Msunduzi Municipality

Final Draft Strategic Environmental Management Plan

Report Prepared for

Department of Environmental Affairs,

Department of Agriculture and Environmental Affairs and Rural Development, and

Msunduzi Municipality

Report No 376998/FDSEMP

May 2010

SRK Consulting
Engineers and Scientists

Msunduzi Municipality

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SRK Project Number: 376998

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Executive Summary

The Msunduzi Municipality (Msunduzi), in partnership with the national Department of Environmental Affairs (DEA),(formerly the Department of Environmental Affairs and Tourism (DEAT)) and the KwaZulu-Natal Department of Agriculture, Environmental Affairs and Rural Development (DAEA&RD)(formerly the Department of Agriculture and Environmental Affairs (DAEA)), have recognised the need for an appropriate policy to inform development planning and approval that supports sustainable development in Msunduzi. SRK Consulting (SRK) was appointed to execute the following tasks for Msunduzi:

- Status Quo Analysis (State of the Environment);
- Strategic Environmental Assessment (SEA);
- Environmental Service Plan (ESP) previously known as the Municipal Open Space System (MOSS);
- Environmental Management Framework (EMF); and
- Strategic Environmental Management Plan (SEMP).

This report constitutes the product of the SEMP process undertaken as part of the greater Msunduzi EMF process. The SEMP provides an operational framework for the amended Integrated Environmental Policy for Msunduzi which is also included in this report. The SEMP will be operationalised through the IDP and has therefore followed a similar approach and format. The SEMP also provides a monitoring and evaluation strategy that will enable the municipality to measure its progress towards meeting the environmental objectives identified as part of the SEA and report progress towards completing action plans identified.

There is limited requirement for SEMP's in South African law. Local government is however, governed by legislation that protects and supports both the community and environment. The SEMP has therefore been designed to meet Msunduzi's responsibilities in terms of South Africa's legislation most notably the Constitution, NEMA and the Municipal Systems Act.

The SEMP provides the foundation from which further work will be undertaken in order to improve and refine environmental goals and targets. The SEMP is therefore a dynamic document that must continue to change and grow as the understanding of the environment improves.

Msunduzi's Integrated Environmental Management Policy, approved by Msunduzi's Executive Committee (EXCO) on 07 May 2007, included an environmental vision for the municipality. As part of the SEMP this vision has been reviewed in light of comments and input received from the public during the Greater Msunduzi EMF Process. The vision as amended, is:-

Msunduzi will:

- have implemented an environmental services plan that protects the city's environmental goods and services including social needs for open space.
- offer a safe, clean and hygienic environment that manages all aspects of the waste hierarchy including avoidance, minimisation, recycling and re-use.

- have environmentally responsible citizens that are well informed in regard to the environmental issues and who will be part of an innovative team that contributes to a sustainable living environment.
- be well planned so as to ensure that synergy of land use.
- have achieved legislated minimum ambient air quality standards through the implementation of an Air Quality Management Plan.
- have an efficient and reliable public transport system to reduce congestion and associated pollutant vehicular emissions and improved safety and security to encourage non motorised transport.
- will be carbon neutral by implementing carbon offset programs and investing in renewable energy technology and green building design.
- Will have sufficient capacity to address environmental issues in Msunduzi and achieve balance between economic, social and environmental needs."

The vision is supported by general policy principles and environmental management tools. A sustainability framework provides the operational framework for implementation of the SEMP. It includes Goals, Objectives, Criteria and limits of acceptable change for the Biophysical, Social Economic and Governance environment. The sustainability framework can be used to assess the sustainability of plans, programmes and / or policies. From the sustainability framework a list of projects was developed and the SEMP provides action plans for each of these projects.

The action plans are intended to be operationalised through the Msunduzi IDP and have been structured accordingly. The strategic issues, outcomes and objectives for each project maintain the thread from the SEA, particularly the sustainability framework and maintain the strategic focus of the SEMP. The action plans also provide a list of tasks to be undertaken for each project with associated budget and responsibility. The action plans also identify strategic partners that may support the municipality in completing the projects.

The projects are broken down into two groups viz., projects to be included in the Msunduzi IDP that are the core function of Msunduzi and projects that are not the core function of the municipality. The second of these refers to projects that need to be undertaken by national and provincial government. Msunduzi must however perform its function by developing a memorandum of understanding with the responsible organisations to identify how they may provide support to ensure that the projects are undertaken.

The projects identified for inclusion in the Msunduzi IDP are as follows:

- Biophysical
  - B1: Alien invasive clearing program for Msunduzi owned land;
  - B2: Wetland Functionality Assessment;
  - B3: Detailed Flood Risk Assessment;
  - B4: Air Quality Constraints Model Action Plan as part of the Msunduzi Air Quality Management Plan;
  - B5: Carbon Emissions Inventory and Offset Program;
  - B6: Climate Change Risk Assessment and Adaptation Strategy; and

  - B7: Action Plan for the Rehabilitation of land owned by Msunduzi.

- Social
  - S1: Urban Greening Program;
  - S2: Integrated Waste Management Plan;
  - S3: Environmental Vulnerability Assessment; and
  - S4: Noise Monitoring.

- Economic
  - E1: Integrate EMF into SDF Review and preparation of the LUMS;
  - E2: Ecosystem Goods and Services Assessment;
  - E3: Sustainability Appraisal of all Municipal Plans, Policies and Programs;
  - E4: Implementation of the ESP with associated land ownership and management policy; and
  - E5: Infrastructure Cost Model.

- Governance
  - G1: Environmental Capacity Assessment;
  - G2: LA21 Forum Growth;
  - G3: Web-based EMF;
  - G4: Sustainable Development Training; and
  - G5: Co-operative Governance.

Projects to be undertaken by DAEA&RD with the support of Msunduzi

- DAEA&RD1: State Land Rehabilitation;
- DAEA&RD2: Identify areas of grazing importance and implement strategies to support sustainable land use practices; and
- DAEA&RD3: Alien Invasive Clearing Program for Land within Msunduzi not owned by the municipality.

Projects to be undertaken by Department of Water Affairs (DWA) with the support of Msunduzi

- DWA1: Refined State of the Rivers Reporting.

Projects to be undertaken by Amafa KwaZulu Natali with the support of Msunduzi

- AMAFA1: Cultural Heritage Resource Assessment.

Table of Contents

List of Tables

List of Figures

Acronyms

ABM	Area Based Management
Asigi-SA	Accelerated and Shared Growth Initiative for South Africa
BRG	Bioresource Groups
CARA	The Conservation of Agricultural Resource Act 43 of 1983
CBD	Central Business District
COGTA	Department Co-operative Governance and Traditional Affairs
DAEA	Department of Agriculture and Environmental Affairs
DAEA&RD	Department of Agriculture and Environmental Affairs and Rural Development
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DSoE	Desired State of the Environment
DWA	Department of Water Affairs formally Department of Water Affairs and Forestry (DWAF)
EIA	Environmental Impact Assessment
EKZNW	Ezemvelo KZN Wildlife
EMF	Environmental Management Framework
ESP	Environmental Services Plan
EXCO	Msunduzi's Executive Committee
GEDI	Greater Edendale Development Initiative
IAP	Interested and Affected Party
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IWMP	Integrated Waste Management Plan
LA21	Local Action 21
LAC	Limits of Acceptable Change
LRI	Land Research Institute
MIDI	Msunduzi Innovation and Development Institute
MOSS	Municipal Open Space System
NEMA	National Environmental Management Act
NEMAQA	National Environmental Management: Air Quality Act
NFSD	National Framework for Sustainable Development
SABS	South African Bureau of Standards
SANS	South African National Standard
SDF	Spatial Development Framework
SDST	Spatial Decision Support Tool
SEA	Strategic Environmental Assessment
SEMP	Strategic Environmental Management Plan
UKZN	University of KwaZulu-Natal
UMDM	uMgungundlovu District Municipality
WESSA	Wildlife and Environment Society of South Africa

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6 May 2010

376998

Msunduzi Municipality: Strategic Environmental Management Plan

1 Introduction

1.1 Background

The Msunduzi Municipality (Msunduzi), in partnership with the national Department of Environmental Affairs (DEA),(formerly the Department of Environmental Affairs and Tourism (DEAT)) and the KwaZulu-Natal Department of Agriculture, Environmental Affairs and Rural Development (DAEA&RD)(formerly the Department of Agriculture and Environmental Affairs (DAEA)), has recognised that to support sustainable social, economic and environmental development within the Municipality, the adoption and implementation of an appropriate policy to inform development planning and approval is required. To address these requirements, the preparation of an Environmental Management Framework (EMF) is being undertaken by SRK Consulting (SRK). As part of the greater Msunduzi EMF project, and in addition to the Msunduzi EMF itself, the following products have also been developed:

- Status Quo Report;
- Strategic Environmental Assessment (SEA);
- Environmental Services Plan (ESP) formally referred to as the Municipal Open Space System (MOSS); and
- Strategic Environmental Management Plan (SEMP).

This report constitutes the product of the SEMP component of the project and includes the following:

CESA

Partners AN Birtles, JCJ Boshoff, MJ Braune, JM Brown, CD Dalgliesh, JR Dixon, DM Duthie, R Gardiner, T Hart, GC Howell, WC Joughin, PR Labrum, DJ Mahlangu, RRW McNeill, HAC Meintjes, BJ Middleton, MJ Morris, GP Murray, WA Naismith, GP Nel, VS Reddy, PN Rosewarne, PE Schmidt, PJ Shepherd, VM Simposya, AA Smithen, PJ Terbrugge, KM Uderstadt, DJ Venter, HG Waldeck, ML Wertz, A Wood
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- An outline of the approach and objectives of the SEMP;
- A summary of strategies identified in the SEA;
- Action plans to implement strategies identified; and
- A monitoring and evaluation strategy.

1.2 Purpose of the SEMP

The objective of the SEMP is to provide an implementation plan that government will use to implement the recommendations arising from the greater Msunduzi EMF project. The SEMP will also provide a monitoring and evaluation strategy that will enable government to measure its progress towards meeting the environmental objectives identified as part of the SEA.

1.3 Project phasing and the SEMP Report

The Msunduzi EMF consists of 3 Phases as indicated in Figure 1.1 below. The SEMP Report, this report, forms part of Phase 3 of the Msunduzi EMF project.

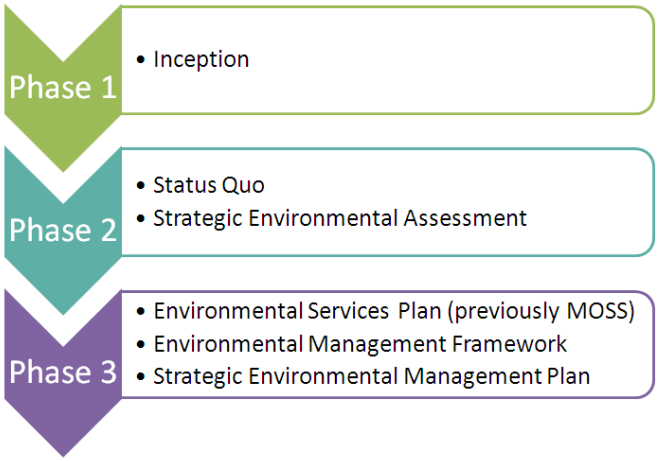

Figure 1.1: EMF Phases

Phase 1 of the project constitutes the Inception phase. The Inception Phase included an extensive stakeholder involvement process to determine the approach to the remainder of the project. The Inception Phase was followed by the Status Quo Analysis and SEA as part of Phase 2 of the Project. The Status Quo Analysis consists of a number of specialist studies that together provide an indication of the existing state of the environment. The SEA built on the status quo information and used it to identify issues and root causes, identify the desired level of environmental quality (which included public consultation) and identify opportunities and constraints to development. The main outcome of the SEA was a sustainability framework that was then used to assess the sustainability of current land use trends against the land use proposed in terms of the Spatial Development Framework (SDF) developed for Msunduzi as part of their integrated development planning process. As part of the sustainability framework action plans were identified and the SEMP provides the operational framework for the implementation of these action plans. The SEMP forms part of phase three of the project together with the EMF (SRK Report No. 376998/DEMF) and ESP (SRK Report No. 376998/ DESP) which are available as separate reports.

1.4 Legal and Policy Framework

There is limited requirement for SEMP's in South African law. Local government is however governed by legislation that protects and supports both communities and environment. The SEMP has therefore been designed to meet government's responsibilities, specifically Msunduzi, in terms of the legislation detailed in Table 1.1 below.

Table 1.1: Regulatory Framework

Legislation	Context
Republic of South Africa Constitution Act 110 of 1983 (The Constitution);	Bill of Rights stipulates in Section 24 that: "Everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that: Prevent pollution and ecological degradation; Promote conservation; and Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. " The constitution indicates that it is local government's responsibility in terms of the constitution to ensure sustainable development that provides all Msunduzi residents with a healthy and protected environment and does not deprive residents of their constitutional rights
National Environmental Management Act, No. 107 of 1998 (NEMA);	NEMA requires that local government respect, protect and fulfill all the rights of its people while ensuring the delivery of basic needs especially to the previously disadvantaged communities. In addition the act provides principles that commit every organ of state to prevent pollution, disturbance and any other negative impact on any component of the environment. NEMA states that where prevention is not possible the local authority must at least minimize or remedy the impact. Local government has to ensure adherence to these principles and follow the right procedures to deal with environmental issues as laid out in this act.
NEMA Environmental Impact Assessment (EIA) Regulations of 2006;	As above, the development and adoption of EMF's is detailed on Part 1 of Chapter 8 General Matters of the EIA Regulations. An SEA can be applied in the preparation of an EMF as is the case for the Msunduzi EMF.
Conservation of Agricultural Resource Act 43 of 1983 (CARA)	While not implemented by local government CARA provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation. The Act also provides for the combating of weeds and invader plants; and for matters connected therewith. Msunduzi is therefore bound by CARA to manage soil erosion and weed infestation on municipal owned land.
Local Government Municipal Structures Act 117 of 1998 (Municipal Structures Act); Municipal Systems Act 32 of 1998 (Municipal Systems Act); and Municipal Planning and Performance Management Regulations (2001)	This legislation collectively provides a context for municipal planning. It requires that local authorities adopt a single inclusive policy framework that governs the allocation of capacity and resources, namely the Integrated Development Plan (IDP). The Act requires that services be provided sustainably and binds local government to ensuring that they make community participation possible for proper service delivery.
Natal Nature Conservation Ordinance 15 of 1974 and KwaZulu Nature Conservation Act (No. 29 of 1992)	Makes extensive provision for protected areas and protection of flora and fauna within protected areas.
National Building Regulations (Government Gazette, 12 October 1990)	Section P of these regulations deals specifically with drainage requirements including the need to ensure that waterborne sewage is disposed in an appropriate manner. This includes ensuring that no sewage is discharged into any stormwater drains, river stream or natural watercourse.

Legislation	Context
National Environmental Management Air Quality Act (Act 39 of 2004)	The Act requires that Msunduzi prepare an inventory of all potential pollution sources that may endanger human health and development an air quality management plan as a sector plan to the IDP. The Act also requires that Msunduzi designate an air quality officer to coordinate all matters pertaining to air quality management.
National Environmental Management Biodiversity Act (Act 10 of 2004)	The Act requires that organs of state manage, conserve and sustain South Africa's biodiversity and genetic resources. It commits local government to implementing strategies to ensure sustainable use and conservation of natural resources including listed ecosystems. The Act requires that local government create management plans to monitor, eradicate and prevent the invasion of listed invasive species and as above, requires that Msunduzi eradicate all alien species on municipal owned land.
National Environmental Management Waste Act 59 of 2008	The Act provides for the development of norms and standards for regulating the management of waste by all spheres of government. It requires that a national waste management strategy be developed and sets out requirements for waste management by local government. The act also sets out requirements for the recycling, reuse and reduction of waste and requirements for waste permitting.
National Forests Act (No. 84 of 1998)	The Act intends to promote sustainable management of forests for the benefit for all and sets out the framework for forest management in South Africa. The act requires the municipality to consider its principles when exercising power of performing duty in terms of any other legislation which may impact on a natural forest or woodland.
National Veld and Forest Fire Act 101 of 1998	The Act provides for a variety of institutions, methods and practices for preventing and combating veld, forest and mountain fires. As a land owner the Act places duty on Msunduzi to prepare and maintain firebreaks.
National Water Act (Act 36 of 1998)	The Act sets out the framework for the management of water resources in South Arica. The Act also requires that Msunduzi ensure that the ecological or basic human needs are reserved when abstracting water. In essence the act requires that Msunduzi provide potable water on a sustainable basis.
Water Services Act (Act 108 of 1997)	The Act identifies municipal responsibility for the provision of water and sanitation services.

1.5 Scope of work and study assumptions and limitations

The Msunduzi SEMP forms part of the greater Msunduzi EMF. The purpose of the SEMP component is to identify actions required by the municipality in implementing and reviewing the EMF as a whole. The SEMP also includes the amended Msunduzi Integrated Environmental Management (IEM) Policy which forms the basis for the implementation of the Action Plans.

The SEMP is based on data collected during the Status Quo and SEA phases of the EMF. This information was supplemented by key interviews with Msunduzi staff in order to identify roles and responsibilities. The design of an SEMP is an ongoing and interactive process. The structure, responsibilities, practices, procedures, processes and resources for implementing environmental policies, objectives and targets need to be coordinated with existing efforts in other areas of Msunduzi's responsibilities such as service provision. Implementation of the EMF will not rest only with environmental staff but will require buy-in and efforts across the entire municipality.

The SEMP aims to provide a reference list of actions that will be required for the municipality to move towards sustainability. Some of the actions do overlap with existing roles and responsibilities

within Msunduzi and other provincial departments. While the responsibility for implementing certain actions may rest with other institutions, the EMF will need a champion to ensure that the EMF is implemented.

The SEMP is aligned to existing policy to allow actions to be easily implemented. The SEMP is a strategic document and as such action plans developed in terms of the SEMP are strategic and cannot deal with site specific issues. Instead, actions will look to address overarching issues that will have the greatest impact. The SEMP therefore does not replace tools such as site specific EMP's.

The success of an SEMP is dependent on the level of information available. This SEMP has been based on information collected during the Status Quo and SEA phases and has built on the Msunduzi IEM Policy which was drafted following considerable IAP interaction and involvement. The Status Quo Phase of the project achieved as much as possible within the limits of the resources available. There is however much still to be done. An example, particularly relevant to the SEMP, is the preparation of an environmental capacity assessment. The SEMP was required to make assumptions regarding environmental capacity within the municipality in order to assign roles and responsibilities for actions. Should the municipality have insufficient capacity to implement the EMF, in terms of action plans identified, the need for additional staff or capacity will have to be identified outside of this process during the implementation phase. The SEMP was, however, developed through consultation with Msunduzi and wherever possible, capacity constraints have been highlighted.

1.6 Structure of the Report

Table 1.2 below provides an outline of the content of this report.

Table 1.2: Report Structure

Section	Title	Content
Executive Summary	Executive Summary	A brief overview of the report and key findings
Section 1	Introduction	Background to the Msunduzi EMF, specifically the SEMP component
Section 2	Methodology	An outline of how the SEMP was developed together with key outcomes and objectives
Section 3	Msunduzi IEM Policy	Proposed amendments to the Msunduzi IEM Policy together with the addition of sustainability Criteria
Section 4	Action Plans	Detailed breakdown of all action plans identified in terms of the sustainability Framework together with associated budgets and responsibility.
Section 5	Monitoring and Evaluation	A system for monitoring and evaluating progress towards achieving the goals set out in the policy.
Section 6	Conclusions	Overview of the report and key recommendations

2 Approach and Methodology

2.1 Objectives

The objective of this report is to provide a review of the existing Msunduzi IEM Policy including identification of a vision, objectives and criteria for environmental quality and management. The report then aims to provide an implementation mechanism in the form of action plans in order to meet the objectives. The action plans have been designed to be operationalised through the IDP and this document therefore has been designed to act as a sector plan to the IDP.

2.2 Information Gathering and Identification of Action Plans

The SEA forms the basis for the review of the IEM Policy and the action plans identified. The SEA, in its turn, was based on information gathered during the Status Quo Phase (refer Figure 1.1 above) of the project and as contained in the Status Quo Report. During the SEA phase this information was supplemented through public participation as detailed in the SEA report. As part of the SEA process significant issues were identified and used to inform the identification of goals, objectives, sustainability criteria and actions. These formed the basis for the sustainability framework developed for Msunduzi that may be used in future to assess any plan, program or policy.

The framework is based on the concept that ecosystem goods and services are the basis for economic and social development. This framework is core to the sustainability concept. The Framework recognises that the loss of these goods and services will severely impact on the development potential of the municipality. Most critical to this concept is the fact that none of these components of sustainability can be achieved without the support of good environmental governance and decision making.

The sustainability framework and associated actions identified were therefore used as the basis for the review of the IEM Policy. The actions identified are expanded on in this report to include specific tasks and associated responsibilities, capacity requirements and projected costs. The format of the action plans, included in Section 4 of this report, was designed to conform to the action plans within the IDP in order to facilitate implementation as the SEMP which will be operationalised through the IDP.

3 Msunduzi IEM Policy 2010

3.1 Vision

The Msunduzi IEM Policy as approved by Msunduzi's Executive Committee (EXCO) on 07 May 2007 included an environmental vision for the municipality. As part of the SEMP this vision has been reviewed in the light of comments and input received from the public during the Greater Msunduzi EMF Process. The amended vision is stated below.

"Msunduzi will:

- have implemented an environmental services plan that protects the city's environmental goods and services including social needs for open space,
- be a safe, clean and hygienic environment that manages all aspects of the waste hierarchy including avoidance, minimisation, recycling and re-use,
- have environmentally responsible citizens that are well informed about the environmental issues and who will be part of an innovative team that contributes to a sustainable living environment,
- be well planned to ensure that synergy of land use,
- have achieved legislated minimum ambient air quality standards through the implementation of an Air Quality Management Plan,
- have an efficient and reliable public transport system to reduce congestion and associated pollutant vehicular emissions and improved safety and security to encourage non motorised transport,
- will be carbon neutral by implementing carbon offset programs and investing in renewable energy technology and green building design, and
- will have sufficient capacity to address environmental issues in the area under its jurisdiction and achieve balance between biophysical and socio-economic needs.

3.2 General Policy Principles

For local government to adhere to legislated or legal responsibilities certain principles, that will bind both the Municipality and the residents of the area, must be set out. Msunduzi is committed to the following principles:

- recognizing, acknowledging and upholding the environmental rights of all Msunduzi residents as enshrined in Section 24 of the Constitution of South Africa;
- ensuring access to natural resources and their sustainable use to meet residents needs now and into the future;
- take a precautionary approach in decision making and recognise the limits of current knowledge;
- acknowledge the interrelationship between aspects of the environment and the residents of Msunduzi as part of the system to enable environmental impacts to be internalised;

- ensure assessment of the sustainability of all policy's, programs, projects, products, processes, services or activities in terms of the Msunduzi Sustainability Framework by the Local Action 21 (LA21) Environmental Forum;
- ensure continual improvement of environmental quality through ongoing monitoring, evaluation, education and empowerment;
- avoid the loss of biological diversity through identifying and managing sensitive habitats;
- reduce pollution and environmental degradation and encourage rehabilitation and remediation;
- ensure waste is avoided, or where it cannot be avoided altogether, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;
- empower and educate civil society to enable them to effectively participate in integrated environmental management;
- ensure open and transparent consultation within the municipality, with other spheres of government and with civil society;
- identify and implement best environmental practices and activities to include environmental education programs;
- integrate environmental considerations into all municipal functions and decision making; and
- enforce the '*polluter pays*' principle.

3.3 Environmental Management Tools

The following section provides strategic enablers to give effect to the policy. The enablers are a list of management principles and/or tools that must be used by Msunduzi for effective implementation of the policy.

Msunduzi shall:

- initiate, monitor and ensure the formation of appropriate institutional structures and procedures that will make the implementation of this policy effective. The procedures must include responsibilities regarding the application and implementation of an environmental policy and the structures must deal directly with the environmental issues of the City;
- ensure that a list of resources required to implement environmental policy and its strategies and action plans is compiled and that these resources are made available to relevant implementing stakeholders where possible;
- transform business units (by adding environmental considerations into each) to enable cooperative and coordinated environmental management;
- continually review and improve the sustainability framework, SEMP and EMF and develop and implement appropriate bylaws to give a force of law to these environmental policy documents;
- implement monitoring and evaluation of the SEMP as part of the environmental branch function;
- operationalise the SEMP through integration with the IDP;
- develop management guidelines that will ensure protection of the environment;
- implement the Msunduzi EMF to inform development planning and decision making;

- develop a system of resource accounting and auditing;
- develop and implement environmental education programs; and
- implement strategies to facilitate transparency between industries and private landowners on the one hand and the Municipality on the other to allow monitoring of solid waste disposal, water pollution and air pollution.

3.4 Policy Specifics (Goals, Objectives and Sustainability Criteria)

The following section provides the operational framework for implementation of the SEMP. It includes Goals, Objectives, Criteria and Limits of acceptable change for the Biophysical, Social Economic and Governance Environment. These collectively provide a sustainability framework against which the Municipality can assess any plans, programmes or policy.

The goals identified have been adapted from the goals developed and outlined in the existing Msunduzi IEM Policy and in the National Framework for Sustainable Development. It provides the strategic goals for each aspect of the environment. The objectives have been adapted from the existing IEM Policy in line with public input obtained during the greater Msunduzi EMF project. They provide the strategic policy objectives in terms of which the sustainability criteria were developed. The sustainability criteria provide the standards against which Msunduzi will assess the sustainability of plans, policy and programmes. The criteria then informed the development of the limits of acceptable change, together with the existing legal and policy limits. The limits of acceptable change also provide indicators and targets against which progress towards achieving environmental goals and objectives can be measured.

3.4.1 Biophysical Environment

Goal

To improve the quality of the environment, and the well-being of fauna, flora and humans.

Objectives

- To manage inappropriate land use and to limit and prevent further land degradation and loss of agricultural potential, ecosystem goods and services and associated biodiversity;
- To ensure that the quality of water from rivers, streams and wetlands is suitable for the maintenance of biodiversity and the protection of human well-being;
- To conserve and promote sustainable use of natural resources;
- To maintain air quality at levels that are not a threat to the environment and human well-being;
- To plan for and facilitate a shift from the use of non-renewable to renewable resources; and
- To accentuate the importance of energy and its role in development and the negative effects that energy production may have on the environment.

Criteria

- Degraded areas are identified and rehabilitated to limit soil erosion and promote land productivity and to restore biodiversity as far as possible, to include landscaping with local (within 50 km) indigenous species;

- Aquatic ecosystems are in a healthy state to ensure that the resource remains fit for all other users and minimum water quality targets are maintained;
- Areas of high biological diversity, are utilised and managed to promote the ecosystem goods and services they supply;
- Alien invasive species are controlled and managed to prevent further infestation;
- Wetland areas, streams and rivers are preserved, rehabilitated and managed so as to maintain ecological function;
- Flood prone areas are managed to promote ecosystem goods and services and minimise flood risks and impacts to flood regimes;
- Areas at geotechnical or geological risk or instability are delineated and are avoided in land development;
- High potential agricultural land is used (or can potentially be used) for sustainable agricultural production;
- Compact, human-orientated land development patterns use land efficiently;
- Minimum air quality standards for the protection of human health and wellbeing and natural systems are maintained;
- A carbon neutral state is achieved through appropriate green house gas emission reductions, the use of alternative technology and carbon off-setting schemes; and
- The use of renewable resources is promoted and the reliance on non-renewable resources is reduced.

Table 3.1: Biophysical Limits of Acceptable Change

Limit of Acceptable Change	Indicator	Target
All degraded areas within the municipality rehabilitated	% land areas classed as degraded	100% of degraded areas rehabilitated
No sub catchment should deteriorate in quality.	Number of sub-catchments maintained at existing water quality or better	9 sub-catchments
Established targets for the persistence of biodiversity features are achieved	% of targets achieved	100%
No net loss of remaining areas of high biological diversity identified in the Environmental Services Plan	% of ecosystems remaining	100% or 20 186 ha or 30% of the municipal area
All listed alien invasive species controlled	% infested areas maintained (defined as cleared with three follow-up operations)	100%
No net loss of remaining wetland functionality	% of functional wetland habitat remaining	100% or 1000ha
No inappropriate development within floodplains	% land within the floodplain with inappropriate development	0%
Remaining areas of high potential agricultural land are used or could potentially be used for agricultural production.	% of high potential agricultural land transformed to other uses	0%
SANS 1929:2005 guideline ambient air quality limits for identified pollutants are not exceeded	Ambient concentrations of the following: Sulphur Dioxide (SO_2) Nitrogen Dioxide (NO_2) Carbon Monoxide (CO) Particulate Matter (PM10) Ozone (O_3) Lead (Pb)	No excedance of SANS 1929:2005 guideline ambient air quality limits

	Benzene (C_6H_6)	
Green house gas emission reductions, the use of alternative technology and carbon off-setting schemes to attain carbon neutral status	Nett Green house gas emissions Carbon footprint per capita	Municipality is carbon neutral

Actions

- B1: Alien invasive clearing program for Msunduzi owned land;
- B2: Wetland Functionality Assessment;
- B3: Detailed Flood Risk Assessment;
- B4: Air Quality Constraints Model Action Plan as part of the Msunduzi Air Quality Management Plan;
- B5: Carbon Emissions Inventory and Offset Program;
- B6: Climate Change Risk Assessment and Adaptation Strategy;
- B7: Action Plan for the Rehabilitation of land owned by Msunduzi;
- DAEA&RD1: State Land Rehabilitation;
- DAEA&RD2: Identify areas of grazing importance and implement strategies to support sustainable land use practices;
- DAEA&RD3: Alien Invasive Clearing Program for Land within Msunduzi not owned by the municipality; and
- DWA1: Refined State of the Rivers Reporting.

3.4.2 Social Environment

Goal

To meet the basic human needs of the Msunduzi residents without compromising the resources upon which basic services rely.

Objectives

- To provide basic services that meet the populations' need without compromising the systems from which the services are obtained;
- To protect the Msunduzi's landscapes and townscapes and sense of place;
- To minimise human vulnerability;
- To ensure that the physiological and psychological effects of noise, shock and vibration levels do not exceed legislated standards; and
- To preserve and enhance the importance of the cultural heritage of the Msunduzi area.

Criteria

- A basic level of water supply is provided to all residents without affecting the integrity of natural ecosystems;
- All residents have an income; access to appropriate, secure and affordable housing; and, have access to public services to meet basic needs and live with dignity;

- Communities vulnerable to environmental risk are identified and strategies are developed to minimise risk and promote human well-being;
- The waste stream to landfill has been reduced to a minimum, with recovery, re-use and recycling of materials undertaken as standard practice;
- Efficient and effective liquid waste management protects human health and the natural environment;
- An efficient, safe, integrated and convenient network of public transport, bicycle routes and pedestrian access is provided;
- Services, amenities, buildings, facilities, community parks and open spaces are accessible to all people; and, safe, clean and pleasant environments are provided that protect and enhance human health and wellbeing and improve the overall quality of life;
- High quality, affordable formal education is available and accessible for students of all ages;
- Indigenous ecological and cultural knowledge is developed and integrated into planning and management processes; and
- The city's sense of place and cultural and natural heritage resources are protected and maintained.

Table 3.2: Social Limits of Acceptable Change

Limit of Acceptable Change	Indicator	Target
Absolute poverty is eradicated	Human Development Index (Income + education levels + life expectancy)	To be defined
SABS 241 potable water quality limits are met	Indicators as per the SABS 241 standard	No excedance of Class I acceptable limit standards
Maintenance of the water quality of the uMsunduzi River within Intermediate contact recreational use guidelines	Indicators as per the Department of Water Affairs (DWA) Water Quality Guidelines for Recreational use	Meet DWA 80th Percentile for intermediate contact recreational guidelines for Faecal coli form pollution
Acceptable level of waste management	Rural, Urban and Peri-urban waste management service levels	Rural – Level 1 Peri-Urban – Level 3 Urban – Level 5
Ambient noise is maintained within the limits set in SANS 10103	Ambient noise levels in: Industrial Areas CBD Residential areas Rural Areas	No excedance of SANS 10103 limits
All identified Cultural Heritage resources are maintained.	State of identified cultural heritage resources	All identified heritage resources conserved

Actions

- S1: Urban Greening Program;
- S2: Integrated Waste Management Plan;
- S3: Environmental Vulnerability Assessment;
- S4: Noise Monitoring; and
- AMAFA1: Cultural Heritage Resource Assessment.

3.4.3 Economic Environment

Goal

To promote sustainable economic development.

Objectives

- To promote sustainable environmental, social and economic development;
- To emphasize the interdependence between poverty, economic growth and the environment;
- To realise the value of ecosystem goods and services;
- Provide opportunities for alternative livelihood strategies; and
- Promote efficient and sustainable use of natural resources.

Criteria

- Development is informed by social needs and the improvement of quality of life and does not compromise the biophysical environment;
- Alternative sustainable livelihood strategies are promoted;
- An equitable and broad range of employment opportunities exist that provide workers with income to support themselves and their families;
- Infrastructure and facilities are well-maintained to meet the needs of residents and business in ways that reduce environmental impact;
- Most of the daily food needs of Msunduzi are sustainably grown, processed and packaged in urban and rural agricultural schemes in the city and surrounding agricultural areas;
- Green design principles are used to ensure environmental efficiency and minimise use of resources;
- Clean, renewable and efficient energy sources and transportation options that reduce fossil fuel dependence are promoted, so as to reduce energy costs and produce low greenhouse gas emissions and other air contaminants
- City finances are managed responsibly and include full life-cycle cost perspectives, including long-term maintenance, repair and replacement costs.
- The cost of ecosystem goods and services are integrated into development planning.

Table 3.3: Economic Limits of Acceptable Change

Limit of Acceptable Change	Indicator	Target
Unemployment rates below National average	% of labour force without employment	To be defined
Sustainable economic growth above National average	% Annual economic growth	To be defined
More than 50% of daily food needs are grown, processed and packaged in Msunduzi and the surrounding agricultural areas	% of agricultural produce used in Msunduzi sourced locally	To be defined

Actions

- E1: Integrate EMF into SDF Review and preparation of the LUMS;
- E2: Ecosystem Goods and Services Assessment;
- E3: Sustainability Appraisal of all Municipal Plans, Policies and Programs;
- E4: Implementation of the ESP with associated land ownership and management policy; and
- E5: Infrastructure Cost Model.

3.4.4 Governance Environment

Goal

Create an enabling environment for ongoing dialogue amongst all Role players.

Objectives

- Ensure decision making is sound and based on an understanding of the principles of sustainability;
- Ensure all the Municipalities legal and policy responsibilities are met;
- Be proactive in addressing environmental threats; and
- Capacitate IAP's, officials and decision makers and build partnerships amongst these groups.

Criteria

- Environmental issues are prioritised and Msunduzi is committed to achieving environmental sustainability;
- Environmental issues and priorities are embedded in the Performance Management System and Key Performance Areas of all components of the municipality; and, are integrated in municipal planning;
- Decision-making processes are defensible, clear and transparent;
- Participation in LA21 is increased and the public is encouraged to participate in municipal planning initiatives;
- Capital investment projects undertaken or facilitated by the Municipality adhere to legislated requirements and Integrated Environmental Management principles;
- Msunduzi is prepared to respond rapidly and to deal effectively with known hazards and emerging threats, to limit the adverse impacts of events and effectively manage emergencies;
- Access to environmental information is facilitated and encouraged;
- Regular monitoring is undertaken to report on progress towards sustainability so that the city can learn and adapt as needed; and
- Communities are informed, empowered and involved in the process of democratic governance

Table 3.4: Governance Limits of Acceptable Change

Limit of Acceptable Change	Indicator	Target
Environmental sustainability criteria are integrated into policies, plans, programmes and decision making	To be defined	To be defined
Capital investment projects undertaken or facilitated by the Municipality adhere to legislated requirements	Number of non-compliance issues identified	Zero
Environmental information is available to the public	To be defined	To be defined

Actions

- G1: Environmental Capacity Assessment;
- G2: LA21 Forum Growth;
- G3: Web-based EMF;
- G4: Sustainable Development Training; and
- G5: Co-operative Governance.

4 Action Plans

4.1 Action Plans for inclusion in the Msunduzi IDP

The action plans as included below have been developed to assist in the implementation of the Environmental policy. The action plans are intended to be operationalised through the IDP and have been structured accordingly. The strategic issues, outcomes and objectives maintain the thread from the SEA, particularly the sustainability framework and maintain the strategic focus of the EMF. The timeframes indicated relate to the 5 year review period for the SEMP and therefore short term refers to tasks to be undertaken in the first year of implementation. Medium term refers to tasks that would be undertaken in the second year of implementation and may extend into the third year of implementation. Long term refers to tasks that should be initiated in the third and fourth years of implementation and should be completed by the review of the SEMP i.e. by 2015.

All action plans included in this section are the responsibility of Msunduzi. However, strategic partners that may assist the municipality in implementing the action plans have also been identified. In addition, where appropriate, the department in Msunduzi responsible for implementation of the action plan has been specified. Wherever possible estimated budgets have been identified for each task included in the action plans. In some cases however, the Municipality should have the capacity in house to implement tasks. These requirements will inform the capacity analysis detailed in Table 4.16 below.

4.1.1 Biophysical

The 6 action plans tabulated in Tables 4.1 – 4.7 below address biophysical issues, goals and strategies identified.

Table 4.1: Action Plan to Develop an Alien invasive Clearing Program for Msunduzi Owned Land

B1: Alien invasive clearing program for Msunduzi owned land				
Strategic Outcomes	Reduce land degradation, increase water availability.	**Strategic Objectives**	To manage inappropriate land use to limit land degradation and loss of agricultural potential, ecosystem goods and services and associated biodiversity	
Issues Addressed	Alien plant infestation results in land degradation; the loss of agriculturally productive land and natural resources; and, the loss of ecosystem goods and services and associated biodiversity; which result in a decline in social and economic conditions.	**Responsible Organisation/s**	Msunduzi Municipality – Parks, Sport and Recreation Msunduzi Municipality – Conservation & Environment Unit	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Update alien plant mapping specifically for Msunduzi Land.		Short term	Land Research Institute (LRI)	R75 000.00
Prioritise areas in terms of the extent of the invasion and the role the area plays in ecological functioning.		Short term	LRI	R 25 000.00
Implement alien plant clearing and control.		Ongoing	Alien Invasive Species Programme (DAEA&RD) and Working for Water	R300 000.00 per annum
Carry out follow up inspections and clearing to ensure reinvasion doesn't occur. Include consideration of using local (within 50km radius) indigenous vegetation for rehabilitation of cleared areas.		Ongoing	Alien Invasive Species Programme (DAEA&RD) and Working for Water	R200 000.00 per annum
Develop and administer an alien invasive plant awareness campaign		Ongoing	Alien Invasive Species Programme (DAEA&RD) and Working for Water	R100 000 in the first year and R50 000 thereafter
Total				R700 000.00 (for the first year) 2.8 million over the 5 year lifetime of the SEMP
Key Performance Indicator:	updated alien plant mapping	**Target**	% of areas subject to alien infestation reduced	

Table 4.2: Action Plan to Develop a Wetland Functionality Assessment

B2: Wetland Functionality Assessment			
Strategic Outcomes	Improve water quality and quantity; maintain biodiversity and associated ecosystem goods and services.	**Strategic Objectives**	To ensure that the quality of water from rivers, streams and wetlands is suitable for the maintenance of biodiversity and the protection of human well-being.
Issues Addressed	Land degradation; and, poor sewerage, solid waste and stormwater management impact on water and aquatic ecosystem quality Loss of ecosystem goods and services and associated biodiversity; results in a decline in social and economic conditions.	**Responsible Organisation/s**	Msunduzi – Development Services, Environmental Branch

Tasks	Timing	Potential Partners	Estimated Cost
Continual update of wetlands mapping as new information becomes available.	Ongoing	EKZNW	In-house (Environmental Branch)
Inclusion of greater wetland buffer areas as policy and wetland guideline documents become available.	Ongoing	EKZNW	In-house (Environmental Branch)
Undertake a wetland health assessment.	Medium term	Institute of Natural Resources; University of KwaZulu-Natal (UKZN)	R100 000.000
Goods and Services Assessment.	Medium term	eThekwini	R75 000.00
Develop and administer community an awareness program that communicates the value of ecosystem goods and services to communities that neighbour wetland habitats.	Medium term/ ongoing	Area Based Management Offices	R 100 000 initially and R 50 000 for every year thereafter
Total			R225 000.00 with an additional R50 000 per annum for education.

Key Performance Indicator:	Valuation of wetland goods and services	**Target**	Improve wetland functionality

Table 4.3: Action Plan to Develop a Detailed Flood Risk Assessment

B3: Detailed Flood Risk Assessment				
Strategic Outcomes	Reduce human vulnerability, reduce land degradation, improve economic opportunities.	**Strategic Objectives**	To ensure that the quality of water from rivers, streams and wetlands is suitable for the maintenance of biodiversity and the protection of human well-being. To protect the City's landscapes and townscapes	
Issues Addressed	Impact of storm water management on water quality. Risk associated with development in floodplains.	**Responsible Organisation/s**	Msunduzi – Water and Sanitation	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Prepare baseline information in a digital GIS based format. (Topographical, land use scenarios, rainfall, catchment boundaries, river centrelines etc).		Short term	KZN Human Settlements	R20 000.00
Map 2m contours for the municipality.		Short term		R500 000.00
Calculate peak flows and monthly stream flows for identified development scenarios.		Short term		R300 000.00
Determine and map planning floodlines and associated flow characteristics.		Short term		R350 000.00
Identify flood hazards, impacts and risks.		Short term		R100 000.00
Recommend potential mitigation measures or interventions.		Short term		R100 000.00
Develop guidelines, policies and by-laws to control development in areas sensitive to flooding or that may impact on the flood regime of a catchment.		Medium term		In-house
Undertake education with communities to prevent new residents moving back into flood areas after they have been resettled		Ongoing		In-house
Total				R 870 000.00 (additional R500 000 to obtain 2m contour data)
Key Performance Indicator:	Preparation of flood risk model	**Target**	No development within the 1:50 year floodline	

Table 4.4: Action Plan to Produce an Air Quality Constraints Model Action Plan as part of the Msunduzi Air Quality Management Plan

B4: Air Quality Constraints Model Action Plan as part of the Msunduzi Air Quality Management Plan				
Strategic Outcomes	Improve air quality and reduce associated human health concerns	**Strategic Objectives**	To maintain air quality at levels that are not a threat to the environment and human well-being.	
Issues Addressed	Air pollution emissions, coupled with the topography of the area, result in impacts on human health and well being and contribute to global greenhouse gas emissions and associated climate change.	**Responsible Organisation/s**	Msunduzi – Environmental Health Unit	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Prepare and maintain an emissions inventory for the municipality.		Short term	National Department of Environmental Affairs	In-house
Prepare an Air Quality Management Plan that identifies emission reduction plans and a mechanism for residents to report odours				In-house
Use the existing traffic model to inform an air quality constraints model and future transport planning.		Short term		R35 000.00
Collect and collate existing meteorological data.		Medium term		R100 000.00
Using information gathered as above prepare an air quality constraints model to inform future development planning.		Medium term		R300 000.00
Total				R435 000.00
Key Performance Indicator:	Mapping of areas sensitive to air quality constraints based on an emissions inventory	**Target**	Reduced ambient concentrations of pollutants	

Table 4.5: Action Plan to Prepare Carbon Emissions Inventory and Offset Program

B5: Carbon Emissions Inventory and Offset Program					
Strategic Outcomes	Reduce Msunduzi's Carbon footprint		**Strategic Objectives**	To plan for and facilitate a shift from the use of non-renewable to renewable resources. To accentuate the importance of energy and its role in development and the negative effects that energy production may have on the environment.	
Issues Addressed	Risk of climate change and potential impacts to ecosystem service delivery		**Responsible Organisation/s**	Msunduzi – Development Services, Environmental Branch	
Tasks			**Timing**	**Potential Partners**	**Estimated Cost**
Prepare a carbon emissions inventory for the municipality.			Long term	eThekwini Municipality, and DEA; NGO's e.g. Wildlands Trust and Arocha	R500 000.00
Invest in green technology and building design in order to reduce reliance on non-renewable energy resources.			Ongoing		In-house
Identify opportunities for carbon offset programs such as Wildlands Trust (tree planting) and Trade plus aid (capturing energy from sewerage and waste disposal).			Ongoing		R 100 000.00
Undertake an education program highlighting alternative green technology.			Ongoing		R 100 000 initially then R50 000 per annum thereafter
Total					R 700 000.00 and R50 000 per annum for education
Key Performance Indicator:	Determination of Msunduzi's carbon footprint		**Target**	Msunduzi is Carbon neutral	

Table 4.6: Action Plan to Undertake a Climate Change Risk Assessment and Prepare an Adaptation Strategy

B6: Climate Change Risk Assessment and Adaptation Strategy					
Strategic Outcomes	Reduce Msunduzi's Carbon footprint		**Strategic Objectives**	To plan for and facilitate a shift from the use of non-renewable to renewable resources. To accentuate the importance of energy and its role in development and the negative effects that energy production may have on the environment.	
Issues Addressed	Risk of climate change and potential impacts to ecosystem service delivery		**Responsible Organisation/s**	Msunduzi – Development Services, Environmental Branch	
Tasks		**Timing**	**Potential Partners**		**Estimated Cost**
Identify potential risks to Msunduzi as a result of climate change.		Long term	eThekwini Municipality and Msunduzi Innovation and Development Institute (MIDI)		In-house
Develop adaptation strategies to address climate change risks.		Long term			In-house
Implement and review strategies.		Long term			Dependant on strategies identified
Total					Still to be determined
Key Performance Indicator:	Climate change risks identified and strategies in place to address risks		**Target**	Reduced climate change risk	

Table 4.7: Action Plan for the Rehabilitation of Land Owned by Msunduzi

B7: Action Plan for the Rehabilitation of land owned by Msunduzi				
Strategic Outcomes	Reduce land degradation, maintain and improve ecosystem goods and services and thereby create more opportunities for economic and social development.	**Strategic Objectives**	To preserve the City's biodiversity and minimize the loss of species resulting from the development of the City. To ensure that the quality of water from rivers, streams and wetlands is suitable for the maintenance of biodiversity and the protection of human well-being.	
Issues Addressed	Inappropriate land use results in land degradation; the loss of agriculturally productive land and natural resources; and, the loss of ecosystem goods and services and associated biodiversity; which results in a decline in social and economic conditions.	**Responsible Organisation/s**	Msunduzi	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Identify and map areas of degraded land.		Medium Term	DAEA&RD (Landcare)	R50 000.00
Implement soil erosion control measures including rehabilitation with local (within 50 km radius) indigenous species.		Ongoing		R20 000.00 per annum
Prioritize degraded areas in need of rehabilitation.		Medium Term		R10 000.00
Rehabilitate priority areas using hydro seeding and any other potential rehabilitation methods recommended. Species to be used in rehabilitation should as far as possible use local indigenous (with 50km radius) species.		Ongoing		R100 000.00
Provide community training and extension services to prevent land degradation and unsustainable agricultural practices		Ongoing		R100 000.00 initially then R100 000 per annum thereafter
Total				R280 000.00 R100 000 per annum for education and extension services
Key Performance Indicator:	Map of degraded land	**Target**	Reduction in the % area classified as degraded	

4.1.2 Social

The 4 action plans tabulated in Tables 4.8 – 4.11 below address social issues, goals and strategies identified.

Table 4.8: Action Plan to Develop an Urban Greening Program

S1: Urban Greening Program				
Strategic Outcomes	Improve amenities, create a green aesthetic in the city, support city marketing objectives.	**Strategic Objectives**	To protect Msunduzi's landscapes and townscapes	
Issues Addressed	The increased demand for development within the Msunduzi area, as a result of its strategic location within the primary Provincial development corridor and being established as the Provincial capital, is placing pressure on open spaces.	**Responsible Organisation/s**	Msunduzi – Parks, Sports and Recreation	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Identify priority areas in need of urban greening i.e. Edendale		Short term	Greater Edendale Development Initiative (GEDI) NGO's e.g. Wildlands Trust and Arocha Botanical Society KZN Inland Branch.	In-house
Identify goals in terms of urban greening such as amenity, food security, ecosystem goods and services. The goals may differ depending on the area identified. This should include an education component to ensure that community takes ownership of the urban greening program and responsibility for trees etc planted in the area.		Short term		
Identify strategies to realise urban greening goals, this may include the creation/ revitalisation of a municipal nursery, and consideration of using only plants indigenous within a 50 km radius.		Short term		
To limit the impact that humans have on the environment the use of indigenous plants from a radius of 50 km should be promoted. All new developments as well as the Municipality and Government Departments should only use local indigenous plants (with the exception of non-invasive food plants)		Ongoing		
All landscape plans submitted to Msunduzi or DAEA&RD should be reviewed to identify opportunities for local indigenous species promotion.				
Implement urban greening strategies.		Ongoing		
Monitor urban greening areas and adapt the strategies accordingly.		Ongoing		
Total				No additional costs anticipated
Key Performance Indicator:	Urban greening strategies	**Target**	Effective use of urban open space	

Table 4.9: Action Plan to Produce an Integrated Waste Management Plan

S2: Integrated Waste Management Plan				
Strategic Outcomes	Sustainable waste management that includes all aspects of the waste hierarchy	**Strategic Objectives**	To provide basic services that meet the populations needs without compromising the systems from which the services are obtained.	
Issues Addressed	Industrial effluent; land degradation; and, poor sewerage, solid waste and stormwater management impact on water and aquatic ecosystem quality The lack of basic services such as effective waste removal and the provision of appropriate sanitation and water services impact on human health and well-being and result in a deterioration of the quality of life.	**Responsible Organisation/s**	uMgungundlovu District Municipality (UMDM) and Msunduzi	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Quantify and classify waste generated in Msunduzi.		Short term	DAEA&RD and UMDM	R130 000.00
Calculate existing capacity and capacity requirements in the future.		Short term		R120 000.00
Identify waste management scenarios and quantify the associated costs. This should include a community consultation and education program that looks at the preferred level of waste services vs what is practical given the population density and budgets.		Short term		R200 000.00
Select a preferred alternative, including option for reuse and recycling.		Short term		In-house
Undertake a public awareness campaign to support identified reuse and recycling initiatives		Short term		R 100 000
Total				R550 000.00
Key Performance Indicator:	Msunduzi Integrated Waste Management Plan	**Target**	Average waste per resident reduced	

Table 4.10: Action Plan to Undertake an Environmental Vulnerability Assessment

S3: Environmental Vulnerability Assessment				
Strategic Outcomes	Reduce risk to vulnerable communities.	**Strategic Objectives**	To minimise human vulnerability.	
Issues Addressed	Impacts to environmental quality pose risks to communities and limit livelihood opportunities.	**Responsible Organisation/s**	Msunduzi Housing	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Identify/ Map communities subject to environmental risk like residents in areas of poor air quality, flood prone areas, on steep slopes or in close proximity to railway lines, large roads or heavy industry.		Medium term	KZN Human Settlements	R180 000.00
Quantify potential risk i.e. the number of people potentially affected.		Medium term		R120 000.00
Identify potential risk prevention strategies such as relocation, creation of barriers, education etc.		Medium term		R150 000.00
Implement risk prevention strategies. Education should form the basis for the strategies to avoid resettlement of areas subject to environmental risk.		Ongoing		In-house (Housing Dept)
Monitor strategy effectiveness and review strategies/ identified communities.		Ongoing		In-house
Total				R450 000.00
Key Performance Indicator:	Strategies in place to reduce human vulnerability	**Target**	All residents have sustainable livelihoods and basic needs	

Table 4.11: Noise Monitoring Action Plan

S4: Noise Monitoring				
Strategic Outcomes	Maintain the City's sense of place	**Strategic Objectives**	To ensure that the physiological and psychological effects of noise, shock and vibration levels do not exceed legislated standards	
Issues Addressed	Impact to social environmental as a result of increased noise levels	**Responsible Organisation/s**	Msunduzi – Development Services, Environmental Branch	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Identify key areas of concern.		Short term	DEA	In-house
Develop a monitoring schedule to include the location day/s of the week and timing for monitoring to take place.		Medium term		R 45 000.00
Undertake noise monitoring.		Medium term		R 20 000.00 per location
Prepare reporting of measurements against legal limits.		Long term		R 50 000.00
Identify potential noise management strategies to mitigate noise impact to include traffic control and urban greening. This should include reporting of high noise incidents.		Long term		R 50 000.00
Implement noise control strategies		Ongoing		In-house
Total				R 245 000.00 (assuming 5 locations)
Key Performance Indicator:	Areas of concern are identified and monitored for noise	**Target**	Ambient noise is maintained within the limits set in SANS 10103	

4.1.3 Economic

The 5 action plans tabulated in Tables 4.12 – 4.16 below address economic issues, goals and strategies identified.

Table 4.12: Action Plan to Integrate the EMF into SDF Review and Preparation of the Msunduzi LUMS

E1: Integrate EMF into SDF Review and preparation of the LUMS					
Strategic Outcomes	Integrated planning approach that prioritises the environment.		**Strategic Objectives**	To promote sustainable environmental, social and economic development. To realise the value of ecosystem goods and services. Promote efficient and sustainable use of natural resources.	
Issues Addressed	Inappropriate development, increased demand for natural resources and services.		**Responsible Organisation/s**	Msunduzi Development Services, Environmental Branch and IDP Manager	
Tasks			**Timing**	**Potential Partners**	**Estimated Cost**
Use the consolidated constraints layer and status quo mapping produced as part of the EMF process as the basis for the next review of the SDF and preparation of the LUMS.			Short term	Department of Co-operative Governance and Traditional Affairs (COGTA)	Already budgeted for as part of the SDF review. This may reduce costs of SDF review as the EMF will significantly reduce the need to collect, collate and analyse environmental base information.
Ensure that development proposed in terms of the SDF or LUMS is appropriate based on any environmental constraints identified.					
Ensure that the SDF Review and development of the LUMS is based on an extensive and inclusive public consultation process.					
Undertake a sustainability appraisal of the SDF and LUMS once drafted using the sustainability framework as included in the SEA Report.					
Key Performance Indicator:	EMF mapping included in SDF review and preparation of the LUMS		**Target**	Environmental constraints inform planning	

Table 4.13: Action Plan to Undertake an Ecosystem Goods and Services Assessment

E2: Ecosystem Goods and Services Assessment				
Strategic Outcomes	Value of ecosystem goods and services is included in development planning.	**Strategic Objectives**	Promote efficient and sustainable use of natural resources. To emphasize the interdependence between poverty, economic growth and the environment.	
Issues Addressed	The unequal distribution of wealth and resources, and resulting poverty, is resulting in environmentally harmful practices which are causing environmental and resource degradation. The increased demand for development within the Msunduzi area, as a result of its strategic location within the primary Provincial development corridor and being established as the Provincial capital, is placing pressure on the optimal use of land and the provision of sustainable services and infrastructure.	**Responsible Organisation/s**	Msunduzi Development Services, Environmental Branch	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Identify priority systems for valuations such as wetlands and grasslands or alternatively the systems of open space identified in the environmental services plan.		Short term	eThekwini	In-house
Identify goods and services associated with the systems		Short term		R 50 000.00
Identify the preferred valuation methodology, (benefit transfer, replacement cost , hedonic value)		Short term		R10 000.00
Collect necessary information and mapping, i.e. extent of ecosystems, ecosystem function and condition.		Medium term		R 50 000.00 (based on the assumption that data has been collected through other business plans i.e. Wetland and grassland assessment.
Undertake valuation of goods and services		Medium term		R 250 000.00 (Dependant on the method selected)
Develop a scorecard for the rating of impacts to ecosystem goods and services based on individual development applications		Medium term		R 200 000.00
Develop an education program to communicate the value of ecosystem goods and services to communities		On going		R100 000 and R50 per annum thereafter
Total				R660 000.00 and R50 per annum for ongoing education.
Key Performance Indicator:	Ecosystem valuation and scorecard	**Target**	No net loss of ecosystem goods and services	

Table 4.14: Action Plan to undertake a Sustainability Appraisal of all Municipal Plans, Policies and Programs

E3: Sustainability Appraisal of all Municipal Plans, Policies and Programs				
Strategic Outcomes	All decision making takes into account environmental priorities.	**Strategic Objectives**	Ensure decision making is sound and based on an understanding of the principles of sustainability.	
Issues Addressed	Environmental issues are not considered a priority; and, insufficient resources are allocated to environmental functions.	**Responsible Organisation/s**	Msunduzi - LA21 Environmental Forum	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Using the Sustainability Framework from the SEA develop a draft sustainability appraisal checklist		Short term	COGTA, DAEA&RD	No additional resources required
Identify a few municipal projects as pilot appraisals to test the practicality of the checklist		Short term		
Amend and update the appraisal based on feedback		Short term		
Using the IDP identify all municipal Plans, Policies and Programs that should be subject to sustainability appraisal		Short term		
Identify capacity needs to undertake sustainability appraisal (plan to complete all appraisals)		Short term		
Address capacity gaps (create sub committees) and encourage further public participation.		Short term		Dependant on capacity analysis – additional staff may be required
Undertake appraisals		Ongoing		
Continually review and amend the appraisal checklist		Ongoing		
Total				
Key Performance Indicator:	Sustainability Checklist	**Target**	No unsustainable development approved	

Table 4.15: Action Plan to finalise the Draft ESP and associated land ownership and rates rebate policy

E4: Implementation of the ESP with associated land ownership and management policy					
Strategic Outcomes	Promote alternative livelihood strategies, increase economic opportunities, green design principles encouraged		**Strategic Objectives**	To promote sustainable environmental, social and economic development.	
Issues Addressed	The increased demand for development within the Msunduzi area, as a result of it's strategic location within the primary Provincial development corridor and being established as the Provincial capital, is placing pressure on the optimal use of land and the provision of sustainable services and infrastructure. Economic costs through the loss of 'free' ecosystem goods and services are not well understood or integrated into economic and development decision making		**Responsible Organisation/s**	Provide opportunities for alternative livelihood strategies. Promote efficient and sustainable use of natural resources.	
Tasks			**Timing**	**Potential Partners**	**Estimated Cost**
Undertake a public involvement process to identify additional areas for inclusion in the ESP. The public involvement process should include all land owners of areas currently identified for inclusion in the ESP, all conservancies, and all IAP's identified during the greater Msunduzi EMF process. Areas that should be given careful consideration during the public consultation process include the following: • Ezemvelo KZN Wildlife Stewardship program proposed protected areas; • Conservancies to include: o Upper Mpushini o Lower Mpushini o Cleland, Mkondeni o Wembly ,Clarendon o Ferncliff Catchment			Short term (This process has already been initiated by the Environmental Branch)		In house
Use the social criteria identified in Annexure 2 of the ESP to rate and prioritise the areas of environmental value to the municipality.			Short term		In house
In consultation with land owners, IAP's and conservancies identify land ownership alternatives for areas included in the ESP. This should consider options such as purchase of land by the municipality, creation of private protected areas, conservancies etc.			Short term		R 150 000
Develop a rates rebate policy to include identification of alternative land use based on land ownership options identified above.			Long term		R 225 000.00
Amend the Town Planning scheme to incorporate priority open space areas subject to rebates					In house
Notify all property owners (particularly those in areas of high environmental value) through the rates system of potential rebates and the rates rebate policy.			Long term		In house
Total					R 375 000.00
Key Performance Indicator:	Short term	ESP and Rates Rebate Policy implemented	Long term	30% of the municipality conserved for open space.	

Table 4.16: Action Plan for the Development of an Infrastructure Cost Model

E5: Infrastructure Cost Model				
Strategic Outcomes	Improved service delivery.	**Strategic Objectives**	To provide basic services that meet the populations needs without compromising the systems from which the services are obtained.	
Issues Addressed	Rapid population growth as a result of urbanisation has resulted in poorly planned urban development and expansion which places immense pressure on the municipality to supply basic services and maintain exiting service infrastructure. This in turn impacts on service delivery and residents rights to basic services.	**Responsible Organisation/s**	Msunduzi – Infrastructure, Services and Planning	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Quantify future service needs based on population growth trends in Msunduzi and the IDP sector plans for service provision.		Short term	Municipal Infrastructure Grant, Development Bank of South Africa	R150 000.00
Using information gathered as part of the Services Capacity Assessment, undertaken in the Status Quo phase of the greater Msunduzi EMF project, identify the urban edge.		Short term		R130 000.00
Identify areas outside the urban fringe where services could be provided at a reasonable cost in the future.		Short term		R 120 000.00
Identify potential cost shocks associated with the extension of service provision to new areas or as a result of a lack of capacity of existing services such as: • Identification and construction of a new land fill site; • Construction of an additional sewerage treatment works at the confluence of the Mpushini and Msunduzi rivers; and • The development of major roads.		Short term		R100 000.00
Total				R500 000.00
Key Performance Indicator:	Spatial identification of appropriate levels of basic service provision	**Target**	All residents of Msunduzi have access to appropriate basic services	

4.1.4 Governance

The 5 action plans tabulated in Tables 4.17 – 4.21 below address governance issues, goals and strategies identified.

Table 4.17: Action Plan to Undertake an Environmental Capacity Assessment

G1: Environmental Capacity Assessment					
Strategic Outcomes	Environmental issues are prioritised and Msunduzi is committed to achieving environmental sustainability		**Strategic Objectives**	Ensure decision making is sound and based on an understanding of the principles of sustainability. Ensure all the Municipalities legal and policy responsibilities are met. Be proactive in addressing environmental threats. Capacitate IAP's, officials and decision makers and build partnerships between these groups	
Issues Addressed	The capacity within the municipality has not increased in line with the increase in the area of responsibility; environmental issues are not considered a priority; and, insufficient resources are allocated to environmental functions		**Responsible Organisation/s**	Msunduzi – Human Resources and Development Services, Environmental Branch	
Tasks			**Timing**	**Potential Partners**	**Estimated Cost**
Identify environmental capacity needs based on the implementation of the EMF and SEMP			Short Term	UMDM, DAEA&RD, DEA	In-house
Undertake an audit of existing environmental capacity within Msunduzi			Short Term		In-house
Identify additional capacity requirements including additional staff, training, equipment and software			Short Term		In-house
Total					No additional resources required. This should be undertaken by existing staff in Msunduzi.
Key Performance Indicator:	Environmental capacity and gaps quantified		**Target**	Sufficient capacity to address all environmental issues	

Table 4.18: Action Plan to increase the Capacity of the LA21 Environmental Forum

G2: Grow the LA21 Environmental Forum				
Strategic Outcomes	Increased participation in LA21 and municipal planning initiatives	**Strategic Objectives**	Ensure decision making is sound and based on an understanding of the principles of sustainability Capacitate IAP's, officials and decision makers and build partnerships between these groups	
Issues Addressed	Insufficient resources are allocated to environmental functions	**Responsible Organisation/s**	Msunduzi - Development Services, Environmental Branch	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Use the media to raise the profile of the LA21 environmental forum and their Terms of Reference		Short Term	Pietermaritzburg Chamber of Business, Sobantu Environmental Forum, DWA Catchment management forum	R 20 000.00 (Advertising)
Investigate options for alternative times and venues to make it easier for the public to participate		Short Term		In-house
Create capacity within the Msunduzi Environment Unit to support LA21 and facilitate the implementation of the LA21 Terms of Reference (see Action G1)				
Create partnerships with other forums (PCB, catchment management etc.) to increase capacity and awareness		Short Term		
Create subcommittees that perform specific tasks		Short Term		
Total				R 20 000.00
Key Performance Indicator:	The number of LA21 environmental forum members	**Target**	Environmental information is available to the public and the public is involved in municipal decision making	

Table 4.19: Action Plan to make the EMF available on the Web

G3: Web-based EMF				
Strategic Outcomes	Greater access to environmental information	**Strategic Objectives**	Be proactive in addressing environmental threats. Capacitate IAP's, officials and decision makers	
Issues Addressed	Limited collaboration between environmental institutions and stakeholders	**Responsible Organisation/s**	Msunduzi – GIS Department	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Investigate the hosting agreement for the Msunduzi website to ensure it is capable of hosting the EMF and associated data (aerial imagery)		Short Term	DEA	In house
Design a webpage to enable the following: View EMF mapping Identify a site based on a property description Zoom in and out Use the EMF reporting tool		Short Term		R200 000.00
Notify the public of the availability of the EMF and how to access it. This should be done through the media as well as notification of identified I&AP and ratepayers.		Short Term		R20 000.00 (advertising)
Total				R220 000.00
Key Performance Indicator:	Interactive web based environmental information system	**Target**	Improved access to environmental information	

Table 4.20: Action Plan to provide Sustainable Development Training

G4: Sustainable Development Training					
Strategic Outcomes	Informed decision making		**Strategic Objectives**	Ensure decision making is sound and based on an understanding of the principles of sustainability Be proactive in addressing environmental threats. Capacitate IAP's, officials and decision makers and build partnerships between these groups	
Issues Addressed	The capacity within the municipality has not increased in line with the increase in the area of responsibility; environmental issues are not considered a priority; and, insufficient resources are allocated to environmental functions		**Responsible Organisation/s**	Msunduzi – Human Resources and Development Services, Environmental Branch and Area Based Management Unit	
Tasks			**Timing**	**Potential Partners**	**Estimated Cost**
Identify groups for sustainable development training – Councillors, Officials, Civil Society			Short term	DEA, DAEA&RD	In-house
Identify training needs (language, levels of understanding of environmental issues and terminology)			Short term		In-house
Design training course and training materials			Short term		R 75 000.00
Undertake training for different groups (it will be critical for training to be undertaken on a regular basis as staff, councillors and I&AP's change and grow)			Ongoing		R18 000.00 (per group)
Total					R165 000.00 (assuming 5 training courses)
Key Performance Indicator:	Set of training materials		**Target**	Increased understanding of sustainability principals and the link between the biophysical and socio economic environment	

Table 4.21: Action Plan to improve Co-operative Governance

G5: Co-operative Governance				
Strategic Outcomes	Decision making is defensible, clear and transparent. Access to environmental information is facilitated and encouraged. Communities are informed, empowered and involved in the process of democratic governance.	**Strategic Objectives**	Ensure decision making is sound and based on an understanding of the principles of sustainability. Capacitate IAP's, officials and decision makers and build partnerships between these groups.	
Issues Addressed	Insufficient intergovernmental co-operation and co-ordination is resulting in poor implementation of environmental governance and there is limited collaboration between environmental institutions and stakeholders.	**Responsible Organisation/s**	Msunduzi, Provincial government,	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Based on the institutional analysis identify existing fora in need of revitalisation or new fora that may need to be created.		Short term	DAEA&RD, COGTA, DWA, Department of Housing, Department of Transport	In-house
Review the effectiveness of fora and attendance to determine whether there aren't opportunities to combine fora or in any way improve the efficiency of participation.				
Undertake extensive consultation to ensure attendance at existing fora, like the IDP forum. This should include careful consideration of the date and time based on availability of participants, extended notice periods for meetings with a number of reminders and ensuring that the invitation reaches the correct participant.		Short term		
Agree on roles and responsibilities with other groups to create/ rejuvenate required fora		Short term		
Attend and participate in the fora to build partnerships, share information and develop strategies to address environmental issues.		Ongoing		
Provide feedback to provincial and national government regarding the participation on fora.		Ongoing		
Total				No additional cost
Key Performance Indicator:	Attendance at Msunduzi Fora (number of attendees)	**Target**	Greater cooperative governance	

4.2 Additional action plans

Action plans included in this section are not the main responsibility of Msunduzi. Msunduzi is however responsible for informing the relevant authority and developing a memorandum of understanding with said authority in order to ensure that the tasks identified are undertaken. The action plans have therefore been broken up in terms of the responsible authority. As above the action plans include strategic focus for the action plan, timeframes and budgets.

4.2.1 DAEA&RD

Tables 4.22 to 4.24 refer to action plans to be implemented by DAEA&RD with the support of Msunduzi.

Table 4.22: Land Rehabilitation Action Plan

DAEA&RD1: Land Rehabilitation				
Strategic Outcomes	Reduce land degradation, maintain and improve ecosystem goods and services and thereby create more opportunities for economic and social development.	**Strategic Objectives**	To preserve the City's biodiversity and minimize the loss of species resulting from the development of the City. To ensure that the quality of water from rivers, streams and wetlands is suitable for the maintenance of biodiversity and the protection of human well-being.	
Issues Addressed	Inappropriate land use results in land degradation; the loss of agriculturally productive land and natural resources; and, the loss of ecosystem goods and services and associated biodiversity; which results in a decline in social and economic conditions.	**Responsible Organisation/s**	Department of Agriculture, Department of Public Works; DAEA&RD (Landcare)	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Identify and map areas of degraded land.		Medium Term	Msunduzi	R100 000.00
Implement soil erosion control measures.		Ongoing	Developers and construction industry	R 50 000.00 per annum
Prioritize degraded areas in need of rehabilitation.		Medium Term	Msunduzi	R20 000.00
Rehabilitate priority areas using hydro seeding and any other potential rehabilitation methods recommended.		Ongoing	Developers and construction industry	R200 000.00
Undertake education programs with communal farmers on appropriate land use management to prevent further land degradation.		Ongoing	Department of Education, Wildlife and Environment Society of South Africa (WESSA)	R90 000.00 (assuming 5 training courses)
Total				R410 000.00
Key Performance Indicator:	Map of degraded land	**Target**	Reduction in the % area classified as degraded	

Table 4.23: Action Plan to Identify Areas of Grazing Importance and Implement Strategies to Support Sustainable Land Use Practices

DAEA&RD2: Identify areas of grazing importance and implement strategies to support sustainable land use practices				
Strategic Outcomes	Improved, sustainable agricultural production	**Strategic Objectives**	To manage inappropriate land use to limit land degradation and loss of agricultural potential To conserve and promote sustainable use of natural resources	
Issues Addressed	Inappropriate land use results in land degradation; the loss of agriculturally productive land and natural resources; and, the loss of ecosystem goods and services and associated biodiversity; which results in a decline in social and economic conditions.	**Responsible Organisation/s**	Department of Agriculture; DAEA&RD	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Identify existing carrying capacity data such as the Bioresource unit / group to provide broad level carrying capacity figures.		Short term	Institute of Natural Resources	R 5 000.00
Refine the assessment of carrying capacity by using information available on rainfall, veld type and veld condition.		Short term		R15 000.00
Undertake field verification.		Short term		R 15 000.00
Prepare Reporting		Short term		R 5 000.00
Total				R40 000.00
Key Performance Indicator:	Areas of high grazing potential mapped	**Target**	Increased agricultural production and reduced land degradation	

Table 4.24: Alien Invasive Clearing Program for Land within Msunduzi not owned by the municipality

DAEA&RD3: Alien Invasive Clearing Program for Land within Msunduzi not owned by the municipality				
Strategic Outcomes	Reduce land degradation, increase water availability.	**Strategic Objectives**	To manage inappropriate land use to limit land degradation and loss of agricultural potential, ecosystem goods and services and associated biodiversity	
Issues Addressed	Alien plant infestation results in land degradation; the loss of agriculturally productive land and natural resources; and, the loss of ecosystem goods and services and associated biodiversity; which results in a decline in social and economic conditions.	**Responsible Organisation/s**	Department of Water Affairs	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Undertake alien plant mapping for Msunduzi (include existing mapping for Municipal owned land)		Short term	Alien Invasive Species Programme (DAEA&RD) Working for Water	R275 000.00
Prioritise areas in terms of the extent of the invasion and the role the area plays in ecological functioning		Short term		R50 000.00
Identify strategies to enforce alien plant control legislation and assist land owners to meet legal obligations		Ongoing		R50 000.00
Carry out follow up inspections to ensure reinvasion does not occur		Ongoing		R200 000.00
Total				R575 000.00
Key Performance Indicator:	Alien plant mapping and control strategies	**Target**	% of areas subject to alien infestation reduced	

4.2.2 DWA

Table 4.25 refer to action plans to be implemented by DWA with the support of Msunduzi.

Table 4.25: Action Plan to Prepare Refined State of the Rivers Reporting

DWA1: Refined State of the Rivers Reporting				
Strategic Outcomes	Improved water quality	**Strategic Objectives**	To ensure that the quality of water from rivers, streams and wetlands is suitable for the maintenance of biodiversity and the protection of human well-being	
Issues Addressed	Industrial effluent; land degradation; and, poor sewerage, solid waste and stormwater management impact on water and aquatic ecosystem quality	**Responsible Organisation/s**	Department of Water Affairs and Umgeni Water	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Identify suitable surface water resource indicators		Short term	Msunduzi	R 5000.00
Identify goods and services provided by surface water resources		Short term		R10 000.00
Identify suitable management units (subcatchments)		Short term		R1 000.00
Assess the quality of surface water in terms of: • Biological data from literature review such as vegetation maps • Land cover or land use within the (subcatchment) • Habitat integrity • Ecological importance and sensitivity		Medium term		R40 000.00
Identify representative sampling points and undertake sampling for the following pollutants: • E-.Coli • Conductivity • Dissolved Oxygen • Chemical Oxygen Demand • Ammonia • Nitrate • Nitrite • Soluble Reactive Phosphate • Total phosphorus • Potassium • Sulphate		Medium term		R200 00.00
Produce a management framework to include: • Management classes and Eco specs for each river reach • Recommendations to meet targets • A monitoring program		Medium term		R60 000.00

Total				R316 000.00
Key Performance Indicator:	Refined state of the rivers report	**Target**	Target management classes achieved	

4.2.3 Amafa KwaZulu Natali (Amafa)

Action plans tabulated in Table 4.26 below are to be implemented by Amafa with the support of Msunduzi.

Table 4.26: Action Plan to Undertake a Cultural Heritage Resource Assessment

AMAFA1: Cultural Heritage Resource Assessment				
Strategic Outcomes	City's sense of place, amenity and tourism potential is optimised Indigenous and cultural knowledge is recognised and included in decision making	**Strategic Objectives**	To protect Msunduzi's landscapes and townscapes To preserve and improve the cultural heritage of the Msunduzi area.	
Issues Addressed	Lack of information regarding cultural heritage resources within the municipality has resulted in the loss and degradation of these resources.	**Responsible Organisation/s**	Amafa	
Tasks		**Timing**	**Potential Partners**	**Estimated Cost**
Undertake extensive public involvement to identify and map cultural heritage resources throughout Msunduzi		Medium term	Msunduzi	R200 000.00
Integrate the new resource map with the existing cultural heritage resources map produced as part of the Cultural Heritage assessment undertaken in the status quo phase of the EMF		Medium term		R10 000.00
Undertake an audit of all heritage resources to determine: The type of resource (building, archaeological site, spiritual area, religious resource) The state of the resources Management interventions required		Long term		R 450 000.00 (Dependant on the number of resources identified and their special location)
Continually update mapping as new sites are identified		Ongoing		In house
				R660 000.00
Key Performance Indicator:	Detailed map and assessment of cultural heritage resources	**Target**	State and number of cultural heritage resources improved	

5 Monitoring and Evaluation System

The SEMP forms part of a greater study which also produced a Status Quo Analysis, SEA, SEMP and ESP (previously MOSS). This is the first attempt at developing an SEMP for Msunduzi. It is therefore critical that the EMF be reviewed regularly and that information gathered during the implementation of the EMF is used to improve the EMF over time. This process will be much like the existing planning process currently undertaken by the municipality to develop and review the IDP and SDF.

5.1 Roles and Responsibilities

Msunduzi will be responsible for implementing the SEMP but should be supported by provincial and national government as illustrated in Figure 5.1 below.

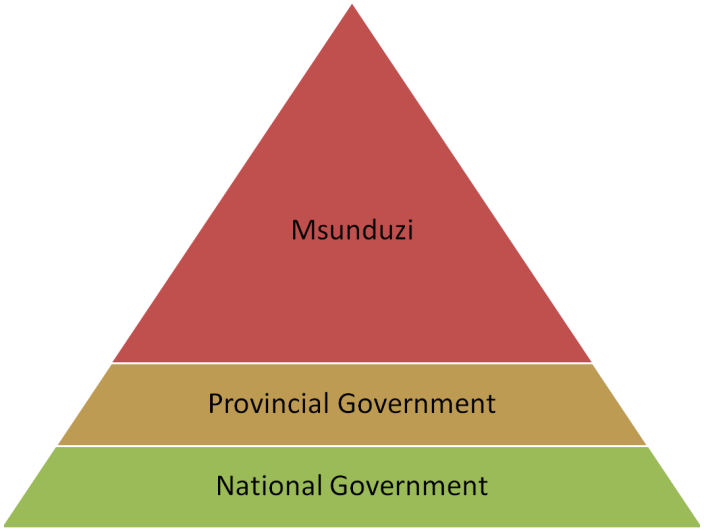

Figure 5.1: Roleplayers in the implementation of the Msunduzi SEMP

As discussed above however there are some activities that are not the core responsibility of Msunduzi. To address this Msunduzi should be required to develop co-operative mechanisms or where necessary memorandums of understanding. These agreements or mechanisms should further detail responsibilities and timeframes for activities. The roles and responsibilities in terms of implementing the SEMP are detailed further below.

5.1.1 Msunduzi

The roles and responsibilities of local government are outlined in Chapter 7 and Schedules 4 and 5 of the Constitution. These responsibilities include governance functions such as development and implementation of by-laws, enforcement, and cooperation with other spheres of government, protection functions such as the creation and implementation of environmental management plans as well as management functions including service provision and associated management of impacts associated with the provision of services.

Msunduzi is therefore required to manage not only the environmental impacts resulting from its activities such as service provision but also to proactively implement measures to ensure environmental degradation does not occur.

The SEMP identifies projects that Msunduzi should implement to improve the Msunduzi environment and the action plans contained in the SEMP should be operationalised through the IDP. Staff resources will be needed and budgeted in terms of the IDP planning process.

5.1.2 Provincial Departments

The Constitution establishes the foundation for environmental governance. As indicated above implementation of the SEMP rests with Msunduzi, but the Constitution creates 'one system of government' consisting of three spheres namely local, provincial and national government. The Bill of Rights places a duty on all three spheres of government to create "reasonable legislative and other measures" in delivering the environmental right as contemplated by the Constitution. This duty means that government as a whole is responsible for ensuring sustainable development. The Constitution also places a duty on government to cooperate on environmental matters and introduces principles of cooperative government and intergovernmental relations.

The constitution therefore requires that provincial government, support and cooperates with Msunduzi in the implementation of the SEMP. To this end each action plan identified potential partners. These partners are to a large extent in provincial government and as a minimum include:

- DAEA&RD;
- COGTA;
- Department Human Settlements; and
- Department of Transport.

5.1.3 National Departments

As it does with provincial government the Constitution places a duty on national government as well to support Msunduzi in implementing the SEMP. DEA is the main role player in environmental management at a National level, but DWA and other relevant National Departments also need to provide support to the implementation of the SEMP.

5.2 Capacity, Training and Awareness

It has been recognised that Msunduzi will require additional capacity and training in order to implement the SEMP. To this end action plans for an environmental capacity assessment (Table 4.17) and sustainable development training (Table 4.20) has been proposed. In fact all 5 action plans proposed in terms of the governance section deal with the need to assess the capacity to implement the SEMP and address capacity issues. In order to implement the remainder of the SEMP it is therefore critical that these action plans be prioritised.

5.3 Documentation and Record Keeping

5.3.1 SEMP Review Period

Msunduzi's Environmental Branch, under the Development Services Sub-Unit, will champion the SEMP. Equally the SEMP will need to be reviewed every 5 years. The action plans have therefore been written with a 5 year timeframe with the aim of achieving a longer term sustainability vision for the area. Msunduzi will be responsible for the review of the SEMP.

5.3.2 Monitoring

Timeframes for the monitoring of specific aspects and activities are provided below. However it is recommended that the results of the monitoring be consolidated and reported annually. It is recommended that the monitoring be undertaken by Msunduzi's Environmental Branch and reported to the LA21 Environmental Forum and then EXCO.

5.4 Activities/Aspects, Key Performance Indicators and Targets

As this is the first attempt at operationalising the environmental policy through an SEMP, there remains much work to be done and additional studies to be undertaken that will feed into the next review of the SEMP. The monitoring framework has therefore been split into two. Table 5.1 deals with monitoring progress towards implementing the various action plans and obtaining additional information required. Table 5.2 deals with monitoring environmental quality to determine the extent to which the SEMP is achieving environmental goals and targets. Each table looks at the activity or aspect being monitored, the key performance indicators, targets to be achieved and responsibility. In addition the second table addresses frequency as progress on activities in Table 5.1 should be reported annually and, once completed, will not required further monitoring. Aspects in Table 5.2 however will require ongoing monitoring with different frequencies. The frequency suggested in Table 5.2 will be refined through public consultation and should be reviewed regularly by Msunduzi to determine whether the suggested frequency for monitoring is practically possible or not.

Table 5.1: Activities, Key Performance Indicators and Targets

Activity	Key Performance Indicator	Target
Msunduzi Responsibility		
B1: Alien invasive clearing program for Msunduzi owned land	Updated alien plant mapping	% of areas subject to alien infestation reduced
B2: Wetland Functionality Assessment	Valuation of wetland goods and services	Improve wetland functionality
B3: Detailed Flood Risk Assessment	Flood risk model	No development within the 1:50 year floodline
B4: Air Quality Constraints Model Action Plan as part of the Msunduzi Air Quality Management Plan	Mapping of areas sensitive to air quality constrains based on an emissions inventory	Reduced ambient concentrations of pollutants
B5: Carbon Emissions Inventory and Offset Program	Determination of Msunduzi's carbon footprint	Msunduzi is carbon neutral
B6: Climate Change Risk Assessment and Adaptation Strategy	Climate change risks identified and strategies in place to address risks	Msunduzi protected against climate change risks
B7: Action Plan for the Rehabilitation of land owned by Msunduzi	Map of degraded land	Reduction in the % area classified as degraded

Activity	Key Performance Indicator	Target
S1: Urban Greening Program	Areas for urban greening identified and strategies in place to address urban greening needs	Effective use of urban open space
S2: Integrated Waste Management Plan	Msunduzi Integrated Waste Management Plan	Average waste per resident reduced
S3: Environmental Vulnerability Assessment	Strategies in place to address human vulnerability	All residents have sustainable livelihoods and basic needs
S4: Noise Monitoring	Areas of concern are identified and monitored for noise	Ambient noise is maintained within the limits set in SANS 10103
E1: Integrate EMF into SDF Review and preparation of the LUMS	EMF mapping included in SDF review and preparation of the LUMS	Environmental constraints inform planning
E2: Ecosystem Goods and Services Assessment	Ecosystem goods and services valuation and scorecard	No net loss of ecosystem goods and services
E3: Sustainability Appraisal of all Municipal Plans, Policies and Programs	Sustainability Checklist	No unsustainable development approved
E4: Implementation of the ESP with associated land ownership and management policy	ESP and Rates Rebate Policy implemented	30% of the municipality conserved for open space
E5: Infrastructure Cost Model	Spatial identification of appropriate levels of basic service provision	All residents of Msunduzi have access to appropriate basic services
G1: Environmental Capacity Assessment	Environmental capacity and gaps quantified	Sufficient capacity to address all environmental issues
G2: LA21 Forum Growth	Number of LA21 environmental forum members	Environmental information is available to the public and the public is involved in municipal decision making
G3: Web-based EMF	Interactive web based environmental information system	Improved access to environmental information
G4: Sustainable Development Training	Set of training materials	Increased understanding of sustainability principals and the link between the biophysical and socio economic environment
G5: Co-operative Governance	Number of fora attended by Msunduzi	Greater Cooperative governance
DAEA&RD Responsibility		
DAEA&RD1: State Land Rehabilitation	Map of degraded land	Reduction in the % area classified as degraded
DAEA&RD2: Identify areas of grazing importance and implement strategies to support sustainable land use practices	Map of areas of grazing importance	Improved agricultural production and reduced land degradation
DAEA&RD3: Alien Invasive Clearing Program for Land within Msunduzi not owned by the municipality	Alien plant mapping and control strategies	Areas subject to alien infestation reduced
DWA Responsibility		
DWA1: Refined State of the Rivers Reporting	Refined state of the rivers report	Target management classes achieved
Amafa Responsibility		
AMAFA1: Cultural Heritage Resource Assessment	Detailed map and assessment of cultural heritage resources	State and number of cultural heritage resources enhanced

Table 5.2: Activities, Key Performance Indicators and Targets

Aspect	Key Performance Indicator	Target	Frequency	Responsibility
Wetlands	% of functional wetland habitat remaining	100% or 1000ha	Annually	Msunduzi & DWA
Biodiversity	% of established biodiversity targets achieved	100%	Every 2 years	Msunduzi and EKZNW
	% infested areas maintained (defined as cleared with three follow-up operations)	100%	Annually	Msunduzi and DWA
Areas prone to flooding	% land within the floodplain with inappropriate development	0%	6 monthly	Msunduzi
Land Degradation	% land areas classed as degraded	100% of degraded areas rehabilitated	Annually	Msunduzi and DAEA&RD
Water Quality	Number of sub-catchments maintained within target management class	9 sub-catchments	6 Monthly	DWA
	Indicators as per the DWA Water Quality Guidelines for Recreational use	Meet DWA 80th Percentile for intermediate contact recreational guidelines for Faecal coliform pollution	As per existing testing	DWA
	Indicators as per the SABS 241 standard for potable water	No excedance of Class I acceptable limit standards	Monthly (as per existing testing)	Msunduzi & Umgeni Water
Agriculture	% of high potential agricultural land transformed to other uses	0%	Annually	Msunduzi and DAEA&RD
	% of agricultural produce used in Msunduzi sourced locally		Annually	Msunduzi and DAEA&RD
Air Quality	Ambient concentrations of the following: Sulphur Dioxide (SO_2) Nitrogen Dioxide (NO_2) Carbon Monoxide (CO) Particulate Matter (PM10)	No excedance of SANS 1929:2005 guideline ambient air quality limits	3 monthly	Msunduzi
Climate Change	Nett Green house gas emissions Carbon footprint per capita	Municipality is carbon neutral	Every 2 years	Msunduzi
Waste Management	Rural, Urban and Peri-urban waste management service levels	Rural – Level 1 Peri-Urban – Level 3 Urban – Level 5	6 monthly	Msunduzi
Noise	Ambient noise levels in: Industrial Areas CBD Residential areas Rural Areas	No excedance of SANS 10103 limits	6 monthly	Msunduzi

Aspect	Key Performance Indicator	Target	Frequency	Responsibility
Heritage	State of identified cultural heritage resources	All identified heritage resources conserved	Every 5 years	Amafa & Msunduzi
Governance	Number of capital investment projects undertaken or facilitated by the Municipality that do not adhere to legislated requirements	0	At every EXCO meeting	Msunduzi

6 Public Involvement

A public consultation process was undertaken to support the preparation of the draft SEMP. This included an initial planning workshop with key stakeholders, two public meetings to discuss the desired state of the environment and the Draft SEMP Report, notices to IAP's and newspaper advertisements.

SRK in partnership with Msunduzi Municipality Environmental Branch made every effort to ensure that the Draft ESP was informed by public input and that a wide range of public sectors gained access to the documentation and participated in the process.

A detailed account of the public consultation process undertaken, together with all notices, representations received, notices issued and a copy of the IAP database, is included in the Public Consultation Record which has been produced as a separate document as it relates to all the products produced in terms of the Greater Msunduzi EMF project. In addition to the public consultation undertaken to prepare the Final Draft SEMP presentations will need to be made to Msunduzi's portfolio committees and executive committee so that Msunduzi council may adopt the SEMP at which stage it will become final.

Table 6.1 includes all comments received in the draft SEMP Report during public consultation and associated responses

Table 6.1: Comments received in the SEMP and associated Responses

Date	Individual	Company / Organisation	Comment / Issue / Concern	Response
SEMP				
18 March 2010 Public Meeting	Ms. P. Long Ms. T. Collocott	PMMB Trust Private	Education is critical in order to achieve environmental goals.	The need for an educational component to each action plan has been included in the SEMP.
18 March 2010 Public Meeting	Ms. S. Schutte	Upper Mpushini Conservancy	Only local (within a 50 km radius) indigenous plants should be used in urban greening projects.	Noted – Action Plan S1: Urban Greening Program has been amended to reflect this.
18 March 2010 Public Meeting	Mr. T. Mlase	Msunduzi Ward Councillor	Enforcement of environmental legislation and policy will be critical.	Agreed - Action Plan G1 Environmental Capacity Assessment to improve environmental capacity within Msunduzi to ensure it has sufficient capacity to enforce all legislation and policy.
18 March 2010 Public Meeting	Mr. L. Ngobo	GEDI	Community involvement will be required to ensure compliance with the proposed policy. Education and awareness of the value of ecosystem goods and services is the only way to ensure community involvement.	The need for an educational component to each action plan has been included in the SEMP.

Date	Individual	Company / Organisation	Comment / Issue / Concern	Response
25 March 2010 Written Comments	Ms. S. Schutte	Upper Mpushini Conservancy	In table 3.1. (Biophysical limits of acceptable change): We would like to see "No sub catchment should deteriorate in quality." In point 3.4.2 Social Environment: we would like to see as an objective: 'The sense of place should be maintained" Page 24 Table 4.8 Action Plan to Develop Urban Greening Program To limit the impact that humans have on the environment the use of indigenous plants from a radius of 50 km should be promoted. All new developments as well as the Municipality and Government Departments should be only using local indigenous plants (with the exception of non-invasive food plants) A potential partner could be the Botanical Society KZN Inland Branch.	Changes have been reflected in the SEMP.
25 March 2010 Written Comments	Mr. N. Durow	Lower Mpushini Conservancy	Biodiversity objective - "To manage inappropriate land use to limit land degradation and loss of agricultural potential, ecosystem goods and services and associated biodiversity." should read - "To manage inappropriate land use and to limit and prevent further land degradation and loss of agricultural potential, ecosystem goods and services and associated biodiversity." "Degraded areas are identified and rehabilitated to limit soil erosion and promote land productivity"should read: "Degraded areas are identified and rehabilitated to limit soil erosion and promote land productivity and to restore biodiversity as far as is humanly possible."	Noted the report has been amended

Date	Individual	Company / Organisation	Comment / Issue / Concern	Response
25 March 2010 Written Comments	Mr. N. Durow	Lower Mpushini Conservancy	South Africa is, and always will be, suffering from water shortages and deficiencies in the generation and supply of electrical energy. In order to overcome these problems in provision the saving and storage of rainwater off roofs should be a priority in all new housing developments. Houses could be, quite easily, designed and built to have under-floor reservoirs built into them. In the same way, new housing developments should have to be equipped with solar water heating facilities and photovoltaic electricity panels and storage batteries sufficient to satisfy their lighting requirements. An educational programme should be implemented to encourage citizens to only use locally indigenous plants in their gardens. This could result in the creation of urban wildlife corridors being created when a whole chain of such gardens becomes established. This will also improve the nature and character of the urban environment.	Action Plan S1: Urban Greening Program has been amended to reflect the use of indigenous plants. Action Plan G4 also addresses sustain able development training and the need for further education.

7 Conclusions and Recommendations

The SEMP provides an operational framework for the amended Integrated Environmental Policy for Msunduzi. The SEMP will be operationalised through the IDP and has therefore followed a similar approach and format. The SEMP also provides action plans to increase environmental capacity within Msunduzi. In order to successfully implement the SEMP, and the associated EMF and ESP, Msunduzi will require additional capacity in the Environmental Branch which will be responsible for facilitating the implementation of the SEMP.

Msunduzi will implement the SEMP and be responsible for monitoring and review of the SEMP. To facilitate this, the following recommendations are made:

- As implementation of the SEMP requires additional resources, it is critical that the action plan to identify environmental capacity requirements (Table 4.17) be prioritised;
- That the SEMP should be reviewed every 5 years; and
- That the monitoring to be undertaken in terms of the SEMP be reported to the LA21 Environmental Forum every year by the Msunduzi Environmental Branch.

Finally as this is the first attempt at operationalising the environmental policy through a SEMP it is critical that this be viewed as a first step in a long process towards achieving environmental sustainability. The SEMP provides the foundation from which further work will be undertaken in order to improve and refine environmental goals and targets. The SEMP is therefore a dynamic document that must continue to change and grow as the understanding of the environment expands and increases and gains in wider acceptance.

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