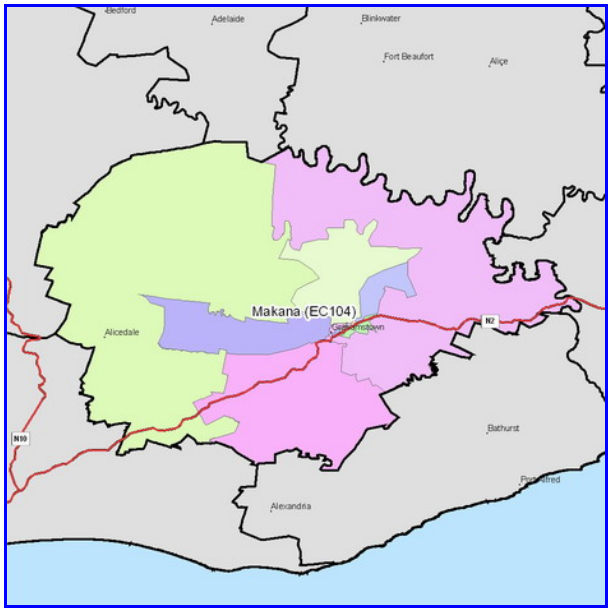
MAKANA MUNICIPALITY



INTEGRATED WASTE MANAGEMENT PLAN FOR THE MAKANA MUNICIPALITY

November 2008

KWEZI V3 ENGINEERS

Final

Client:

Makana Municipality

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PROJECT NO: 234560PW0

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TECHNICAL DEFINITIONS

Aquifer is a water bearing formation capable of supplying a sufficient yield for a community based potable water source.

Cell is a volume of waste generally placed during one working day and covered on all horizontal surfaces by cover soil.

Communal Landfill is the smallest landfill classification with a capacity of less than 25 tonnes per day.

Composting is the controlled aerobic biological decomposition of organic matter, such as food scraps and plant matter, into humus, a soil-like material. Aerobic is the decomposition process in the presence of oxygen.

Confirmation of Site Feasibility is the initial step in the DWAF permitting process that establishes the basic site features and general feasibility for a fully permitted landfill.

Controlled landfill is a solid waste management facility used for the disposal of non-hazardous domestic waste and non-infectious medical waste, which employs compaction of wastes, covering of waste with soil cover material, and the management of leachate and gaseous materials produced by the organic decomposition of the landfilled waste, all in such a manner as not to harm human health and minimize negative impacts to the environment.

Daily cover is a daily application and compaction of approximately 15 centimetres of soil intended to control blowing litter, odours, flies, rats and fires, intended for an exposure of less than one week.

Design Drawings are drawings prepared by the landfill designer and include dimensions, specifications and other technical data regarding the construction of the landfill.

Domestic solid waste (General Waste) is solid waste generated by single or multifamily residential dwellings, and solid waste of a non-hazardous nature, generated by wholesale, retail, institutional or service establishments such as office buildings, stores, markets, restaurants, theatres, hotels, warehouses, industrial operations and manufacturing processes.

Final Cover is an application and compaction of soil on the landfill after it has reached its designed elevation. The final cover soil shall be relatively impermeable and have a thickness of approximately 50 centimetres.

Groundwater is all waters flowing or existing under the ground surface.

Hazardous waste is any waste, which by reason of chemical reactivity or toxic, explosive, corrosive or other characteristics causes danger or is likely to cause danger to human health or the environment, whether alone or in combination with other wastes. Hazardous waste is categorized in four hazard ratings with 1 being the most hazardous and 4 being the least hazardous.

Incineration is the controlled combustion of solid waste employing closed combustion chambers, controlled combustion air, temperature monitoring and control to insure complete combustion of organic matter with a minimum of undesirable air emissions and wastewater discharges.

Intermediate cover is an application and compaction of cover having the same functions as daily cover but applied at a thickness of 30 centimetres, intended to be exposed for a period of one week to one year.

Landfill Classification is a system under the DWAF Minimum Requirements for classifying landfill according to the type and size (TPD) of the landfill, and its potential for significant leachate generation.

Landfill gas is the gaseous by-product of organic decomposition of landfilled waste. Landfill gas contains significant concentrations of methane gas, which is explosive at concentrations exceeding 5 percent.

Leachate is the liquid by-product of organic decomposition of landfilled waste or any liquid that comes in contact with solid waste in a sanitary landfill.

Lift is a series of one or more landfill cells forming a section of landfilled waste that extends horizontally across the landfill.

Medical waste is any waste generated by hospitals, clinics, nursing homes, doctor's offices, medical laboratories, research facilities and veterinarians, which are infectious or potentially infectious;

Operating Plan consists of drawings, descriptions and other documents regarding the operation of the landfill, placement of waste, building daily cells and lifts, leachate management, landfill gas management and all other functions related to the operation of the landfill.

Operator is the person or organisation responsible for the operation of the landfill. The operator may be the owner, another public agency or private contractor.

Owner is the person or organisation that owns the property and/or facilities that constitute the landfill

Perimeter drains are open ditches surrounding the landfill installed to prevent surface water from entering the landfill.

Recycling is the sorting, processing, and transportation of solid waste materials, products or containers for the purpose of remanufacture or reuse.

Scavenging is the unauthorised separation of solid waste for recyclable materials and food for human consumption.

Solid Waste is waste of a solid nature generated by a person, business or industry.

Solid Waste Management facility is any facility used for the transportation, processing or disposal of solid waste, and includes transfer stations, recycling facilities, composting facilities, waste incinerators, and sanitary landfills.

Sorting is the authorised separation of solid waste materials for the purpose of recycling or disposal, either at the source of generation or at a solid waste management facility.

Special waste is a non-hazardous waste, which due to its nature requires special or separate handling at a sanitary landfill. Special wastes include but are not limited to tires, asbestos, demolition waste, industrial sludges of a non-hazardous nature, paper mill sludge, olive oil waste, abattoir wastes and petroleum waste oil.

Surface water is all water in or coming from a water source, which is found on the surface of the ground, excluding water under the surface of the ground and seawater.

Transfer Station is a facility that receives solid waste from collection vehicles and reloads that waste into larger vehicles for transfer to a disposal or processing facility.

Vectors are birds, insects, and rodents capable of carrying disease-causing bacteria, viruses or fungi from one host to another.

Water Balance is a method for determining the potential for significant leachate generation, which includes climatic conditions (rainfall and evaporation) and site condition.

Working area is the area of the landfill where waste is unloaded, compacted and covered. It generally includes adequate space for several trucks to unload at the same time, for waste compaction and storage of cover soil.

ABBREVIATIONS

AP	Action Plan
APIG	Action Plan Implementation Group
CBD	Central Business District
CEC	Committee for Environmental Co-ordination
CONNEPP	Consultative National Environmental Policy Process
DEAT	Department of Environmental Affairs and Tourism
DFA	Development Facilitation Act 67 of 1995
DME	Department of Minerals and Energy
DTL	Departmental Task Leader
DWAF	Department of Water Affairs and Forestry
ECA	Environment Conservation Act, Act No. 73 of 1989
IDP	Integrated Development Plan
IP&WM	Integrated Pollution and Waste Management
IWM	Integrated Waste Management
IWMP	Integrated Waste Management Plan
LDO	Land Development Objectives
LUPO	Land Use Planning Ordinance
LGTA	Local Government Transition Act 209 of 1993
LFA	Logical Framework Analysis
NEAF	National Environmental Advisory Framework
NEMA	National Environmental Management Act, Act No. 107 of 1998
NWMS	National Waste Management Strategy
OLGA	Organised Local Government Act 52 of 1997
PMG	Project Management Group
PPA	Physical Planning Act 125 of 1991
PSC	Project Steering Committee

SECTION 1:
INTRODUCTION

1 INTRODUCTION

The Cacadu District Municipality appointed KV3 Engineers to assist with the compilation of an Integrated Waste Management Plan (IWMP) for the Waste Management Division of the Makana Local Municipality. As a requirement of the National Waste Management Strategy (NWMS) and the IDP Process all Municipalities are faced with the obligation to compile such a plan by end 2004 but at present many municipalities are still in the process of compiling an IWMP.

The compilation of this IWMP was done in line with the Starter Document for Guidelines for the compilation of IWMP's (DEAT, 2000). The process of compiling the IWMP consisted of two phases. During the first phase an assessment of the current status of waste collection systems and existing disposal sites, service delivery capacity and a needs analysis for each of these aspects were done and completed in July 2008.

The second phase will comprise the compilation of the IWMP. The Objectives and Goals identified will be included in this phase, with alternatives for obtaining these being considered and evaluated on a high level thereafter. Based on the preferred options selected for implementation a programme was developed and cost estimates compiled to facilitate inclusion of the plan into the IDP.

SECTION 2:

BACKGROUND

2 BACKGROUND

2.1 GENERAL

The Makana Municipality (MM) is located in the Eastern Cape Province and forms part of the Cacadu District Municipality that also includes the Camdeboo, Blue Crane, Ikwezi, Baviaans, Sunday's River Valley, Ndlambe, Kouga and Makana Local Municipalities. The Makana Municipality is situated almost in the middle of Port Elizabeth (to the East) and East London (to the West) on the N2 highway.

The MM consists of 12 wards and has a total geographical area of 4375.6530 square kilometres. The current population figures calculated with an actual 1.0% population growth for Makana as indicated in the 2008-2009 IDP document are 140 120 people.

The Municipal Main offices are situated in Grahamstown, with Alicedale and Riebeeck East forming the other major towns.

The following statistics were obtained from www.demarcation.org.za and are also relevant to the MM:

Household income	
Description	**2001**
No income	3407
R1 - R4 800	1117
R4 801 - R 9 600	4266
R9 601 - R 19 200	3639
R19 201 - R 38 400	2740
R38 401 - R 76 800	1511
R76 801 - R153 600	922
R153601-R307200	472
R307201-R614400	140
R614401-R1228800	59
R1228801-R2457600	49
R2 457 601 , more	33
Not Applicable	93

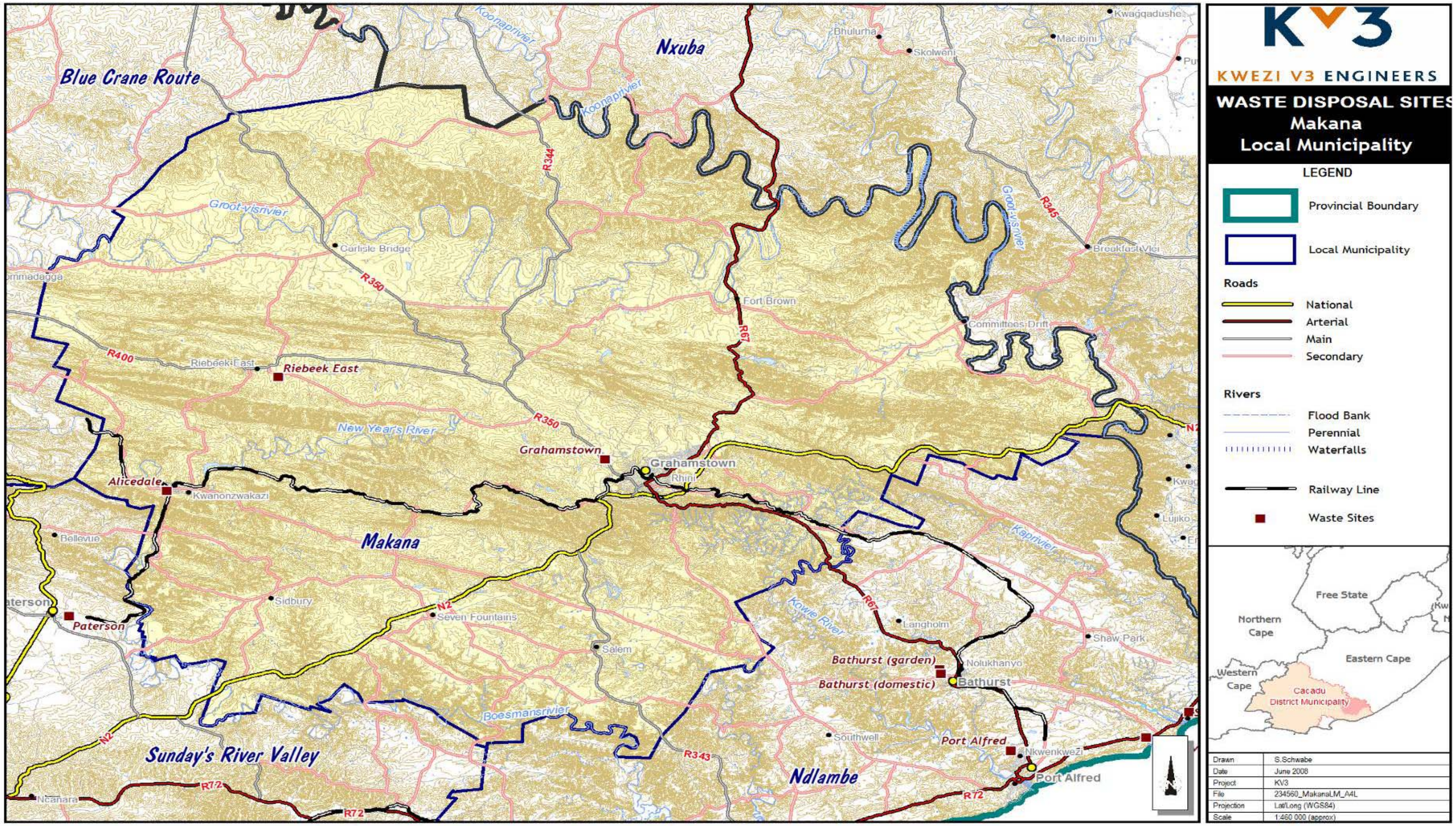
The MM is rated by the Cacadu District Municipality as number one in its unemployment severity ranking of municipalities in the District. An influx of poorly skilled migrant job-seekers will increase the already high unemployment and poverty levels in Makana, particularly Grahamstown. This will have dire socio-economic consequences, unless serious consideration is given to stimulate the economic growth in the municipal area.

2.2 STUDY AREA

The following towns and areas formed part of this study:

- Grahamstown
- Alicedale
- Riebeeck East

The entire study area is shown on the following map.


KWEZI V3 ENGINEERS
WASTE DISPOSAL SITES
Makana
Local Municipality
LEGEND
Provincial Boundary
Local Municipality
Roads
National
Arterial
Main
Secondary
Rivers
Flood Bank
Perennial
Waterfalls
Railway Line
Waste Sites
Free State
Northern Cape
Eastern Cape
Western Cape
Cacadu District Municipality
Drawn S.Schwabe
Date June 2008
Project KV3
File 234560_MakanaLM_A4L
Projection Lat/Long (WGS84)
Scale 1:460 000 (approx)
Blue Crane Route
Nxuba
Makana
Sunday's River Valley
Ndlambe
Riebeek East
Grahamstown
Alicedale
Paterson
Bathurst (garden)
Bathurst (domestic)
Port Alfred
Carlisle Bridge
Fort Brown
Committees Drift
Breakfast Vlei
Kwanonzwakazi
Bellevue
Sidbury
Seven Fountains
Salem
Langholm
Nolukhanyo
Bathurst
Southwell
Nkwenkwezi
Shaw Park
Rhini
Bhulurha
Skolweni
Macibini
Kwagqadushe
Ncanara
Groot-visrivier
New Years River
Koonaprivier
Kowie River
Kaprivier
Boesmansrivier
R344
R345
R350
R400
R67
R343
R72
N2

2.3 LEGISLATIVE FRAMEWORK

Following is a short summary of all the relevant legislation pertaining to waste management.

The South African Constitution (Act 108 of 1996) is the supreme law of the land. All law, including environmental waste management planning must comply with the Constitution.

The Constitution states that the people of South Africa have the right to an environment that is not detrimental to human health, and imposes a duty on the state to promulgate legislation and to implement policies to ensure that this right is upheld. All departments of state or administration in the national, provincial or local levels of government have similar obligations. The principles of co-governance are also set out in the Constitution and the roles and responsibilities of the three levels of government are defined.

According to the Constitution, responsibility for waste management functions is to be devolved to the lowest possible level of government. Local government therefore is assigned the responsibility for refuse removal, refuse dumps and solid waste disposal. Provincial government has the exclusive responsibility to ensure that local government carries out these functions effectively.

In addition to the Constitution, a number of government policies and statutes are relevant to waste management at the local government level, which includes the following:

- National Environmental Management Act 107 of 1998
- National Environmental Management: Waste Management Act, 2007
- Environment Conservation Act 73 of 1989
- Local Government Transition Act 209 of 1993
- Municipal Demarcation Act 27 of 1998
- Municipal Structures Act 117 of 1998
- Municipal Systems Act 32 of 2000
- The Development Facilitation Act 67 of 1995
- The Physical Planning Act 125 of 1991
- National Environment Management: Air Quality Act 39 of 2004
- Atmospheric Pollution Prevention Act 45 of 1965
- National Water Act 36 of 1998

- Health Act 63 of 1977
- White Paper on Environmental Management Notice 749 of 1998
- White Paper on Integrated Pollution and Waste Management for South Africa, Notice 227 of 2000
- Minimum Requirements for Waste Disposal by Landfill, 2nd edition, 1998
- Minimum Requirements for the Handling and Disposal of Hazardous Waste, 2nd Edition, 1998
- Minimum Requirements for Monitoring at Waste Management Facilities, 2nd edition, 1998
- National Waste Management Strategy and Action Plans.
- Relevant Provincial Legislation
- Local government by-laws on waste management.

2.3.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT 107 OF 1998

The National Environmental Management Act (NEMA) provides for co-operative governance by establishing principles and procedures for decision-makers on matters affecting the environment. An important function of the Act is to serve as an enabling Act for the promulgation of legislation to effectively address integrated environmental management. Some of the principles in the Act are – Accountability; Affordability; Cradle to Grave Management; Equity; Integration; Open Information; Polluter Pays; Subsidiary; Waste Avoidance and Minimisation; Co-operative Governance; Sustainable Development; and Environmental Protection and Justice.

Chapter 2 makes provision for the establishment of the Committee for Environmental Co-ordination (CEC). The objective of the committee is to promote the integration and co-ordination of environmental functions by the relevant organs of state and in particular to promote the achievement of the purpose and objectives of environmental implementation plans and environmental management plans.

Chapter 3 requires that national government departments that have waste management responsibilities and every province must develop environmental implementation plans (EIPs) every four years and an environmental management plan (EMP). Local government is obliged to exercise its responsibilities in accordance with these plans and to report annually within four months from the end of its financial year on implementation of the environmental management plan or environmental implementation plan. Provincial government must ensure that municipalities adhere to the relevant environmental implementation and management plans within its province, as well as the principles in the preparation of any policy, programme or plan, including the establishment of Integrated Development Plans (IDPs) and Land Development Objectives (LDOs).

Chapter 7 imposes a duty of care in respect of pollution and environmental degradation. Any person who has caused significant pollution or degradation of the environment must take steps to stop or minimise the pollution. Where an incident occurs that is potentially detrimental to the environment, the person who is responsible for the incident or the employer must, within 14 days of the incident, report to the Director-General, provincial head of department and municipality. The relevant authority may specify measures to address the problem and remediate the area within 7 days. The Acts also attach consequences for breaching the duty of care, namely that government authorities are empowered to issue directions and to remediate the situation and recover costs where the directions are not complied with.

Chapter 8 provides that the Minister and every MEC and municipality may enter into an environmental management co-operation agreement with any person or community for the purpose of promoting compliance with the principals laid down in NEMA. Environmental Co-operation Agreements may contain an undertaking by the person or community concerned to improve the standards laid down by law for the protection of the environment and a set of measurable targets and a timeframe for fulfilling the undertaking.

Chapter 9 allows the Minister to make model by-laws aimed at establishing measures for the management of environmental impacts of any development within the jurisdiction of the municipality, which may be adopted by the municipality as by-laws. Any municipality may request the Director-General to assist it with its preparation of by-laws on matters affecting the environment and the Director-General may not unreasonably refuse such a request. The Director-General may institute programmes to assist municipalities with the preparation of by-laws for the purposes of implementing this Act.

2.3.2 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE MANAGEMENT ACT, 2007

The National Waste Management Bill, gazetted in January 2007, will entrench best practices in waste management into law, replacing the outdated and unsustainable “end of pipe” approach with a new, more environmentally responsible and sustainable approach.

The Bill deals with minimising the consumption of natural resources, waste generation, recycling, waste disposal, prevention of pollution, promotion of waste services, remedying land degradation, and achieving integrated waste management reporting and planning.

The Bill was available for comment until 12 April 2007. The aim of this process was to incorporate public input before submitting the Bill to Parliament in July for approval and promulgation.

2.3.3 ENVIRONMENT CONSERVATION ACT 73 OF 1989

The object of the Environment Conservation Act is to provide for the effective protection and controlled utilisation of the environment. The ECA was amended in 2005 (Environment Conservation Amendment Act 50 of 2003) to provide for the transfer of the administration of waste disposal sites from the Minister of Water Affairs and Forestry to the Minister of Environmental Affairs and Tourism. This transfer was enacted with the publishment of Government Gazette No 28346 to be implemented as from 3 January 2006. Any person who intends to establish or operate a waste disposal site must apply for a permit from the Minister of Environmental Affairs and Tourism. The permit is made subject to a number of conditions, which *inter alia* pertain to the design, construction, monitoring and closure of a waste disposal site.

Waste is defined in ECA to mean ”any matter, whether gaseous, liquid or solid or any combination thereof, which is from time to time designated by the Minister by notice in the *Gazette* as an undesirable or superfluous by-product, emission, residue or remainder of any process or activity”. Waste products may originate from domestic, commercial or industrial activities. In a subsequent regulation (GN 1986 0f 24 August 1990) the Minister excluded the following wastes from those covered by ECA, i.e. sewage sludge, radioactive waste, building rubble, as well as mining, metallurgical and power generation wastes. These wastes are dealt with under other legislation. The Minister of Environmental Affairs and Tourism however amended the definition of waste to include building rubble used for filling or levelling purposes on 3 February 2003.

In terms of the Section 19 of the Act, it is an offence to litter on any place to which the public has access and the person or authority in charge of the area must provide containers for the discarding of litter. In addition, every authority in control of any place must remove the litter within a reasonable time. Provision is made for the appointment of inspectors to investigate compliance with the Act. In terms of Section 24A of the Environment Conservation Act, a competent authority may make regulations with regard to the control of the dumping of litter.

Section 20 deals with waste management, including with the establishment and operation of waste disposal sites. A disposal site is any site used for the accumulation of waste for the purpose of disposal or treatment. Such sites may only be operated under a permit issued by the Minister of Environmental Affairs and Tourism and may be subject to specified conditions. The DWAF Minimum Requirements documents form the basis for the permitting process and may be included as permit conditions, thereby becoming legally binding on the permit holder. The permit holder is generally required to operate, maintain and attend to the closure of a waste disposal site in compliance with the permit conditions, as well as in accordance with the guidelines set out in the Minimum Requirements documents.

Environment Impact Assessment Regulations, regarding activities defined under Section 21(1) of the Environment Conservation Act, have been promulgated in Government Notice R1183 of 5

September 1997. An environmental impact assessment must be conducted prior to the establishment of waste disposal facilities.

2.3.4 MUNICIPAL DEMARCATION ACT 27 OF 1998

The Municipal Demarcation Act 27 of 1998 provides criteria and procedures for the determination of municipal boundaries by an independent authority. In terms of the Act, the Municipal Demarcation Board is established to determine municipal boundaries.

Section 24 provides that when demarcating a municipal boundary, the Board must aim to establish an area that would enable the municipality to fulfil its Constitutional obligations, including the provision of services in an equitable and sustainable manner, the promotion of social and economic development and the promotion of a safe and healthy environment. The tax base must also be as inclusive as possible of users of municipal services in the municipality.

2.3.5 ORGANISED LOCAL GOVERNMENT ACT 52 OF 1997

The Organised Local Government Act 52 of 1997 provides for the recognition of national and provincial organisations representing the different categories of municipalities and determines various procedures concerning local government, including procedures by which local government may consult with national and provincial government.

2.3.6 MUNICIPAL STRUCTURES ACT 117 OF 1998

The main object of the Municipal Structures Act 117 of 1998 is to provide for the establishment of municipalities in accordance with the requirements relating to categories and types of municipality and to provide for an appropriate division of functions and powers between categories of municipality. It is one of a set of legislation that is aimed at the transformation of local government into a more financially sustainable and performance orientated sphere of government. The Act is aimed at creating the permanent structures mandated by the Constitution, which will replace the transitional structures created by the Local Government Transition Act. Municipalities are categorised either as A, B or C. depending on the level of development.

Chapter 5 sets out the functions and powers of the municipalities in accordance with the Constitution.

2.3.7 MUNICIPAL SYSTEMS ACT NO. 32 OF 2000

The Municipal Systems Act describes the core principles, mechanisms, and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of communities and ensure access to services that are affordable to all. Its focus is primarily on the internal systems and administration of the municipality.

The Act enables the process of decentralisation of functions through assigning powers of general competence to local Government. Municipal by-laws are regulated to achieve harmony with national and provincial legislation.

As service authorities, municipalities remain responsible for the effective delivery of services and must provide an appropriate policy and regulatory framework. This can be achieved through the most appropriate service provider, ranging from internal departmental delivery to corporatisation and joint ventures to private sector delivery options.

Performance management systems are to be developed to measure and evaluate performance in priority areas, which are to be reported annually to citizens and other spheres of government.

The process to be followed in planning, drafting and adopting the Integrated Development Plan is set out.

2.3.8 THE DEVELOPMENT FACILITATION ACT 67 OF 1995

The Development Facilitation Act 67 of 1995 sets out a planning and land development system, which ensures that national, provincial, and local government policies are implemented.

Section 28 describes the requirements for Land Development Objectives, which must be developed by each local authority. One of the objectives of Land Development Objectives is to create a new system of planning that encourages sustained utilisation of the environment, particularly with regard to the environmental consequences of developments.

Municipalities are encouraged to co-operate in order to develop the capacity of each municipality to exercise its powers and duties and manage its affairs.

2.3.9 THE PHYSICAL PLANNING ACT 125 OF 1991

The objective of the Physical Planning Act 125 of 1991 is to provide for the division of the country into regions and to promote regional development. Policy plans consist of broad guidelines for the future physical development of the area and restrictions are placed on the use of land in the area

to which the plan relates. Local authorities are required to develop urban structure plans for their areas of jurisdiction.

2.3.10 NATIONAL ENVIRONMENT MANAGEMENT: AIR QUALITY ACT 39 OF 2004

The purpose of the National Environmental Management: Air Quality Act 39 of 2004 is to reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto.

Part 2 of Chapter 2 of the Act sets out national, provincial and local ambient air quality and emission standards, chapter 3 institutional and planning matters, chapter 4 air quality management measures (priority areas, Listing of activities resulting in atmospheric emissions, controlled emitters, controlled fuels and other emitters.

Chapter 5 describes the procedures to apply for licenses for listed activities, while chapter 7 describes the offences and penalties for non-adherence.

2.3.11 ATMOSPHERIC POLLUTION PREVENTION ACT 45 OF 1965

The Atmospheric Pollution Prevention Act 45 of 1965 is not yet repealed and is added to the list of relevant legislation applicable to waste management. The authorisations issued in terms of this Act will be applicable until regulations have been promulgated in terms of the National Environment Management: Air Quality Act 39 of 2004.

Part II of the Act sets out the procedure for the permitting of Scheduled Processes, which includes waste incineration processes. A registration certificate is a mandatory requirement and the Act prohibits any person from carrying on a Scheduled Process unless that person is the holder of a current registration certificate. A current registration certificate is granted after compliance with the conditions of a provisional registration certificate and the requirements of the Department of Environmental Affairs and Tourism to whom this power has been delegated. The current registration certificate also is issued subject to conditions. These include the condition that all appliances used for preventing or reducing to a minimum the escape into the atmosphere of noxious or offensive gases shall be properly operated and maintained and that the best practice means for achieving this are implemented.

Part III of the Atmospheric Pollution Prevention Act provides for the control and regulation of smoke pollution arising from any fuel-burning appliance.

Part IV of the Atmospheric Pollution Prevention Act deals with dust control. Whenever dust originating on any land in a dust controlled area is causing a nuisance to persons residing or present in the vicinity of that land, the owner or occupier may be required to take the prescribed steps or adopt the "best practicable means" for the abatement the dust.

2.3.12 NATIONAL WATER ACT 36 OF 1998

The National Water Act contains a number of provisions that impact on waste management, including the disposing of waste in a manner, which detrimentally impacts on a water resource and the discharge of waste into a water resource. The Act allows the Minister to make regulations for:

- Prescribing waste standards, which specify the quantity, quality and temperature of waste that may be discharged or deposited into or allowed to enter a water resource.

- Prescribe the outcome or effect, which must be achieved through management practices for the treatment of waste before it is discharged or deposited into or allowed to enter a water resource.

- Requiring that waste discharged or deposited into or allowed to enter a water resource be monitored and analysed according to prescribed mechanisms.

2.3.13 HEALTH ACT 63 OF 1977

The Health Act 63 of 1977 provides measures for the promotion of health, for the rendering of health services and defines duties of certain authorities which render health services in the Republic

Section 20 sets out the duties and powers of local authorities. It provides that every local government is obliged to take measures to maintain its district in a clean and hygienic condition and to prevent the occurrence of any nuisance, unhygienic or offensive condition or any other condition, which could be of danger to the health of any person. A "nuisance" includes any accumulation of refuse or other matter that is offensive or is injurious or dangerous to health. The local government is obliged to abate the nuisance or remedy the condition and to prevent the pollution of any water intended for the use of the inhabitants of its district.

Draft regulations for the control of environmental conditions constituting a danger to health or a nuisance were published in GNR21 of 14 January 2000. In terms of the proposed regulations, registration is required for: concerns that to carry out a scheduled trade, including waste incineration, waste (including medical waste) disposal sites and waste collecting, sorting, treating or processing sites.

2.3.14 WHITE PAPER ON ENVIRONMENTAL MANAGEMENT NOTICE 749 OF 1998

The White Paper on Environmental Management was published in 1998. This policy sets out government's objectives in relation to environmental management, how it intends to achieve its objectives, and to guide government agencies and organs of state in developing strategies to meet their objectives.

The policy document is an overarching policy framework that refers to all government institutions and to all activities that impact on the environment. The policy states that government will allocate functions to the institutions and spheres of government that can most effectively achieve the objectives of sustainable development and integrated environmental management. This would include the allocation if certain functions to the municipal sphere of government.

Where appropriate, provincial and local government are to develop their own legislation and implementation strategies to address their specific needs and conditions within the framework of the policy.

2.3.15 WHITE PAPER ON INTEGRATED POLLUTION AND WASTE MANAGEMENT FOR SOUTH AFRICA, NOTICE 227 OF 2000

The White Paper of Integrated Pollution and Waste Management was published in March 2000 and represents formal government policy regarding integrated pollution and waste management. Integrated pollution and waste management is defined as a holistic and integrated system and process of management aimed at pollution prevention and minimisation at source, managing the impact of pollution and waste on the receiving environment and remediating damaged environments. Waste management is to be implemented in a holistic and integrated manner and extend over the entire waste cycle from cradle-to-grave and will include the generation, storage, collection, transportation, treatment and disposal of waste.

The overarching goal reflected in the policy is integrated pollution and waste management, with the intention being to move away from fragmented and uncoordinated pollution control and waste management towards integrated pollution and waste management as well as waste minimisation. Within this framework of the overarching goal, the following strategic goals apply:

1. Effective institutional framework and legislation;

2. Pollution and waste minimisation, impact management and remediation;

3. Holistic and integrated planning – the intention is to develop mechanisms to ensure that integrated pollution and waste management considerations are integrated into the development of government policies, strategies and programmes as well as all spatial

and economic development planning processes and in all economic activity. The strategic mechanisms include the following:

- The incorporation of integrated environmental management principles and methodologies in spatial development planning as it relates to pollution and waste management;
- Making timeous and appropriate provision for adequate waste disposal facilities;
- Developing management instruments and mechanisms for the integration of pollution and waste management concerns in development planning and land allocation;
- Developing appropriate and agreed indicators to measure performance for inclusion in EIPs and EMPs as provided for in the National Environmental Management Act;
- Participation and partnerships in integrated pollution and waste management governance;
- Empowerment and education in integrated pollution and waste management;
- Information management; and
- International co-operation.

2.3.16 DWAF MINIMUM REQUIREMENTS FOR LANDFILL, 2ND EDITION, 1998

The Minimum Requirements provide applicable waste management standards or specifications that must be met, as well as providing a point of departure against which environmentally acceptable waste disposal practices can be assessed. The objectives of setting Minimum Requirements are to:

- Prevent water pollution and to ensure sustained fitness for use of South Africa's water resources.
- Attain and maintain minimum waste management standards in order to protect human health and the environment form the possible harmful effects caused by the handling, treatment, storage and disposal of waste.
- Effectively administer and provide a systematic and nationally uniform approach to the waste disposal process.

- Endeavour to make South African waste management practices internationally acceptable.

- Before a waste disposal site permit is issued, adherence to the Minimum Requirement conditions will be required from the permit applicant. The Minimum Requirements promote the hierarchical approach to waste management, as well as a holistic approach to the environment.

2.3.17 NATIONAL WASTE MANAGEMENT STRATEGY AND ACTION PLANS.

The overall objective of this strategy is to reduce the generation of waste and the environmental impact of all forms of waste and thereby ensure that the socio-economic development of South Africa, the health of the people and the quality of its environmental resources are no longer adversely affected by uncontrolled and uncoordinated waste management. The internationally accepted waste hierarchical approach was adopted of waste prevention/minimisation, recycle/reuse, treatment and finally disposal.

The strategy outlines the functions and responsibilities of the three levels of government and where possible, firm plans and targets are specified. During the development of the strategy a number of priority strategic initiatives were identified which were categorised into short-term (by the year 2004), medium-term (by the year 2008) and long-term (by the year 2012) initiatives. Action plans have been developed for the short-term initiatives for integrated waste management planning, a waste information system, waste minimisation and recycling, general waste collection, waste treatment and disposal, and capacity building, education, awareness and communication. A logical framework analysis approach was adopted to develop the Action Plans that analysed the problems, stakeholders, and the risks to successful implementation followed by the development of outputs, activities, inputs and assumptions, as well as a proposed allocation of functions, roles, and responsibilities of the three levels of government.

The roles and responsibilities in terms of the NWMS for local government include:

- *Integrated waste management planning*: Local government will be responsible for the compilation of general waste management plans for submission to provincial government.

- *Waste information system*: Local government will be responsible for data collection.

- *Waste minimisation*: Local government will implement and enforce appropriate national waste minimisation initiatives and promote the development of voluntary partnerships with industry.

- *Recycling*: Local government are to establish recycling centres and/or facilitate community initiatives.

- *Waste collection and transportation*: Local government are to improve service delivery. Private public partnerships to assist service delivery are encouraged.

- *Waste disposal*: Local government is to take responsibility for the establishment and management of landfill sites, and to promote development of regionally based facilities. Formalising and controlling of scavenging is the responsibility of the permit holder.

2.3.18 POLOKWANE WASTE SUMMIT DECLARATION

During September 2001 a national waste summit was held at Polokwane, in the Northern Province. It was attended by all stakeholder groupings in the waste field in order to jointly chart a way forward in terms of waste management. The resultant Polokwane Declaration includes a vision and goal for the management of all waste, i.e. domestic, commercial and industrial:

Vision - To implement a waste management system, which contributes to sustainable development and a measurable improvement in the quality of life by harnessing the energy and commitment of all South Africans for the effective reduction of waste.

Goals - To reduce waste generation and disposal by 25% and 50% respectively by 2012 and develop a plan for zero waste by 2022

The Polokwane Declaration has significant implications for local government. In order to move towards the goal it will be necessary for government and other stakeholders to engage more closely toward the achievement of this goal in a realistic and practical manner. The key actions in the Polokwane Declaration that impact on local government include the following:

- Implement the NWMS.
- Develop and implement legislative and regulatory framework.
- Waste reduction and recycling.
- Develop waste information and monitoring systems.

2.4 GENERAL

It must be noted that some of the above Acts and Regulations are currently (2008) under review for changes and / or additions, and some are due for complete replacement with new Acts soon.

SECTION 3:

STUDY AREA AND STATUS QUO

3 STUDY AREA AND STATUS QUO

3.1 INTRODUCTION

The status quo study will assess the municipal area with consideration to the various service categories as well as evaluate the service delivery in each of the towns in the Municipality. The service categories that are taken into consideration can be summarised as follows:

- Refuse Removal: Residential, Commercial, Industrial, Garden Refuse, Builders' Rubble and Medical Waste
- Street and ablution cleaning
- Landfill Sites, Transfer Stations and Bulk Containers

The Status Quo investigation of the waste management section considered each of these aspects of service delivery by the Makana Municipality as shown in the following table.

SERVICE CATEGORY	SERVICE ASPECTS CONSIDERED
Refuse removal	Waste generation, collection system, collection equipment, personnel, residential, commercial, garden refuse and builders' rubble, medical and hazardous waste, mining industry, obvious needs.
Street Cleansing	Regularity of service, equipment, personnel, obvious needs
Landfill Sites, Transfer Stations and Bulk Containers	Waste generation, collection and transportation, personnel, equipment, landfill operation, transfer stations, garden refuse sites, obvious needs

In addition to this existing structure, the status quo study also considered planned developments, service extensions and any planned projects that have been identified in the IDP.

3.2 MAKANA MUNICIPALITY

3.2.1 SERVICE AREA AND REFUSE COLLECTION

The Municipality currently service 15 178 of the 16 151 properties in Makana. Approximately 13 179 households receive a kerb side waste collection service while 1 999 households receive a communal waste collection service. The information provided did not clearly specify the difference between domestic, commercial and industrial service points.

The waste service delivery of the Makana Municipality is co-ordinated from Grahamstown. A regular waste removal service is provided to all households and businesses within the major towns of the Municipal area, except to the households in rural areas. The majority of the population in rural areas either bury or burn their waste. The faming areas of the Makana Municipality do not receive a waste removal service. The provision of such a service is at the moment not envisaged by the Municipality. There are also no private waste contractors active within the municipal area.

The Municipality provides a weekly (1 day per week) waste collection service to all the households and businesses in Grahamstown, Alicedale and Riebeeck East. The businesses (e.g. Spur and KFC restaurants) in Grahamstown receive a special additional collection service from Mondays to Thursdays (2 x per week) depending on the collection requirements.

Street cleaning (litter picking, sweeping, and cleaning of ablution facilities) is done from Mondays to Fridays in all the Major towns of the Municipality

3.2.1.1 WASTE RECEPTACLES

The Makana Municipality utilises a black refuse bag system for all the households and businesses in the municipal area. Some restaurants utilise Otto bins. In Grahamstown the residents from the west side of town have to buy their own black bags. The Municipality provides the residents in Grahamstown East and North with one black bag per week. The Municipality provides the residents from Riebeeck East with black bags and in Alicedale the Municipality is in the process to also provide the community with black bags. The Municipality accepts any number of bags per household or business, so there is no specific limit. The bags are placed on the curb outside the house or business and collected from there.

3.2.1.2 NEW DEVELOPMENTS

During the past two years 1800 new houses were built in Makana where refuse collection services are rendered. No major new developments are currently planned for the near future by the Municipality.

3.2.2 MUNICIPAL BY-LAWS PERTAINING TO WASTE

The Makana Municipality has a set of by-laws, promulgated in 2007, pertaining to solid waste disposal. Although the by-laws are quit comprehensive, it is recommended that the by-laws should be expanded to include aspects of waste minimisation e.g. recycling and other issues as set out in the National Environmental Management: Waste Management Act, 2007 to promote integrated waste management.

3.2.3 WASTE GENERATION RATES

3.2.3.1 POPULATION GROWTH RATES

The effective annual population growth rate allowed for the MM is 1% for all areas.

3.2.3.2 WASTE GENERATION

The landfill sites in the Municipal area do not have weighbridges and therefore the quantities of waste disposed of are not exactly known, although a certain level of record-keeping (vehicle details and waste type at Grahamstown landfill and number of black bags disposed of at Alicedale and Riebeeck East) takes place at the landfill facilities. In such cases the Minimum Requirements for Waste Disposal by Landfill prescribes that the daily tonnages of waste generated can be obtained by applying per capita waste generation rates to the figures for the population served. These rates vary with the socio-economic standing of the population, from 0.2 kg per capita per day in the poor areas, to 1 kg per capita per day in the affluent areas.

Based on the above, the mathematical estimation of the amount of waste generated within the municipal area is indicated in the table below:

AREA	2008 POPULATION	*PER CAPITA* WASTE GENERATION	GENERATED WASTE (TONS/DAY)	GENERATED WASTE (TONS/ANNUM)
Riebeeck East	1 896	0.3 kg/p/d	0.56	145.6
Alicedale	5 202	0.3 kg/p/d	1.56	405.6
Grahamstown	124 758	1 kg/p/d	124.75	32 435
TOTAL				**32 986 .20**

Note: Annum = 260 day (5 day week)

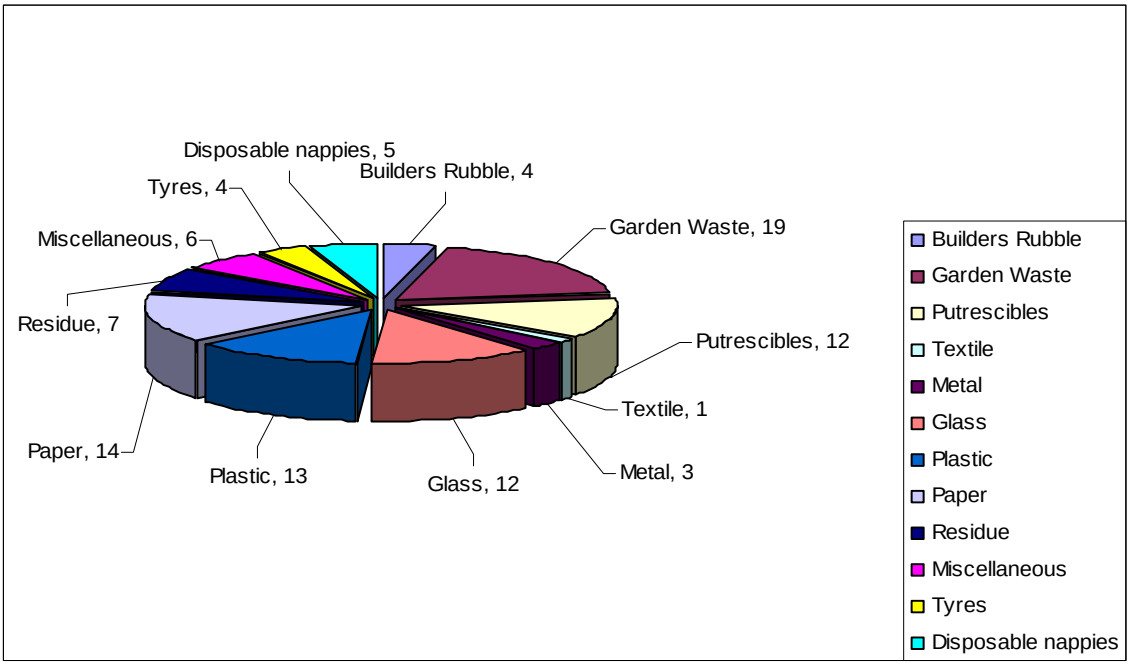
Note: The waste generation trends/projections for the future will be calculated in accordance with the population growth during Phase II of the study.

3.2.3.3 WASTE CHARACTERISTICS

For the composition of the waste stream the waste body was divided into 12 categories that include both recyclable and non-recyclable material.

The following Table indicates the waste composition as a percentage of the sample:

Waste Stream Composition	
Makana Municipality (Grahamstown landfill)	***Percentage***
Builders Rubble	**4**
Garden Waste	**19**
Putrescibles	**12**
Textile	**1**
Metal	**3**
Glass	**12**
Plastic	**13**
Paper	**14**
Residue	**7**
Miscellaneous	**6**
Tyres	**4**
Disposable nappies	**5**
Total	**100**



The waste collected in Grahamstown is disposed off on the Grahamstown Landfill. Waste from Riebeeck East is disposed off on the Riebeeck East Landfill site. Waste from Alicedale is disposed off on the Alicedale Landfill.

3.2.4 WASTE MINIMISATION STRATEGIES

The Municipality has formed a Municipal Private Partnership with some Recyclers and the Department of Social Development to start with a big recycling project known as the Masihlule Project. The Municipality is however currently not offering any recycling incentives to private people or businesses. There are currently several informal waste recycling activities that take place in the municipality. There is a private individual on the Grahamstown landfill site that collects cans, bottles, paper and cardboard from the landfill. The Municipality is considering establishing a covered area on the Grahamstown landfill to do more formal recycling.

3.2.5 ILLEGAL DUMPING

Illegal dumping of waste is common all over the Municipal area. The Municipality has to collect this waste at an unnecessary cost. The Municipality, together with the Ward members, has identified 48 legal dumping spots where the communities may dump their garden refuse and council will clean these spots as often as possible. A schedule to clean these identified areas and streets has been drawn up by the Municipality, but the Municipality is starting to experience manpower problems to properly fulfil this task.

The Makana Municipality has recognised the need for education of the people regarding this practice.

The Municipality is also experiencing the dumping of waste by the public along the access roads to the landfill sites, as well as areas on the landfill sites which are not designated for the disposal of waste.

3.2.6 GARDEN REFUSE

Bulk garden waste can be collected on request at a specific fee or residents should take it to the disposal sites themselves. Some residents make use of garden services to remove their garden refuse. Disposal of garden waste by private persons are free of charge at the disposal sites. .

A private company is currently in the process of determining the feasibility of composting garden waste in Grahamstown.

Except at the Grahamstown landfill site where garden waste, building rubble and domestic refuse are recorded, the exact amount of garden waste generated within the total Municipal area is not known since garden refuse is often disposed off with general household refuse at Riebeeck East and Alicedale disposal sites.

Specific waste records should be kept at the entrances to all the waste disposal sites. With proper access control and record keeping at the various waste disposal sites, the exact volumes of garden refuse disposed off can be obtained.

It is however estimated that 19% of the total waste stream represents garden refuse e.g. 6 267 ton/annum.

3.2.7 PERSONNEL

The Makana Municipality renders its own waste collection and street cleaning service.

The Municipality is experiencing shortages of labour for waste collection, environmental cleaners; as well as for the proper management of the waste disposal facilities. Existing vacant posts should be filled and posts will have to be created to improve the current service delivery as well as for the additional services that will have to be rendered with new developments in the future.

3.2.8 EQUIPMENT

The equipment that is utilised by the Makana Municipality is given below in the Table below.

REG NUMBER	VEHICLE DESCRIPTION	CONDITION*
GRAHAMSTOWN		
DPL 713 EC	Tata LDV (2006)	Good
DPL 711 EC	Tata LDV (2006)	Good
BNN 231 EC	Isuzu KB 200 LDV (1996)	Good
BJT 317 EC	Isuzu KB 200 LDV (1995)	Good
BJT 314 EC	Nissan 1400 LDV (1990)	Fair
BMP 026 EC	Nissan CM12 Compaction unit (1993)	Bad
BBV 689 EC	Isuzu Compaction unit (1995)	Stand-by

REG NUMBER	VEHICLE DESCRIPTION	CONDITION*
NEW	Isuzu Compaction Unit (2007)	Good
BMP 028 EC	Ford Tractor (1986)	Bad
BPX 661 EC	Nissan CM 10 truck (1986)	Bad
BPX 651 EC	Cat 916 Loader (1990)	Bad
BPX 654 EC	Nissan Tipper truck (1995)	Fair
DFR 389 EC	FAW Tipper Truck (2003)	Good
BNC 065 EC	Toyota Hilux LDV (1984)	Bad
BNN 227 EC	Isuzu F8000 D Truck Roll on (1994)	Fair
BNN 228 EC	Isuzu F8000 FN Truck Roll on (1988)	Bad
BSK 278 EC	Ford Tractor 6600 (1982)	Scrap
CF 23615	Massey Ferguson 154 CC (1985)	Scrap
Unknown	Kamatsu Bulldozer (2004)	Good
Unknown	Trailer Domestic	Fair
Unknown	Trailer Low Bed	Fair
Unknown	Trailer Skips	Fair
Unknown	Trailer Special Removals	Fair
ALICEDALE		
Unknown	Tractor Trailer unit for domestic refuse	Fair
Unknown	Open Trailer for garden refuse	Fair
RIEBEECK EAST		
Unknown	Tractor Trailer to remove domestic refuse	Fair

- Note that the indicated **VEHICLE CONDITION** is a subjective as assessment of the vehicles and no mechanical assessment of the vehicles had been conducted for this study. The opinion of the municipal fleet management workshop was also obtained during the assessment of the vehicles.

The Makana Municipality has a few vehicles that are old and are due for replacement. The vehicles which conditions are indicated as “bad” are in need of replacement in the near future. The Municipality is responsible for the maintenance of their own vehicles.

Based on the above assessment of the vehicle fleet, the Municipality should compile a vehicle replacement plan to ensure that future planning for the replacement of the vehicles is done at the appropriate time. The actions to be taken by the Municipality to address the collection fleet for service delivery and compile a vehicle replacement plan will be addressed in Phase II of the study i.e. compiling the draft IWMP.

3.2.9 LANDFILL

The Makana Municipality has three landfill sites namely the Grahamstown, Alicedale and Riebeeck East landfill. All the sites are managed by the Municipality. The landfills are located on municipal property.

The landfill site at **Grahamstown** is permitted by the Department of Water Affairs and Forestry on 10 September 1996 as a Class G:M:B+ waste disposal site in terms of Section 20 of the Environment Conservation Act (Act 73 of 1989). The site is located 2km from town at co-ordinates: S 33^0 17' 28'' and E 26^0 29' 32''. The expected lifetime of the site is approximately 20 years. The municipality uses a cell method to dispose off the waste in an old quarry. Waste is properly and regularly covered with excavated material from the quarry and building rubble. A bulldozer is used on the site for compaction and covering purposes. No burning of waste takes place. The Municipality was experiencing problems with the disposal of chillies and abattoir waste. These waste streams need to be disposed off in a dedicated deeply dug trench and be covered immediately after disposal. It could be necessary depending on the quantities of abattoir waste (dead animals) to treat the waste with lime once disposed off. Illegal scavenging is only taking place at the landfill during night time. The site is properly fenced with an access gate at the entrance. Record-keeping of incoming waste should be improved and properly recorded. The site should be continued to be operated in accordance with the permit conditions for the site and the Minimum Requirements for Waste Disposal by Landfill document as published by DWAF in 1998.

Position of site:	The site is located approximately 2km from town at co-ordinates: S 33^0 17' 28'' and E 26^0 29' 32''.
Permit:	Yes
Year issued:	10 September 1996
Classification of site:	GMB+
Type of Operation (end – tip, trench, cell):	Cell method, filling of quarry.
Estimated size of site:	Approximately 10 ha.
Estimated remaining life of site:	20 years

Separation of fresh and contaminated water:	Yes.
Groundwater monitoring:	6 monthly monitoring of down stream borehole located at neighbouring farmer – no problems with ground water pollution encountered
Volumes per day, week or month:	It is estimated that the site receives approximately 125 tons per day.
Is cover material available?	Yes, from quarry and building rubble
Is the drainage sufficient?	Yes
Is there access control?	Yes, but record keeping of incoming waste should be improved
Is the site fenced?	Yes
Does the site have a sufficient buffer zone?	Yes (2 km)
Type of equipment utilised on site:	Kamatsu Bulldozer
Operating hours:	The site is open 24 hours.
Estimating cost for closure:	No estimate regarding closure exists. The Municipality must budget for the closure and rehabilitation timeously.
Saving plan for closure:	

Grahamstown Landfill in quarry

Waste along the access route

The landfill site at **Alicedale** is authorised during May 2005 through Directions in terms of Section 20(5)(b) of the Environment Conservation Act, Act 73 of 1989, by the Department of Water Affairs and Forestry. The site is located approximately 500m from town (Co-ordinates: S 33^0 19' 04'' and E 26^0 04' 35''). The landfill site is operated by filling an old sandstone quarry. The site is approximately 0.9 Ha in size. The expected lifetime of the site is approximately 20 years. Waste is covered once a year by hiring a bulldozer for this purpose. Waste is being burned on a regular basis although it is prohibited in the authorisation for the site. There is scavenging taking place at the landfill. The site is not fenced and should be equipped with a gate at the entrance to prevent unauthorised persons from entering the site. Access to the site is not controlled. It is recommended that the burning of waste be phased out as an operational method and that waste be covered on a weekly basis as required in the authorisation for the site, that the site be fenced and proper access control be executed at the site (including proper record-keeping of incoming waste streams) and that the salvagers be formalised or disallowed on the site. The management of the site in general should be improved in accordance with the Minimum Requirements for Waste Disposal by Landfill document published by DWAF in 1998 and in accordance with the authorisation issued for the site.

Position of site:	The site is located 500m from town (Co-ordinates: S 33^0 19' 04'' and E 26^0 04' 35'')
Permit:	Yes, controlled through Directions
Year issued:	2005
Classification of site:	GCB $^-$
Type of Operation (end – tip, trench, cell):	Filling of sandstone quarry, waste burning
Estimated size of site:	Approximately 0.9 ha.
Estimated remaining life of site:	20 years
Separation of fresh and contaminated water:	None in place.
Groundwater monitoring:	No, not required
Volumes per day, week or month:	It is estimated that the site receives approximately 1.56 tons per day.
Is cover material available?	Yes, from quarry
Is the drainage sufficient?	No

Is there access control?	No
Is the site fenced?	No
Does the site have a sufficient buffer zone?	Yes (500m)
Type of equipment utilised on site:	No permanent equipment, a Bulldozer is hired once a year for covering purposes
Operating hours:	There are no official operating hours for the site.
Estimating cost for closure:	No estimate regarding closure exists. The Municipality must budget for the closure and rehabilitation in the near future.
Saving plan for closure:	

Uncovered Waste

Waste regularly burned

The landfill site at **Riebeeck East** is authorised during May 2005 through Directions in terms of Section 20(5)(b) of the Environment Conservation Act, Act 73 of 1989, by the Department of Water Affairs and Forestry. The site is located approximately 2 kilometres from town (Co-ordinates: S 33^0 12' 35'' and E 26^0 10' 56''). The landfill site is approximately 0.5 Ha in size. The expected lifetime of the current disposal area is approximately 10-15 years. Waste is covered once a year by hiring a bulldozer for this purpose. Waste is being burned on a regular basis although it is prohibited in the authorisation for the site. The site is fenced (but need maintenance) with an access gate to prevent unauthorised persons from entering the site. Access to the site is however not properly controlled. It is recommended that the burning of waste be phased out as an operational method and that waste be covered on a weekly basis as required in the authorisation for the site. Access to the site should be controlled and proper record keeping of incoming waste should be done. The management of the site in general should be improved in accordance with

the Minimum Requirements for Waste Disposal by Landfill document published by DWAF in 1998 and in accordance with the authorisation issued for the site.

Position of site:	The site is located approximately 2 kilometres from town (Co-ordinates: S 33^0 12' 35'' and E 26^0 10' 56'')
Permit:	Yes, controlled through Directions
Year issued:	2005
Classification of site:	GCB $^-$
Type of Operation (end – tip, trench, cell):	No proper operational method followed, waste is burned
Estimated size of site:	Approximately 0.5 ha.
Estimated remaining life of site:	10 -15 years
Separation of fresh and contaminated water:	None in place.
Groundwater monitoring:	No, not required
Volumes per day, week or month:	It is estimated that the site receives approximately 0.56 tons per day.
Is cover material available?	Yes
Is the drainage sufficient?	No
Is there access control?	No
Is the site fenced?	Yes, but need maintenance
Does the site have a sufficient buffer zone?	Yes, 2 km from nearest house
Type of equipment utilised on site:	No permanent equipment, a bulldozer is hired once a year for covering purposes
Operating hours:	There are no official operating hours for the site.
Estimating cost for closure:	No estimate regarding closure exists. The Municipality must budget for the closure and rehabilitation in the near future.
Saving plan for closure:	

	
Uncovered Waste	**Large amounts of scrap metal on the site**

3.2.10 TRANSFER STATIONS

The Makana Municipality has no transfer stations within the municipal area.

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3.3 NEEDS ANALYSIS

From the Status Quo and Needs Analysis study, certain needs pertaining to the waste disposal service in the Makana Municipality were identified that requires attention. These needs are summarised below.

- Although the Municipality has formed a Municipal Private Partnership with some Recyclers and the Department of Social Development to start with a big recycling project known as Masihlule Project, more extensive waste minimisation strategies have to be developed. These need to be addressed and implemented.

- The waste collection services should be extended to include all areas which are not currently being serviced. New developments that are taking place in the Makana Municipality must also be included for the provision of a waste collection and disposal service. It is essential that in conjunction with the Town Planning Department that future residential and business area expansion are catered for in terms of refuse removal. This will allow the Municipality to, at an early stage, determine the possible costs involved and therefore will be able to adjust their budget accordingly. This will allow the Municipality to service the new areas when they are developed.

- There is illegal disposal of waste at various sites in the municipality. The illegal disposal should be addressed in order to manage and minimise the illegal activities pertaining to waste disposal.

- The Municipal By-Laws should be updated to address issues such as waste minimisation and recycling, as well as local standards and other issues as may be required in terms of the National Environmental Management: Waste Management Act, 2007.

- The Makana Municipality has a shortage of personnel for waste collection, for the proper management of the disposal facilities and for environmental cleaning.

- The Makana Municipality should continue to operate the Grahamstown landfill site in accordance with the permit conditions for the site and in accordance with the Minimum Requirements for Waste Disposal by Landfill. The development plan for the site (which was compiled as part of the permit application report for the site) should be followed during the continued operation and management of the site. Record-keeping of incoming waste should be improved. The recycling activities on site done by a private person should be formalised and the designated under roof area considered for this purpose should be completed.

- The Alicedale and Riebeeck East landfills should be upgraded by properly fencing the sites (fencing maintenance at Riebeeck East and fencing at Alicedale) and equipping the sites with a guard house and ablution facility. The operation management of both sites should be improved by complying with the Directions (authorisation conditions) issued for the sites and in accordance with the Minimum Requirements for Waste Disposal by Landfill. This *inter alia* includes phasing out the burning of waste and covering the waste on a weekly basis as required in the authorisations.

- Proper access control and record-keeping of incoming waste streams do not occur at the entrance to the Alicedale and Riebeeck East landfills and should be instituted.

- Garden refuse are disposed off at the disposal facilities with no processing of the garden waste. The exact volumes of garden refuse need to be determined (entrance control at all the disposal facilities) to determine the feasibility of composting garden refuse.

- The Makana Municipality has a few vehicles that are old and in poor condition that are due for replacement.

- Municipal waste records should be kept and maintained for informed future decision-making purposes and to comply with the Government's Waste Information System requirements.

- A medical waste stream management strategy should be formulated to deal with this component, and with the intention of ensuring compliance with SANS 0228.

- To provide a cost effective waste management service, the payment of service tariffs should be improved and the tariff structure should be investigated to be viable and should be standardised. The number of domestic, commercial and industrial service points should be determined to ensure that the generators of waste pay for the waste they generate. This can also be an incentive for businesses to minimise their waste streams and will allow for the objective to render a complete service to all communities in the municipal area.

- A Detailed financial investigation should be done by the Municipality (see Section 6.1.2).

SECTION 4:
INDUSTRIAL AND MINING WASTE

4 INDUSTRIAL AND MINING WASTE

There are no major industries or mines that operate in the Makana Municipality. Therefore, the possibility of hazardous industrial or mining waste disposal on the landfill sites is minimal. The Municipality does not experience any problems with the disposal of hazardous waste on the landfills.

Once access to the disposal sites is properly controlled, the disposal of any possible hazardous waste on the disposal sites would be prevented. Industries should be informed about the hazardousness of certain waste streams e.g. fluorescent tubes, empty paint containers, asbestos waste etc. The DEAT has policies to deal with these specific waste streams. Fluorescent tubes for example in large quantities must be crushed, treated and disposed of at a Class H:H disposal site. Empty paint containers should be rinsed with water, holes punched into the containers and can then be disposed of at the General landfills. DEAT is in the process of drafting tyre recycling regulations to deal with the problem of tyres on landfills.

An assessment to provide detail regarding light industrial waste streams would not be required by the WIS, but it is important to deal with these waste streams in accordance with authority policies when large volumes had to be disposed of. It is a fact that low percentages of these waste streams are disposed of with general waste on *ad hoc* occasions at the general landfills, and is impossible to control. The impact from these waste streams will be minimal unless disposed of in large quantities, which should then be prevented with proper access control at the disposal sites.

SECTION 5:
MEDICAL WASTE

5 MEDICAL WASTE

The primary health care facilities within the Makana Municipal area are as follows:

- Fort England Hospital
- Grahamstown Mobile 2
- Middle Terrace TLC Cli
- Joza Clinic
- Riebeeck East Clinic
- Middle Terrace Clinic
- Kwa-Nonzwakazi Clinic
- Grahamstown FP Clinic
- NG Dlukulu Clinic
- Anglo African Street C
- Tantyi Clinic
- Raglan Road Clinic
- Settlers Day Hospital
- Alicedale Clinic
- Grahamstown Mobile 1
- Grahamstown Mobile 3
- Grahamstown Clinic
- Assumption Clinic
- Temba SANTA Hospital
- Albany Road Clinic
- Grahamstown Mobile 4
- Settlers Hospital

Medical waste from the medical health facilities is taken away by a private contractor for incineration or treatment at approved medical health treatment facilities in Port Elizabeth. The Municipality is not experiencing problems with the disposal of medical waste at their landfills.

SECTION 6:
COSTS AND TARIFFS

6 TARIFFS

6.1 CURRENT TARIFF STRUCTURE

6.1.1 RATES, TARIFFS AND CHARGES

The Table below lists the tariffs and charges for 2007/2008.

Service Delivery	Tariff ® – Exc Vat
Refuse Removals	
• Domestic	29.07
• Business	58.16
• Removal of garden refuse	168.30
• Removal of garden refuse (expired notice)	258.50
• Removal of condemned goods	134.20
• Illegal dumping of refuse (domestic or other)	165.00
• Special refuse removals (festival period)	No charge
Refuse bins/refuse bags/Otto bins – cost determined by suppliers prices	
• Removal of bees (as per quote)	R130.00 minimum
• Carara (4 removals)	!90.80
• Abattoir	R347.22

No fees are charged for waste disposal at the disposal facilities.

The tariffs compares well with other Municipalities in the District.

6.1.2 FINANCIAL REQUIREMENTS

It is recommended that a detail financial investigation be done by the Municipality which will address the following:

- Run of vehicles, salaries, etc.
- Basic service allocation (appropriation) from MIG funding (including total allocation for indigents)
- Credit control

- assessment of effective use of financial system & reporting ability
- accessibility of pay points to the public
- CMM
- Indigent Management with specific regard to the formulate used to allocate equitable share to the accounts.

➢ Pricing & tariffs

- Review policies & by-law for legal compliances including Tariff Policy, Credit Control, debt collection & indigent Policy
- Identify gaps in terms of legislation & policies
- Identify operational non-compliance
- Assess tariff costing mechanism or formula
- High level exercise to determine actual cost of services delivered
- Contribution of developers to bulk infrastructure

➢ Billing

- Differentiation of household, business(s) for billing purposes

➢ Other issues

- Budget management
- Cash flow assessment
- High level balance sheet review

SECTION 7:
TRENDS AND FORECASTS

7 TRENDS AND FORECASTS

Decision-making and planning has to be based on sound input and data. The following trends were identified for the Makana Local Municipality for population, economic growth and waste generation.

7.1 POPULATION

The current population within the Makana Local Municipality is approximately 140 120 people, based on an annual growth rate of 1.0%.

7.2 ECONOMIC GROWTH

South Africa's GDP is expected to increase gradually during the next few years, and the government recently revised upward its 2005 estimated growth to 4.3%. Such a growth could translate into an effective increase in the waste generation growth rate. Since the focus on waste minimisation and recycling is expected to sharpen in the immediate future any minimal growth associated with economic growth will be cancelled out by the associated waste reduction that will mainly be expected from higher income groups.

7.3 WASTE GENERATION

Waste generation growth estimates should take the economic growth, population wealth as well as the population growth rate into consideration as a zero increase in population size, but a fast growing economy will result in a waste generation growth and vice versa.

The estimated waste generation models will give a prediction until the year 2015. Growth rates used were applied using Per Capita Waste Generation Figures as defined in the Minimum Requirements Documents. These growth rates do not take any recycling activities into account and is likely to be an overestimate of the waste generation figures.

Makana Municipality Population Growth Rates									
Area	**Current Population**	**Population Growth**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Riebeeck East	1896	1.00%	1915	1934	1953	1973	1993	2013	2033
Alicedale	5202	1.00%	5254	5307	5360	5413	5467	5522	5577
Grahamstown	124758	1.00%	126006	127266	128538	129824	131122	132433	133757
Total	**131856**		**133175**	**134506**	**135851**	**137210**	**138582**	**139968**	**141367**

Expected Waste Generation Rates (Kg/day)									
Area	**Current Population**	**Generation Rates**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Riebeeck East	1896	0.3	574.5	580.2	586.0	591.9	597.8	603.8	609.8
Alicedale	5202	0.1	525.4	530.7	536.0	541.3	546.7	552.2	557.7
Grahamstown	124758	1.0	126005.6	127265.6	128538.3	129823.7	131121.9	132433.1	133757.5
Total	131856		127105	128377	129660	130957	132266	133589	134925

SECTION 8:

GOALS AND OBJECTIVES

8 GOALS AND OBJECTIVES

Seven (7) focus areas have been identified to be addressed for the compilation of an IWMP for the Makana Local Municipality. Based on the Gaps and Needs identified, Goals and Objectives have been identified for each of the categories or focus areas.

It is important to structure Goals and Objectives in accordance with the Government's strategy of waste minimisation. The official hierarchy adopted in the Government Waste Management Strategy is as follows:

Waste Hierarchy		
Cleaner Production	Prevention	
	Minimisation	
Recycling	Re-Use	
	Recovery	
	Composting	
Treatment	Physical	
	Chemical	
	Destruction	
Disposal	Landfill	

This hierarchy remained central with the compilation of goals and objectives for the Municipality that are discussed below:

8.1 DISPOSAL INFRASTRUCTURE DEVELOPMENT

This area relates to the development, upgrading and legalisation of disposal infrastructure. This includes the identification of new infrastructure required, the permitting of existing unauthorised facilities, and the upgrading of the current infrastructure as well as the improvement of management practices at the various locations.

8.2 WASTE COLLECTION INFRASTRUCTURE

The shortcomings in the available collection infrastructure will be identified. This will involve possible fleet shortages, receptacle placement and route planning.

8.3 INSTITUTIONAL CAPACITY AND HUMAN RESOURCES

This area involves the identification of human resource shortcomings and possible alteration to employee structures.

8.4 FINANCIAL RESOURCES

This area relates to existing and required financial structures and strategies.

8.5 DISSEMINATION OF INFORMATION /COMMUNICATION

This area covers the need for effective record keeping and the development of a Waste Information System, the sharing of available information as well as co-operation of the various stakeholders within the municipality.

8.6 MANAGEMENT OF ILLEGAL ACTIVITIES

This focus area relates to illegal dumping activities within the municipal area. This involves identification of possible illegal dumping hot spots, development of clean up and anti dumping campaigns, possible revision of bylaws as well as revision of collection strategies.

8.7 WASTE MINIMISATION

This area involves the identification of specific waste minimisation strategies, whether it is separation and collection at the source, privatisation of recycling activities, and development of collection points throughout the area as well as public awareness/education strategies.

Disposal Infrastructure Development

Goal
Improve, Develop and Maintain Infrastructure to comply with Legislative Requirements and Municipal Needs
Objectives
Establish Recycling centre at the Grahamstown landfill site
Upgrade and Improve management of Grahamstown, Alicedale and Riebeeck East landfill sites

Waste Collection Infrastructure

Goal
Provide Effective Waste Collection
Objectives
Extend Service to Un-serviced Areas in Local Municipal area
Replace and Maintain Collection Fleet for Service Delivery
Standardise Collection and Optimise Collection Route

Institutional Capacity and Human Resources

Goal
Provide Effective Waste Management Service
Objectives
Effective Structure and Extension of Human Resources
Train Staff

Financial Resources

Goal
Provide Cost Effective Waste Management Service
Objectives
Undertake a Detail Financial Investigation
Improve Payment of Service Tariffs
Standardise Tariff Structure

Dissemination of Information/Communication

Goal
Capacity Building through Information Sharing
Objectives
Develop and Maintain a Waste Information System
Contribute to Inter Municipal Waste Information Workshops
Improve Community Awareness, Education and establish Communication Channel with Waste Generators

Management of Illegal Activities

Goal
Minimise/Prevent Illegal Activities
Objectives
Develop Penalty System for Illegal Activities
Improve Removal of Illegally Dumped Waste
Develop a Medical Waste Stream Management Strategy

Waste Minimisation

Goal
Decrease Waste Deposited on Landfill
Objectives
Encourage Recycling Activities
Encourage Waste Minimisation
Develop Garden Refuse Strategy

SECTION 9: ALTERNATIVES & PROPOSALS

9 ALTERNATIVES

The Goals and Objectives identified in the previous section must now be evaluated and alternative solutions developed to meet them. From the various alternative solutions developed, a number of feasible scenarios, taking into account various aspects of the waste management cycle, will be compiled. These scenarios will then be evaluated in terms of a number of criteria to ensure that the most suitable scenario is selected for implementation.

The following information is provided as background information to enable the reader to better comprehend conditions and terminology.

COLLECTION SERVICES

The three main aspects of collection services are (a) the waste receptacles, (b) collection frequency and (c) position of receptacles.

Waste Receptacles

There are a number of waste receptacles that can be used such as 85 litre bins, 240 litre trolley bins, skip containers, etc. The receptacle will be dependent on the volume of waste generated at the collection point, the type of waste, the type of collection vehicle and the cost of the service to the community. In densely populated areas such as larger cities, the 240 litre wheelie-bin system is fairly common. This is due to the fact that there is generally more waste in these areas requiring larger waste receptacles. These wheelie-bins are emptied mechanically into the collection vehicle. There is however a cost implication since these containers are fairly expensive and costs must somehow be recovered, usually directly influencing the cost of the service. It is however a once off capital cost which might be weighed against the continuously monthly cost of bin liners.

The most commonly used system is the black bag system. Usually a bin liner (black bag) is placed in an 85 litre container (dustbin) and used for disposal purposes. The bag is then removed from the bin and placed on the sidewalk for collection. Bags can be picked up by hand and dropped into the collection vehicle.

In more rural areas almost any type of receptacle is used, depending on how formal the collection system is. In some rural or less affluent areas skip containers are placed at strategic points. The community is then responsible to bring their waste and dispose of it in the skip containers from where it is collected. The level of co-operation from the community usually determines the success of such a system.

For commercial collection, i.e. restaurants, shops, etc., a vast number of receptacles is used. In most instances the type of receptacles are determined by the type and volume of waste disposed of as well as the type of service rendered. In smaller towns the municipality usually renders the service and they provide the receptacles. In larger towns there are usually private contractors collecting waste from commercial collection points.

Generators of industrial waste usually dispose of their waste themselves, or use a private contractor. The receptacles used are usually skip containers.

To summarise, the type of receptacle will be dependent on what the community can afford, the volumes of waste generated, the type of waste and the special needs of the community.

Collection Frequency

The collection frequency is again dependent on the volumes of waste generated, the availability of the equipment and the level of service. The norm is that domestic collection is done once a week in most areas. Commercial collection is dependent on the volumes generated and the types of waste. A restaurant, for instance, will have their waste removed up to four times a week should the volumes require it. This is due to the fact that most of their waste is food residue that can cause an odour and fly problem within a day or two.

Placement of Receptacles

In most instances domestic waste receptacles are placed on the pavement on the day of collection. This allows for easy access to the receptacle and saves on actual collection time. In some instances, collection of commercial receptacles is done from the actual premises.

EQUIPMENT

The type of equipment is usually determined by the cost of the service to the residents, the condition of the collection roads (surface, alignment, etc), the distance to the landfill and the number of collection points serviced per day.

Cost of Equipment

There is a wide range of collection equipment that can be utilised for collection equipment. This can range from a tractor and trailer system (R 390 000) up to a top of the range REL (R 1 200 000). It is vital that the right equipment is utilised for the right conditions and type of service required. This will be clarified in the following points.

Conditions of Collection Roads

The road condition that the collection vehicle has to drive plays a major factor when deciding on a particular collection vehicle. If one has to compare a rural road full of potholes to a road in a city suburb, a tractor and trailer would be more suitable in the rural application as opposed to a state of the art 20 m³ REL, which is not built to drive on poorly maintained roads. The maintenance cost would be above normal for an REL to drive these roads on a daily basis due to wear and tear on components. A tractor and trailer, which is a much more robust type of system, will be better suited to such conditions. In an urban environment a tractor and trailer will be less suited as the landfill is usually far from the collection areas and will take to long to drive to the landfill and back.

Distance to the Landfill

As discussed above, distance to the landfill plays an important role. For instance if the landfill is 20 km from the collection area, a tractor and trailer will spend most of the time driving from the collection area to the landfill and back. A general rule is that a tractor and trailer combination should not drive further than 7 km from the collection area to the landfill. For distances above 7 km, alternative types of vehicles should be considered.

There is a collection system using a mobile compactor with a demountable container. This can be used in various applications. Once the container is full, it is demounted and left for a 'Roll-on Roll-off' truck to collect. The collection vehicle therefore does not waste any time driving to the landfill and back.

Another possible application will be in a regional context where the vehicle collects waste in a certain area, leaves the container at a designated point and moves on to the next area. The container will then be collected by a "Roll-on Roll-off" truck for disposal at the landfill.

Number of Collection Points

The number of collection points becomes critical in an urban area where a 20 m³ REL collects up to 1 200 service points per day. A collection vehicle's sole purpose should be to collect waste and not spend time driving from the collection area to the landfill and back. Aspects such as compaction also play an important role. A 20 m³ REL can collect up to 60 m³ of waste at a time because of a one to three (1:3) compaction ratio, while a tractor/trailer combination can collect only 5 m³ to 10 m³ at a time before it has to offload. The tractor/trailer therefore has to make a lot more trips to the landfill than a 20 m³ REL. The REL therefore has more time for the collection and service of more points. It must also be noted that the "runners", collecting and loading the collection vehicle, are idling while the vehicle is on the road to the dumpsite and back.

Landfill Equipment

On the larger landfills a landfill compactor, loader, water container and tipper will be found to ensure effective operating conditions. For smaller landfills a TLB will handle waste effectively enough and on communal landfills where the trench system is used, a machine is only required part time. The type of equipment will depend on the type of operation (trench, cell, etc.) and the volume of the waste generated. Compaction is usually an important factor since this allows for more waste to be disposed of at a landfill thereby prolonging the life of the landfill. Economics however play an important role, since the volume of waste has to justify the type of equipment. It is of no use using a 30-ton landfill compactor, capable of handling over 500 tons of waste per day, on a landfill only receiving 10 tons per day. Such a machine cost in the region of R 2 600 000 and operating cost is in the region of R 180.00/hour without the cost of the operator or maintenance costs.

From the above it is evident that the choice of equipment is very important to ensure the correct equipment is used for the correct application.

The following pictures represent some of the equipment mentioned above.

	12 m³ REL
	***Landfill compactor***

19 m³ REL: Lifting 240 litre wheel bin

19 m³ REL: Lifting 1.75 m³ wheel bin

Tractor with utility trailer

Gravity compactor

	***240 litre wheelie bin***

9.1 DISPOSAL INFRASTRUCTURE DEVELOPMENT

Goal
Improve, Develop and Maintain Infrastructure to comply with Legislative Requirements and Municipal Needs
Objectives
Establish Recycling centre at the Grahamstown landfill site
Upgrade and Improve management of Grahamstown, Alicedale and Riebeeck East landfill sites

Objective 1: Establish Recycling centre at the Grahamstown landfill site

The **Grahamstown landfill site** is permitted as a Class G:M:B+ landfill site. The permit conditions for the site allows for the reclamation of waste on the site provided that the reclamation activities do not interfere with the daily operational activities on site. Illegal scavenging is taking place during night time. The reclamation activities on site should be formalised and controlled in accordance with Appendix 10.3 of the document, Minimum Requirements for Waste Disposal by Landfill, as published by DWAF in 1998.

The site receives approximately 125 tons of waste per day. It is recommended that a proper recycling centre (under roof) be established on the site property where the recycling of waste can be done without interfering with daily operational activities. The Municipality should keep a record of the volume and nature of the waste materials which are reclaimed and report this on an annual basis to the authorities as required in the permit conditions.

Since the recycling centre would be located on the landfill site property, no additional permit/authorisation would be required. It is recommended however to update the operational plan for the site to address the operation at the recycling centre.

Objective 2: Upgrade and Improve management of Grahamstown, Alicedale and Riebeeck East landfill sites

The landfill site at **Grahamstown** is permitted by the Department of Water Affairs and Forestry on 10 September 1996 as a Class G:M:B+ waste disposal site. The expected lifetime of the site is approximately 20 years. The municipality uses a cell method to dispose off the waste in an old quarry. Waste is properly and regularly covered with excavated material from the quarry and building rubble. A bulldozer is used on the site for compaction and covering purposes. The Municipality was experiencing problems with the disposal of chillies and abattoir waste. These waste streams need to be disposed off in a dedicated deeply dug trench and be covered immediately after disposal. It could be necessary depending on the quantities of abattoir waste

(dead animals) to treat the waste with lime once disposed off. The waste disposed off along the access road to the site should be cleared and disposed off at the active working area. Record-keeping of incoming waste should be improved and properly recorded. The site should be continued to be operated in accordance with the permit conditions for the site and the Minimum Requirements for Waste Disposal by Landfill document as published by DWAF in 1998. The site should be further developed in accordance with the approved development plan submitted as part of the permit application for the site.

The landfill site at **Alicedale** is authorised during May 2005 through Directions in terms of Section 20(5)(b) of the Environment Conservation Act, Act 73 of 1989, by the Department of Water Affairs and Forestry. The landfill site is operated by filling an old sandstone quarry. The site is approximately 0.9 Ha in size. The expected lifetime of the site is approximately 20 years. Waste is covered once a year by hiring a bulldozer for this purpose. The authorisation for the site requires the covering of waste on a weekly basis. Waste is burned after disposal and scavenging is taking place at the landfill. The site is not fenced and access to the site is not controlled.

It is recommended that the burning of waste be phased out as an operational method and that waste be covered on a weekly basis as required in the authorisation for the site - a TLB can be utilised on a part time basis to assist with landfill operations, that the site be fenced and proper access control be executed at the site (including proper record-keeping of incoming waste streams) and that the salvagers be formalised or disallowed on the site. The site should be equipped with a guard house and ablution facility. Staff (at least a site supervisor) should be appointed to properly manage the site. The management of the site in general should be improved in accordance with the Minimum Requirements for Waste Disposal by Landfill document published by DWAF in 1998 and in accordance with the authorisation issued for the site.

The landfill site at **Riebeeck East** is authorised during May 2005 through Directions in terms of Section 20(5)(b) of the Environment Conservation Act, Act 73 of 1989, by the Department of Water Affairs and Forestry. The landfill site is approximately 0.5 Ha in size. The expected lifetime of the current disposal area is approximately 10-15 years. Waste is covered once a year by hiring a bulldozer for this purpose. Waste is being burned on a regular basis although it is prohibited in the authorisation for the site. The site is fenced (but need maintenance) with an access gate to prevent unauthorised persons from entering the site. Access to the site is however not properly controlled. It is recommended that the burning of waste be phased out as an operational method and that waste be covered on a weekly basis as required in the authorisation for the site. A TLB can be utilised on a part time basis to assist with landfill operations. Access to the site should be controlled and proper record keeping of incoming waste should be done. The site should be upgraded by establishing a guard house with ablution facility. The management of the site in general should be improved in accordance with the Minimum Requirements for Waste Disposal by Landfill document published by DWAF in 1998 and in accordance with the authorisation issued for the site.

9.2 WASTE COLLECTION INFRASTRUCTURE

Goal
Provide Effective Waste Collection
Objectives
Extend Service to Un-serviced Areas
Replace and Maintain Collection Fleet for Service Delivery
Standardise Collection and Optimise Collection Route

Objective 1: Extend Service to Unserviced Areas

A regular waste removal service is provided to all households and businesses within the major towns of the Municipal area, except to the households in rural areas. The Municipality provides a weekly (1 day per week) waste collection service to all the households and businesses in Grahamstown, Alicedale and Riebeeck East. The businesses (e.g. Spur and KFC restaurants) in Grahamstown receive a special additional collection service from Mondays to Thursdays (2 x per week) depending on the collection requirements). It is essential that in conjunction with the Town Planning Department that future residential and business area expansion are catered for in terms of refuse removal. This will allow the Municipality to, at an early stage, determine the possible costs involved and therefore will be able to adjust their budget accordingly. This will allow the Municipality to service the new areas when they are developed.

The Municipality at the moment does not provide a waste removal service to the farms in the municipal area. The extent of the Municipality and the remote locations of several of the farms will not make this an economically feasible option. It is recommended that the Municipality assist the farmers by informing them of correct disposal measures and safety precautions.

Objective 2: Extend and Maintain Collection Fleet for Service Delivery

The Makana Municipality does have sufficient equipment to deliver an effective service in the existing municipal area.

The Municipality is however experiencing a problem with the age and dependability of some of the current waste collection vehicles. Some of the vehicles are older than 15 years e.g. the Nissan CM12 Compaction unit in Grahamstown and generally needs repairs to keep it running. The replacement of the old waste collection vehicles is therefore a definite need of the Municipality.

It is therefore recommended that a vehicle replacement plan be compiled to ensure that future planning for the replacement of the vehicles is done at the appropriate time. The Municipality

should inspect the vehicles and establish a lifespan for each of the vehicles based on the general wear and tear of the vehicle. This will be influenced by the specific route and conditions of the road that the vehicle has to travel. The current condition of the vehicles should also be taken into account. This investigation will determine which vehicles are due for replacement first and the Municipality will be able to budget for such vehicles. Due to cost concerns the Municipality will also be able to divide the capital cost of the vehicles over more than one financial year. The replacement of old and unreliable vehicles is a matter of urgency as this may in future undermine the effectiveness of the current refuse removal system.

With the purchase of the new vehicles it is essential that the Municipality negotiate with the various suppliers for the maintenance of the vehicles. The older vehicles are still maintained by the Municipality, but the phased replacement of the vehicles will allow for the regular service of the vehicles by the supplier. This will prolong the lifespan of the vehicles as well as ensuring that they are more reliable.

With regard to landfill equipment, no permanent landfill equipment is present at the Alicedale and Riebeeck East landfills. It is recommended that the Municipality should hire a TLB which can be utilised on a part time basis to handle waste effectively on the two landfills. The Municipality can go out on tender for a TLB with an operator on an as and when required basis. The Municipality will then be liable for the supply of all diesel for the TLB. Alternatively the Municipality can go out on tender to purchase a TLB which can be used on each landfill once per week and for illegal dumping clean-ups during the other 3 days.

Objective 3: Standardise Collection and Optimise Collection Route

The Makana Municipality utilises a black refuse bag system for all the households and businesses in the municipal area. Some restaurants utilise Otto bins. In Grahamstown the residents from the west side of town have to buy their own black bags. The Municipality provides the residents in Grahamstown East and North with one black bag per week. The Municipality provides the residents from Riebeeck East with black bags and in Alicedale the Municipality is in the process to also provide the community with black bags. The Municipality accepts any number of bags per household or business, so there is no specific limit. The bags are placed on the curb outside the house or business and collected from there. The use of 240 litre wheelie bins to collect waste in the middle to high income residential areas and for businesses (which use black bags as receptacles) should be considered in future.

It is suggested that the Municipality should continue with the current refuse collection system in the short term, but that it be revised regularly and be adopted should it be necessary. The municipality has the option that with the replacement of their old collection vehicles that the new REL's be fitted with wheelie bins lifters. This will allow the municipality the option of rolling out a wheelie bin system in future should they decide it is feasible. The feasibility of this option will depend on

whether the Municipality will provide the bins to the residents and claim it back on the services accounts, or if the communities will be responsible for purchasing their own bins. It is recommended that the Municipality provide the bins and claim it back on the service accounts. This will result in a saving on the price of plastic bags in the long run. The Municipality may also obtain grants or funding from other sources for the purchase of the bins. This will allow the Municipality to ensure that all residents get the new bin. The provision of wheelie bins will improve the effectiveness of the refuse collection as the collection vehicle can increase the number of receptacles it can collect in a single day. This will also allow the Municipality to extend the existing service area to include new developments. The provision of the wheelie bins does not have to be instantaneous and can be phased in throughout the municipal area.

The extension of the service to new developed areas over time will necessitate new route planning as well as adjustments to the current collection route. The shortest possible route with the least amount of repeat must be established. It is not the purpose of the IWMP to provide detailed route planning. The appointment of a consultant to investigate the possible route is not necessary and should the Municipality feel they have the specific expertise, they can conduct the route planning exercise themselves.

9.3 INSTITUTIONAL CAPACITY AND HUMAN RESOURCES

Goal
Provide Effective Waste Management Service
Objectives
Effective Structure of Human Resources
Train Staff

Objective 1: Effective Structure of Human Resources

The Municipality is experiencing shortages of labour for waste collection, environmental cleaners; as well as for the proper management of the waste disposal facilities. Existing vacant posts should be filled and posts will have to be created to improve the current service delivery as well as for the additional services that will have to be rendered with new developments in the future.

Objective 2: Train Staff

The delivery of an effective refuse delivery service and efficient waste management within the Municipality depends on the ability of the staff to perform their specific functions. It is therefore a non-negotiable that staff is trained to perform their specific duties. Depending on the level of training required, general labourer versus compactor operator, it has to be decided whether to provide in-house training or whether to provide the employee with specialised training. In-house training should only be attempted if the capacity and knowledge exist within the Municipality. Based on the fact that for lower levels employees the knowledge is available within the Municipality, it is recommended that specialists be obtained to provide more specialised training.

9.4 FINANCIAL RESOURCES

Goal
Provide Cost Effective Waste Management Service
Objectives
Undertake a Detail Financial Investigation
Improve Payment of Service Tariffs
Standardise Tariff Structure

The Municipality is at the moment experiencing a lack of payment of tariffs, which needs to be rectified to provide a cost effective waste management service.

Objective 1: Undertake a Detail Financial Investigation

The level of financial information required in terms of the Integrated Waste Management Plan is not sufficient to make decisions for example whether the Municipality should render the waste management service internally or through an external service mechanism. It is therefore recommended that a detail financial investigation be done by the Municipality which will address the following:

- Run of vehicles, salaries, etc.
- Basic service allocation (appropriation) from MIG funding (including total allocation for indigents)
- Credit control
    - assessment of effective use of financial system & reporting ability

- accessibility of pay points to the public
- CRM
- Indigent Management with specific regard to the formula used to allocate equitable share to the accounts.

➢ Pricing & tariffs

- Review policies & by-law for legal compliances including Tariff Policy, Credit Control, debt collection & indigent Policy
- Identify gaps in terms of legislation & policies
- Identify operational non-compliance
- Assess tariff costing mechanism or formula
- High level exercise to determine actual cost of services delivered
- Contribution of developers to bulk infrastructure

➢ Billing

- Differentiation of household, business(s) for billing purposes

➢ Other issues

- Budget management
- Cash flow assessment
- High level balance sheet review

Objective 2: Improve Payment of Service Tariffs

Formal households as well as businesses currently serviced are billed on a monthly basis in conjunction with their water and electricity bills. Penalties for non-payment of accounts should therefore easily be enforced by withholding services. This however is an administrative problem that generally takes a long time.

The inclusion of more areas however, may increase the likelihood of non-payment by residents. A possible option is a pre-paid system similar to the one used for electricity. The system can be a coupon-based system where coupons can be bought in advance for a specific month. The negative aspect is that non-payment and subsequent non-delivery of services will lead to an increase in the instances of illegal dumping in the area. It is recommended that the pre-paid system be used in accordance with strategies to prevent illegal dumping in the municipal area. It would also be possible for the Municipality to retrieve some of the lost service fees from the Equitable Share.

Objective 3: Standardise Tariff Structure.

Upgrading service delivery throughout the municipal area will entail standardising the service that is delivered to all the households in the area. All households must therefore be serviced on a weekly basis, either by the Municipality or by the community. It is important that the tariffs identified for service delivery is comparable throughout the municipal area. Specific tariffs for a specific service, municipal or communal, should therefore be levied and not vary depending on the geographical area. The standardisation of the tariff structure will provide uniformity that may encourage payment of tariffs. Tariffs for additional services, including garden and commercial waste removal, should also be according to service delivery.

9.5 DISSEMINATION OF INFORMATION/COMMUNICATION

Goal
Capacity Building through Information Sharing
Objectives
Develop and Maintain a Waste Information System (WIS)
Contribute to Inter Municipal Waste Information Workshops
Improve Community Awareness, Education and establish Communication Channel with Waste Generators

Objective 1: Develop and Maintain a Waste Information System

The main objective would be to develop and maintain a WIS. This system would allow for the keep of comprehensive records of waste disposal and collection on which informed decision-making can be based and to comply with the reporting requirements of the relevant authorities such as DEAT.

The costs involved in the development of a WIS will vary depending on the structure and contentiousness of the area. The National Department of Environmental Affairs and Tourism is at the moment in the process of developing a generic WIS that may be provided to the various Municipalities for implementation.

Objective 2: Contribute to Inter Municipal Waste Information Workshops

The current difference in service delivery management within the Eastern Cape Province necessitates that frequent information sharing sessions be held to share capacity building information. Another option is to provide quarterly reports regarding waste management to other

Local Municipalities. It is proposed that the information sharing sessions would be the preferred option since it would allow for discussions on problems encountered and not only provide information. These quarterly meetings should be attended by all the Local Municipalities within the District Municipality as well as representatives from the relevant Eastern Cape Provincial Departments as well as DEAT.

Objective 3: Improve Community Awareness, Education and establish Communication Channel with Waste Generators

The Makana Municipality presently does not have any formal community awareness campaigns that are directed at informing the general community with regards to disposal and recycling.

A top down approach by the municipality relies heavily on non-payment penalties to ensure that residents comply with legislation. Recycling and waste minimisation initiatives however, are not included in the normal service delivery and can only be effectively achieved with the co-operation of the residents.

It is therefore vitally important that the community is made aware of initiatives, waste recycling activities and the advantages of waste minimisation and recycling by the Municipality. This can either be achieved by advertisements and notices in the local newspapers or by providing information regarding these initiatives on the municipal bills distributed each month. The municipality can also conduct a road show to all the towns to demonstrate to and inform people of waste related issues.

A communication channel with all waste generators in the area should be established by the Municipality.

9.6 MANAGEMENT OF ILLEGAL ACTIVITIES

Goal
Minimise/Prevent Illegal Activities
Objectives
Develop Penalty System for Illegal Activities
Develop a Medical Waste Stream Management Strategy
Improve Removal of Illegally Dumped Waste

The Makana Municipality as with several other Municipalities in the country has problems with illegal dumping throughout the municipal area. This can either be attributed to a lack of an

effective refuse removal service or residents being unaware of their options regarding private waste disposal. A certain portion of these activities will be eliminated through proper community awareness programs as discussed above.

Objective 1: Develop Penalty System for Illegal Activities

It is imperative that the Municipality develops and implements a system to minimise or stop illegal dumping within the Municipal area. The major problem facing the Municipality is that they do not have the specific manpower to police the illegal disposal of waste. Within the serviced areas it is easier to regulate illegal dumping and introduce a penalty system for offenders. There are several actions the Municipality can take to minimise illegal dumping and introduce such a penalty system.

The first is that the Municipal By-laws must be amended to allow the Municipality to issue spot fines for residents caught dumping waste in illegal areas. This will to a certain degree reduce and prevent illegal dumping within the town boundaries. The disadvantage is that it will not reduce dumping outside the town boundary and it will increase the pressure on already limited human resources.

A second option will be to introduce community awareness whereby a community watch movement is introduced. This will limit the pressure on the human resources of the municipality as neighbourhood watch systems are put in place. Incentives such as discount on regular fees for "clean" neighbourhoods can be introduced to encourage these activities.

A third option is the provision of garden/domestic refuse skips at strategic locations throughout the towns to minimise travelling distances for the general public. The Municipality can then remove the refuse on a monthly basis.

It is recommended that a combination of the above be implemented to find an effective solution to the illegal dumping of waste. The amendment of the by-laws will provide the municipality to officially produce policies and strategies that will benefit the community. Through community awareness and a neighbourhood watch system the residents will have all the information regarding the disposal of waste in their area. They will also be aware of the incentive scheme to prevent illegal dumping from taking place within their surrounds. To prevent illegal dumping outside of town, garden refuse skips should be placed at strategic locations to provide convenient access to a dumping facility.

The costs of the skips are:

Estimated Skip Prices		
Refutainer	5.5 m^3	R 7,000.00
Refutainer	6 m^3	R 7,500.00
Refutainer	9 m^3	R 9,000.00
Refutainer	11 m^3	R 10,100.00

Objective 2: Develop a Medical Waste Stream Management Strategy

The disposal of medical waste from local practitioners, old age homes and pharmacies sometimes end up on the local landfill site. The disposal of medical waste on a landfill is prohibited. The control over the disposal of medical waste is therefore essential to prevent the disposal of medical waste on a landfill. It is recommended that a medical waste stream management strategy be formulated to deal with this component, and with the intention of ensuring compliance with SANS 0228.

Objective 3: Improve Removal of Illegally Dumped Waste

Illegal dumping of waste is common all over the Municipal area. The Municipality has to collect this waste at an unnecessary cost.

The Municipality should clean all areas where waste is illegally dumped. The Municipality should place skips in “illegally dumping hot spot areas”, as well as notice boards to try and prevent further illegal dumping in these areas once cleaned.

9.7 WASTE MINIMISATION

Goal
Decrease Waste Deposited on Landfills
Objectives
Encourage Recycling Activities
Encourage Waste Minimisation
Develop Garden Refuse Strategy

Objective 1: Encourage Recycling Activities

The Municipality has formed a Municipal Private Partnership with some Recyclers and the Department of Social Development to start with a big recycling project known as Masihlule Project. The Municipality should ensure the proper implementation of this project.

Recycling of waste will lengthen the lifespan of the landfill site. Through proper recycling it might be possible to remove as much as 30% of all material earmarked for landfill disposal. The problem, however, is the availability of an offset market due to the remote distance from Makana Municipal area to central recycling business areas. The Municipality should continue with the establishment of a recycling centre at the Grahamstown disposal site.

The Municipality has to further encourage recycling by providing measures to increase the convenience of recycling for the average person. Recycling activities tend to fail due to the effort required from the community. The Municipality therefore can place recycling containers at central and visible locations to maximise exposure and convenience. Community awareness about recycling and recycling initiatives must also then be increased through advertisements and the distribution of flyers and letters.

There is also a national initiative that will put a levy on the purchase of new and retread tyres. This levy will go into a national fund that will be responsible for the disposal and possible recycling of used tyres.

Objective 2: Encourage Waste Minimisation.

Waste minimisation and recycling at source is more effective than reclamation at landfills since it reduces the removal and transport costs. It is therefore recommended that waste sorting and minimisation be encouraged amongst the businesses in the Municipal area. It is recommended

that a system be implemented whereby businesses within the community are billed for waste removal based on the number of receptacles or mass collected from their premises. They therefore effectively receive a discount for in house recycling activities, as it will limit the number of receptacles collected.

Objective 3: Develop Garden Refuse Strategy.

The Municipality should develop a garden refuse strategy to *inter alia* investigate the feasibility of establishing a composting facility to process garden refuse generated within the Municipal Area. Due to the lack of access control at the landfill sites, the volume of garden waste generated and disposed of at the landfill site is not exactly clear. Garden refuse can however constitute up to between 10% and 20% of the municipal solid waste stream. Composting garden refuse can therefore significantly reduce waste stream volume and by diverting garden refuse from the waste stream will save valuable landfill air space. Composting is considered a viable option only when the compost can be marketed – that is either sold or used by the Municipality in their parks.

SECTION 10: RECOMMENDATIONS

10 RECOMMENDATIONS

The recommendations that have been proposed during the discussion of the alternatives are listed in the following table (Recommendations for various scenarios are included):

Recommendations		
Focus Area	**Objective**	**Recommendation**
Disposal Infrastructure Development	**Objective 1: Establish Recycling centre at the Grahamstown landfill site**	Formalise reclamation activities at the Grahamstown landfill site and establish a proper recycling centre at the site. Update the operational plan of the site to address the recycling operations.
	Objective 2: Upgrade and Improve management of Grahamstown, Alicedale and Riebeeck East landfill sites	**Grahamstown:** Continue to operate site in accordance with permit conditions and Minimum Requirements for Waste Disposal by Landfill. Follow the approved development plan with further cell development. Improve record-keeping of incoming waste streams. Record volumes of recycled waste and report to authorities as required in permit. **Alicedale and Riebeeck East:** The sites should be upgraded by fencing the site (at Alicedale) and doing fencing maintenance (at the Riebeeck East landfill), execute proper access control at both sites (including proper record-keeping of incoming waste streams) and formalising illegal

Recommendations		
Focus Area	**Objective**	**Recommendation**
		scavenging activities on the sites. The sites should be equipped with a guard house and ablution facility. Staff (at least a site supervisor) should be appointed at each site to properly manage the sites. The management of the site in general should be improved in accordance with the Minimum Requirements for Waste Disposal by Landfill and in accordance with the authorisations issued for the sites.
Waste Collection Infrastructure	**Objective 1: Extend Service to Un-serviced Areas in Municipal Area**	Include additional residential and business developments into Service Delivery Area
	Objective 2: Extend and Maintain Collection Fleet	Purchase/Hire TLB for Alicedale and Riebeeck East landfills
		Compile Equipment Replacement Plan
		Negotiate Maintenance Contract with Vehicle Suppliers
		Maintain Current Collection Fleet
	Objective 3: Standardise Collection and Optimise Collection route	Continue with current refuse removal system, but phase in Standard Refuse Receptacles

Recommendations		
Focus Area	**Objective**	**Recommendation**
		with new collection equipment.
		Amend and optimise collection route.
Institutional Capacity and Human Resources	**Objective 1: Effective Structure of Human Resources**	Appoint additional staff throughout municipal area for waste collection, environmental cleaning; as well as for the proper management of the waste disposal facilities.
		Fill vacant posts and create posts to extend human resources capacity to fulfil service requirements.
	Objective 2:Train Staff	Locally train low level staff and provide specialised training for specialised positions.
		Ensure proper training of contracted personnel
Financial Resources	**Objective 1: Undertake Detail Financial Investigation**	Undertake detail financial investigation to determine most cost effective waste management service delivery mechanism (internal or external)
	Objective 2: Improve Payment of Service Tariff	Implement pre-paid system in areas where a lack of payment for services are evident

Recommendations		
Focus Area	**Objective**	**Recommendation**
		Implement penalties
		Redistribute equitable share
	Objective 3: Standardise Tariff Structure	Implement standardised tariff system
Dissemination of Information / Communication	**Objective 1: Develop and Maintain a WIS**	Develop WIS
	Objective 2: Contribute to Inter Municipal Waste Information Workshops	Attend workshops
	Objective 3: Build Community Awareness.	Build awareness through flyers, newspaper notices and road shows.
Management of Illegal Activities	**Objective 1: Develop Co-operation Strategies to Prevent Illegal Activities.**	Amend Bylaws
		Establish Community Watch
		Introduce Incentive schemes for Clean Neighbourhoods.
		Provide Skips throughout towns for refuse dumping
	Objective 2: Develop a Medical Waste Stream Management Strategy	Formulate a Medical Waste Stream Management Strategy

Recommendations		
Focus Area	**Objective**	**Recommendation**
	Objective 3: Improve Removal of Illegally Dumped Waste	Clean Illegally Dumping Hot Spot Areas
Waste Minimisation	**Objective 1: Encourage Recycling Activities**	Ensure the proper implementation of the Masihlule Project. Provide recycling containers throughout towns. Establish recycling centre at Grahamstown landfill.
	Objective 2: Encourage Waste Minimisation	Incentive Schemes for In-House Recycling.
	Objective 3: Develop Garden Refuse Strategy	Develop Garden Refuse Strategy and investigate the feasibility to establish a composting facility at the Grahamstown landfill**.**

SECTION 11: IMPLEMENTATION PROGRAM

11 IMPLEMENTATION PROGRAM

The following is an implementation programme based on the recommendations. The programme identifies actions to be taken to achieve the proposed recommendations.

Implementation Programme

Focus Area	Recommendation	Actions						
		2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
Disposal Infrastructure Development	**Establish Recycling centre at the Grahamstown landfill site**	Formalise reclamation activities at the Grahamstown landfill site and establish a proper recycling centre at the site. Update the operational plan of the site to address the recycling operations.	Monitor and Maintain Grahamstown landfill and recycling centre					

Implementation Programme

Focus Area	Recommendation	Actions						
		2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
	Upgrade and Improve management of Grahamstown, Alicedale and Riebeeck East landfill sites	**Grahamstown:** Continue to operate site in accordance with permit conditions and Minimum Requirements for Waste Disposal by Landfill. Follow the approved development plan with further cell development. Improve record-keeping of incoming waste streams. Record volumes of recycled waste and report to authorities as required in permit. **Alicedale and Riebeeck East**: The sites should be upgraded by fencing the site (at Alicedale) and doing fencing maintenance (at the Riebeeck East landfill), execute proper access control at both sites (including proper record-keeping of incoming waste streams) and formalising illegal scavenging activities on the sites. The sites should be equipped with a guard house and ablution facility. Staff (at least a site supervisor) should be appointed at each site to properly manage the sites. The management of the site in general should be improved in accordance with the Minimum Requirements for Waste Disposal by Landfill and in accordance with the authorisations issued for the sites.		Audit Management of Landfill Sites	Audit Management of Landfill Sites	Audit Management of Landfill Sites	Audit Management of Landfill Sites	Audit Management of Landfill Sites

Focus Area	Recommendation	Actions						
		2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
Waste Collection Infrastructure	**Extend services to un-serviced areas in Municipal Area.**	Add new residential development areas as it develops	Add new residential development areas as it develops	Add new residential development areas as it develops	Add new residential development areas as it develops	Add new residential development areas as it develops	Add new residential development areas as it develops	Add new residential development areas as it develops
	Extend & Maintain Collection Fleet	Compile Equipment Replacement Plan	Implement Equipment Savings Plan	Replace equipment as Required	Replace equipment as Required Negotiate Maintenance Contract	Replace equipment as Required Negotiate Maintenance Contract	Replace equipment as Required Negotiate Maintenance Contract	Replace equipment as Required Negotiate Maintenance Contract
		Maintain Current Collection Fleet	Maintain Current Collection Fleet	Maintain Current Collection Fleet	Maintain Current Collection Fleet	Maintain Current Collection Fleet	Maintain Current Collection Fleet	Maintain Current Collection Fleet
	Optimise Collection Route	Optimise Collection Route	Include new Areas into Collection Route					
	Standardise Refuse Receptacles	Continue with current refuse collection system		Phase in 240 l wheelie bins to existing development	Phase in 240 l wheelie bins to existing development	Phase in 240 l wheelie bins to existing development	Phase in 240 l wheelie bins to existing development	Phase in 240 l wheelie bins to existing development

Focus Area	Recommendation	Actions						
		2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
Institutional Capacity & Human Resources	**Employ Additional Staff to service new areas and to manage disposal facilities**	Appoint additional General Workers and drivers to service new areas once necessary, as well as a landfill supervisor/operator at the Alicedale and Riebeeck East disposal facilities.		Employ Staff as Vacancies Develop				
	Locally Train Low Level Staff **Specialised Training for Specialised Posts**	Train New Staff Ensure Training of Landfill Managers and Contractor Staff						
Financial Resources	**Undertake detail financial investigation**		Undertake detail financial investigation to decide on service delivery mechanism (internal or external	Implement most efficient service delivery mechanism				
	Implement Standardised Tariff Structure	Evaluate Level of Service Delivery Develop Standardised Tariffs for Specific Levels of Service.		Update Tariffs as Service Levels Improve Increase Tariffs to Combat Inflation				
	Implement Pre-paid system in areas where a lack of payment is experienced	Inform Community regarding Implementation of System Implement Pre-Paid System		Upgrade System as Required				
Dissemination of Information / Communication	**Develop WIS**	Appoint Consultant to Develop WIS		Maintain and Update WIS as Situation Change in Municipality				

Focus Area	Recommendation	Actions						
		2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
	Build Community Awareness, establish communication channel with waste generators	Publish Newspaper Notices and Flyers. Conduct Road Shows	Publish Newspaper Notices and Flyers.	Publish Newspaper Notices and Flyers. Conduct Road Shows	Publish Newspaper Notices and Flyers.	Publish Newspaper Notices and Flyers. Conduct Road Shows	Publish Newspaper Notices and Flyers.	Publish Newspaper Notices and Flyers. Conduct Road Shows
Management of Illegal Activities	**Establish Community Watch Programme**	Inform Communities of Proposed Program	Establish Community Watch System Implement Incentive Schemes		Incorporate New Neighbourhoods into the Community Watch System			
	Amend By-Laws	Amend By-Laws	Update By-Laws as Required					
	Provide Skips Throughout Town	Purchase Skips for Existing Neighbourhoods	Purchase Skips for New Developments as the Need Arise					
	Formulate Medical Waste Stream Management Strategy	Develop Medical Waste Stream Management Strategy	Implementation of Medical Waste Stream Management Strategy					
	Improve Removal of Illegally Dumped Waste	Clean Illegally Dumping Hot Spot Areas	Clean Illegally Dumping Hot Spot Areas	Clean Illegally Dumping Hot Spot Areas	Clean Illegally Dumping Hot Spot Areas	Clean Illegally Dumping Hot Spot Areas	Clean Illegally Dumping Hot Spot Areas	Clean Illegally Dumping Hot Spot Areas
Waste Minimisation	**Ensure the proper implementation of the Masihlule Project. Provide Recycling Containers Throughout Town.**	Purchase Recycling Containers; Locate Containers at Strategic Places Monitor the implementation of the Masihlule Project	Purchase Recycling Containers; Locate Containers at Strategic Places Monitor the implementation of the Masihlule Project	Improve Community Awareness	Add Additional Containers to Service New Development Areas			
	Incentive Schemes for In-House Recycling	Develop Discount System for Businesses Implement Discount Strategy		Maintain and Evolve Discount System to Incorporate New Businesses				

Focus Area	Recommendation	Actions						
		2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
	Develop Garden Refuse Strategy and investigate feasibility to establish Composting Facility at the Grahamstown landfill site	Develop Garden Refuse Strategy	Investigate feasibility for establishment of composting facility at the Grahamstown landfill site	Design, construct, authorise composting facility, if prove to be feasible				

Cost Estimates

Focus Area	Recommendation	Actions						
		2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
Disposal Infrastructure Development	**Establish Recycling centre at the Grahamstown landfill site**	Formalise reclamation activities at the Grahamstown landfill site and establish a proper recycling centre at the site. Update the operational plan of the site to address the recycling operations.	Monitor and maintain Grahamstown disposal site and recycling centre (8% CPI Increase)					
		R 350 000	**R 19 872**	**R 21 461**	**R 23 177**	**R25 032**	**R27 034**	**R 29 196**

Cost Estimates

Focus Area	Recommendation	Actions						
		2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
	Upgrade and Improve management of Grahamstown, Alicedale and Riebeeck East landfill sites	**Grahamstown:** Continue to operate site in accordance with permit conditions and Minimum Requirements for Waste Disposal by Landfill. Follow the approved development plan with further cell development. Improve record-keeping of incoming waste streams. Record volumes of recycled waste and report to authorities as required in permit. **Alicedale and Riebeeck East**: The sites should be upgraded by fencing the site (at Alicedale) and doing fencing maintenance (at the Riebeeck East landfill), execute proper access control at both sites (including proper record-keeping of incoming waste streams) and formalising illegal scavenging activities on the sites. The sites should be equipped with a guard house and ablution facility. Staff (at least a site supervisor) should be appointed at each site to properly manage the sites. The management of the site in general should be improved in accordance with the Minimum Requirements for Waste Disposal by Landfill and in accordance with the authorisations issued for the sites.		Operate landfills in accordance with permit conditions or Minimum Requirements Audit Management of Landfill Sites	Operate landfills in accordance with permit conditions or Minimum Requirements Audit Management of Landfill Sites	Operate landfills in accordance with permit conditions or Minimum Requirements Audit Management of Landfill Sites	Operate landfills in accordance with permit conditions or Minimum Requirements Audit Management of Landfill Sites	Operate landfills in accordance with permit conditions or Minimum Requirements Audit Management of Landfill Sites
		R 480 000		**No cost involved, to be conducted by Municipality**				

Cost Estimates

Focus Area	Recommendation	Actions						
		2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
Waste Collection Infrastructure	Extend services to un-serviced areas.	Assist Farmers with Proper Disposal Techniques. Add new residential development areas as it develops	Add new residential development areas as it develops	Add new residential development areas as it develops	Add new residential development areas as it develops	Add new residential development areas as it develops	Add new residential development areas as it develops	Add new residential development areas as it develops
		No Costs Assigned. To be conducted by Municipality	**No Costs Assigned**	**No Costs Assigned**	**No Costs Assigned**	**No Costs Assigned**	**No Costs Assigned**	**No Costs Assigned**
	Extend & Maintain Collection Fleet	Compile Equipment Replacement Plan	Implement Equipment Savings Plan	Replace equipment as Required	Replace equipment as Required Negotiate Maintenance Contract	Replace equipment as Required Negotiate Maintenance Contract	Replace equipment as Required Negotiate Maintenance Contract	Replace equipment as Required Negotiate Maintenance Contract
		R 25 000	**No Costs Assigned**	**No Costs Assigned**	**No Costs Assigned**	**No Costs Assigned**	**No Costs Assigned**	**No Costs Assigned**
		Maintain Current Collection Fleet	Maintain Current Collection Fleet	Maintain Current Collection Fleet	Maintain Current Collection Fleet	Maintain Current Collection Fleet	Maintain Current Collection Fleet	Maintain Current Collection Fleet
		No Costs Assigned. To be included in Municipal Budget	**No Costs Assigned. To be included in Municipal Budget**	**No Costs Assigned. To be included in Municipal Budget**	**No Costs Assigned. To be included in Municipal Budget**	**No Costs Assigned. To be included in Municipal Budget**	**No Costs Assigned. To be included in Municipal Budget**	**No Costs Assigned. To be included in Municipal Budget**

Cost Estimates

Focus Area	Recommendation	Actions						
		2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
	Optimise Collection Route	Optimise Collection Route		Include new Areas into Collection Route				
		R 25 000	R 25 000	No Costs Assigned. To be Conducted by the Municipality				
	Standardise Refuse Receptacles	Continue with current refuse collection system		Phase in 240 l wheelie bins to existing development				
		No costs Assigned. To be conducted by the Municipality						
Institutional Capacity & Human Resources	Employ Additional Staff to service new areas and to manage disposal facilities	Appoint additional General Workers, drivers and street cleaners should the need arise, as well as disposal site supervisor/operator at Alicedale and Riebeeck East landfills.		Establish dedicated Waste Management Section and employ Staff as Vacancies Develop				
		No Costs Assigned. To be Negotiated by the Municipality		No Costs Assigned. To be Conducted by the Municipality				
	Locally Train Low Level Staff Specialised Training for Specialised Posts	Train New Staff (High First Year Costs Followed by Updating Training if Required) Ensure Training of Landfill Managers and Contractor Staff						
		R 80 000	R 21 600	R 23 328	R 25 194	R 27 209	R 29 386	R 31 736
Financial Resources	Undertake detail financial investigation		Undertake detail financial investigation to decide on service delivery mechanism	Implement most efficient and effective service delivery mechanism				
			R 500 000	No Costs Assigned. To be Conducted by the Municipality				

Cost Estimates

Focus Area	Recommendation	Actions						
		2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
	Implement Standardised Tariff Structure	Evaluate Level of Service Delivery Develop Standardised Tariffs for Specific Levels of Service.		Update Tariffs as Service Levels Improve Increase Tariffs to Combat Inflation				
		No Costs Assigned. To be Conducted by the Municipality		**No Costs Assigned. To be Conducted by the Municipality**				
	Implement Pre-paid system in areas where a lack of payment is experienced	Inform Community regarding Implementation of System Implement Pre-Paid System		Upgrade System as Required				
		R 90 000	**R 60 000**	**No Costs Assigned. To be Conducted by the Municipality**				
Dissemination of Information / Communication	**Develop WIS**	Develop WIS		Maintain and Update WIS as Situation Change in Municipality				
		No Costs Assigned. Generic WIS being designed by DEAT		**No Costs Assigned.**				
	Attend Workshops	Attend Quarterly Waste Management Workshops	Attend Quarterly Waste Management Workshops	Attend Quarterly Waste Management Workshops	Attend Quarterly Waste Management Workshops	Attend Quarterly Waste Management Workshops	Attend Quarterly Waste Management Workshops	Attend Quarterly Waste Management Workshops
		No Costs Assigned	**No Costs Assigned**	**No Costs Assigned**	**No Costs Assigned**	**No Costs Assigned**	**No Costs Assigned**	**No Costs Assigned**
	Build Community Awareness, establish communication channel with waste generators	Publish Newspaper Notices and Flyers. Conduct Road Shows	Publish Newspaper Notices and Flyers.	Publish Newspaper Notices and Flyers. Conduct Road Shows	Publish Newspaper Notices and Flyers.	Publish Newspaper Notices and Flyers. Conduct Road Shows	Publish Newspaper Notices and Flyers.	Publish Newspaper Notices and Flyers. Conduct Road Shows
		R 40 000	**R 20 000**	**R 45 000**	**R 22 000**	**R 50 000**	**R 24 000**	**R 55 000**

Cost Estimates

Focus Area	Recommendation	Actions						
		2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
Management of Illegal Activities	Establish Community Watch Programme	Inform Communities of Proposed Program	Establish Community Watch System Implement Incentive Schemes	Incorporate New Neighbourhoods into the Community Watch System				
		R 27 000	R 27 000	R 27 000	No Costs Assigned			
	Amend By-Laws	Amend By-Laws	Update By-Laws as Required					
		No Costs Assigned	No Costs Assigned					
	Provide Skips Throughout Town	Purchase Skips for Existing Neighbourhoods	Purchase Skips for New Developments as the Need Arise					
		R 7 500/skip						
	Formulate Medical Waste Stream Management Strategy	Develop Medical Waste Stream Management Strategy	Implementation of Medical Waste Stream Management Strategy					
		R 300 000	No Costs Assigned. To be Conducted by the Municipality					
	Improve Removal of Illegally Dumped Waste	Clean Illegally Dumping Hot Spot Areas	Clean Illegally Dumping Hot Spot Areas	Clean Illegally Dumping Hot Spot Areas	Clean Illegally Dumping Hot Spot Areas	Clean Illegally Dumping Hot Spot Areas	Clean Illegally Dumping Hot Spot Areas	Clean Illegally Dumping Hot Spot Areas
		R 600 000	No Costs Assigned. To be Conducted by the Municipality					

Cost Estimates

Focus Area	Recommendation	Actions						
		2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
Waste Minimisation	**Ensure the proper implementation of the Masihlule Project. Provide Recycling Containers Throughout Town.**	Purchase Recycling Containers; Locate Containers at Strategic Places Monitor the implementation of the Masihlule Project	Purchase Recycling Containers; Locate Containers at Strategic Places Monitor the implementation of the Masihlule Project	Improve Community Awareness	Add Additional Containers to Service New Development Areas			
		R 180 000	**R 100 000**	**No costs assigned**				
	Incentive Schemes for In-House Recycling	Develop Discount System for Businesses Implement Discount Strategy		Maintain and Evolve Discount System to Incorporate New Businesses				
		No Costs Assigned. To be Conducted by the Municipality		**No Costs Assigned. To be Conducted by the Municipality**				
	Develop Garden Refuse Strategy and investigate feasibility to establish Composting Facility at the Grahamstown landfill site	Develop Garden Refuse Strategy	Investigate feasibility for establishment of composting facility at the Grahamstown disposal site	Design, construct, authorise composting facility, if prove to be feasible				
		R 100 000		**No Costs Assigned. To be determined when prove feasible**				

SECTION 12:
FINANCIAL RESOURCES AND IMPLEMENTATION PRIORITIES

12 FINANCIAL RESOURCES & IMPLEMENTATION PRIORITIES

The Makana Municipality has several financial resources options available to them for the implementation of the various recommendations. The first is resources form the Municipal budget. The majority of the Municipalities within the country however have a severe shortage of Municipal funds. A second option available is in the form of Municipal Infrastructure Grants (MIG) or the Special Municipal Infrastructure Fund (SMIF). The National Government is working on a three-year cycle and business plans have to be submitted for a specific project. The government then approves these projects and funds are made available through the District Municipalities. This MIG grant is from the National Government and is generally only applicable to the building of Infrastructure within a Municipal area, but waste equipment may be considered.

A third option is funding from the development bank and international development organisations, such as the Finnish Environmental Institute. Several International organisations are currently involved in Solid Waste Management and this therefore seems a very viable option.

The Equitable Share provided by the government is at the moment generally used for water and electricity subsidies. It should however be noted that this subsidy should also be used for subsidising refuse removal tariffs.

The implementation plan indicated in Section 8 represents the ideal or complete solution for waste management within the Makana Municipality. Due tot the fact that the Makana Municipality at the moment does not have the financial resources to implement all of the recommendations it is essential that the Municipality prioritise the recommendations and actions as well as identify the persons needed or responsible for the completion of these tasks.

The following is a breakdown of the tasks according to priority and responsibility.

Focus Area	Priority	Requirements/Responsibility
Infrastructure Development	Establish Recycling centre at the Grahamstown landfill site	Consultant / Municipality
Infrastructure Development	Upgrade and Improve management of Grahamstown, Alicedale and Riebeeck East landfill sites	Consultant / Municipality / Contractor

Focus Area	Priority	Requirements/Responsibility
Waste Collection	Compile Fleet Replacement Plan and Implement Savings Plan	Consultant / Municipality
Waste Collection	Extend services, Standardise Collection and Optimise Collection route	Municipality
Human Resources	Employ Additional Personnel (General workers, environmental cleaners, disposal facility staff).	Municipality
Human Resources	Train Staff	Municipality
Financial Resources	Undertake detail financial investigation	Consultant/Municipality
Management of Illegal Activities	Improve Removal of Illegally Dumped Waste; Clean Illegally Dumping Hot Spot Areas	Contractor / Municipality
Management of Illegal Activities	Amend By-laws	Legal Expert/Municipality
Management of Illegal Activities	Develop Medical Waste Stream Management Strategy	Consultant / Municipality
Community Awareness	Community Awareness and Community Watch	Municipality
Dissemination of Information	Develop and Maintain WIS	DEAT/Municipality
Communication	Establish Communication Channel with Waste Generators in area	Municipality
Waste Minimisation	Community Awareness	Waste Recyclers/Municipality
Waste Minimisation	Ensure the proper implementation of the Masihlule Project.	Consultant / Municipality

Focus Area	Priority	Requirements/Responsibility
Waste Minimisation	Provide Recycling Containers	Municipality
Waste Minimisation	Develop Garden Refuse Strategy and investigate feasibility of establishing composting facility at the Grahamstown landfill site	Municipality/Consultant

The above list of priorities is based on the legal requirements faced by the Municipality as well as on strategies and plans already in place. The legal requirements that is not in place is considered to be of the utmost priority while measures recommended to streamline and convenience the waste management process are located further down the priority list.

SECTION 13: SUMMARY

13 SUMMARY

13.1 DISPOSAL INFRASTRUCTURE

The Makana Municipality has three landfill sites namely the Grahamstown, Alicedale and Riebeeck East landfills. All the sites are managed by the Municipality. The landfills are located on municipal property.

The landfills have all been authorised (either through a site specific permit or through Directions) by the Department of Water Affairs and forestry in terms of Section 20 of the Environment Conservation, Act 73 of 1989, for their continued operation. The landfills have enough airspace left for the next 8 years at least. The Grahamstown landfill site is reasonably well-operated and should be continued to be operated in accordance with its permit conditions and/or the Minimum Requirements for Waste Disposal by Landfill. Access control at the Grahamstown landfill should however be improved to properly record volumes of incoming waste streams. Further development of cells at the Grahamstown landfill site should also be done in accordance with the approved development plan for the site, which was submitted as part of the permit application for the site. The Municipality should formalise the recycling activities at the sites by establishing a proper recycling centre at the site to reclaim waste and to ensure that the reclaiming activities do not interfere with the daily operational activities on site.

The Riebeeck East and Alicedale landfills are not well operated due to the lack of landfill equipment and personnel on site. Waste is burned after disposal and not covered on a weekly basis as required in the Directions issued for the operation of the sites. The sites should be upgraded by fencing the site (at Alicedale) and doing fencing maintenance (at the Riebeeck East landfill), execute proper access control at both sites (including proper record-keeping of incoming waste streams) and formalising illegal scavenging activities on the sites. The sites should be equipped with a guard house and ablution facility. Staff (at least a site supervisor) should be appointed at each site to properly manage the sites. The management of the site in general should be improved in accordance with the Minimum Requirements for Waste Disposal by Landfill and in accordance with the authorisations issued for the sites.

13.2 WASTE COLLECTION INFRASTRUCTURE

The Municipality currently has sufficient equipment for the delivery of a refuse removal service. Some of the vehicles are however old and there is the need to plan for the future replacement of these vehicles. A compilation of a replacement plan as well as the implementation of a savings plan will assist the Municipality to plan ahead and budget for the vehicles.

13.3 INSTITUTIONAL CAPACITY AND HUMAN RESOURCES

The Makana Municipality at the current moment has limited or no personnel at the disposal facilities. A site supervisor/operator to operate or manage the Riebeeck East and Alicedale landfill sites should at least be appointed. It is also essential that the municipal workers are properly trained for their specific tasks. Additional General Workers, environmental cleaners and drivers (as required) will have to be appointed to ensure a proper waste collection service once services are extended to unserviced or newly developed areas.

13.4 FINANCIAL RESOURCES

The payment of services in certain areas of the Municipality is low due to various reasons. A pre-paid system should be investigated to be implemented where non-payment of fees is present. It is also recommended that a detail financial investigation be done by the Municipality to investigate the most cost effective and efficient service delivery mechanism.

13.5 DISSEMINATION OF INFORMATION / COMMUNICATION

A Waste Information System needs to be developed to ensure effective waste management. This information will also enable the Municipality to contribute to the quarterly waste management workshops with the other Municipalities in the District Municipality. The aim of these workshops will be to build capacity within them as well as guide Municipalities with less experience. The communities within the municipal area should also be made aware of proper waste management techniques and the service the Municipality renders. The establishment of a communication channel with all waste generators in the municipal area would benefit all.

13.6 MANAGEMENT OF ILLEGAL ACTIVITIES

The Municipality has a problem with illegal dumping within the municipal area. To improve the current situation, the Municipality can introduce a neighbourhood watch system that will aim to prevent illegal dumping within their specific area. The Municipality can also deploy skips at strategic locations across the towns and settlements to minimise illegal dumping.

Illegal dumping areas should all be cleared and the waste taken to a properly established waste disposal site. Skips should be placed in “illegally dumping hot spot areas”, as well as notice boards to try and prevent further illegal dumping in these areas once cleaned.

The Municipality should also embark on the development of a Medical Waste Stream Management Strategy to ensure the safe handling and disposal of medical waste and to ensure compliance with SANS 0228.

13.7 WASTE MINIMISATION

The Municipality has formed a Municipal Private Partnership with some Recyclers and the Department of Social Development to start with a big recycling project known as Masihlule Project. The Municipality should ensure the proper implementation of this project.

Previously the Makana Municipality did not have any formal recycling activities. This could have been attributed to the lack of available markets for the recycled materials. The Municipality should continue with the establishment of a recycling centre at the Grahamstown landfill site as planned and investigate the feasibility of establishing a composting facility at the landfill site as well. The distribution of recycle containers throughout the towns and settlements will further encourage recycling activities. The implementation of an incentive scheme for in-house waste minimisation for businesses should also be investigated.

SECTION 14: RECOMMENDATION AND CONCLUSION

14 RECOMMENDATIONS AND CONCLUSION

Apart from the recommendations in Section 10, the following recommendations are made:

A Waste Information System should be implemented for the Municipality. The aim of this information system will be to provide all the necessary detail information pertaining to waste management i.e. permit status of disposal facilities, volumes disposed off, condition of the landfills/transfer station, number and type of equipment, date of purchase, operating and maintenance cost, replacement date, type of service, number of service points (domestic, commercial and industrial), the number of personnel involved, etc.

Decisions concerning new equipment or services can then be made based on accurate information provided by the above system. Some of the information in this document can serve as a basis for future development of such a Waste Information System. The above is regarded to be of the utmost importance to the district as well as the local municipalities.

This IWMP should be re-evaluated and expanded to a detail operational plan, once suitable information is available from the system as to ensure that future planning is done correctly:

- Service levels should be workshopped with the community to obtain their views and inputs on the proposed upgrading of their service and the cost implications involved.

- Community awareness campaigns should be implemented to educate the communities on responsible waste management i.e. why a landfill is fenced, why you dispose of your waste in waste receptacles, why waste is covered at a landfill, why illegal dumping is costly, etc.

- The municipality should promote recycling and/or waste minimisation. The informal salvaging operations at the landfill sites should be formalised to ensure that the reclaimers co-operate with the landfill supervisors.

The above recommendations together with the recommendations in Section 10 should ensure that the short term waste management requirements in the region are met. Once the Waste Information System is implemented, this Plan should be re-evaluated and if need be adjusted. Long term planning can then be done in a more responsible manner. This will ensure that sound waste management is practised in the region.

APPENDIX A:

Notice of Availability and Public Viewing for Commenting on the IWMP

MAKANA MUNICIPALITY

NOTICE OF AVAILABITY AND PUBLIC VIEWING FOR COMMENTING ON THE FOLLOWING:

INTEGRATED WASTE MANAGEMENT PLAN

The Cacadu District Municipality appointed Kwezi V3 Engineers to assist with the compilation of an Integrated Waste Management Plan (IWMP) for the Solid Waste Disposal Division of the Makana Local Municipality. As a requirement of the National Waste Management Strategy (NWMS) and the IDP Process all Municipalities are faced with the obligation to compile such a plan.

Phase 1 of the project was completed in June 2008 and consisted of an assessment of the current status of waste collection systems and existing disposal sites, service delivery capacity and a needs analysis for each of these aspects. The second phase comprised the IWMP, in which objectives and goals were identified with alternatives for obtaining these. Preferred options were selected for implementation of a programme which was developed as well as cost estimates to facilitate inclusion of the plan into the IDP.

A draft copy of the IWMP will be available to the general public for comment at the Community Services office of the Makana Municipality from 8 September to 26 September 2008:

Anyone requiring more information can contact Mr Francois Humphries of Kwezi V3 Engineers at (012) 425-6300.

APPENDIX B:
Permit for Grahamstown Landfill

DEPARTEMENT VAN WATERWESE EN BOSBOU
DEPARTMENT OF WATER AFFAIRS AND FORESTRY

RESIDENSIEGEBOU / BUILDING, SCHOEMANSTRAAT 185 SCHOEMAN STREET, PRETORIA

DW 1

Fax: (012) 326-1780
323-4472
326-2715
E-mail:

Privaat Sak
Private Bag X313
Pretoria
0001

Navrae: W. Vosloo
Enquiries:
☎ (041) 56-4884

Verwysing:
Reference: B33/2/1400/3 S

PERMIT NUMBER: B33/2/1400/3/P243

CLASS: G:M:B+

WASTE DISPOSAL SITE: GRAHAMSTOWN MUNICIPAL DISPOSAL SITE

LOCATION: GRAHAMSTOWN COMMONAGE WEST: DIVISION OF ALBANY

PERMIT HOLDER: GRAHAMSTOWN MUNICIPALITY

ADDRESS: P.O. BOX 176, GRAHAMSTOWN, 6140

PERMIT IN TERMS OF SECTION 20 OF THE ENVIRONMENT CONSERVATION ACT, 1989 (ACT 73 OF 1989)

By virtue of the powers delegated to me by the Minister of Water Affairs and Forestry (hereinafter referred to as "the Minister"), I, Jacobus Louis Johannes van der Westhuizen, in my capacity as Acting Manager: Scientific Services in the Department of Water Affairs and Forestry (hereinafter referred to as "the Department"), hereby, in terms of section 20(1) of the Environment Conservation Act, 1989 (Act 73 of 1989), authorise the abovementioned Permit Holder to further develop and operate the abovementioned waste disposal site, subject to the conditions specified herein.

PERMIT CONDITIONS

In this Permit, "Regional Director" means the Regional Director: Eastern Cape of the Department who may be contacted at the address below:

Regional Director: Eastern Cape
Department of Water Affairs and Forestry
Private Bag X68
CRADOCK
5880

1. LOCATION

1.1 This Permit authorises the further development and operation of a waste disposal site on Grahamstown Commonage West, Division of Albany (hereinafter referred to as "the Site") according to the report dated May 1994 (hereinafter referred to as "the Report"), submitted by the Permit Holder.

The boundaries of the Site shall be as indicated as beacon descriptions A,B,C,D,E,F on the plan with scale 1:2500 and the permit application submitted by the Permit Holder.

2. PERMISSIBLE WASTE

2.1 The Site may be used for the disposal of all waste types, excluding those listed in Annexure I and excluding those where specific control has been established in terms of the Nuclear Energy Act, 1993 (Act 131 of 1993). Waste types controlled in terms of the Minerals Act, 1991 (Act 50 of 1991) and the Electricity Act, 1987 (Act 41 of 1987) are also excluded from disposal on the Site unless written permission has been obtained from the Regional Director.

2.2 The Permit Holder shall take all reasonable steps to ensure that –

2.2.1 no organic or inorganic element or compound which may have a definite acute or chronic negative effect on human health and/or the environment, due to it's toxic, physical, chemical or persistent characteristics and which corresponds with the UNEP definition of hazardous waste be disposed of on the Site;

2.2.2 no medical waste be disposed of on the Site unless it has been incinerated at 800°C or higher for at least 1 second; and

2.2.3 no scheduled pharmaceutical products registered in terms of the Medicines and Related Substances Control Act, 1965 (Act 101 of 1965) or associated containers be disposed of on the Site.

3. CONSTRUCTION

3.1 The Site or any portion thereof may only be used for the disposal of permissible waste if the Site or any such portion has been constructed or developed according to condition 3 of this Permit.

3.2 Further development within the Site shall be in accordance with approved plan number S1/6 dated May 1994 to be submitted by the applicant.

3.3 Any further development within the Site which may require construction can only be undertaken by the Permit Holder after specified engineering plans have been provided to and approved by the Regional Director.

3.4 Further development within the Site shall be carried out under the supervision of a suitably qualified person proposed by the Permit Holder and approved by the Regional Director.

3.5 Should a portion of the Site be further developed, the Permit Holder shall notify the Regional Director of such a development within the Site before disposal may commence on that portion within the Site. The completed construction

works of the development within the Site shall be inspected by an official of the Department and the person referred to in condition 3.4. If the Regional Director is satisfied with the construction of that further development within the Site and has given written permission, the Permit Holder may use that portion of the Site for the further disposal of waste.

3.6 Works shall be constructed and maintained on a continuous basis by the Permit Holder to divert and drain from the Site in a legal manner, all runoff water arising on land adjacent to the Site, which could be expected as a result of the estimated maximum precipitation during a period of 24 hours with an average frequency of once in fifty years (hereinafter referred to as the "estimated maximum precipitation"). Such works shall, under the said rainfall event, maintain a freeboard of half a metre.

3.7 Works shall be constructed and maintained on a continuous basis by the Permit Holder to divert and drain from the working face of the Site, all runoff water arising on the Site, which could be expected as a result of the estimated maximum precipitation and to prevent such runoff water from coming into contact with leachate from the Site. Such works shall, under the said rainfall event, maintain a freeboard of half a metre.

3.8 Runoff water referred to in condition 3.7 shall comply with the quality requirements of the General Standard, prescribed in terms of section 21(1)(a) of the Water Act, 1956 as published in Government Notice 991 of 18 May 1984, or with such quality requirements as may from time to time be determined by the Minister and shall be drained from the Site in a legal manner.

3.9 Runoff water referred to in condition 3.7 which does not comply with the quality requirements applicable in terms of condition 3.8 and all leachate from the Site shall, by means of works which shall be constructed and maintained on a continuous basis by the Permit Holder –

3.9.1 be discharged into any convenient sewer if accepted by the authority in control of that sewer; and/or,

3.9.2 be treated to comply with the aforementioned standard and discharged in a legal manner; and/or,

3.9.3 with the written approval of the Regional Director be evaporated in dams and/or be evaporated by spraying over those portions of the Site which comply with the requirements set in terms of condition 3.1.

3.10 Works constructed in compliance with condition 3.9 shall be of such a capacity as to accommodate all runoff and leachate which could be expected as a result of the estimated maximum precipitation. Such works shall, under the said rainfall event, maintain a freeboard of half a metre.

3.11 The Site shall be constructed in accordance with recognised civil engineering practice to ensure that it remains stable.

3.12 The slope of the sides of the Site shall be constructed in such a manner that little or no erosion occurs.

3.13 The Permit Holder shall make provision for adequate sanitation facilities on the Site.

4. ACCESS CONTROL

4.1 Weatherproof, durable and legible notices in three official languages applicable in the area, shall be displayed at each entrance to the Site. These notices shall prohibit unauthorised entry and state the hours of operation, the name, address and telephone number of the Permit Holder and the person responsible for the operation of the Site.

4.2 The Site shall be fenced to a minimum height of 1,8 metres, with gates of the same height at all entrances, to reasonably prevent unauthorised entry and curtail the spreading of wind-blown paper and plastic materials.

4.3 The Permit Holder shall take all reasonable steps to maintain service roads in a condition which ensures unimpeded access to the Site for vehicles transporting waste and to keep the roads free of waste.

4.4 The Permit Holder shall ensure that all entrance gates are manned during the hours of operation and locked outside the hours of operation.

4.5 The Permit Holder shall ensure effective access control.

4.6 The Permit Holder shall take all reasonable steps to prevent the disposal of waste on the Site for which the Site has not been approved.

5. OPERATION

5.1 Waste disposed of on the Site shall be compacted and covered on a daily basis with a minimum of 150 millimetres of soil or other material approved by the Regional Director.

5.2 The Permit Holder shall take all reasonable steps to ensure that the Site is operated in a manner which shall prevent the creation of nuisance conditions or health hazards.

5.3 The Permit Holder shall make use of moveable fences to control wind-blown waste.

5.4 The Permit Holder shall apply sufficient dust control measures to prevent wind-blown dust from causing nuisance conditions or health hazards.

5.5 Waste disposed of on the Site may be reclaimed. The

reclamation activity shall not interfere with the daily operational activities of the Site.

5.6 The Permit Holder shall keep a record of the volume and nature of the waste materials which are reclaimed and report this on an annual basis to the Regional Director.

6. MONITORING

6.1 Gas monitoring

6.1.1 The Permit Holder shall implement adequate measures to the satisfaction of the Regional Director, to ventilate or to prevent lateral migration of methane gas generated in the waste disposal area within the Site so that the build-up of dangerous concentrations is prevented.

6.1.2 The concentration, by volume in air at Standard Temperature and Pressure, of flammable gas and carbon dioxide shall not exceed 1% and 0.5% respectively in gas monitoring boreholes or other monitoring devices surrounding the waste body within the Site.

6.1.3 The measurements for condition 6.1.2 shall be taken on a three-monthly basis from gas monitoring boreholes or any other monitoring devices approved by the Regional Director which shall be at least one metre deeper than the deepest point of the waste body.

6.1.4 Should measurements at these boreholes or devices transgress the limits set in condition 6.1.2, the Permit Holder shall immediately notify the Regional Director and initiate a more frequent gas monitoring programme as prescribed by the Regional Director.

6.1.5 The concentration of flammable gas in the atmosphere inside buildings on the Site shall not exceed 1% by volume in air, at Standard Temperature and Pressure. If the atmospheric levels are found to be between 0.1% and 1%, regular monitoring shall be instituted. If levels above 1% are detected, the buildings shall be evacuated or trained personnel shall be consulted.

6.2 Post-closure gas monitoring

6.2.1 Gas monitoring by the Permit Holder as described in condition 6.1 shall continue after closure for a period of two years, or such longer period as may be determined by the Regional Director.

6.2.2 The Permit Holder shall also initiate a six-monthly gas monitoring programme where measurements are taken from gas monitoring boreholes or any other monitoring devices approved by the Regional Director, situated within the waste body, until the limits set in condition 6.1.2 are met over a two year period.

6.3 Water monitoring

6.3.1 The Permit Holder shall within the next financial year starting 1 April 1997, construct a borehole (where the ground water in the borehole is at an expected lower hydraulic pressure level than the hydraulic pressure level of the ground water under the Site) to be used as a monitoring point. The location of this borehole shall be determined in consultation with the Regional Director.

6.3.2 The monitoring borehole shall be equipped with a lockable cap. The Department reserves the right to take water samples at any time and to analyse these samples or have them analysed.

6.3.3 The monitoring borehole shall be maintained by the Permit Holder to the satisfaction of the Regional Director so that unobstructed sampling, as required in terms of this Permit can be undertaken.

6.3.4 Surface water monitoring shall be performed in all stormwater drains on and adjacent to the Site at locations selected in conjunction with the Regional Director and at a frequency as determined by the Regional Director.

6.3.5 Treated leachate discharged into a water course shall be monitored and the standards and parameters shall be as determined from time to time by the Manager: Scientific Services.

6.4 Detection monitoring

6.4.1 Monitoring shall be conducted within 3 days of 15 January and 15 July of each year for the water quality variables listed in paragraph (a) of Annexure III and annually within 3 days of 15 July for the variables listed in paragraph (b) of Annexure III.

6.5 Investigative monitoring

6.5.1 If, in the opinion of the Regional Director, a water quality variable listed under the detection monitoring programme, as referred to in condition 6.4, shows an increasing trend, the Permit Holder shall initiate a monthly monitoring programme for the water quality variables listed in Annexure II.

6.6 Post-closure monitoring

6.6.1 Ground water monitoring by the Permit Holder, in accordance with condition 6.4 or 6.5, shall commence immediately upon closure of the Site and be maintained for a period of 30 years, or such lesser period as may be determined by the Regional Director.

6.7 Further investigations

If, in the opinion of the Regional Director, ground water, surface water and/or air pollution occur or are suspected to

occur, the Permit Holder shall conduct the necessary investigations as may be required by the Regional Director.

7. METHODS OF ANALYSIS

7.1 The Permit Holder shall carry out all tests in accordance with methods prescribed by and obtainable from the South African Bureau of Standards (SABS), referred to in the Standards Act, 1982 (Act 30 of 1982), to analyze the samples taken under the monitoring programmes specified in condition 6.

7.2 The Permit Holder shall only use another method of analysis if written proof that the method is equivalent to the SABS method, is submitted to the Regional Director.

8. RECORDING

8.1 The Permit Holder shall keep a record of and update all the information referred to in Annexure IV on an annual basis.

8.2 The Permit Holder shall record all borehole data and chemical analysis in the format depicted in Annexure V.

9. REPORTING

9.1 The information required in terms of conditions 6.1 to 6.6 shall be submitted to the Regional Director within a period of 30 days following the analysis of the said samples. The information required in terms of condition 8.1 shall be submitted to the Regional Director within a period of one year from the date of issuing of this Permit and annually thereafter.

10. REHABILITATION AND CLOSURE OF THE SITE

10.1 The Permit Holder shall, at least 60 days prior to the intended closure of the Site, notify the Regional Director by registered mail of such closure and submit final rehabilitation plans for his approval.

10.2 Immediately following the cessation of operations with the intention to close the Site, the surface of the Site shall be covered in such a way that –

10.2.1 the formation of pools due to rain is prevented;

10.2.2 free surface runoff of rain-water is ensured; and

10.2.3 no objects or materials which may hamper the rehabilitation of the Site are present.

10.3 The Permit Holder shall rehabilitate the Site in accordance with a rehabilitation plan which shall be submitted by the

Permit Holder and which shall be to the satisfaction of the Regional Director.

11. LEASING AND ALIENATION OF THE SITE

11.1 Should the Permit Holder want to alienate or lease the Site, he shall notify the Regional Director in writing of such an intention at least 60 days prior to the said transaction.

12. GENERAL

12.1 This Permit shall not be transferable.

12.2 This Permit shall not be construed as exempting the Permit Holder from compliance with the provisions of the Health Act, 1977 (Act 63 of 1977), the Water Act, 1956 (Act 54 of 1956) or any other applicable act, ordinance, regulation or by-law.

ACTING MANAGER: SCIENTIFIC SERVICES
p.p. MINISTER OF WATER AFFAIRS AND FORESTRY

DATE: 10/9/96

ANNEXURE I
WASTE WHICH SHALL NOT BE ACCEPTED ON THE SITE

1. Waste considered to be dangerous by virtue of their fire hazard. That is all waste with a closed cup flashpoint < 61°C.

2. Any waste with a substance which is a Group A and/or Group B carcinogen. Group A carcinogens has been clinically and epidemiologically proven in humans. Group B carcinogens have been proven without doubt in laboratory animals.

3. Any waste with a substance at a concentration greater than 1% which is a Group C and/or Group D carcinogen. Group C carcinogens have shown limited evidence in animals. Group D carcinogens – only inadequate and doubtfull data is available.

4. Any waste with a substance which is a Mutagen.

5. Any infectious waste, unless it has been incinerated at 800° C or higher for at least 1 second. Infectious waste is waste which is generated during the diagnosis, treatment or immunisation of humans or animals; in the research pertaining to this; in the manufacturing or testing of biological agents –including blood, blood products and contaminated blood products, cultures, pathalogical wastes, sharps, human and animal anatomical wastes and isolation waste that contain or may contain infectious substances.

6. Any waste with a substance with a LD_{50} for acute oral toxicity smaller and equals to 5000 mg/kg. The LD_{50} for acute oral toxicity shall be as defined in SABS 0228:1995.

6. Any waste with a substance with a LD_{50} for acute dermal toxicity smaller and equals to 2000 mg/kg. The LD_{50} for acute dermal toxicity shall be as defined in SABS 0228:1995.

7. Any waste with a substance with a LC_{50} for acute toxicity on inhalation smaller and equal to 10mg/l. The LC_{50} for acute toxicity on inhalation shall be as defined in SABS 0228:1995.

8. All waste with a pH less than 6 or greater than 12.

9. All materials which fall in Class 1 (explosives), Class 2 (compressed gases) and Class 7 (radioactive materials), as specified in SABS 0228:1995.

10. Any waste containing a substance listed in SABS 0228:1995, or is difficult to analyse and classify, unless written approval has been granted by the Regional Director.

11. Any complexes of heavy metal cations, paints and paint sludges, laboratory chemicals.

ANNEXURE II

WATER QUALITY VARIABLES REQUIRED FOR INVESTIGATIVE MONITORING : CONDITION 6.5

Alkalinity (P.Alk)
Calcium (Ca)
Chromium (hexavalent) (Cr^{6+})
Chromium (Total) (Cr)
Chemical oxygen demand (COD)
Cyanide (CN)
Lead (Pb)
Nitrate (as N) (NO_3–N)
Phenolic compounds (Phen)
Potassium (K)
Total dissolved solids (TDS)
Free & saline ammonia as N (NH_4–N)
Boron (B)
Magnesium (Mg)
Cadmium (Cd)
Chloride (Cl)
Mercury (Hg)
pH
Sodium (Na)
Electrical conductivity (EC)
Sulphate (SO_4)

ANNEXURE III

WATER QUALITY VARIABLES REQUIRED FOR DETECTION MONITORING: CONDITION 6.4

(a) Alkalinity (P.Alk)
Chemical oxygen demand (COD)
pH
Total dissolved solids (TDS)
Chlorides (Cl)
Nitrate (NO_3–N)
Potassium (K)

(b) Annually for electrical conductivity (EC), calcium (Ca), magnesium (Mg), sodium (Na), sulphate (SO_4) and fluoride (F).

ANNEXURE IV

INFORMATION WHICH SHALL BE SUBMITTED ON AN ANNUAL BASIS: CONDITION 8.1

NAME OF SITE: _____ DATE OF REPORT Y Y Y Y M M D D

1. Registered owner(s) of property on which disposal site is situated:

Name.....

Postal Address..... Telephone Code & No .....

..... Fax Code &No.....

..... Postal Code..... Telex No.....

2. Name of Operator in control of disposal site:

.....

Telephone code & number .....After hours .....

Identity number.....

Educational qualifications (*). std 6 ☐ diploma ☐

std 8 ☐ higher diploma ☐

matric ☐ degree ☐

other (specify).....

3. (a) Latest estimated lifetime of the disposal site .....yrs

(b) Indicate the type of waste and approximate quantities of waste disposed during the year.

Type of waste	Quantity (m^3 $annum^{-1}$)	Compacted (C)	Uncompacted (U)
Non-hazardous waste			
Household	.....		
Garden refuse	.....		
Building rubble	.....		
Industrial (not hazardous)	.....		
- (specify)	.....		
-	.....		
TOTAL	.....		
Hazardous waste			
- Flammable solids	.....		
- Flammable liquids	.....		
- Oxidising agents	.....		
- Toxic wastes	.....		
- Corrosive wastes	.....		
- Hospital and infectious wastes	.....		
- (specify)	.....		
-	.....		
TOTAL	.....		

* *Indicate with an X*

4.(a) Indicate the method of disposal of waste (*). Landbuilding ☐ Landfilling ☐

(b) Indicate the present dimensions of the site in metres.

Height/depth	.....
Length	.....
Breadth	.....

5. Indicate the applicable waste types and quantities salvaged during the year (*)

No salvaging undertaken ☐

	Type	Quantity (m^3)		Type	Quantity (m^3)
☐	Paper/wood fibre	.....	☐	Rubber	.....
☐	Plastics	.....	☐	Textiles	.....
☐	Glass	.....	☐	Iron	.....
☐	Copper	.....	☐	Aluminium	.....
☐	Zinc	.....	☐	Lead	.....
☐	Phosphogypsum	.....	☐	Fly-ash	.....
☐	Waste for composting	.....	☐	Food residues	.....
☐	Flammable gases	.....	Other	.....	.....
Other	.....	.....	Other	.....	.....
Other	.....	.....	Other	.....	.....

6. Indicate the types, sources and approximate quantities of available covering material (*).

Type		Sources	Quantity m^3
☐	Soil	.....	.....
☐	Sand	.....	.....
☐	Ash	.....	.....
☐	Gravel	.....	.....
☐	Clay	.....	.....
☐	Building rubble	.....	.....
Other (specify)		.....	.....
.....		.....	.....
.....		.....	.....
.....		.....	.....

** Indicate with an X*

Signature .....

Capacity.....

Place..... Date.....

ANNEXURE V: FORM TO BE USED FOR CHEMICAL INFORMATION: CONDITIONS 6 AND 8

Name of site : _____ Borehole/observation-point name/number _____

Sampling date (y y y y m m d d) [ ][ ][ ][ ][ ][ ][ ][ ] Time [ ][ ]h[ ][ ] Method : Bail [ ] Pump [ ]

Time after start of pump [ ][ ]h[ ][ ] Depth of sample [ ][ ][ ].[ ][ ] m

Date of analysis (y y y y m m d d) [ ][ ][ ][ ][ ][ ][ ][ ] Laboratory [ ]

General chemistry

pH	[ ][ ].[ ]		EC	[ ][ ][ ][ ][ ]	mS/m	TDS	[ ][ ][ ][ ][ ]	mg/l
Ca	[ ][ ][ ][ ][ ]	mg/l	Mg	[ ][ ][ ][ ][ ]	mg/l	Na	[ ][ ][ ][ ][ ]	mg/l
K	[ ][ ].[ ][ ]	mg/l	P.Alk	[ ][ ][ ][ ][ ]	mg/l	Cl	[ ][ ][ ][ ][ ]	mg/l
SO4	[ ][ ][ ][ ][ ]	mg/l	NO3-N	[ ][ ].[ ][ ]	mg/l	F	[ ][ ].[ ][ ]	mg/l
As	[ ].[ ][ ][ ]	mg/l	B	[ ][ ].[ ][ ]	mg/l	Cd	[ ].[ ][ ][ ]	mg/l
CN	[ ][ ].[ ][ ]	mg/l	Cr	[ ][ ].[ ][ ]	mg/l	Cu	[ ][ ].[ ][ ]	mg/l
Mn	[ ][ ].[ ][ ]	mg/l	Pb	[ ][ ].[ ][ ]	mg/l	COD	[ ][ ][ ][ ][ ]	mg/l
Phen.	[ ][ ].[ ][ ]	mg/l	PO4	[ ][ ].[ ][ ]	mg/l	TOC	[ ][ ].[ ][ ]	mg/l
S-	[ ][ ].[ ][ ]	mg/l	NH4-N	[ ][ ].[ ][ ]	mg/l	TOX	[ ][ ][ ][ ][ ]	µg/l
Ba	[ ][ ].[ ][ ]	mg/l	Hg	[ ].[ ][ ][ ]	mg/l	Cr6+	[ ][ ].[ ][ ]	mg/l

APPENDIX C:

Directions Authorisation for Alicedale Landfill

DW 712

DEPARTMENT OF WATER AFFAIRS AND FORESTRY: EASTERN CAPE
Private Bag X 7485, King William's Town
Water Quality Management, Private Bag X6041, **Port Elizabeth**, 6000

Tel: 041-586-4884 **Fax:** 041-586-4210 **e-mail:** retiefp@dwaf.gov.za

Enquiries: P. G. Retief **Ref:** 16/2/7/P101/D1/Z1

13 May 2005

Department of Water Affairs and Forestry
Private Bag X313
PRETORIA
0001

ATTENTION: Ms. W. Moolman

Dear madam

DIRECTION IN TERMS OF SECTION 20(5)(b) OF THE ENVIRONMENT CONSERVATION ACT, 1989 (ACT 73 OF 1989): ALICEDALE WASTE DISPOSAL SITE: MAKANA MUNICIPALITY

Attached is a copy of the Direction for your records.

Yours faithfully

CHIEF DIRECTOR: SOUTHERN CLUSTER

DEPARTMENT OF WATER AFFAIRS AND FORESTRY: EASTERN CAPE
Private Bag X 7485, King William's Town
Water Quality Management, Private Bag X6041, Port Elizabeth, 6000

Tel: 041-586-4884 **Fax:** 041-586-4210 **e-mail:** retiefp@dwaf.gov.za

Enquiries: P. G. Retief **Ref:** 16/2/7/P101/D1/Z1

The Municipal Manager
Makana Municipality
P.O Box 176
GRAHAMSTOWN
6140

ATTENTION: Mr. P Naidoo

DIRECTIONS IN TERMS OF SECTION 20(5)(b) OF THE ENVIRONMENT CONSERVATION ACT, 1989 (ACT 73 OF 1989): ALICEDALE WASTE DISPOSAL SITE: MAKANA MUNICIPALITY

Your application for registration in terms of Section 20(5)(b) of the Environment Conservation Act 1989 (Act 73 of 1989), for the Alicedale Class G:C:B disposal site, dated 14 August 2002, refers.

The Department acknowledges your registration and authorises the operation of the Alicedale waste disposal site in terms of direction 2(2) of Government Notice 91 of 01 February 2002 published in Government Gazette No. 23053 (attached for your convenience), on the area as indicated on the application form for registration, **subject to the additional condition set out below**:

Additional condition

This direction is issued on condition that Department of Economic Affairs, Environment and Tourism grant a Record of Decision and / or Authorisation.

Your attention is also drawn to the following direction and revised directions:

Direction 4(2) Permissible Waste

The registered person must take all measures to ensure that-

(a) no medical waste is disposed of on the Site;

(b) no scheduled pharmaceutical products registered in terms of the Medicines and Related Substances Control Act, 1965 (Act 101 of 1965) or associated containers are disposed of on the Site; and

Direction 7(2) Operation

Waste disposed of on the Site must be covered on a weekly basis with a minimum of 100 millimetres of soil or other material approved by the Regional Director or a person delegated by him or her.

Direction 7(10) does not apply.

Direction 8 Monitoring

Groundwater monitoring is not applicable and is not required.

If you have any enquiries, please do not hesitate to contact this office.

CHIEF DIRECTOR: SOUTHERN REGION

DATE: 2005/04/28

Copy to: Ms. W. Moolman, DWAF, Private Bag X313, Pretoria, 0001

APPENDIX D:

Directions Authorisation for Riebeeck East Landfill

DW 712

DEPARTMENT OF WATER AFFAIRS AND FORESTRY: EASTERN CAPE
Private Bag X 7485, King William's Town
Water Quality Management, Private Bag X6041, Port Elizabeth, 6000

Tel: 041-586-4884 **Fax:** 041-586-4210 **e-mail:** retiefp@dwaf.gov.za

Enquiries: P. G. Retief **Ref:** 16/2/7/P102/D3/Z

13 May 2005

Department of Water Affairs and Forestry
Private Bag X313
PRETORIA
0001

ATTENTION: Ms. W. Moolman

Dear madam

DIRECTION IN TERMS OF SECTION 20(5)(b) OF THE ENVIRONMENT CONSERVATION ACT, 1989 (ACT 73 OF 1989): RIEBEECK EAST WASTE DISPOSAL SITE: MAKANA MUNICIPALITY

Attached is a copy of the Direction for your records.

Yours faithfully

Retief

CHIEF DIRECTOR: SOUTHERN CLUSTER

DW 712

DEPARTMENT OF WATER AFFAIRS AND FORESTRY: EASTERN CAPE
Private Bag X 7485, King William's Town
Water Quality Management, Private Bag X6041, Port Elizabeth, 6000

Tel: 041-586-4884 **Fax:** 041-586-4210 **e-mail:** retiefp@dwaf.gov.za

Enquiries: P. G. Retief **Ref:** 16/2/7/P102/D3/Z

The Municipal Manager
Makana Municipality
P.O Box 176
GRAHAMSTOWN
6140

ATTENTION: Mr. P Naidoo

DIRECTION IN TERMS OF SECTION 20(5)(b) OF THE ENVIRONMENT CONSERVATION ACT, 1989 (ACT 73 OF 1989): RIEBEECK EAST WASTE DISPOSAL SITE: MAKANA MUNICIPALITY

Your application for registration in terms of Section 20(5)(b) of the Environment Conservation Act 1989 (Act 73 of 1989), for the Riebeeck East Class G:C:B disposal site, dated 14 August 2002, refers.

The Department acknowledges your registration and authorises the operation of the Riebeeck East waste disposal site in terms of direction 2(2) of Government Notice 91 of 01 February 2002 published in Government Gazette No. 23053 (attached for your convenience), on the area as indicated on the application form for registration, **subject to the additional condition set out below:**

Additional condition

This direction is issued on condition that Department of Economic Affairs, Environment and Tourism grant a Record of Decision and / or Authorisation.

Your attention is also drawn to the following direction and revised directions:

Direction 4(2) Permissible Waste

The registered person must take all measures to ensure that-

(a) no medical waste is disposed of on the Site;

(b) no scheduled pharmaceutical products registered in terms of the Medicines and Related Substances Control Act, 1965 (Act 101 of 1965) or associated containers are disposed of on the Site; and

Direction 7(2) Operation

Waste disposed of on the Site must be covered on a weekly basis with a minimum of 100 millimetres of soil or other material approved by the Regional Director or a person delegated by him or her.

Direction 7(10) does not apply.

Direction 8 Monitoring

Background monitoring must be conducted six monthly on all boreholes within a radius of 500 m from the site, for the water quality variables listed in Annexure C including Fluoride.

If you have any enquiries, please do not hesitate to contact this office.

CHIEF DIRECTOR: SOUTHERN REGION

DATE: 2005/04/28

Copy to: Ms. W. Moolman, DWAF, Private Bag X313, Pretoria, 0001