Makana Municipality

Preliminary

Sustainable Development Framework

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Acknowledgments

This report is part of the Local Environmental Action Plan (LEAP) for the Makana Municipality. It has received review and comments from the LEAP Project Team, the Development Bank of South Africa and relevant Stakeholders. Additional review and comment has been received from Xolisa Ngwadla of MBB Engineers and Lawrence Sisitka. However, the views expressed in this document are those of the author, and do not necessarily reflect those of Rhodes University or the Makana Municipality.

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Executive Summary

The Makana Municipality is experiencing growth in several areas, including, residential real estate, institutional development and tourism related industries, for example, game reserves. In addition, the Municipal government has recently been given the responsibility for planning and growth management services for the entire Makana Municipality. This includes Grahamstown, Alicedale, Riebeek East and all remaining lands within the municipal boundaries. In order to facilitate sustainable development, the Municipality has launched a Local Environmental Action Plan (LEAP), of which, the Sustainable Development Framework (SDF) is one component. This document seeks to identify relevant sustainability goals and indicators for the foreseeable future. It also seeks to identify specific actions needed to bring about a higher degree of environmental sustainability for future development projects. However, the goal of the SDF is also to provide greater public participation in the development process and to streamline governmental actions thereby increasing efficiency. Specific environmental review criteria for program and project review and approval is provided as well. The environmental review criteria should also be developed into a specific checklist for distribution to the interested and affected parties.

1.0 Introduction

1.1 Purpose of Sustainable Development Framework

The Republic of South Africa has undergone major political and social change over the past ten years. The new democracy is now attempting to correct the abuses and exploitation of natural and human resources that existed in the past. Part of this process requires the evaluation of the present capacity for managing the environment in a sustainable manner while promoting a healthy economy. Numerous policy and legislative changes have occurred as a result of the persistent efforts to modernize the systems and infrastructure that manage and protect the environment. Additional changes are being contemplated and will no doubt be implemented in the years to come.

The new democratic government through its Reconstruction and Development Programme has created a development vision for the country, which corrects many of these previous injustices (DEAT, 1996). Central to the RDP is the concept of achieving sustainable development. Broadly stated, the goal of sustainable development is to ensure that today's development is aimed at improving the quality of life of all the country's people, without adversely affecting the options for future generations of South Africans. Sustainable development requires that there is participation, equity and sustainable use of natural resources. It includes protection of the environment in which we live and work. It is thus important to ensure that management of development conforms to recommended principles, which have been outlined in Agenda 21, the United Nations programme for global sustainable development.

Environmental protection is promulgated in a variety of national laws including, The Water Act (Act No. 36 of 1998), the National Environmental Management Act (Act No. 107 of 1998), and the Environment Conservation Act (Act No. 73 of 1989) to name only a few. However, it is the Constitution that provides the basis for all governmental efforts to protect and conserve the environment, including the health and safety of all South African citizens. The Constitution of the Republic of South Africa (Act No. 108 of 1996) is relevant to environmental protection and human health and safety vis-à-vis the Bill of Rights (Chapter Two of the Constitution) and the delegation of authority for the institutional regulation of the environment within the country and its territorial waters. Section 24 of the Bill of Rights provides that; "*Everyone has the right*

a. *to an environment that is not harmful to their health or well-being; and*
b. *to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that-*
    i. *prevent pollution and ecological degradation;*

ii. promote conservation; and
iii. secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development."

The purpose of this Sustainable Development Framework (SDF) is to support the Makana Municipality in its efforts to promote sustainable development practices throughout its jurisdiction. It seeks to increase the understanding of environmental constraints and opportunities in development planning at the regional level. This includes an analysis of on-going plans and policies (for example recommendations of the IDP) and how they cumulatively effect the environment of Makana. This SDF, and specifically, the guidelines established by the IDP Environmental Protocols and the Environmental Review Criteria should be used as a proactive planning tool for the Municipality. They will assist the government in formulating long-range plans and policies at the local and regional level. These guidelines also include increased opportunities for public participation and meaningful input.

This document also responds to the principles outlined in the Local Agenda 21 produced from the Earth Summit in Rio (1992) and the National Environmental Management Act (NEMA) of 1998. It also seeks to conform to the requirements of the Local Government Transition Act (LGTA) and the Development Facilitation Act (DFA). The Local Government Transition Act (LGTA) compels municipalities to develop negotiated Integrated Development Plans (IDPs) for their areas of authority. According to the LGTA, IDPs must aim at integrating the development and management of municipal areas in terms of the municipalities' powers and duties, and where applicable, having due regard to the subject matter of land development objectives as contemplated in Chapter 4 of the Development Facilitation Act. The Development Facilitation Act (DFA) aims to put in place extraordinary measures to facilitate the implementation of reconstruction and development. These measures include the fundamental transformation of planning processes, mechanisms and institutions, in order to facilitate the newly envisaged developmental role of local government (Dept of Constitutional Development, nd).

This document briefly outlines the international standards for SDF, the South African context, specific development review process utilised by the Municipality and makes recommendations to further implement the objectives stated above. It provides a framework for the implementation of procedures for project review, public participation, capacity building, implementation schedule and potential sources of funding. This framework should be viewed as a, "starting point" in the process of increasing the sustainability of development within the Makana Municipality. It is, and should be, subject to periodic review, updates and changes as new information is gained and lessons are learned through implementation of these recommendations.

1.2 Definitions

This report makes use of the following definitions for those terms identified below.

Development: Development, in the context of this report, refers to the change in land use or intensification of an existing use on a parcel of land or improvements thereon.

Environmental Impact Assessment: The purpose of Environmental Impact Assessment (EIA) is to ensure that development and investment proposals, activities, projects and programmes are environmentally sound and sustainable. EIA is therefore a planning tool used to predict, analyze and interpret the significant environmental effects of a proposed development action and to provide information that can be used during decision making. Best practice EIA also has an ongoing role during implementation. As projects are constructed and commissioned, or programmes implemented, the environmental consequences can be further minimised by appropriate monitoring and mitigative measures.

Environmental Risk Assessment (EnRA): EnRA is the determination of the potential impact of a chemical or physical agent on ecosystems, habitats or other ecological resources (Ecological Risk Assessment) or on human health and wellbeing (Human Health Risk Assessment). The assessment can be either qualitative or semi-quantitative.

Integrated Development Plan (IDP): In the context of this report, the IDP refers to the approved Makana Municipality Integrated Development Plan.

Regional Environmental Assessment (REA): REA is used to improve decision making on a regional level by assessing the potential impacts of development planning programs and the cumulative impacts of on-going development processes. They are not project specific, but instead focus on proactive approaches to increasing the sustainability of future planning decisions. They may also limit the scope and intensity of project specific EAs where a REA has previously been completed.

Strategic Environmental Assessment (SEA): SEA is a formalized, systematic and comprehensive process of evaluating the environmental impacts of a policy, plan or program and its alternatives. It is not project specific and seeks to define the impacts of a particular policy or programme over other potential options. It is proactive, and is often used as part of a sectoral assessment for example, water supply policy, civil aviation, energy supply and waste disposal. It involves the preparation of a written report on the findings, and the use of the findings in publicly accountable decision-making.

Social Impact Assessment: Social Impact Assessment: Social Impact Assessment (SIA) can be used if there is a need for a more comprehensive, in depth and rigorous determination of the impacts a given policy, plan, programme, project, activity or action may have on the social aspects of the environment.

Spatial Development Framework: Within the context of this report, a Spatial Development Framework refers to the Cacadu Spatial Development Framework (District Council 10). The Spatial Development Framework identifies and classifies settlements within the Cacadu District based on settlement character and sets funding priorities for future investment.

Sustainable Development Framework: A document that seeks to prescribe a process for economic development that will meet the community's objectives for sustainability.

1.3 Background and History

The Makana Municipality contains approximately 4 222 square kilometres of land, with the predominant land uses being agricultural, private preserve, urban and commonage. The total population, according to the 2001 Census, is 74,540 giving an average population density of 18 people per square kilometre. However, subtracting out the largest population centre, Grahamstown (and the associated population of Rhodes University, the military base and the hospitals), the average density outside of the urbanised area is much lower. The following map (Figure 1) and table (Table 1) provide a description of the existing land uses within the Municipality.

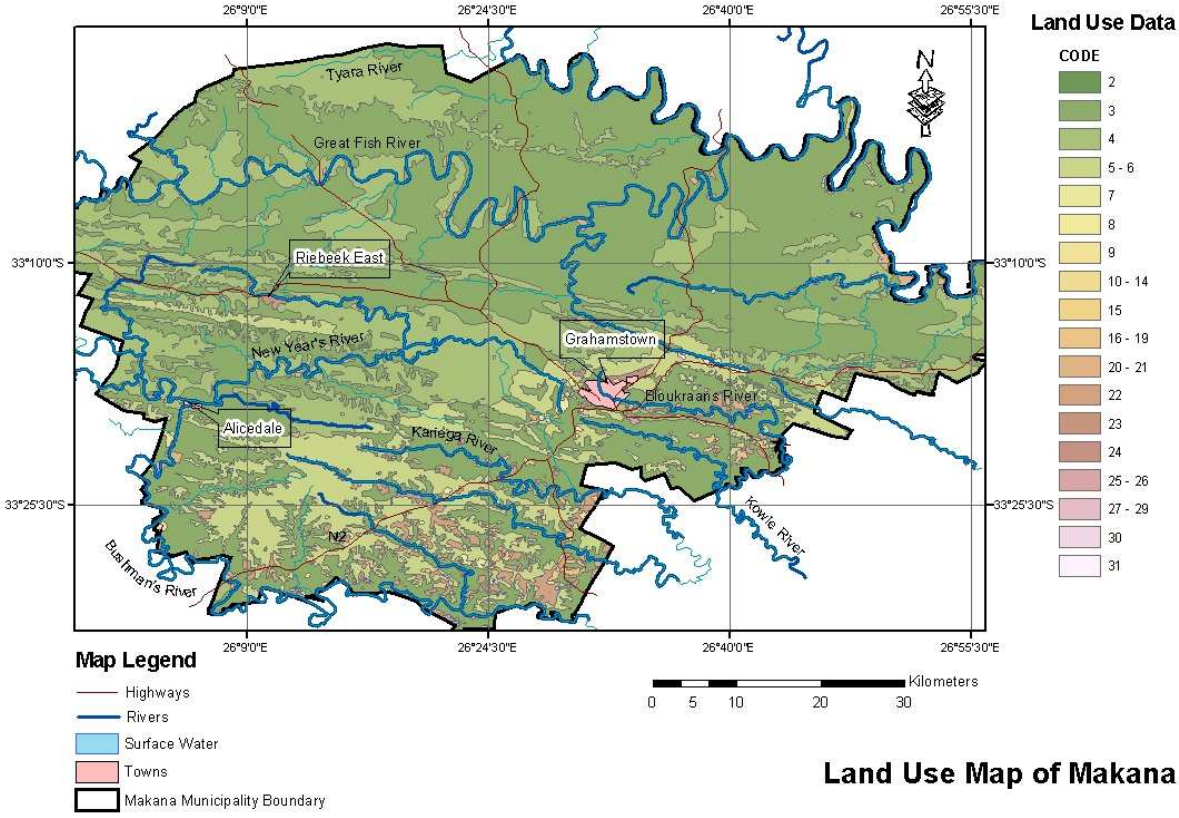

Figure 1: Land Use Map of Makana

Table 1: Land Use Description

Land Use	Description
2	Forest
3	Thicket & bushland
4	Shrubland and low Fynbos
6	Unimproved grassland
7	Improved grassland
8	Forest plantations
9	Waterbodies
14	Degraded: thicket & bushland
15	Degraded: unimproved grassland
19	Cultivated: permanent – commercial dryland
21	Cultivated: temporary – commercial irrigated
22	Cultivated: temporary – commercial dryland
23	Cultivated: temporary – semi-commercial subsistence dryland
24	Urban/built-up land: residential
26	Urban/built-up land: residential (small holdings: bushland
29	Urban/built-up land: commercial
30	Urban/built-up land: industrial/transport
31	Mines and quarries

Source: Chief Directorate: Surveys and Mapping, Department of Land Affairs

1.4 Terms of Reference Selection

This report has been prepared subject to the terms and conditions as stipulated in the Terms of Reference (ToR) between the Makana Municipality and the Agricultural Research Council (ARC) and the Contract between the ARC and Rhodes University, Department of Environmental Science (February 2004).

2.0 Review of Existing SDF Policies

2.1 Western District (Cacadu) Spatial Development Framework

The Cacadu District's Spatial Development Framework document is strongly guided by the Eastern Cape Spatial Development Plan, which targets specific locations for development initiatives to engender consolidation of settlement areas. Investment strategies are broken down into three levels as described below:

►*Level 1: fulfils basic human needs for service delivery at a minimum level.*

►*Level 2: ensures the managed investment of public sector funding for the urban and rural areas to build local capacity and build on existing infrastructure*.

►*Level 3: is the provision of adequate funding to strategically targeted development zones with further development potential.*

Grahamstown is considered a *Level 3* settlement whereas, Alicedale and Riebeek East are both considered *Level 1* settlements for funding priority.

The Spatial Development Framework provides general guidance to the municipalities within Cacadu on a variety of topics including, Agriculture, Water Resources and Catchment Management Areas, and Environment, Conservation and Forestry. With respect to development activities, the framework recommends more compact urban areas thereby limiting the loss of land for other resources while simultaneously allowing for greater efficiency in the delivery of services. In existing towns, this policy should aim to integrate previously segregated areas, utilise currently serviced areas and limit linear development along transportation routes.

The framework provides the following recommendations for protection of the environment relevant to the Makana Municipality.

- Implementation of the Integrated Environmental Management Procedures as well as the Regulations promulgated in terms of the Environment Conservation Act for development projects.

- Rehabilitation of areas that have been degraded through inappropriate land use practices.
- The preservation of representative habitats and ecologically significant ecosystems within a network of conservation areas, especially within the coastal zone.
- To make conservation accessible and meaningful to the entire population.
- Adherence and enforcement of the National Monuments Act with regard to all provisions made in the act – i.e., archaeological sites, middens, palaeontological sites, structures over 50 years, shipwrecks and national monuments.
- Protection of natural and planted forests is crucial for the economy and should be ensured through adherence to the National Forests Act.
- The following environmentally sensitive areas should be protected from development:

    - State forests;
    - Within 30 metres from water courses;
    - Along major river systems;
    - Game reserves and nature sanctuaries;
    - Steep slopes greater than 1:6 (17%);
    - Historic heritage sites; and
    - Water catchment areas.

2.2 Integrated Development Plan

The Integrated Development Plan (IDP) for the Makana Municipality was adopted in 2001. The Municipality developed the IDP pursuant to the authorisations provided by the Municipal Systems Act, (Act No 32 of 2000) and the Municipal Planning and Performance Management Regulations (Notice 796 of 2001). Among other things, the Makana Municipality IDP identifies the Localised Strategic Guidelines (Protocol) for the Environment and has recognised the following key ideas. All development planning in the Municipality should take cognisance of:

- The impact on the biophysical environment
- The impact on the quality of life of all citizens
- The sustainability of developments
- The potential for economic and social empowerment of all citizens
- The presumption of greater equity in the distribution of and access to resources, and
- The sustainable use of resources

A set of "Working Principles" were developed as part of the Localised Strategic Guidelines (Protocol) - Environment. These are detailed below:

1. An over-riding consideration in regard to all development plans is that everyone likely to be affected by the development is kept fully informed at all stages, and their opinions of and contributions to such plans are taken into account, not only as required by legislation, but in a spirit of real participation.

2. All developments plans should include Environmental Impact Assessments (EIAs), even for developments not strictly requiring these under current legislation. These EIAs need not necessarily be very detailed or complex, but should examine the potential impact of development on the immediate biophysical environment, and on any associated features such as watercourses, which could have wider effects.

3. All development plans should include Social Impact Assessments (SIAs), these too need not be particularly complex but must examine the potential impact of development on existing communities in the areas concerned, and on any communities, which may develop in the future. Development plans should also address issues concerning the quality of peoples' living environment, taking into account considerations of space, light, and green areas; access to goods, services, transport and recreation and personal and collective security.

4. Sustainability of developments should be addressed through selection of appropriate materials, designs and technologies with low maintenance requirements and low future costs. A key feature of planning for sustainable developments should be the exploration of sustainable alternatives to conventional development practices.

5. Development plans should address the potential for supporting local economic development and employment creation through the contracting of local businesses using local labour, and for skills development through associated training.

6. In addition to the improvement of access to resources for those currently with little access, there should be encouragement for the reduction of resource use by those with good access. This applies particularly to services such as water and electricity. In terms of access to land, there should be emphasis on support for those seeking security of tenure on land they currently occupy, and on the release of agricultural land from both the state and the private sector for people wishing to develop agricultural interests.

7. Encouragement, through education and demonstration, should be given for wise and careful use of resources by all sectors of society, including business and agriculture. As discussed in point 4 above; appropriate low resource-use technologies should be investigated and adopted wherever possible and economically feasible.

2.3 Makana Municipality Zoning

The Makana Municipality has only recently been given full responsibility for planning services and has inherited three separate zoning schemes. These schemes relate to Grahamstown, Grahamstown East and Section 8 and there are considerable discrepancies between the separate zoning and planning schemes. The current zoning classifications for Grahamstown are provided below.

- Agriculture 1 and 2
- Single Residential
- General Residential
- Group Housing
- Town Houses
- Business 1 and 2
- Business Restricted
- Special Business
- Commercial
- Light Industrial
- Industrial

- Noxious Industrial
- Mining
- Educational
- Institutional
- Open Space 1 (Public)
- Open Space 2 (Private)
- Open Space 3 (Nature Reserves)
- Resort 1 and 2
- Authority (Usage)
- Local Authority (Services)
- Transport 1 (Transport Usage)
- Transport 2 (Public Road)
- Transport 3 (Public Parking)
- Subdivisional Zone
- Undetermined
- Local Authority Area
- Special Zone 1 – Historical Preservation

However, for areas outside of Grahamstown, including Riebeek East and Alicedale, there is no formal zoning classification scheme as of yet. Planning decisions in these areas are currently dictated by the existing land uses. Without a coherent and coordinated zoning classification scheme for the entire Municipality, land use decisions by the municipal officials may be seen as being arbitrary and a lack of predictability may act as a deterrent to economic development.

2.4 Development Review Process

Makana Municipality maintains a Land Use Planning Ordinance that serves to guide the review and implementation of the zoning requirements. These regulations guide the development review and approval process through the municipal offices and provide the framework for decision making. It includes the consultation of the other relevant departments within the Municipality with plan processing responsibilities falling on the Engineering Department. If an environmental impact assessment or other environmental review is required, the Engineering Department completes the review of the documents on behalf of the Municipality. Land use changes and rezonings typically involve an applicant, and their consultant to facilitate the completion and processing of the application and supporting documentation. Engineering and surveying firms are typically involved in the design of the project and these technical drawings are reviewed and approved by the relevant municipal office.

3.0 Review of Sample Sustainable Development Frameworks

3.1 United Nations Department of Economic & Social Affairs

A variety of sources and references are being utilised in the development of this SDF to align the document with other accepted standards for sustainable development. These include, the United Nations Department of Economic and Social Affairs, the South East England Sustainable Development Framework, various United States environmental protection standards, the Western Cape's, Bioregional Planning Framework, the Subtropical Thicket Ecosystem Planning (STEP) project and consultations with local municipal officials, developers, engineers, academics and citizens. A complete listing and summary statement of the informational sources is contained in the Appendices of this report.

The United Nations Department of Economic and Social Affairs has developed a SDF for national governments to implement on a regional and local level. The SDF is designed around 4 Core Areas (Social, Environmental, Economic and Institutional) and contains 15 Themes, 38 Sub-themes and 58 indicators. The Environmental Core contains 5 Themes, and 13 Sub-themes as indicated below. The following (Table 2) is a summary of the Environmental Core Themes and Sub-Themes with those that were also identified by the initial Environmental Issues Audit conducted as part of the LEAP process.

Table 2: U.N. Sustainable Development Framework (DESA)

Theme	Sub-Theme	Identified in Preliminary Audit
Atmosphere	Climate Change	
	Ozone Layer Depletion	
	Air Quality	✔
Land	Agriculture	✔
	Forests	✔
	Desertification	
	Urbanization	✔
Oceans, Seas & Coasts	Coastal Zone	
	Fisheries	
	Water Quality	✔
	Water Quantity	✔
Biodiversity	Ecosystem	✔
	Species	✔

All 4 themes have some application to Makana Municipality, however, only 8 of the sub-themes have been identified during the preliminary environmental issues audit. Specific indicators for the relevant sub-themes will be set as part of the final LEAP process and will be dependent upon the outcome of the final environmental audit.

3.2 South East England SDF

The Rhodes University Department of Environmental Science has reviewed the South East England Sustainable Development Framework for comparison to the U.N. standards and for application to the South African, and in particular, the Makana Municipality context. The South East England SDF provides 4 Themes, with 25 Objectives and 41 Indicators. Specifically, two themes relate to the environment and natural resources. For example, under Theme 2: Effective Protection of the Environment, Objective 15 calls for a reduction in road traffic and the corresponding Indicator (30) is the level of investment in public transportation and choice in mode of travel. The overall development of the document is consistent with the U.N. but is more specific to the needs of the individual community. This document is relevant to the Makana Municipality SDF in that it represents the specific vision, goals and objectives of a community similar in scale to ours.

3.3 Western Cape Bioregional Planning Framework

The RUDES has also reviewed the Provincial Government of the Western Cape Department of Planning, Local Government & Housing's *Bioregional Planning Framework for the Western Cape Province* (2000) for application to the Manaka Municipality SDF. The bioregional planning concept is based upon the identification of spatial planning categories as follows:

- Core: zones of wilderness or other statutory conservation areas

- Buffers: public and private conservation areas, ecological corridors and rehabilitation sites
- Agriculture: intensive and extensive
- Urban-Related
- Industry
- Surface Infrastructure and Buildings

These spatial planning categories do have relevance for the Makana Municipality given the predominance of public and private conservation lands and the large areas of extensive agriculture practised in the municipality. However, no specific land use targets or sustainable indicators are set in this document.

3.4 Summary

The review of and reference to international organisations and their examples of SDF lend direction and support to the innovative efforts of the Makana Municipality in the development of their own SDF. The review of more localised instruments designed to foster SDF provide relevance and context to our particular setting and SDF efforts. The Makana Municipality SDF seeks to meet the spirit and intent of the international standards and examples yet maintain balance and functionality through an understanding of local resources and capital.

4.0 Proposed SDF Framework

4.1 Proposed SDF Objectives

The proposed Makana Municipality SDF seeks to achieve those objectives set out in the Cacadu Spatial Development Framework and the Environmental Protocols outlined in the IDP in addition to the national sustainability efforts. In order to achieve these, the proposed SDF has developed the following nine Themes based on the preliminary Environmental Issues Audit conducted as part of the LEAP process. Each Theme (9) contains relevant Sub-Themes (23) and Objectives (29) as identified during the initial stakeholder participation. The Indicators of Sustainable Development for each Objective will be determined through a participatory process as the LEAP development continues and the results of the final environmental audit are determined.

The following table (Table 3) identifies the Themes, Sub-Themes and Objectives based on the initial Environmental Issues Audit. These are subject to change as the LEAP process continues and additional information is obtained from the Stakeholders Group and the final environmental audit.

Table 3: SDF Themes, Sub-Themes and Objectives

Theme	Sub-Theme	Objective
Air Quality	Ambient Air Quality	Determine the status of fixed industrial sources of air pollution including, the number of sources and the types and amounts of pollutants emitted
	Indoor Air Quality	Determine the status of bio-fuel use for household heating/cooking including, paraffin, wood and/or candles – promote affordable alternative technologies
Biodiversity	Endangered Species	Maintain and if possible improve the habitat for endangered and threatened species.
	Alien Species Infestations	Determine current and anticipated levels of infestation and prioritise for control
Built-Environment	Drainage and Flooding	Identify flood hazard areas and restrict development in those zones
		Reduce the use of concrete lined channels and protect natural drainage courses – Wherever possible, remove rather than renovate existing concrete channels and restore the natural stream profile
	Open Space	Identify open space needs for passive and active recreation
	Sanitation	Meet minimum goals established in IDP, including rural areas and provide capacity for future economic development
		Minimise infiltration and stormwater inflow
	Water Supply	Meet minimum goals established in IDP, including rural areas and provide capacity for future economic development
		Implement standards for water conserving devices
	Electric Supply	Meet minimum goals established in IDP and provide capacity for future economic development

		Reduce dependence on fossil fuels and promote locally derived renewable energy sources especially in rural areas
	Solid Waste Management	Improve collection of solid waste and recycling programs
Energy Needs	See Air Quality and Biodiversity	Objectives are established under the Air Quality and Biodiversity Themes
	Fuel Wood Supply	Determine the status of use and capacity for sustainable harvesting of fuel wood
Environmental Management / Compliance	Private Sector	Increase the number of firms operating under recognised environmental management systems
	Public Sector	Implement environmental protocols for all departments
		Increase enforcement actions
Environmental Education	Formal Education NQF Level 1	Assess needs and opportunities to increase environmental education
	Local Government	Assess needs and develop curriculum
	Private Sector	Assess demand for training programs and opportunities
Land Resources	Cultivated Lands	Maintain and improve sustainability through soil conservation programmes, efficient irrigation systems and educational efforts
	Range Lands	Maintain and improve sustainability through grazing management programmes and education, particularly in the Commons – promote smaller numbers of high quality stock to reduce grazing pressure
	Preserves	Maintain and improve biodiversity through environmental management and education
		Dedicate and protect areas for cultural rites and practices
Water Quality	Ecological Factors	Determine status of selected river system health including reservoirs
	Physio-chemical Factors	Provide for mechanisms to monitor and make recommendations for interventions to improve overall water quality

4.2 Environmental Review Criteria

The built environment is closely related to the Integrated Development Plan and the local Land Use Plan. The development review process identifies those features of a development that are sustainable and consistent with the goals of the community. The public participation process is one area where proposed development is tested against the community's values and for consistency with the adopted policies of the municipality. The Sustainable Development Framework proposes to assess the consistency of the development review process to the identified standards imposed as part of the IDP Environmental Protocols and the spirit of the Local Agenda 21 Framework.

In order to determine the environmental and social cost and benefits of each proposed development project within the Municipality, the following theoretical framework has been developed for project review and approval. All projects that require approval from the Municipality shall be subjected to the following environmental review criteria (ERC) based on their potential to negatively impact the environment and/or social institutions and living conditions. The ERC are categorized based on the Themes identified in the environmental issues summary document and overall SDF.

Environmental Review Criteria Questions

Air Quality

1. Will the project involve the discharge of pollutants to the air on a temporary (i.e., dust) or permanent (i.e. odours or chemicals) basis?

Biodiversity

2. Does the project area contain locations of plants traditionally harvested for medicinal purposes?

3. Does the project area serve as habitat for any sensitive or protected wildlife species (flora or fauna)?

4. Are there any Red Data Book species (plant or animal) within or adjacent to the project area?

5. Will the project remove substantial amounts of natural vegetation and ground cover?

Built-Environment

6. Does the project affect the use of a recreation area, an area of important visual value, or pre-empt a site with potential cultural, environmental, recreational, historical or resource utilisation?

7. Will any unique natural or manmade features in the project be negatively impacted?

8. Is the project one of a series of cumulative actions, which although individually small, may as a whole have significant environmental impact?

9. Does the project provide for passive and recreational open space?

10. Will existing water and sewerage utilities be able to adequately service the development?

11. Does the project contain adequate provisions for security, including lighting and will it lead to excessive light pollution?

12. Does the project provide landscaping and building location standards that buffer non-compatible adjacent land uses and is it protective of private property rights?

13. Is the project pedestrian and bicycle friendly?

Energy Needs

14. Are energy conservation features such as, compact fluorescent lighting, low flow water conservation devices, and energy efficient building standards incorporated into the design?

Environmental Management / Compliance

15. Does the project conflict with existing plans?

16. Is the project located in an area of existing development and does it serve to promote the redevelopment of existing parcels of land?

17. Has the public been notified of the proposed development and been given an adequate opportunity to comment on the project?

18. Will the project cause or aggravate existing health and safety concerns (i.e., traffic, crime, noise, air quality, etc).

19. Do the local schools have capacity to adequately absorb any increase in population resulting from the proposed development?

20. Does the project make use of sustainable building materials derived from the local economy?

21. Does the project make use of recycled building materials and/or post-consumer waste products?

22. Does the project provide adequate services for refuse storage and collection, including recyclable materials and garden waste?

23. Are escrow funds, insurance or bonds established to guarantee environmental performance for the project i.e., inspection and maintenance, rehabilitation, and institutional control?

Environmental Education

24. Does the project offer opportunities for environmental education?

Land Resources

25. Do the engineering drawings contain provisions to control erosion during the construction process?

26. Do the engineering drawings contain provisions to protect against geologic hazards such as land slippage, compaction and unstable soils?

27. Is the projected located on areas of existing steep slopes or unstable slopes and/or will it lead to these conditions?

Water Quality

28. Do the engineering drawings contain provisions for the control of surface water management (including quantity and quality) and flooding?

29. Will the project place fill in or otherwise constrict the movement of water within the flood zone, and does it protect natural drainage channels including intermittent and perennial watercourses?

30. Does the project identify and protect areas of freshwater wetlands?

31. Will the project have any impact on streams, water quality (surface or groundwater)?

32. Will the project affect the overall hydrology of the area?

4.3 Environmental Review Toolbox

The following is a review of commonly utilised tools to assess the environmental and social impacts of proposed development. These tools may be used in addition to the common planning review, engineering analysis and departmental comments provided through the Makana Municipality review process.

Strategic and Regional Environmental Assessment

The purpose of the Strategic Environmental Assessment (SEA) and the Regional Environmental Assessment (REA) is to look at the potential impacts (both positive and negative) on the environment (physical and social) in a proactive and holistic manner. Their main purpose is to improve investment decisions by bringing environmental opportunities and costs into the planning process at a regional level and at the policy formulation stage. This is different to the more traditional EIA in that it is a more proactive approach and is not project specific.

The advantages of REA and SEA are that they can influence investment planning in a large area. They can assess the cumulative and interactive environmental impacts of multiple projects or programs whereas a project specific assessment only deals with site specific impacts. Thus, they help to eliminate, at an early stage, those projects or policies that will generate particularly adverse environmental impacts. They may also help to set baseline data such as a biodata base, that can be used as a benchmark for project review and monitoring. In the case of the Eastern Cape, the recently completed State of the Environment (SoE) report establishes a considerable amount of baseline data. In addition, the Succulent Thicket and Ecosystem Project (STEP) also established considerable baseline data for the Makana region. Other existing similar studies should be identified and collated into a usable database for development planning in the Municipality. The REA and SEA process can also streamline and reduce the scope and intensity of project specific EIAs thereby providing a benefit to potential development projects that have already been determined to be in line with the recommendations of the regional or strategic document.

Environmental Impact Assessment

The purpose of Environmental Impact Assessment (EIA) is to ensure that development and investment proposals, activities, projects and programmes are environmentally sound and sustainable. EIA is therefore a planning tool used to predict, analyze and interpret the significant environmental effects of a proposed development action and to provide information that can be used during decision making. Best practice EIA also has an ongoing role during implementation. As projects are constructed and commissioned, or programmes implemented, the environmental consequences can be further minimised by appropriate monitoring and mitigative measures.

Best practice also identifies three core values for EIA, namely:

- sustainability – the EIA process will result in environmental safeguards;
- integrity – the EIA process will conform to agreed standards; and
- utility – the EIA process will provide balanced and credible information for decision making.

EIA is designed to provide the basis for environmentally sound decision making and the design, planning, construction and operation of acceptable development and investment projects that meet environmental standards and resource management objectives. Environmental impact assessments empower decision makers to make practical, responsible and informed choices.

As noted above, an EIA also involves appropriate follow up processes, with requirements for monitoring, management, audit and evaluation that are based on the significance of potential effects, the uncertainty associated with prediction and mitigation, and the opportunity for making future improvements in project design or process application.

The precise components, staging and responsibilities for an EIA are stipulated in the Environment Conservation Act. However, most EIAs have a similar structure, based on the following:

- screening – an initial assessment to decide whether a proposed project requires further investigation in an EIA;
- scoping – to identify the key impacts requiring further investigation, and prepare the terms of reference for the study;
- assessing – the identification, analysis and evaluation of the significance of the impacts;
- mitigation – developing measures to prevent, reduce or compensate for impacts, and to make good any environmental damage;
- reporting – presenting the results of the assessment in a useful format;
- reviewing – assessing the adequacy of the EIA report, taking into account the views of stakeholders and assessing the acceptability of the proposal in terms of existing policies, plans and standards;
- decision making – deciding whether the proposal can proceed and under what conditions;
- monitoring and managing – implementing mitigation measures, monitoring impacts for compliance and checking that impacts are as predicted; and
- public involvement – typically occurs during the scoping and review phases, but may also happen at any of the other stages of the EIA process.

In addition to its common status as a regulatory measure, EIA has a number of other attributes that favour its use as a decision support tool. These include the formalised and comprehensive process designed to anticipate and identify a wide range of potentially adverse environmental consequences of the proposed technology investment and also to integrate the input of specialised information from a variety of experts.

However, experience has revealed a number of limitations, including the following:

- the procedures are largely pre-determined in terms of both their nature and timing, with a consequent loss of flexibility to adapt to specific local conditions and circumstances;

- the procedures are very broad, and sometime lack focus and specificity, promoting uncertainties;
- there is often inconsistent implementation;
- there is subjective interpretation of the regulations related to EIA;
- the proponent is often too involved in the process, with a loss of objectivity;
- typically only one option is assessed, though the EIA methodology explicitly calls for alternatives to be considered, including that of maintaining the status quo;
- significant decisions are already made, and the EIA is merely used to reinforce those decisions;
- the requirements for information and technical expertise are often excessive, leading to excessive costs and time delays; and
- some stakeholders are often marginalised.

But above all else, an EIA promotes public discussion about project proposals and technologies. This is important for ensuring an open and balanced approach and for encouraging consideration of those environmental effects, costs and benefits that cannot always be identified or measured by scientific or technological means.

Environmental Risk Assessment

Environmental Risk Assessment (EnRA) is the determination of the potential impact of a chemical or physical agent on ecosystems, habitats or other ecological resources (Ecological Risk Assessment) or on human health and well being (Human Health Risk Assessment). The assessment can be either qualitative or semi-quantitative.

There are four basic steps in the assessment process:

- hazard identification;
- exposure assessment;
- toxicity assessment; and
- risk characterization.

However, two further steps are integral to risk assessment, namely

- risk management - assessing the findings of the risk assessment and deciding what risk mitigation measures are required, also taking into account social, economic, legal and political factors; and
- risk communication – the methods and information required to convey to all stakeholders, in a relevant form and manner, the findings of the risk assessment and the resulting risk management decisions (or recommendations).

A formal risk assessment has several advantages in that it:

- expresses results as probabilities, thereby acknowledging the inherent uncertainty in predicting future environmental conditions, thereby making the assessment more credible;
- provides the quantitative basis for comparing and prioritising risks;

- provides an informed, scientific basis for cost benefit and other analyses; and
- separates the scientific process of estimating the magnitude and probability of effects from the process of choosing among alternatives and determining the acceptability of the identified risks.

For these and related reasons, the use of EnRA in environmental planning and management is fast becoming a standard practice, either as a stand alone procedure or as a support or complement to an EIA. Appropriate use of EnRA will identify situations of potential environmental concern and allow decision makers to select management options with the least, and still acceptable level of risk. In the context of choosing amongst ESTs, risk assessment provides a way to rank the relevant hazards in terms of human health and ecological effects, and to decide which are acceptable or manageable in the local context.

Social Impact Assessment

All environmental management decision support tools are based on an appropriately broad definition of "environment" and will therefore include human dimensions in the assessment. However, in most cases the analysis is undertaken at a very superficial level. Where these preliminary assessments, or other considerations, indicate that a more detailed and rigorous assessment is required, Social Impact Assessment (SIA) can be used to determine the impact a given policy, plan, programme, project, activity or action may have on the social aspects of the environment.

These aspects include, but are not limited to:

- the ways people cope with life through their economy, social systems, and cultural values;
- the ways people use the natural environment, for subsistence, recreation, spiritual activities, cultural activities, and so forth;
- the ways people use the built environment, for shelter, making livelihoods, industry, worship, recreation, gathering together, etc;
- the ways communities are organized, and held together by their social and cultural institutions and beliefs;
- ways of life that communities value as expressions of their identity;
- art, music, dance, language arts, crafts, and other expressive aspects of culture;
- a group's values and beliefs about appropriate ways to live, family and extra-family relationships, status relationships, means of expression, and other expressions of community; and
- the aesthetic and cultural character of a community or neighbourhood-its ambience.

SIA involves characterizing the existing state of such aspects of the environment, predicting how they may change if a given action or alternative is implemented, and developing means of mitigating changes that are likely to be adverse from the point of view of an affected individual or population.

Although every project, and every SIA, is unique, in most cases there is a series of more or less standard steps through which the analysis must proceed in order to achieve good results:

- develop an effective public involvement plan, so that all affected interests will be involved;
- identify and characterize alternatives;
- define baseline conditions;
- define the scope of the effort;
- estimate probable impacts;
- predict responses to impacts;
- consider indirect and cumulative impacts;
- recommend new alternatives as needed and feasible; and
- develop a mitigation plan.

The variables to be examined in an SIA will depend on the results of scoping. Adjustments may have to be made as the analysis proceeds. New variables may be found to be important, and some initially thought to be important may be found to be of less significance. Generally, the following are key variables to address:

- population characteristics;
- community and institutional structure
- political and social resources;
- individual and family factors; and
- community resources.

Since SIA is all about determining and addressing the concerns of the public, public involvement is essential. A basic part of SIA is to analyze who wins and who loses with each alternative considered. It is especially important to analyze whether an alternative may have high and disproportionate adverse environmental or health effects on a low-income population or a minority population. Impact equity must be considered in close and sympathetic consultation with affected communities, neighbourhoods, and groups, especially low-income and minority groups. Analysis should begin during scoping, to ensure that important issues are not left out. The scoping stage should also be used to identify "concerns that really count, not those that are just easy to count." Scoping should seek to ascertain what issues are really important to affected communities and groups. The analysis should not focus on such aspects as economic issues or demographics or effects on city services, simply because these are easy to quantify.

5.0 Public Participation

5.1 Redefined Model Zoning Code

The current zoning code for the municipality is disjointed and codified under three separate authorizations. This leads to confusion and

inconsistency in application as well as potential land use conflicts. The present number of distinct zoning classifications is too cumbersome and can be reduced to a more manageable level. This SDF proposes that the three current zoning schemes be integrated into one consistent scheme, covering the entire Municipality. This process must be undertaken within the correct legal framework and include a participatory and open programme. Draft model zoning ordinances that emphasize performance standards and sustainability are available for review and comment by respective stakeholders. A proposed listing of zoning categories is:

- Open Space (dedicated reserves, parks and recreational areas)
- Flood Plain (areas identified within the modelled 100 year flood zone and flood way – can be used as an overlay zone with performance standards)
- Natural Resource (this zoning category includes range land, cultivated lands, forestry and other renewable resource utilization)
- Mining (this can be used as an overlay zone for existing and planned future mining areas and areas with identified strategic resource reserves)
- Low Density Residential (single family homes)
- Medium Density Residential (townhouses, attached housing and low-rise apartments)
- High Density Residential (apartment blocks)
- Commercial 1 (neighbourhood level services and small shopping centres)
- Commercial 2 (CBD oriented, office parks and larger retail centres)
- Industrial Light (clean manufacturing and low intensity trades)
- Industrial Heavy (outdoor storage of materials, 24 hour/day operations)
- Institutional (schools, churches, universities, cemetaries)

These twelve classifications can replace the thirty +/- categories currently used within greater Grahamstown. The emphasis should be more on flexibility, sustainability, integration of land uses and public consultation. This approach must, however, be participatory and include the various stakeholders in the plan and policy formulation, as well as, the periodic comprehensive update to the ordinance. Individual re-zoning applications should be discouraged and minimized by strengthening of the standards for approval.

5.2 Public Notices and Review

Proposed development projects should provide substantial opportunity for public involvement. This is a stated objective of the Makana Municipality IDP and is a requirement for sustainability. In addition, the LEAP process is adopting the principles of the Aarhus Convention on Public Participation. This Convention is significant because it establishes a uniform set of standards involving citizens in environmental decision-making and emphasizes the importance of fully integrating environmental considerations in governmental decisions.

In order for the public to become involved in the decision making process they need to be informed of projects that have the potential to affect their communities. The Municipality should adopt a more aggressive programme to inform citizens and provide them an opportunity to learn of future developments and comment on them in a meaningful way. Options currently under consideration by the LEAP project team include, advertisements in the local newspapers, notice boards posted on the relevant property, and appointment of an ombudsman to assist residents. These practices will increase opportunities to voice concerns over pending projects (prior to their final design and approval). Legislation such as the, Promotion of Information Act and the National Environmental Management Act provide for increased access to information and public participation in the environmental review process. Education of the citizens needs to be increased so that they are informed of their rights under this legislation and the programmes implemented in the Municipality.

6.0 Capacity Building

6.1 Staff Development

The Environmental Education Unit of Rhodes University is currently undertaking a study of the Municipality staff to determine the needs for environmental training and education. In addition, as part of the LEAP process the RU Law Department is also planning a workshop for the Municipal staff to educate them on their responsibilities under various legislation and Acts related to environmental management. The results of this research and workshops will be evaluated to determine if additional staff development is needed to facilitate sustainability efforts.

6.2 Outsourcing

One option under consideration for the LEAP team is the outsourcing of service and management responsibilities for the Municipality. Outsourcing to the private sector of specific programmes and service delivery may be more economical and provide for a more efficient delivery of services. These options will be discussed through the environmental management programme to be developed as part of the LEAP commission.

6.3 Geographic Information System (GIS)

The Municipality is currently operating a GIS (ArcView) for spatial data display and analysis. Preliminary investigations have determined a need for additional capacity development and staff training on this system. GIS training is a component of the LEAP project and will be implemented as the formal research and issues development is finalised. The increased use of GIS in the Municipal planning functions will ensure a more proactive management and

responsive service delivery. However, the data sets must be completed, updated and managed by a trained GIS technician in order to maintain system functionality. Additional capacity is needed in this area of the Municipal government and can be sourced locally through the Department of Geography at Rhodes University.

7.0 Proposed Implementation Strategy

7.1 Changes to the Development Review Process

Proposed changes to the development review process will be recommended to the Engineering Department of the Makana Municipality. These recommendations will also be forwarded to members of the affected community including real estate representatives, engineers and surveyors, architects, environmental organisations and the general public. It is anticipated that a participatory process of consultation and negotiation will resolve differences of opinion and that a final set of agreed upon changes can be implemented. Periodic evaluation and revision should be incorporated to maintain sensitivity to changing conditions and additional findings through implementation.

7.2 Potential Funding Mechanisms

Potential sources of funding will be evaluated as part of the LEAP process. These may include grants and funding from the provincial and/or the national government. In addition, select NGOs will be solicited for the opportunity of providing training grants for capacity development. Additional funding sources may include the imposition of exaction fees from developers, “pay as you grow” provisions such as, recuperative agreements, review fees, tax incremental financing to support economic development and private/public partnerships for infrastructure development. A list of potential funding opportunities will be provided to the Municipality for consideration as part of the environmental management submittal of the LEAP commission.

References and Notes

Source of data for Land Use Map (Figure 1): Chief Directorate: Surveys and Mapping, Department of Land Affairs – State Copyright.

Source of data for descriptions of EIA, SIA and EnRA is: United Nations, 2003. *Facilitating Uptake of Environmentally Sound Technologies: The Role of Environmental Decision Support Tools, UNEP IETC, 2 Feb 2003* and the World Bank Environment Department, *Environmental Assessment Sourcebook Update*, June 1996, Number 15.

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