similarly, the management plan and /or planning guidelines should meet the requirements of the provincial heritage legislation as guided by Amafa.	**Responsibility** The development of the AQMP needs to be undertaken by a specialist with assistance/in collaboration with the responsible district Air quality officer and assistance from the Provincial department. The municipality needs to work with Amafa to facilitate the finalisation of the survey they initiated into the built environment in the area.
15. Integrate baseline Understanding into Municipal development planning decision making ***Motivation****:* Once in place the baseline understanding and management plans must be given effect through integration in municipal planning and decision making.	**Update and Develop Municipal Planning and Associated Tools** The spatial information generated must be used to update the SDF, LUMS and EMF in terms of environmental constraints. It may also be necessary to develop new/amend bylaws to assist in achieving the objectives and targets of the management plans.	**Responsibility** This is the responsibility of the Municipal planning section.

3.6 Municipal Capacity to Achieve Effective Environmental Governance

Sustainability Objective

Develop the required capacity within the Municipality to integrate environmental sustainability into every day planning and implementation

Motivation: Environmental governance is a collective responsibility. The municipality has a key role to play in meeting their mandate of 'sustainable development'. In addition to their specific requirements such as the development of integrated waste and water plans, they are required to drive the implementation of the EMF. To do so it is necessary to assign responsibility for implementing this SEMP and monitoring its success. Environmental sustainability issues and governance however cuts across all municipal functions as follows:

- Technical services (ensuring designs of infrastructure reduce negative impacts e.g. sustainable urban drainage systems and appropriate sanitation infrastructure),
- Planning (analysing development proposals against sustainability criteria and including appropriate conditions in approvals),
- Service delivery waste collection – reduce pollution.
- Local Economic Development – identifying opportunities and facilitating 'Green Projects and Jobs' in association with provincial and national natural resources management programmes.

So while all functions need to be accountable for integrating environmental sustainability into their decision making and actions, the lack of awareness, skills and specific key performance areas within existing job descriptions will limit the ability of the municipality to implement and utilise the outcomes of the EMF.

CRITERIA - Integrated understanding of sustainability issues and responses across the municipality and defined responsibilities for meeting specific legal requirements and mandates.

Indicators	Targets
1. Integrated Municipal understanding of sustainability issues	EMF and outputs work shopped with the municipality as final activity of the EMF process.
2. Framework defining environmental responsibilities and their linkages to/influence on municipal mandates and functions.	Develop 'institutional sustainability framework' with Municipality within 1 year of EMF being completed.
3. Responsibility for all aspects in 'institutional sustainability framework' allocated to appropriate position and appropriate capacity developed.	Defined in next version of municipal organogram and associated job descriptions.

Sustainability Actions

ACTION	ACTIVITIES/Process	RESPONSIBILITIES
16. Workshop Sustainability issues with Municipality ***Motivation*:** An understanding of the influence of sustainability issues on all municipal mandates is the basic requirement/first step for improved environmental governance.	**Workshop Outcomes and Implications of the EMF with the Municipality** This will need to be designed to indicate the implications of sustainability issues for municipal delivery against its core mandates.	**Responsibility** Organised by the Municipality in conjunction with the service provider.
17. Develop 'institutional sustainability framework' ***Motivation***: A gap analysis is necessary to identify where responsibilities are not being met and why e.g. lack of awareness regarding that responsibility for certain environmental issues, or lack of capacity to address the need.	**Undertake Analysis to Define Municipal Responsibilities** Analyse the municipal mandates in terms of the relevant legal framework to define responsibilities relating to environmental governance. This will result in framework defining key gaps in the achievement of these responsibilities.	**Responsibility** Undertaken by the municipality in conjunction with service provider and key sector departments and district/provincial government input/review.
18. Implement Institutional Framework and develop Capacity ***Motivation**:* Having identified shortcomings in the institutional framework relating to environmental governance, these need to be addressed if the sustainability objective is to be achieved.	**Implement the Institutional Framework** This will require a combination of activities including the potential creation of new posts and amendment of existing responsibilities. The changes would need to be signed off and integrated in the municipal organogram. **Training and Capacity Building** Capacity building of officials can be achieved through defined training courses that address technical issues. It is also achieved through involvement in appropriate forums - such as the catchment management forum in the case of water resources management. Appropriate options for both types of capacity building should be identified to facilitate improved capacity within the municipality to respond to the need for improved performance in terms of environmental governance.	**Responsibility** Suitable capacity building identified by the Municipality in conjunction with key stakeholders in in each area of governance. Training should be funded by the municipality and/or other government programmes/ departments.

3.7 High Vulnerability Levels

Sustainability Objective

Reduced vulnerability of population through prioritization of sustainable economic growth and service delivery

Motivation: High levels of poverty coupled with high dependency rates, low education and skills levels and reliance on poor environmental quality, uncertainty regarding tenure, low levels of service supply - translate in high vulnerability for the poorest portion of the population i.e. they are the most significantly affected by significant economic or natural crises. Examples include a crash in the sugar industry and associated loss of jobs in the region, where there are limited alternatives or loss of family members on whom the household depends for social welfare grants. A flood that destroys traditional/basic housing structures represents an example of natural event that significantly impacts vulnerable households. Such households are likely to be affected by water borne diseases given they are often dependent on abstracting water directly from polluted resources.

***Implications for Development*:**

- *Future Developments: Prioritization of projects:*
  - That contribution to addressing the factors currently - e.g. include a skills development, employ local people.
  - Service delivery must:
    - Not add to existing issues e.g. VIPs are likely to add to the bacterial pollution of water resources and alternative solutions/technology should be implemented.
    - Consider sustainable solutions – the waste management plan should ensure the consideration of recycling activities and possible job creation.
  - Development of economic opportunities that improve ecological quality (recycling business, eradication of alien invasive plants, wetland rehabilitation) or harness environmental assets such as market gardening projects that ensure food security and improve income levels. In summary - explore and develop the green economy within the study area.
- *Existing Land-use*: Investigate opportunities to develop sustainable projects – such as biofuel pellets from agricultural waste products generated in timber and saw milling industry.

CRITERIA – Reduced Vulnerability.

Indicators		Targets
1.	Improved environmental quality	As per indicators across relevant SAs.
2.	Improved access to basic services	Targets met for delivery of basic services (sanitation/ water, power, education) as per national standards for each.
3.	Increased employment	Growth in GDP as indicated by census data.
4.	Increased security of tenure	% of land claims settled.

Sustainability Actions

ACTION	ACTIVITIES/Process	RESPONSIBILITIES
19. Improve Environmental Quality ***Motivation*:** This will improve people's quality of life.	**Planning, rehabilitation and Policy actions defined in Previous SAs.**	**Responsibility** As documented in relevant SAs.
20. Improved Access to basic services ***Motivation***: Improved basic services reduce the risk of exposing people to the negative impacts of poor environmental quality e.g. poor water quality.	**Development of appropriate types of services and maintenance etc of existing infrastructure as proposed in relevant SAs.**	**Responsibility** As documented in relevant SAs.
21. Increased security of Tenure ***Motivation**:* Increased security of tenure enables people to access finance against this asset and associated government funding to develop land. Uncertainty reduces the willingness to invest in the development of and/or management of land.	**Undertake an Audit of Outstanding Land Claims and work with relevant Role-players to prioritize and address these.** This will require a consolidation of information from affected landowners in the area and engagement with the Department of Land Affairs and the Land Claims Commission.	**Responsibility** The municipality, relevant landowners/associations and the relevant government agencies.

4. MANAGEMENT PRIORITIES

4.1 Defining Priorities

This section prioritizes the sustainability actions listed in the SEMP in order that resources can likewise be prioritised in addressing the most significant issues. The following categories have been used to define priority actions and time frames.

Table 1 Description of priority categories for sustainability actions

PRIORITY CATEGORY	DESCRIPTION
HIGH	This is an essential action to implement if the sustainability issue is to be addressed. It will play a significant role in addressing the issue because it will deal with the causes, will be binding on all role-players and/or it addresses the issue across the entire development node.
MEDIUM	This action will play a large role in addressing the issue, but not necessarily across the entire area, and may not address all causes. There may also be other responses that will assist in achieving the same outcome.
LOW	This action will assist to a limited degree in addressing the issue. It is worth doing but will not have the same impact as a medium or high priority action.

Table 2 Definition of time frame categories for implementation of sustainability actions

CATEGORY	TIME FRAME & DESCRIPTION
Immediately	Within a month of the EMF being finalised.
Short Term	**6 months – 1 year** (can be achieved within the annual/current budget and cycle)
Medium Term	**1 - 5 years** (this is within the operational life span of the IDP and the EMF)
Long Term	**5 - 20 Years** (this extends beyond the operational life of an IDP)

The following table summarises the level of priority and timeframes for implementing the 21 sustainability actions described in the document. In summary, however, it is recommended that the focus of the Municipality's efforts is on the SAs for which they are responsible, as this reduces the reliance on other role-players. Of these 'Appropriate Municipal Planning', which involves several aspects was identified a priority action that addresses a range of issues. The Municipality also needs to harness existing external processes to ensure that the outcomes are best suited for addressing their sustainability issues. The classification process for water resources and setting of legally binding quality objectives is an example of such a process. Given that many of the actions require the involvement of a range of stakeholders, particularly in the case of water resources and the need to develop an integrated catchment management plan, the Municipality needs to establish permanent representation in organisations such as the catchment management forum to start influencing the actions arising from these bodies. And while the above actions are priorities, the most important immediate action for the Municipality is to internalise understanding of the outcomes and implications of the EMF for the municipality and its constituents. This will allow the municipality to start assigning responsibility for implementation of the EMF across municipal functions.

4.2 Prioritizing Management Actions

The following table summarizes the 21 management actions. Guidance is provided for each action in terms of is priority and the relevant timeframes for initiating and undertaking the action. It should be noted that certain actions address various issues. These actions are therefore only listed once and may have several numbers allocated to them.

NO	SUSTAINABILITY ACTION	PROCESS/ ACTIVITIES	PRIORITY & MOTIVATION	TIME FRAME
1.	**Set Appropriate Management Class and Water Quality Standards in the Catchment**	Register and participate in Classification Process for the Mvoti-Mzimkulu Water Management Area which includes the Umgeni River system.	**HIGH** This is the process through which legally binding management class and quality objectives will be set. It will be binding on all role-players throughout the entire catchment which influences the state of the resources within the development node on the long term.	The Municipality can register their involvement **IMMEDIATELY.** The process commenced in the first half of 2013, so there is an urgency to influence the outcomes. The process of setting the management class will require involvement of the municipality for approximately another year - **SHORT TERM.**
2.	**Develop a Resource Management Plan for Albert Falls Dam**	Initiate the development of a RMP with relevant role-players through the catchment management forum.	**MEDIUM** The RMP is an important mechanism for managing activities directly surrounding the Albert Falls Dam. The limited spatial influence of the RMP reduces the significance of the mechanism compared with the classification process. There are also other mechanisms such as planning controls and bylaws that can be used in managing impacts within the dam periphery.	**MEDIUM TERM** It will likely take several months to mobilise agreement of a decision to develop a RMP, following which finance will need to be secured and the RMP developed.
3. **9.**	**Improve the Capacity of Natural Systems to Ameliorate/dilute poor water quality.**	Establish and implement a Resource Inventory and Rehabilitation Programme for the Development Node.	**HIGH** This is a high priority action because rehabilitation of natural systems meets several sustainability objectives. In addition to addressing water quality issues, it supports the need to improve habitat and biodiversity value of natural systems. It is also an action that focusses on priority sites across the entire development node.	**MEDIUM TO LONG TERM** While the planning and development of such a plan may be achieved within one to two years, the implementation, monitoring and maintenance is an ongoing process.
4. **8.** **13.** **15.**	**Appropriate Municipal Planning**	There are a range of specific sub-actions relating to this broad action. i. Delineate an open space system and integrate it into spatial planning instruments i.e. LUMS and SDF.	**HIGH** This action will integrate natural systems into planning considerations in a proactive manner and provide them with a level of protection. It will also have influence across the entire development node to all types of development.	**MEDIUM TERM -** it is likely to take approximately a year to develop the terms of reference, commission and establish an open space system. The OSS then needs to be integrated into the SDF and LUMS.

NO	SUSTAINABILITY ACTION	PROCESS/ ACTIVITIES	PRIORITY & MOTIVATION	TIME FRAME
		ii. Integrate the Delineation of Productive Land Mapped in the EMF Process in Municipal Planning Outputs i.e. LUMS and SDF	**HIGH** This action will assist in protecting high value agricultural systems and secondary activities from threat of conversion to alternative land-uses across the study area.	**MEDIUM TERM –** The municipality is required to produce a LUMS within 3-5 years. In the short term the maps indicating areas of high value agriculture can be sued to inform planning decisions.
		Develop a suite of planning conditions that make it a requirement of all planning approvals to: - Delineate, rehabilitate and manage natural systems occurring on a property. - The need for an integrated waste management plan based on recycling. - The use of indigenous species lists in landscaping. - Ensure the sanitation infrastructure designed for any development proposal is able to meet the required standard. - Support appropriate management of Air Quality and Cultural Resources once a baseline has been undertaken to define the baseline quality, and location and value of cultural resources.	**MEDIUM** These conditions of planning are relatively easily developed. They will contribute to reducing negative impacts on water quality from sanitation and improve the condition of natural systems within the development node. The influence is restricted to new developments and the site specific/property scale.	**IMMEDIATELY** - the EMF can be used as motivation for including this as a condition on all approvals.

NO	SUSTAINABILITY ACTION	PROCESS/ ACTIVITIES	PRIORITY & MOTIVATION	TIME FRAME
		iii. Make the development of appropriate sanitation a condition of planning approvals.	**MEDIUM** This is easily achieved and will slow the rate of increase in nutrient and bacterial inputs to the system. The influence will be limited due to the fact that it is only addressing new developments.	**IMMEDIATELY** - the EMF can be used as motivation for including a comprehensive assessment of alternative/appropriate sanitation infrastructure in development applications.
5.	**Investigation and Establishment of Appropriate Sanitation Infrastructure**	Implementing appropriate sanitation infrastructure for Municipal projects and maintaining this infrastructure and waste water treatment facilities to meet standards.	**MEDIUM** It is important that the Municipality set a good example in terms of using appropriate sanitation infrastructure. This will deal with a specific aspect of the pollution problem.	This investigation of alternative/appropriate technologies should be initiated in the short term. The implementation and maintenance of these is a **MEDIUM TO LONG TERM** action (ongoing requirement).
6.	**Development of an Integrated Catchment Management Plan**	Engage relevant role-players through Catchment Management Forum (CMF) and apply relevant guidelines in developing an ICMP.	**HIGH** The ICMP is the primary tool for directing responses to the significant water quality issues in the development node. The ICMP will document the various causes of pollution, involve the relevant role-players in identifying appropriate responses as well as budgets, responsibilities and timeframes. The ICMP will provide the tool for an integrated/shared responsibility in addressing this major sustainability issue.	The development of the ICMP should be initiated in the medium term, but will be a **LONG TERM** process as it requires ongoing review, and revision.
7.	**Representation of the Municipality on the Catchment Management Forum**	Join and actively participate in the CMF and relevant projects on permanent and regular basis.	**HIGH** The CMF is the primary body through which the Municipality can raise issues of concern and involve relevant role players in decisions and actions required to address water resource issues. It is therefore essential that they are permanently involved.	There is nothing stopping the Municipality from registering on the CMF **IMMEDIATELY.**
12.	**Develop Protected Area Expansion programme for the Development Node**	Identify Appropriate Mechanisms for Protection of High Value Biodiversity Areas	**HIGH** Establishing formal protection of high value biodiversity is the most effective way of contributing to meeting biodiversity conservation targets.	This is not a Municipal mandate and will require a range of other role-players. Furthermore, it will require a high level of investigation to identify the most suitable properties and the appropriate mechanisms for

NO	SUSTAINABILITY ACTION	PROCESS/ ACTIVITIES	PRIORITY & MOTIVATION	TIME FRAME
				protection depending on the biodiversity occurring there and land tenure/use. While investigation should commence in the short term, planning and implementation are a **MEDIUM TO LONG TERM** activities.
14.	**Develop Management Plans for Air Quality and Heritage Resources**	Undertake studies to establish baseline air quality, and the location and conservation value of built environment (historical buildings).	**LOW** There is fairly high level of confidence that the air quality is within standards relating to human health. The baseline will however provide confidence in this assumption and a management plan will assist in dealing with cumulative impacts of nuisance issues such as odour. There are limited heritage resources and the value of historical buildings (the highest value resource) can be reviewed through the project assessment process. This is therefore not a high priority action.	**MEDIUM TO LONG TERM**
16.	**Workshop Sustainability issues with Municipality**	Workshop Outcomes and Implications of the EMF with the Municipality	**HIGH** The EMF has been developed for the municipality. Its successful implementation requires that the outcomes are institutionalised. This requires that the implications of the key sustainability issues for the municipality in terms of delivering on their mandate are explained. The recommendations and guidance provided by the EMF for addressing the issues should also be explained.	**IMMEDIATELY -** This should happen at the soonest possible opportunity.
17.	**Develop 'institutional sustainability framework'**	Undertake Analysis to Define Municipal Responsibilities	**HIGH** Implementation of the EMF requires that responsibility for implementation outlined in this document is allocated to departments and positions within the municipal structures. In certain cases, the responsibility may cut across several areas of operation. Analysis of the existing organogram is required to identify where there are gaps in capacity required to implement the EMF. Particularly for those actions which are a priority and which need to be undertaken urgently. The will also require identification of gaps in skills.	**SHORT TERM**

NO	SUSTAINABILITY ACTION	PROCESS/ ACTIVITIES	PRIORITY & MOTIVATION	TIME FRAME
18.	**Implement Institutional Framework and develop Capacity**	**Implement the Institutional Framework** This will require the potential creation of new posts and amendment of existing responsibilities. **Training and Capacity Building** Capacity building of officials through formal training and involvement in appropriate forums.	**MEDIUM** The development of the framework will assist in institutionalising the environmental responsibilities across municipal mandates and developing capacity required for responsible staff to fulfil their obligations.	**MEDIUM - LONG TERM** The requirements of the legal context and responsibilities of local government are dynamic. There will need to be a review at five yearly intervals when the EMF is updated to establish changes in responsibilities and amend the institutional sustainability framework accordingly.
19.	**Improve Environmental Quality**	Implement the SEMP	**HIGH** To overcome the sustainability issues identified and described in the Strategic Environmental Assessment.	**IMMEDIATE - LONG TERM** (as for the various actions).
20.	**Improved Access to Basic Services**	Development of appropriate types of services and maintenance etc of existing infrastructure as proposed in relevant SAs	**HIGH** The lack of appropriate infrastructure was identified as one of the major causes of environmental damage (particularly sanitation and potable water supply infrastructure in the case of water quality impacts). The lack of/poor quality of infrastructure also places people at risk of harm/illness from poor environmental quality.	**MEDIUM – LONG TERM** While this I something that is being addressed on an ongoing basis, it is unlikely that service infrastructure gaps will be addressed in the medium term, and maintenance is an ongoing (long term) requirement.
21.	**Increased security of Tenure**	Undertake an Audit of Outstanding Land Claims and work with relevant Role-players to prioritize and address these.	**LOW** The failure to finalise land reform process is a long standing issue that involves a range of high level and complex policy, economic and institutional issues. So, while achieving clarity and finalising outstanding claims is something that should continue it is not a major priority. It is also less of a priority because affects only a portion of the development zone and associated residents/owners.	**MEDIUM TERM**