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KAREEBERG LOCAL MUNICIPALITY



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA



Integrated Waste Management Plan Final

27474J – 001

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PROJECT 27474J - INTEGRATED WASTE MANAGEMENT PLAN							
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TECHNICAL DEFINITIONS

Building and demolition waste means waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition;

Business waste means waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment or government administration purposes;

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

Communal Waste Disposal Site is the smallest waste disposal site 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;

Constitution means the Constitution of the Republic of South Africa, 1996;

Container means a disposable or re-usable vessel in which waste is placed for the purposes of storing, accumulating, handling, transporting, treating or disposing of that waste, and includes bins, bin-liners and skips;

Decommissioning in relation to waste treatment, waste transfer or waste disposal facilities, means the planning for and management and remediation of the closure of a facility that is in operation or that no longer operates;

Department means the Department of Environmental Affairs and Tourism;

Disposal means the burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto, any land;

Domestic waste means waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes;

Environment has the meaning assigned to it in section 1 of the National Environmental Management Act;

Environment Conservation Act means the Environment Conservation Act, 1989 (Act No. 73 of 1989);

General waste means waste that does not pose an immediate hazard or threat to health or to the environment, and includes—

- a) domestic waste;
- b) building and demolition waste;



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c) business waste: and

d) inert waste;

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

Hazardous waste means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment;

Industry includes commercial activities, commercial agricultural activities, mining activities and the operation of power stations;

Inert waste means waste that—

a) does not undergo any significant physical, chemical or biological transformation after disposal;

b) does not burn, react physically or chemically biodegrade or otherwise adversely affect any other matter or environment with which it may come into contact; and

c) does not impact negatively on the environment, because of its pollutant content and because the toxicity of its leachate is insignificant;

Integrated Waste Management Plan¹ is a plan which has been compiled to provide the most cost-effective and technically and environmentally acceptable solutions to the total waste management in the municipality. It addresses the situation analysis, and offer solutions to ensure responsible waste management. As such it addresses waste generation, waste minimisation and re-use, collection of all waste, disposal infrastructure (disposal facility requirements) and disposal according to environmentally sound practises and within the requirements of relevant legislation and regulations. A plan prepared in terms of Section 12 of the National Environmental Management: Waste Act (Act 59 of 2008);

Licensing authority means an authority referred to in section 43 and that is responsible for implementing the licensing system provided for in Chapter 5;

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;

Minimisation when used in relation to waste, means the avoidance of the amount and toxicity of waste that is generated and, in the event where waste is generated, the reduction of the amount and toxicity of waste that is disposed of;

Minister means the Minister of Environmental Affairs and Tourism;

Municipality means a municipality established in terms of the Local Government: Municipal Structures Act, 1998 (Act No. 117 of 1998);

¹ ibid



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Municipal Systems Act means the Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000);

National Environmental Management Act means the National Environmental Management Act, 1998 (Act No. 107 of 1998);

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

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

Organ of state has the meaning assigned to it in section 239 of the Constitution;

Owner is the person or organisation that owns the property and/or facilities that constitute the waste disposal site;

Pollution has the meaning assigned to it in section 1 of the National Environmental Management Act;

Reclamation is the unauthorised separation of solid waste for recyclable materials and food for human consumption;

Recycle means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material;

Re-use means to utilise articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles;

Site Feasibility is the initial step in the DEA permitting/licensing process that establishes the basic site features and general feasibility for a fully permitted/licensed waste disposal site;

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

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 waste disposal site. Special wastes include but are not limited to tires, asbestos, demolition waste, industrial sludge of a non-hazardous nature, paper mill sludge, olive oil waste, abattoir wastes and petroleum waste oil;

Storage means the accumulation of waste in a manner that does not constitute treatment or disposal of that waste;

Waste means any substance, whether or not that substance can be reduced, re-used, recycled and recovered—



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- a) that is surplus, unwanted, rejected, discarded, abandoned or disposed of;
- b) which the generator has no further use of for the purposes of production;
- c) that must be treated or disposed of; or
- d) that is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but—
 - i) a by-product is not considered waste; and
 - ii) any portion of waste, once re-used, recycled and recovered, ceases to be waste;

Waste Disposal Classification is a system under the DWAF Minimum Requirements for classifying waste disposal sites according to the type, size of waste stream and its potential for significant leachate generation;

Waste disposal facility means any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premise;

Waste management activity means any activity listed in Schedule 1 or published by notice in the Gazette under section 19, and includes—

- a) the importation and exportation of waste;
- b) the generation of waste, including the undertaking of any activity or process that is likely to result in the generation of waste;
- c) the accumulation and storage of waste;
- d) the collection and handling of waste;
- e) the reduction, re-use, recycling and recovery of waste;
- f) the trading in waste;
- g) the transportation of waste;
- h) the transfer of waste;
- i) the treatment of waste; and
- j) the disposal of waste;

Waste Management facility is a place, infrastructure, structure or containment of any kind, wherein, upon or at, a waste management activity takes place and includes a waste transfer station, container yard, landfill site, incinerators, lagoons, recycling and composting facilities;

Waste management licence means a licence issued in terms of Section 49;

Waste management services means waste collection, treatment, recycling and disposal services;



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Waste minimisation programme means a programme that is intended to promote the reduced generation and disposal of waste;

Waste transfer facility means a facility that is used to accumulate and temporarily store waste before it is transported to a recycling, treatment or waste disposal facility;

Waste treatment facility means any site that is used to accumulate waste for the purpose of storage, recovery, treatment, reprocessing, recycling or sorting of that waste.



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ABBREVIATIONS

AP	Action Plan
APIG	Action Plan Implementation Group
CBD	Central Business District
CEC	Committee for Environmental Co-ordination
COGTA	Cooperative Governance Traditional Affairs
CONNEPP	Consultative National Environmental Policy Process
DEA	Department of Environmental Affairs
DACRD	Department of Agriculture, Conservation and Rural Development
DEDET	Department of Economic Development Environment 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
DWEA	Department of Water and Environmental Affairs
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
MISA	Municipal Infrastructure Support Agency
NCDENC	Northern Cape Department of Environment and Nature Conservation
NEAF	National Environmental Advisory Framework
NEMA	National Environmental Management Act, Act No. 107 of 1998
NEMWA	National Environmental Management Waste Act, Act No. 59 of 2008.



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1 INTRODUCTION

The development of an Integrated Waste Management Plan (IWMP) is a requirement for certain organs of state in terms of Section 11 of the National Environmental Management: Waste Act, 2008 (Act. 59 of 2008) (NEMWA) for government to properly plan and manage waste. The compilation of this IWMP will be done in line with the “Guideline for the Development of Integrated Waste Management Plans (IWMP’s) (DEA, 2012) and in accordance with Section 12 of NEMWA.

The Department: Environmental Affairs appointed WorleyParsons RSA (WPRSA) to review the 2007 IWMP for the Pixley ka Seme District Municipality which *inter alia* includes the Kareeberg Local Municipality (hereafter referred to as “the Municipality”).

The process WPRSA followed in order to compile the IWMP consisted of two phases, the first consisting of a “Situation Analysis” and the determination of the “Desired End State” for waste management within the Municipal Jurisdiction, the second phase consisting of identifying, evaluating and selecting alternative methods/approaches for achieving the desired end state.

This report, the IWMP, is a concise report including the information collated in the two phases mentioned above and provides the Municipality with a plan on how to manage and improve the waste management service within the municipal area. The Municipality will be responsible for the implementation of the IWMP and the evaluating and reviewing of the plan to ensure that the respective objectives are being met.



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2 LEGISLATIVE REQUIREMENTS

THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT: (ACT NO. 59 OF 2008)

Chapter 3, Section 11 of the Waste Act requires that certain organs of state must develop Integrated Waste Management Plans (IWMP's). Section 12 of the Waste Act outlines what the contents of integrated waste management plans should be, whilst section 13 stipulates the reporting mechanisms on the implementation of IWMP's.

In terms of Section 11 (4) (a) (ii) of the Waste Act, municipalities must incorporate the approved IWMP in their Integrated Development Plans (IDP's) as called for by chapter 5 of Municipal Systems Act, 2000 (Act 32 of 2000)(hereinafter referred to as the "MSA"). The MSA Chapter 5, sections 23-37 deals with the process of developing IDP's. Section 36 of the MSA states that, a Municipality must give effect to its IDP and conduct its affairs in a manner which is consistent with its IDP. This means that the development and implementation of the IWMP must be aligned with the IDP.

Waste is managed by different pieces of legislation such as the National Water Act, (Act 36 of 1998); Hazardous Substances Act, (Act 15 of 1973); Advertising on Roads and Ribbon Development Act (Act 21 of 1940); and the National Health Act, 2003 (Act 61 of 2003).

Other applicable policies and standards including municipal by-laws are listed below which should be considered when developing an IWMP:

REGULATIONS IN TERMS OF THE WASTE ACT:

- On 13 August 2012, the Minister of Water and Environmental Affairs, Ms Edna Molewa published under Section 69(1)(y), (aa) and (ee) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (Waste Act) the National Waste Information Regulations, 2012 in Gazette No. 35583 for implementation on 1 January 2013. Any person who conducts activities which are listed in Annexure 1 of the Regulations needs to register on the South African Waste Information System at www.sawic.org.za. The purpose of the national waste information regulations, 2012 is to regulate the collection of data and information to fulfil the objectives of the South African Waste Information System (SAWIS) as set out in Section 61 of the Waste Act. The Municipality should therefore comply with these regulations and follow the procedure and criteria to register on SAWIS (as required in Section 4 of the Regulations) and submit a quarterly report



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containing the information as prescribed in Annexure 2 of the Regulations, within 30 days of the end of a reporting period (as required in Section 7 of the Regulations).

- National Waste Classification and Management regulations;
- Standard for Assessment of Waste for Landfill Disposal;
- Remediation of contaminated land; and,
- Standards for soil quality

THE NATIONAL WASTE MANAGEMENT STRATEGY (NWMS)

Gazetted by DEA in 2012, aims at giving effect to the objectives of the Waste Act. Municipalities are required to align their IWMP's to the NWMS targets where possible in order to contribute to the attainment of the goals and targets set in the NWMS.

THE SOUTH AFRICAN CONSTITUTION, 1996 (ACT 108 OF 1996)

Section 24 of the Bill of rights of the Constitution of South Africa clearly states that everyone has the right to:

- (a) An environment that is not harmful to their health or well-being; and
- (b) Should have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:
 - (i) prevent pollution and ecological degradation;
 - (ii) Promote conservation; and
 - (iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

The Constitution places an emphasis on the need to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures i.e. IWMP. It is within this provision that IWMP's must strive or come up with measures to uphold the rights of all citizens within the jurisdiction of the Municipality and should enhance and promote environmental protection from any form of degradation as enshrined by the South African Constitution.



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The responsibility of the **Local Municipality** regarding the above relates to:

- Compiling and implementing integrated waste management plans and integrating these into IDPs;
- Running public awareness campaigns;
- Collecting data for the Waste Information System;
- Providing waste management services, including waste removal, waste storage and waste disposal services, in line with national norms and standards. Municipality specific standards for separation, compacting and storage of solid waste that is collected as part of the municipal service, may be set and enforced by the municipality.
- Implementing and enforcing waste minimisation and recycling (including the encouraging of voluntary partnerships with industry and waste minimisation clubs).

The responsibility of the **District Municipality** regarding the above relates to:

- Ensuring integrated development planning for the district as a whole. This includes the development of a framework for IDPs and ensuring that IWMPs inform the IDP process.
- Promoting bulk infrastructure development and services for the district as a whole. The infrastructure refer to the establishment of regional waste disposal sites and bulk waste transfer stations that can be used by more than one local municipality within the district.
- Building local municipality capacity – where a local municipality fails to perform its management functions, Waste management governance encompasses the legal framework and institutions involved in waste management. As such the main players are National Departments of Environmental Affairs and Co-operative Governance and Traditional Affairs, the various Provincial departments responsible for environmental affairs and Local government including Metropolitan, District and Local Municipalities. The District municipality can enter into a Service Level Agreement (SLA) with the local municipality to provide the service for a stipulated period until such time that the local municipality can offer the service.

Promoting the equitable distribution of resources between the local municipalities in its area, for example, ensuring that resources are deployed in municipalities within their area of jurisdiction, where it is most needed.

NATIONAL DOMESTIC WASTE COLLECTION STANDARDS, JANUARY 2011

The main purpose of these standards is to redress past imbalances in the provision of waste collection services, whereby it has become imperative that acceptable, affordable and sustainable



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waste collection services be rendered to all South Africans. The provision of waste collection services will improve the quality of life of citizens and will ensure that citizens live in a clean and more acceptable environment. The lack of waste collection services or poor quality waste collection services can result in a number of environmental and human health problems and therefore proper planning is crucial.

NATIONAL POLICY FOR THE PROVISION OF BASIC REFUSE REMOVAL SERVICES TO INDIGENT HOUSEHOLDS

This policy provides for the provision of basic refuse removal for Indigent households. The policy defines basic refuse removal service level as the most appropriate level of waste removal service that should be provided and this is based on site specific circumstances. Such a basic level of service be it in an urban or rural set-up, is attained when a Municipality provides or facilitates waste removal. The policy further outlines the appropriate levels of service for different settlement densities, frequency of collection and provision of waste receptacles amongst others.

NATIONAL ENVIRONMENT MANAGEMENT ACT, (ACT 107 OF 1998) NEMA

NEMA is the mother of all environmental management Acts in South Africa. The purpose of NEMA is to uphold the provisions of section 24 of the Bill of rights (The Constitution of the Republic of South Africa). It aims to promote and uphold the rights of South African citizens to live in an environment that is not harmful to its health or well-being.

It places sustainable development at the centre of every development process that has the potential to have an impact on social, economic and environment whereby it requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations.

MUNICIPAL SYSTEMS ACT, 2000 (ACT 32 OF 2000)

In terms of Section 25 of the MSA each municipal council must, within a prescribed period after the start of its elected term, adopt a single, inclusive and strategic plan (IDP) for the development of the Municipality. In relation to waste management, the IDP is required to include sectoral environmental plans which would be an IWMP for waste management. In their IDP's municipalities are required to ensure proper resource allocation to achieve the targets set in the respective plans.



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NATIONAL HEALTH ACT, 2003 (ACT 61 OF 2003)

The National Health Act 61 of 2003 provides a framework for a structured uniform health system within the Republic, taking into account the obligations imposed by the Constitution and other laws on the national, provincial and local governments with regard to health services; and to provide for matters connected therewith.

Section 32 of the Health Act (Act 61 of 2003) requires provincial Health MECs to assign environmental health functions to district and metropolitan municipalities. The definition of these functions in the Health Act includes environmental pollution control, waste management and water quality monitoring.

As a schedule B function in terms of the Constitution, municipalities are expected to continue to fund and provide the expanded definition of municipal health services (RSA 1996). The assignment and delegation of additional environmental health and management functions has led to recognition in the Health Act of the responsibility of the Provincial sphere to contribute towards meeting the additional financial burden. Many district municipalities are having difficulty in restructuring and implementing the new district-level arrangements envisaged by the Health Act for the financing and management of environmental health functions. Section 34 of the Health Act makes provision for transitional arrangements (RSA 2003) in which local municipalities are required to continue providing the services they provided before the Act, and until such time as a Service Level Agreement (SLA) is in place. In a number of districts the EHS devolution process has not yet been finalised. District Municipalities cannot raise income from property rates and do not receive equitable share finance for their given environmental health function. It follows then that the Provincial Department of Health is required, through an SLA to assess and make available the resources needed to perform the required environmental health functions. Local municipalities who previously provided environmental health services are expected to continue to provide the finances for these posts which are required to be transferred to the District Level. Additional posts to address newly assigned and delegated functions need to be funded in terms of Section 32 of the Health Act through an SLA which a) describes the services; b) determines the resources that must be made available by the province and those by the municipality and c) sets performance and monitoring standards.

The National Health Act does not address the disposal of health care risk waste as such.

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,



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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

WASTE SECTOR PLAN

The Department has completed the Municipal Waste Sector Plan which was initiated in 2009. The municipal waste sector plan was gazetted by the Minister of Water and Environmental Affairs, Ms. Edna Molewa on 30 March 2012 in Gazette No 35206.

The development of the waste sector plan came as a response to the cabinet's call to all sector Departments to account for all service backlogs and to develop a plan to address such service backlogs. The Municipal Waste Sector Plan aims to assist Municipalities to fast track the provision of waste services including the storage, collection, transportation, recycling and safe disposal of waste. The sector plan has three key strategic objectives namely; to reduce the amount of general and hazardous waste disposed in the country, to ensure that all waste is disposed of appropriately and does not damage the environment or human health and to provide adequate domestic waste collection services across the country.

The successful implementation of the Plan will be supported by the development of Integrated Waste Management Plans (IWMPs) by municipalities as well as support from the Department and Provinces.



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3 PUBLIC PARTICIPATION PROCESS

As per the agreement between WorleyParsons and DEA at the onset of the project, two public meetings were held on a District level as a means of informing the general public and key stakeholders of the project and to receive comments to be addressed in the IWMP. These meetings were held during the two phases of the project i.e. Situation Analysis and the IWMP phases.

The public meetings were hosted on 22 May and 05 November 2013 respectively both at 10:00 at the Pixley Ka Seme District Municipality Boardroom in Culvert Street, De Aar. Invitations were e-mailed to all key stakeholders and advertised in the Volksblad newspaper. The attendance registers and minutes for the meetings are contained in **Appendix 1**.

The Draft Situation Analysis and the Draft IWMP reports were availed to all stakeholders for review and comment prior to the hosting of the respective public meetings. All comments were incorporated in the final Situation Analysis and IWMP reports. Comments from the stakeholders and the response thereto are contained in **Appendix 2**.



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4 SITUATION ANALYSIS

4.1 METHODOLOGY

The following methodology was followed for the situation analysis investigation:

- (i) All relevant records of the Waste Management Section of the Municipality were obtained for the purposes of the study.
- (ii) Relevant officials from the Municipality were interviewed on 11 April 2013 and the sites were visited on the same date.
- (iii) All the areas in the study area were visited on the above mentioned date to obtain first-hand knowledge of the existing status of the waste management services rendered.
- (iv) The Waste Infrastructure in the form of waste disposal sites was inspected during the site visits on the abovementioned date.
- (v) Much of the general information was obtained from the Integrated Development Plan, 2012/13 or from Stats SA 2011 data.
- (vi) The information contained in the 2007 IWMP for the Pixley Ka Seme District Municipality was also studied.
- (vii) After compiling the draft Situation Analysis document, a Public Participation Meeting was held for the District Municipality on 22 May 2013 in De Aar. A closing date was established for comments from the Interested and Affected Parties.
- (viii) All of the above were incorporated into the Situational Analysis.

4.2 BACKGROUND

Kareeberg Local Municipality is one of eight municipalities within the Pixley ka Seme District Municipality in the Northern Cape Province. The other local municipalities include Ubuntu, Siyathemba, Siayncuma, Emthanjeni, Renosterberg, Thembelihle and Umsobomvu.

The municipal area encompasses a geographical area of 17 698 km² (Pixley ka Seme District Municipality IDP, 2011), which implies that the Municipality accounts for 17% of the total district



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surface area and approximately 5% of the provincial area. The three main towns in the Municipality are Carnarvon, Vosburg and Vanwyksvlei.

The landscape is typical Karoo with an average rainfall of 260 mm and an annual evaporation of 2 300 mm. There are no constant rivers running through the municipal area and all the towns and settlements are primarily dependent on ground water. All communities within the Municipality are affected in terms of poverty and development deficit, with high levels of poverty and low levels of education. There is also a declining economy that is largely based on sheep farming (Kareeberg Local Municipality IDP, 2011-2016).

According to the Municipal Report of the Northern Cape for the 2011 Census, the total population of the Municipality is 11 673 and the average population growth rate between 2001 and 2011 is 2.1%.

4.3 LOCALITY

The Municipality is located in the western side of the Pixley ka Seme District Municipality. The administration centre is located in Carnarvon, which is on the main route from Kimberley/Bloemfontein to the southern part of Namakwaland and the West Coast. No national routes like the N1 and N9 pass through the Municipality. Refer to **Figure 1** for a locality map of the Municipality.

4.4 STUDY AREA

The following towns and areas formed part of this study:

- Carnarvon
- Vosburg
- Vanwyksvlei

The towns mentioned above can be seen on the locality plan in **Figure 1**.



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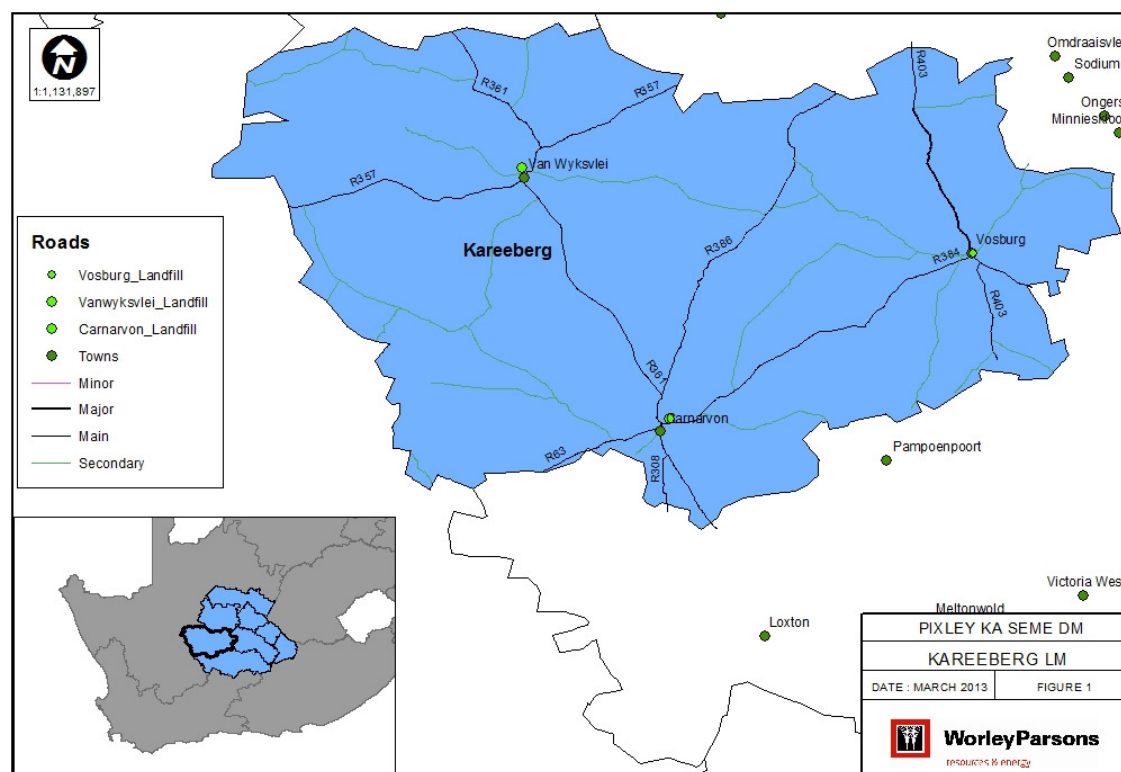


Figure 1: Locality Map of the Kareeberg Local Municipality

4.5 DEMOGRAPHICS

According to the Northern Cape Municipal Report from the 2011 Census, the following relevant demographics are applicable to the Municipality. The Kareeberg Local Municipality has no additional information available on the household distribution per town or area and no additional information has been published by Statistics South Africa at the time of compiling this document.

Population

The total population of the Municipality is 11 673 with 3 222 households, which amounts to an average household size of 3.4 persons. The average population growth rate between 2001 and 2011 is 2.1%. **Figure 2** below illustrates the gender distribution for the Municipality.



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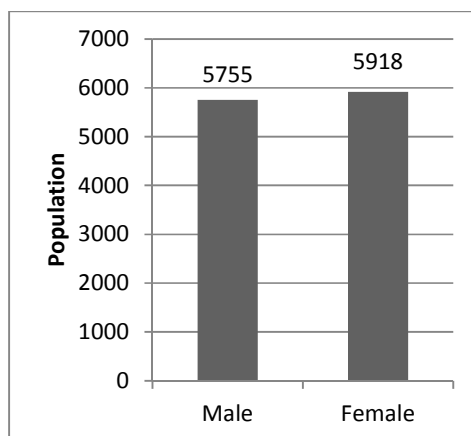


Figure 2: Gender Distribution

The above gender distribution results in a male-female ratio of 97.2%.

Refer to **Figure 3** below for the household distribution for the Municipality.

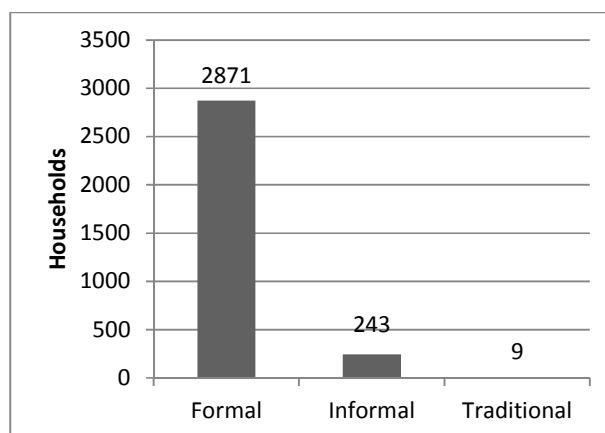


Figure 3: Household Distribution

The above household distribution illustrates that the Municipality has a relatively large portion of households that are still informal. It is often problematic to offer a refuse collection service to these households due to the difficult accessibility to the households, the high density of the households per area and the lack of revenue generation in the form of rates for refuse collection. The refuse collection distribution for the Municipality will be discussed later in this document.

Figure 4 below illustrates the population group distribution for the Municipality.



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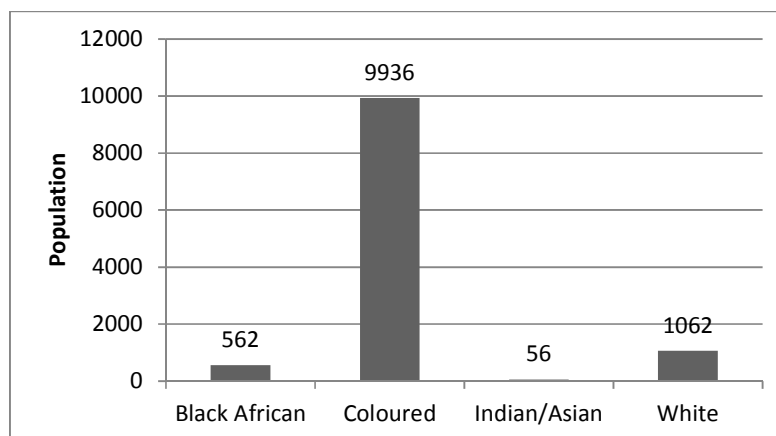


Figure 4: Population Groups Distribution

The population is predominantly Coloured with the White and Black African population groups contributing a small part of the population in the Municipality.

Income Levels

The average household income in the Municipality is R 71 465 per annum.

Employment Levels

Figure 5 below indicates the employment distribution of the population aged between 15 and 64 years. The unemployment rate of the Municipality is 25%.

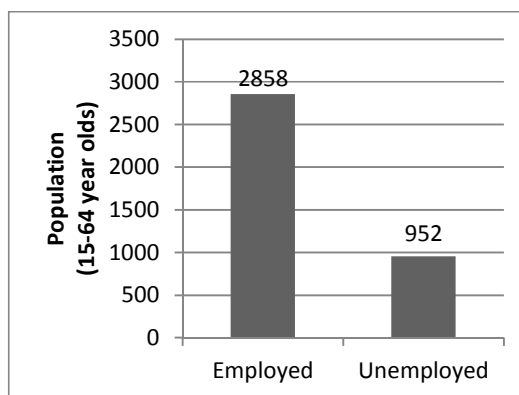


Figure 5: Employment Distribution



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The Municipality has a relatively high unemployment rate. This will have an effect on waste generation as well as waste disposal as a service delivery. A higher unemployment rate relates to less rates and taxes received by the Municipality, therefore the Municipality will have less resources available for an effective waste collection service. It often increases the amount of informal recyclers at the waste disposal site.

Education levels

The distribution of the population aged 20 years and older by highest level of education attained is illustrated in **Figure 6** below.

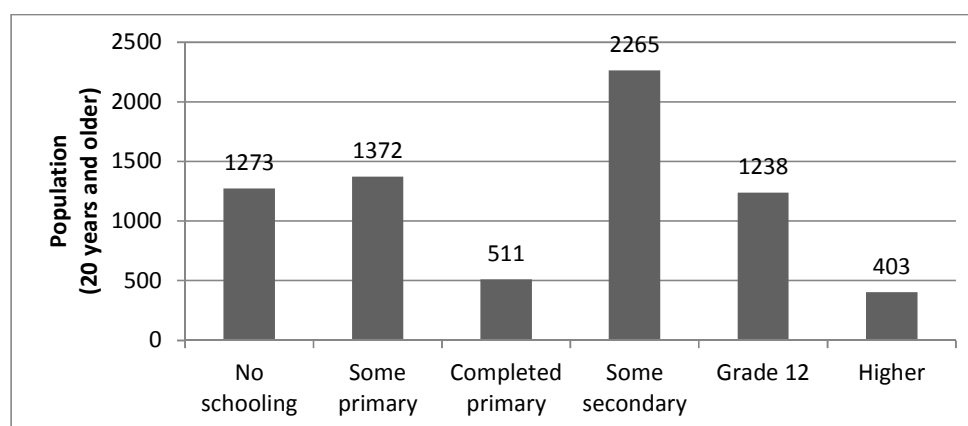


Figure 6: Attained Education

Education levels are directly linked to employment and income levels as well as the community's awareness of good waste disposal practices.

Refuse removal per household

Figure 7 below illustrates the distribution of households by refuse removal in 1996, 2001 and 2011.



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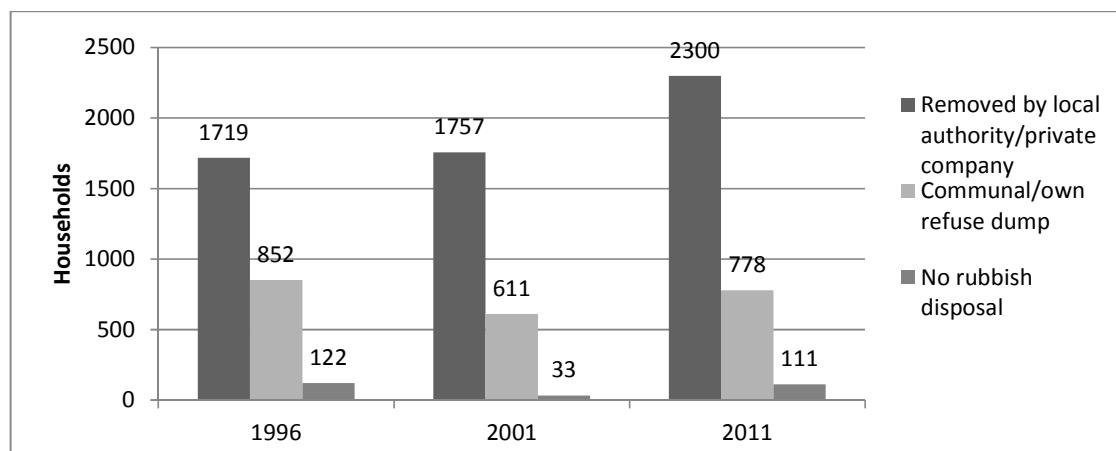


Figure 7: Household Distribution of Refuse Removal

The Municipality has had a significant increase in the number of households that receive a refuse removal service by local authority or private company. There has been an overall decrease in communal/own refuse dumps and the number of households with no rubbish disposal has decreased overall. The number of households that do not receive a refuse removal service can in this case also be attributed to farms and informal settlements in rural areas that are remotely located and which are not easily accessible to the Municipality to render a waste removal service.

The above figures indicate that the Municipality is performing well in terms of moving towards a 100% refuse removal service.

4.6 WASTE QUANTITIES AND TYPES

4.6.1 Waste Generation

Waste generation quantities can be calculated using one of the following three methods:

- Option1: Weighbridge – Using a weighbridge a Municipality must record the amounts of waste entering its waste disposal facility, by weighing the vehicles at the point of entry and again on the way out. The difference in the mass of the vehicle between the 'in' and 'out' provides the mass of the waste.
- Option 2: Without a weighbridge – Municipalities can estimate the amount of waste generated by using a volume density based estimation. This requires accurate records.



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- Option 3: Sampling or conducting a waste stream analysis at a household/Ward level Waste stream analysis or a waste audit can be conducted by selecting a representative sample of an area which should at least comprise of 30 % of the total sample area. In residential areas, these could be households from different Wards in order to ensure inclusivity and representation. Once that is known, the participating households can then be provided with receptacles and these could be different coloured plastic bags such as a black bag for mixed waste and a clear bag for recyclables. The participating households could also be provided with instructions/ training on the objectives of the study, what is required of them and how the audit will be carried out.

The Municipality does not currently use any of the above mentioned methods to determine the waste generation rates for the area. An alternative method is therefore used to estimate the waste generation figures for the Municipality i.e. an estimate based on per capita waste generation rates. This method is also recommended in the Minimum Requirements for Waste Disposal by Landfill, published by Department of Water Affairs and Forestry in 1998, when no other information source is available.

4.6.2 Waste Generation per Capita

The average income level in the Municipality is R 71 465 per annum which falls into the low income level. Therefore the estimated waste generation value is taken at 0.41 kg per capita per day, as prescribed in the Guidelines for Development of IWMP's. The Municipality's average growth rate between 2001 and 2011 is 2.1%. Therefore the current population figure is estimated at 12 168 with a total waste generation figure of 1 821 tons per annum. Refer to **Table 1** for the calculations of these values.

Table 1: Current waste generation figures

Year	Population Growth (%)	Population	Per Capita Waste Generation (kg/p/day)	Total / Day (ton)	Total / Month (ton)	Total / Annum (ton)	CUM (ton)
2011	2.10%	11673	0.41	5	146	1747	1747
2012	2.10%	11918	0.41	5	149	1784	3530
2013	2.10%	12168	0.41	5	152	1821	5351



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4.6.3 Future Waste Generation Rates and Quantities

In order to determine the future waste generation rates and quantities, the following assumptions are made:

- The future growth rates and growth estimates remain constant for the next 12 years,
- The per capita waste generation rates remain constant.

Table 2 shows the results obtained for the future waste generation rates and quantities after applying the abovementioned assumptions.

Table 2: Future population figures and waste generation rates

Year	Population Growth (%)	Population	Per Capita Waste Generation (kg/p/day)	Total / Day (ton)	Total / Month (ton)	Total / Annum (ton)	CUM (ton)
2011	2.10%	11673	0.41	5	146	1747	1747
2012	2.10%	11918	0.41	5	149	1784	3530
2013	2.10%	12168	0.41	5	152	1821	5351
2014	2.10%	12424	0.41	5	155	1859	7211
2015	2.10%	12685	0.41	5	158	1898	9109
2016	2.10%	12951	0.41	5	162	1938	11047
2017	2.10%	13223	0.41	5	165	1979	13026
2018	2.10%	13501	0.41	6	168	2020	15046
2019	2.10%	13784	0.41	6	172	2063	17109
2020	2.10%	14074	0.41	6	176	2106	19215
2021	2.10%	14369	0.41	6	179	2150	21366
2022	2.10%	14671	0.41	6	183	2196	23561
2023	2.10%	14979	0.41	6	187	2242	25803

The above results show that if the current population and waste generation trend remains constant in the next 12 year period, the Municipality will produce a total of 25 803 tons of waste for which they will have to make provision for in terms of waste disposal airspace, transport, and personnel.



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Note that the above figure does not take into account any possible recycling, reduction or reuse initiative the Municipality is likely to put into place in the next 12 years, which could reduce the final disposal to waste disposal volume.

4.6.4 Waste Type Analysis

A site visit to the Municipality was undertaken from 11 to 13 March 2013. The Guideline for the Development of IWMPs was used and the following methodology was applied.

The waste stream analysis was calculated by selecting representative samples (an 85ℓ bin was used as a standard) from the High Income, Middle Income and Low Income waste generating areas located in the Municipality. The Municipality was requested to collect 85ℓ black bags from the above areas and deliver them to a central point for sorting. To ensure that a standard was maintained, 5 bags from each area were used. In some cases the waste was already collected from the area and the Municipality went door to door to obtain a sample. The black bags were opened, sorted into the different waste fractions and weighed. The following waste fractions were used:

- Paper
- Plastics
- Glass
- Card board boxes
- Metal (tins)
- Green waste
- Non Recyclables

Samples were taken and sorted into the above fractions. Refer to **Figures 8 to 11** for the waste characterisation obtained from High Income, Middle Income and two samples from Low Income areas, respectively.



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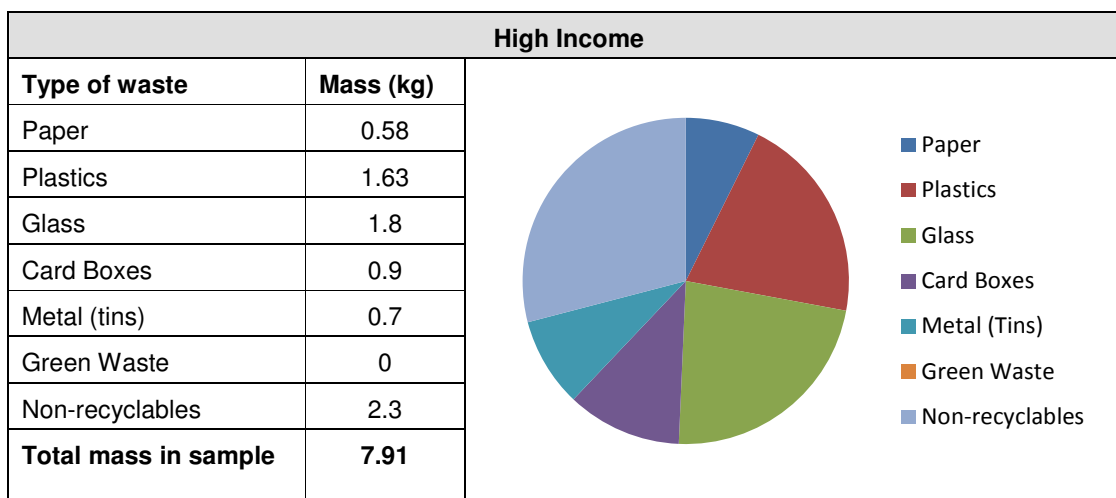


Figure 8: Waste Stream Analysis – High Income

More than half of this sample consists of recyclable material (plastics, glass, card board, paper and metal). There are not green waste present in this sample, indicating that the community either takes the green waste to the waste disposal site themselves or disposes of it by other means.

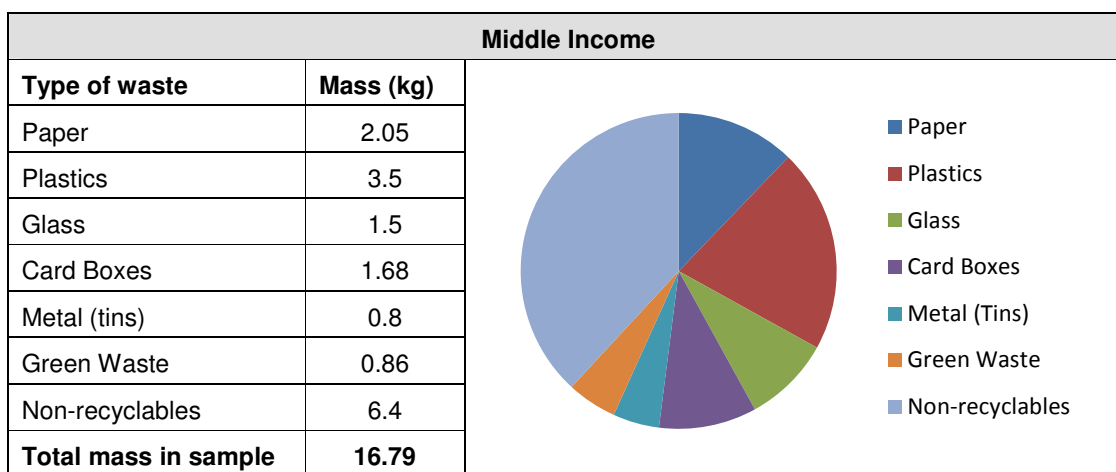


Figure 9: Waste Stream Analysis – Middle Income

This sample consists mainly of recyclable material (plastics, paper, card board, glass and metal), which contribute to more than half. There is very little green waste present in this sample, due to the same reasons as mention above.



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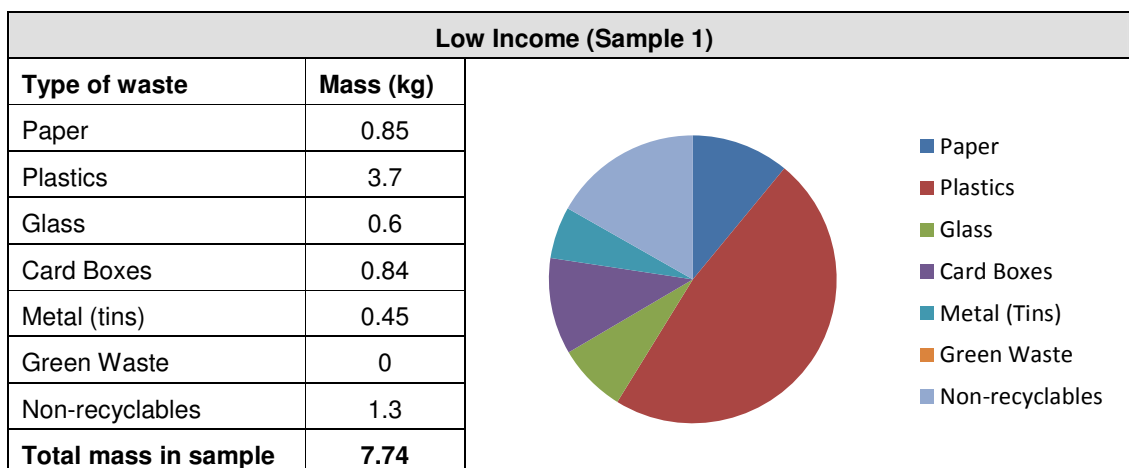


Figure 10: Waste Stream Analysis – Low Income (Sample 1)

Almost half of this sample consists of plastics, followed by paper, card boxes, glass and metal, which is all recyclable material. These materials contribute to more than 80% of the total sample. There are no green waste present in this sample, due to the same reasons as mentioned above.

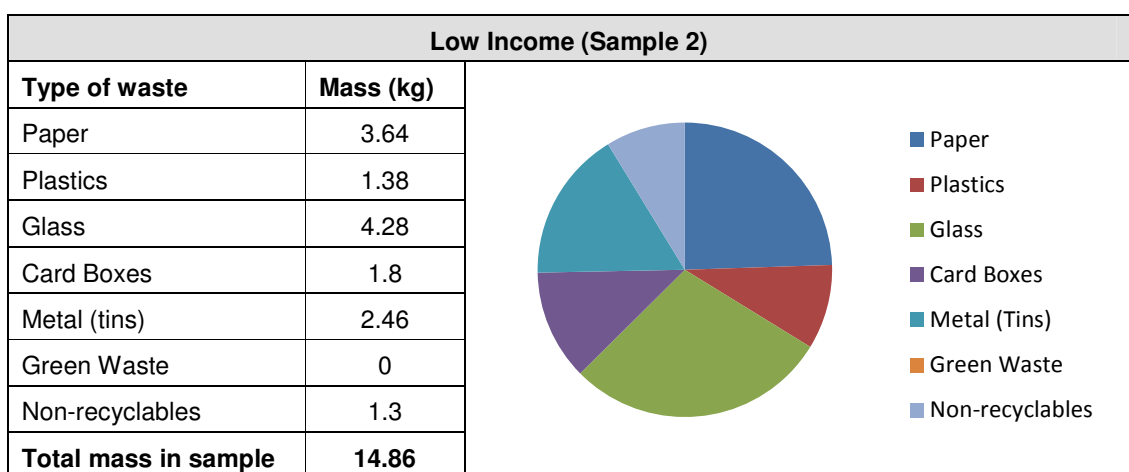


Figure 11: Waste Stream Analysis – Low Income (Sample 2)

This sample consists mainly of recyclable material with glass and paper contributing the most. There are no green waste present in this sample, due to the same reasons as mentioned above.

The above waste characterisation figures are summarised in **Figure 13** below.



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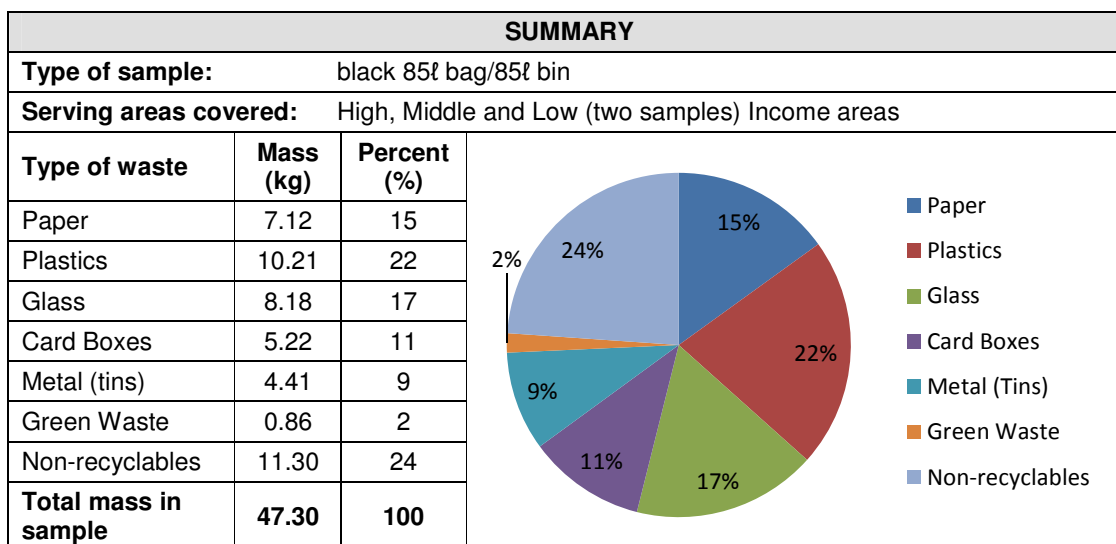


Figure 12: Waste Characterisation – Summary

The above summary shows that the typical waste stream for the Municipality consists mainly of recyclable materials, with plastics contributing the most (22%), followed by glass (17%), paper (15%), card boxes (11%) and metal (9%). This gives a total of 74% recyclable material ending up at the waste disposal site.

4.6.5 Industrial and Mining Waste

The Municipality provides services for the collection of general/light industrial and commercial general waste (non-hazardous wastes). The Municipality does not collect hazardous industrial or mining waste. The possibility of hazardous industrial or mining waste disposal on the municipal waste disposal sites is therefore minimal. During site visits no hazardous industrial or mining waste was observed on the waste disposal sites. Industrial waste is usually collected and disposed of by the generator themselves or by a specialist waste contractor and taken to a hazardous waste disposal site for disposal.

Industries should however be informed about the hazardousness of certain waste streams e.g. fluorescent tubes, empty paint containers, asbestos waste etc. The Department of Water and Environmental Affairs (DWEA) 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 and holes should be punched into the containers before it can be disposed of at the general waste disposal sites.



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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 have 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 waste disposal sites, 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.

It must be noted that all major industries must perform their own Industrial Waste Management Plan in terms of Section 28 of NEMWA. Industrial waste is regarded hazardous until proven not to be and is prohibited for disposal on general waste disposal sites. With proper record-keeping and access control at these sites, these waste streams should be identified and be returned to the generator for proper disposal at a suitable hazardous waste disposal site.

With regard to this IWMP, the responsibility of the Municipality is to ensure that no hazardous waste is disposed of on the municipal waste disposal sites. Mining waste falls outside the definition of waste in NEMWA and is not dealt with in this IWMP. The responsibility of the Municipality is to ensure proper access control and record-keeping that mining waste is not disposed of on the municipal waste disposal sites.

It is proposed that the Municipality compile a list or database of all industries and commercial businesses that may generate industrial/hazardous waste (including those not serviced by the municipality) in their area of jurisdiction, with a contact person/number and an indication of how their hazardous waste is handled, who collects the waste and where it is being disposed of. This information could also be of assistance should hazardous waste be dumped illegally on the municipal waste disposal sites.

4.6.6 Medical Waste

No medical waste was observed on the waste disposal sites during the site visits.

With regard to this IWMP, the responsibility of the Municipality is to ensure that no medical waste is disposed of on the municipal waste disposal sites. Collection, handling and disposal of medical waste are the responsibility of the Provincial Department of Health. Private health care institutions must appoint a service provider for the safe collection, handling and disposal of medical health care risk waste.



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Volumes of medical waste generated within the district could not be attained, since private contractors contracted to deliver the waste services do not give out that information, and the Health Department does not keep records of the amount of waste that is generated or disposed. It must be further noted that the arena of medical waste disposal is contentious due to the amount of illegally dumped waste found from time to time. It has been highlighted that the Department of Health in conjunction with DWEA will formulate and implement a plan detailing the handling of medical waste. Medical waste is classified as hazardous waste and should be treated before disposal is allowed on a hazardous waste disposal site.

It is proposed that the Municipality compile a list or database of all medical waste facilities (including old age homes) in their area of jurisdiction, with a contact person/number and an indication of how their medical waste is handled, who collects the waste and where it is being disposed of. This information could also be of assistance should medical waste be dumped illegally on the municipal waste disposal sites.

4.7 RECYCLING, TREATMENT AND DISPOSAL

4.7.1 Recycling

There are currently no formal Municipal driven waste minimisation activities taking place in the Municipality. There are also no operated recycling facilities or initiatives in the Municipality. This is mainly due to the extensive transport costs with regards to recycling initiatives. Normally, the recycled material needs to be transported to the nearest recycling depot, which is usually situated in bigger towns or cities. Due to the vast distances the Municipality has to transport these materials, recycling initiatives seem not to be feasible.

4.7.2 Garden Refuse

For an additional tariff and per appointment, the Municipality collect garden refuse and disposes of it at the waste disposal sites. Some residents dump their own garden refuse with a private vehicle at the waste disposal sites.

4.7.3 Waste Disposal Sites

The Municipality has jurisdiction over three waste disposal sites, viz. Carnarvon, Vosburg and Vanwyksvlei. All three sites are managed by the Municipality. Carnarvon and Vosburg are permitted/licensed. All the waste disposal sites are experiencing operational problems in varying



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degrees, but mainly as a result of insufficient funding, equipment and personnel shortage as well as interference by uncontrolled reclaiming activities on daily operations. None of the sites are covered on a daily basis and wind-blown litter, vectors, dust and odours are common concerns.

Carnarvon Waste Disposal Site

The Carnarvon waste disposal site was permitted on 30 November 1999 as a G:C:B¹ waste disposal site in terms of Section 20(1) of the Environment Conservation Act, 1989 (Act 73 of 1989). A copy of the permit was not available to attach to this report.

The Carnarvon waste disposal site is located approximately 2.5 km north east from the town of Carnarvon. Refer to **Figure 13** for the locality of the waste disposal site with regards to the town.

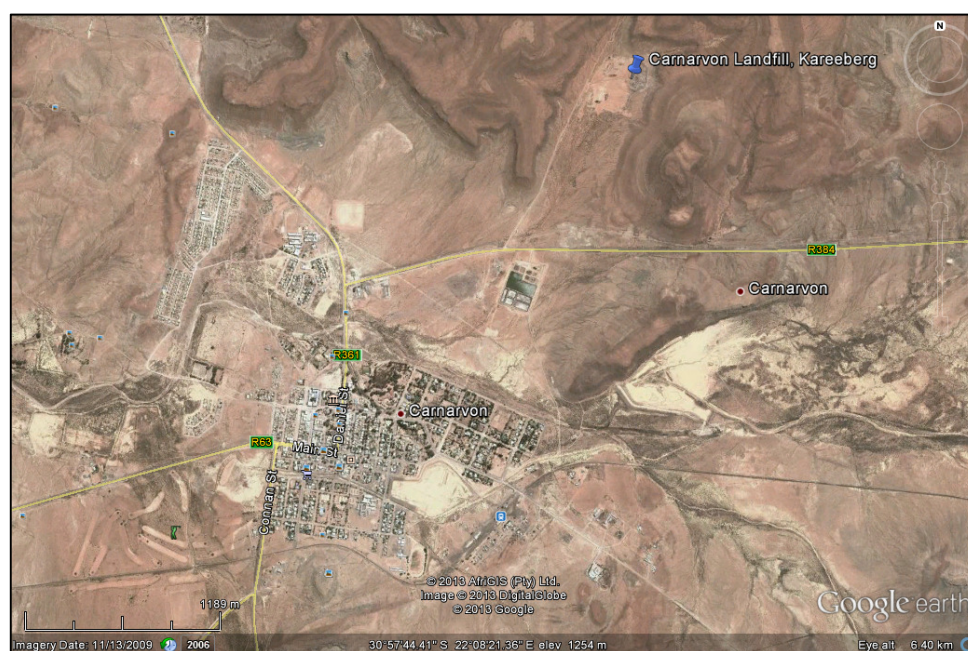


Figure 13: Locality of Carnarvon waste disposal site

The waste collected by the Municipality is disposed of in a hap-hazard manner on the waste disposal site. Waste is then burned on a weekly basis by the Municipality (refer to **Figure 14**). The site is not operated according to the permit conditions. There is a cell structure constructed on site, but the waste is not properly disposed of and not covered on a daily basis (mainly due to the lack of cover material, equipment and personnel). There is no fence around the site, which results in wind-blown litter in the vicinity of the site. There is uncontrolled reclaiming of waste taking place on the waste



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disposal site, which interferes with operational activities and should be formalised (refer to **Figure 15**). The Municipality uses a bulldozer to shape the waste two to three times a year, depending on the availability of the machine.



Figure 14:
Waste burned on a weekly basis



Figure 15:
Uncontrolled reclaimers on the waste disposal site

The status of the Carnarvon waste disposal site is summarised below in **Table 3**.

Table 3: The status of the Carnarvon waste disposal site

Position of site:	2.5 km North East of the town of Carnarvon (Co-ordinates: 30°56.898'S 22°08.853'E)
License:	Yes
Year issued:	30 November 1999
Classification of site:	G:C:B
Type of Operation (end – tip, trench, cell):	Waste is disposed of hap-hazardly and burned
Estimated size of site:	2 Ha
Estimated remaining life of site:	15 years
Separation of fresh and contaminated water:	No
Groundwater monitoring:	No
Estimated Volumes per day, week or month:	2 tons/day
Is cover material available?:	No
Is the drainage sufficient?:	No
Is there access control?:	No
Is the site fenced?:	No
Does the site have a sufficient buffer zone?:	Yes, approximately 1.7 km.



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Type of equipment utilised on site:	No equipment on site
Operating hours:	Officially: 8:00 – 17:00 daily
Site facilities, i.e. ablutions, guard house:	None
Evidence of waste being burnt on site	Yes
Estimating cost for closure:	R 4 085 732 (Cost estimation conducted by <i>Aurecon South Africa (Pty) Ltd</i> , 2012).
Savings plan for closure:	There is currently no savings plan in place for the closure of the site.

Vosburg Waste Disposal Site

The Vosburg waste disposal site was permitted on 3 September 2008 as a G:C:B waste disposal site in terms of Section 20(1) of the Environment Conservation Act, 1989 (Act 73 of 1989). A copy of the permit is attached as **Appendix 3** to this report.

The Vosburg waste disposal site is located approximately 300 m east from the edge of the town of Vosburg. Refer to **Figure 16** for the locality of the site with regards to Vosburg.

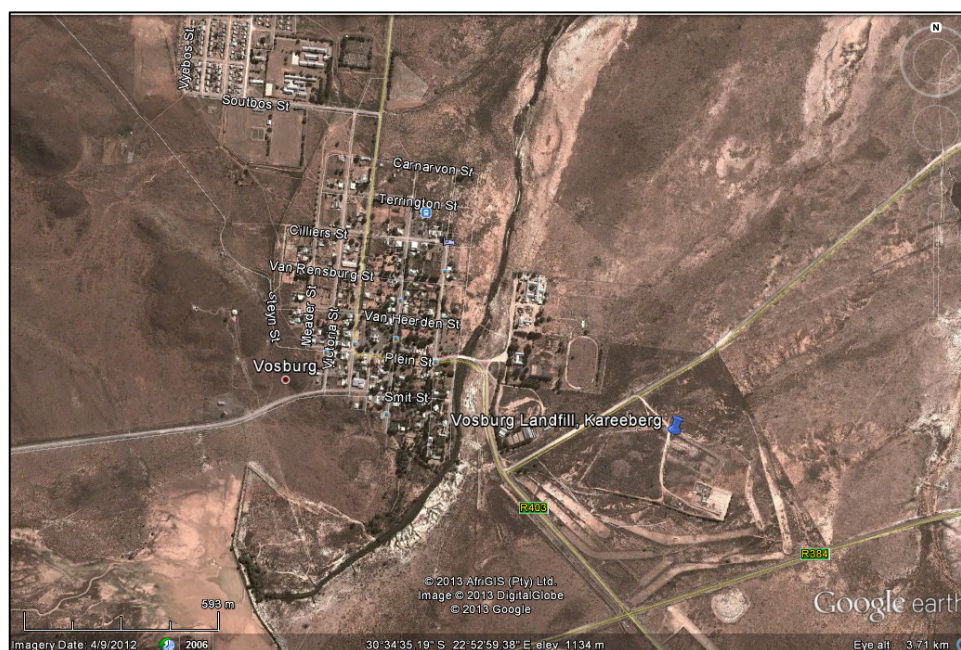


Figure 16: Locality of Vosburg waste disposal site



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The site is operated by the Municipality and the collected waste is disposed of at the site and burned on a weekly basis (refer to **Figure 17**). The waste is being disposed of at random on the site, and is not covered on a regular basis, mainly due to the lack of equipment and personnel. The site has recently been fenced and a guard house facility was built (refer to **Figure 18**). During the site visit, no reclaimers were observed on site. The Municipality uses a bulldozer to shape the waste two to three times a year, depending on the availability of the machine.



Figure 17:
Waste burned on a weekly basis



Figure 18:
Recently built fence, access gate and guard house facility

The status of the Vosburg waste disposal site is summarised below in **Table 4**.

Table 4: The status of the Vosburg waste disposal site

Position of site:	300 m East of the town of Vosburg (Co-ordinates: 30°34.762'S 22°53.329'E)
Permit:	Yes
Year issued:	3 September 2008
Classification of site:	G:C:B
Type of Operation (end – tip, trench, cell):	Tipped and burning of waste
Estimated size of site:	1 Ha
Estimated remaining life of site:	20 years
Separation of fresh and contaminated water:	No
Groundwater monitoring:	No
Estimated Volumes per day, week or month:	1 ton/day
Is cover material available?:	No
Is the drainage sufficient?:	No



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Is there access control?:	No, the site is fenced but not manned
Is the site fenced?:	Yes
Does the site have a sufficient buffer zone?:	Insufficient, residential development approximately 150 m from site
Type of equipment utilised on site:	No equipment on site
Operating hours:	Officially: 8:00 – 17:00 daily
Site facilities, i.e. ablutions, guard house:	Yes, guard house and water tank
Evidence of waste being burnt on site	Yes
Estimating cost for closure:	R 1 587 192 (Cost estimation conducted by <i>Aurecon South Africa (Pty) Ltd</i> , 2012).
Savings plan for closure:	There is currently no savings plan in place for the closure of the site.

Vanwyksvlei waste disposal site

The Vanwyksvlei waste disposal site is not licensed in terms of Section 49(1) of the National Environmental Management: Waste Act (NEMWA), (Act 59 of 2008). However, the site was recently upgraded (fenced and a guard house facility). The license application was compiled for the Municipality, but it has not been submitted to the relevant Authorities.

The Vanwyksvlei waste disposal site is located approximately 500 m north west of the informal residential area of Vanwyksvlei. Refer to **Figure 19** for the locality of the site with regards to Vanwyksvlei.

The site is operated by the Municipality and the collected waste is disposed of at the site and burned on a weekly basis (refer to **Figure 20**). The waste is being disposed of at random on the site, and is not covered on a regular basis, mainly due to the lack of equipment and personnel. The site has recently been fenced and a guard house facility was built (refer to **Figure 21**), although the water tank was either stolen or removed. During the site visit, no reclaimers were observed on site. The Municipality uses a bulldozer to shape the waste two to three times a year, depending on the availability of the machine.



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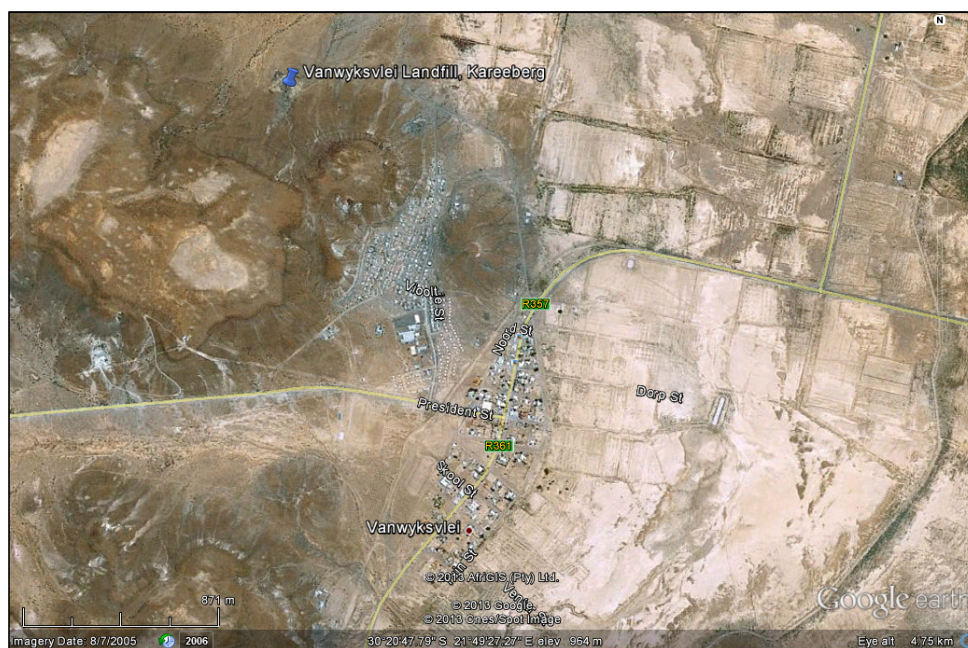


Figure 19: Locality of Vanwyksvlei waste disposal site



Figure 20:
Waste burned on a weekly basis



Figure 21:
Recently built fence, access gate and guard house facility

The status of the Vanwyksvlei waste disposal site is summarised below in **Table 5**.



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Table 5: The status of the Vanwyksvlei waste disposal site

Position of site:	500 m North West of the informal residential area of Vanwyksvlei (Co-ordinates: 30°20.219'S 21°48.920'E)
Permit:	No
Year issued:	N/A
Classification of site:	G:C:B ⁻ (Expected)
Type of Operation (end – tip, trench, cell):	Tipped and burning of waste
Estimated size of site:	1 Ha
Estimated remaining life of site:	20 years
Separation of fresh and contaminated water:	No
Groundwater monitoring:	No
Estimated Volumes per day, week or month:	1 ton/day
Is cover material available?:	No
Is the drainage sufficient?:	No
Is there access control?:	No, the site is fenced but not manned
Is the site fenced?:	Yes
Does the site have a sufficient buffer zone?:	Yes, approximately 500 m
Type of equipment utilised on site:	No equipment on site
Operating hours:	Officially: 8:00 – 17:00 weekly
Site facilities, i.e. ablutions, guard house:	Yes, guard house and water tank
Evidence of waste being burnt on site	Yes
Estimating cost for closure:	R 817 420 (Cost estimation conducted by <i>Aurecon South Africa (Pty) Ltd</i> , 2012).
Savings plan for closure:	There is currently no savings plan in place for the closure of the site.

4.7.4 Transfer Stations

The Municipality does not currently operate any transfer stations in the area.



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4.8 STATUS OF WASTE COLLECTION SERVICES

4.8.1 Service Area and Refuse Collection

As mentioned previously in this report, the Municipality has three towns, each with an operational waste disposal site. Currently, some form of a waste collection service is rendered to all developed and proclaimed areas of the Municipality. All the waste management for the Municipality is co-ordinated by the technical department from the municipal offices at Carnarvon, with managers or supervisors appointed at each town to conduct services. No private contractors are made use of.

All the serviced areas, viz. Carnarvon, Vosburg and Vanwyksvlei make use of a kerb collection system on a weekly basis. This is applicable for both households and businesses collection. The receptacles used for the collection of waste from households are mainly black bags, which are supplied by the Municipality. Street cleaning takes place on a daily basis in all the towns.

4.8.2 Collection Needs

Since the serviced areas within the Municipality consist of small towns, the collection routes are relatively short. All the areas are serviced on a weekly basis. By establishing collection routes, a municipality would be able to properly plan for collection and disposal of waste to and from households to the waste disposal facility/ies, at the same time this information could also be used to gauge whether there is a need to develop transfer stations especially where there are vast travel differences between the collection points and the disposal points in order to save on time and financial resources.

4.8.3 Equipment

Insufficient and unsuitable equipment, fleet age and maintenance issues are impeding service delivery for both waste disposal operation and refuse collection. The positioning of the waste disposal operation within the Technical Department of the Municipality allows equipment to be shared amongst the public services. The problem with this is that the equipment is generic, not specialised for the purpose of waste disposal operations and insufficiently available. **Table 6** below summarises the available equipment used by the Municipality.



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Table 6: Waste management vehicle list

Registration	Model Year	Type of Vehicle	Condition		
			Poor	Fair	Good
BVP 428 NC	2006	Nissan Cabstar			X
BSJ 840 NC	2005	Nissan Cabstar			X
BSJ 844 NC	2005	Nissan Cabstar			X

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

Poor – Vehicle very old and unreliable. Large amounts spent or required to maintain vehicle.

Fair – Vehicle reliable, but mechanical problems beginning to creep in due to high mileage and age.

Good – Vehicle fairly new and reliable.

Vehicles that are 14 years and older is likely to have to be replaced in the near future. The Municipality owns all equipment and vehicles and all vehicles are maintained and serviced by the Municipal workshop.

All the vehicles at the Municipality are relatively new and in a good condition. The Municipality is responsible for the maintenance of their own vehicles. Refer to **Figure 22** for a photograph of the Nissan Cabstar that is used at Vanwyksvlei. Similar vehicles are used at the other areas as well.



**Figure 22:
Nissan Cabstar used at Vanwyksvlei**

Based on the above assessment of the vehicle fleet, the Municipality should compile a vehicle replacement plan to ensure that funds will be available for when the vehicles need replacement. 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 3 of the study, i.e. compiling the draft IWMP.



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4.9 FINANCING FOR WASTE MANAGEMENT

4.9.1 Budget for Waste Management

The following financial figures that were available for waste management at the time of this study are summarised in **Table 7** below, as provided by the Municipality.

Table 7: Waste management budget

Description	Amount	Financial Year
Actual Income	R 2 781 414	2012/13
Actual Expenditure	R 2 636 815	2012/13

The budget for waste management services in the Municipality was not provided as such, but is assumed to be low when compared to the Actual Income and Actual Expenditure. This would basically cover expenses for waste collection services and basic operational expenses i.e. vehicle running cost and staff salaries. The budget might not be sufficient to render an efficient and improved waste management service to the entire area and will have to be increased in the new financial year to allow for all costs including the upgrading of the three waste disposal sites. Where municipal funds are not sufficient alternative funding mechanisms have to be investigated.

4.9.2 Current Tariff Structure for Waste Collection

Table 8 below lists the tariffs and charges for 2012/2013.

Table 8: Current tariff structure for waste removal

Area	Service Rendered	Tariff
Carnarvon, Vosburg and Vanwyksvlei	Household	R 118.12 per month
	Garden Refuse	R 161.34 per month

4.10 ORGANISATIONAL AND INSTITUTIONAL MATTERS

An organizational structure or organogram will determine the available human resources to deliver waste services. The organogram will highlight the number of available staff under each section to perform management duties, planning, waste collection, recycling and disposal, and enforcement etc.



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Further an organizational structure could potentially be used to evaluate gaps in areas where there are new functions that must be performed in order to fulfil the Waste Act's requirements.

The Municipality has no organogram available, but indicated that there is sufficient staff to provide waste collection services to all areas on a weekly basis.

4.11 LEGAL MATTERS

4.11.1 Legal Compliance

The Municipality's current legal compliance pertaining to waste collection and their disposal facilities is shown on the **Table 9** below.

Table 9: Legal compliance for the waste management facilities

Waste Management Facility	Licensed / Permitted	Operated according to licence conditions or minimum requirements
Carnarvon waste disposal site	Full Compliance	Non-Compliance
Vosburg waste disposal site	Full Compliance	Non-Compliance
Vanwyksvlei waste disposal site	Full Compliance	Non-Compliance

All three waste disposal sites in the Municipality are permitted/licensed and conform to the applicable legislation with regards to being authorised. However, all three sites are not being operated according to permit/license conditions or the Minimum Requirements for Waste Disposal by Landfill 1998. The Municipality therefore does not comply fully with the applicable legislation and steps will have to be taken to correct this.

4.11.2 Municipal By-Laws Pertaining to Waste

The Municipality currently has no updated set of by-laws in place with regards to waste management. The current by-laws were previously amended in 1986 and focussed only on end of pipe solutions i.e. waste disposal. Waste minimisation did not feature at all in the historical by-laws. A new set of by-laws relevant to all aspects of waste management needs to be drafted to ensure that the by-laws covers all aspects addressed and required in the National Environmental Management: Waste Act (Act 59 of 2008) i.e. that covers the full hierarchy of waste management from waste generation to final disposal. The by-laws need to cover all aspects of waste management, including aspects such as collection and removal of business and domestic refuse, industrial and trade refuse, garden, special



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domestic and bulky refuse, builders refuse, special industrial, hazardous, medical and infectious refuse, waste minimisation, the solid waste waste disposal site site management, littering, offences and penalties. A set of by-laws will allow for the enforcement of the by-laws, especially those pertaining to illegal dumping which is one of the areas of concern for the Municipal Council.

The following stipulates the NEMWA requirement which needs to be incorporated into the new set of by-laws.

In assessing the National Environmental Management: Waste Act, it was evident that clear responsibilities are assigned to each sphere of government in relation to waste management activities.

Local Government is responsible for the provision of waste management services, which includes waste removal, waste storage and waste disposal services, as per Schedule 5b of the Constitution. Municipalities are obliged to designate a waste management officer from their administration to co-ordinate matters pertaining to waste management. They must also submit an IWMP to the MEC for approval. The IWMP needs to be integrated into municipal Integrated Development Plans (IDP), and the municipal annual performance report must include information on the implementation of the IWMP.

At the discretion of the municipality, they may set local waste service standards for waste separation, compacting of waste, management and disposal of solid waste, amongst others. The local standards must be aligned with any provincial and national norms and standards where these exist. In particular, the existing draft by-laws must be aligned with Chapter 4, Part 6 of NEMWA. The Municipality may also require transporters of waste to register on a list of waste transporters.

The by-laws must be aligned with Chapter 4, Part 6 of NEMWA and how the strategic priorities for the disposal of waste need to be implemented in terms of the regulatory framework provided by NEMWA. Chapter 4, Part 6 of NEMWA prohibits the unauthorised disposal of waste, and requires that where there is no household waste collection service the waste must be disposed of in the most environmentally and economically feasible manner. Section 26(1)(b) requires that waste disposal must be explicitly authorised and accomplished without polluting the environment or harming human health and well-being.



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In terms of Section 68(1) of NEMWA a maximum penalty of R10 000 000 or a jail sentence of up to 10 years can be imposed for unauthorised waste disposal, depending on the severity of the impact on health and the environment.

Section 27(1) of NEMWA provides regulatory instruments focused specifically on littering. It stipulates that private land owners that provide public access to their property must provide suitable receptacles for litter and ensure that it is disposed of (in an authorised manner) before it becomes a nuisance. This is reinforced by Section 27(2), which prohibits littering of public places by individuals.

In terms of Section 68(2) a maximum fine up to R5 000 000 or imprisonment for up to 5 years can be imposed for littering offences, depending on the severity of the offence.

The waste disposal and anti-littering measures provided in NEMWA must be implemented through the aligned by-laws and should be enforced by local law enforcement agencies. These measures should be seen as providing the minimum requirements that need to be implemented in terms of the by-laws.

Proper provision for monitoring, compliance, and enforcement, as well as the role of the Municipal Waste Management Officers (WMOs) should be described in the existing draft by-laws. The WMO in the Municipality should not be located within the waste services or engineering department, but rather in the Municipal Manager's office or a separate environmental regulatory component. Their duties should be limited to the regulatory aspects of NEMWA, whilst service-delivery should be fulfilled by other waste management personnel.

The responsibilities of the WMO in the municipality will be as follows:

- Stakeholder management in relation to implementation of NEMWA.
- Liaison with Environmental Management Inspector (EMI) compliance monitoring activities in the Municipality.
- Municipal and local IWMP: alignment of planning and reporting cycles.
- Capacity building in relation to NEMWA implementation.
- Monitoring adherence to norms and standards in the delivery of waste services.



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Chapter 7 of NEMWA addresses compliance and enforcement matters and stipulates the powers of the Minister in relation to the NEMWA provisions for:

- Preventing and remedying the effects of pollution.
- Rectifying contraventions of NEMWA.
- Obtaining a high court interdict against any person contravening the NEMWA.

Chapter 7, Section 66 of the Act provides for Waste Impact Reports which can be requested by EMIs in cases where a contravention of the Waste Act is suspected and by WMOs where a review of a waste management license is undertaken.

Section 67 of NEMWA lists provisions of NEMWA which constitute an offence if not complied with. The penalties for the offences are listed in section 68 of NEMWA, as mentioned earlier in this section of the report.

Section 6(1)(e) of NEMWA requires that the National Waste Management Strategy which is in the process to be developed provides approaches for securing compliance with the provisions of NEMWA, including “monitoring of compliance”. Effective capacity to undertake compliance monitoring and the concomitant action where required is essential for the achievement of the objectives of NEMWA.

Chapter 7 of the National Environmental Management Act, 107 of 1998 (NEMA) provides for Environmental Management Inspectors (EMIs) to be designated by the Minister and MECs. EMIs are situated at all three levels of government. A key principle to inform the allocation of responsibilities is that an institution cannot police itself. A principle specifically relevant to the Municipality is that in circumstances where the NEMWA act regulates or controls issues that are typically covered by the by-laws and that fall within the competence of the local Municipality (e.g. public nuisance/cleansing), these issues needs to be dealt with by the Local Municipality.

The role of EMIs in the municipality will therefore be as follows:

- Local EMIs will work in conjunction with provincial and national EMIs to execute compliance activities in respect of waste management licenses (reacting to complaints and conducting routine inspections). In accordance with the principal that an institution cannot police itself, local EMIs are not expected to monitor the municipalities’ compliance.



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The Municipality may address non-compliance in that the EMI or WMO may request a waste impact report. The findings of the waste impact report may trigger an enforcement procedure to correct the illegal activity.

The Department of Environmental Affairs will develop norms and standards which will be promulgated in terms of Section 7(1) of the Waste Act. The by-laws can refer to these norms and standards which will address norms and standards for the operation, maintenance and reporting requirements for general waste disposal sites that will be built on the existing Minimum Requirements for Waste Disposal by Landfill guidelines.

The Municipality should take cognisance of the indigent policy on the provision of free basic services. Reference to the criteria for qualification should be set out in the by-laws.

Chapter 4 of the National Domestic Waste Collection Standards can be incorporated into the amended by-laws. It addresses separation at source, collection of recyclable waste, receptacles, bulk containers, communal collection points and frequency of collection.

4.11.3 Illegal Dumping

Illegal dumping of waste is common all over the Municipal area and is especially a problem at conveniently located open public spaces. The Municipality has to collect this waste at an unnecessary cost. The Municipality has recognised the need for education of the people regarding this practice.

4.12 NEW DEVELOPMENTS

There are no new developments in the municipal area.



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5 REVIEW OF THE 2006 IWMP

The previous IWMP for the Pixley Ka Seme District Municipality (2007) was reviewed. The recommendations that were made in the 2007 IWMP that could be evaluated are summarised in **Table 10** below. The table also indicates whether the objectives have been Implemented (Imp.), Partially Implemented (Par. Imp.) or Not Implemented (Not Imp.), since the previous IWMP.

Table 10: Summary of 2007 IWMP review

Objective	Imp.	Par. Imp.	Not Imp.	Comments
Disposal infrastructure: Finalise authorisation for the following: <ul style="list-style-type: none"> Vosburg waste disposal site Vanwyksvlei waste disposal site Upgrade infrastructure and improve management of the following: <ul style="list-style-type: none"> Carnarvon waste disposal site Vosburg waste disposal site Vanwyksvlei waste disposal site 	X	X		Both waste disposal sites are licensed according to ECA. No infrastructure upgrades undertaken and operation of site is not according to permit conditions. Significant infrastructure upgrades undertaken, but operation of site is not according to license conditions. Significant infrastructure upgrades undertaken, but not properly operated.
Waste collection infrastructure: <ul style="list-style-type: none"> Extend service to un-serviced areas Extend and maintain collection fleet Standardise collection and optimise collection route 	X	X		All developments are included in service area. Still unserviced areas according to StatsSA. All vehicles maintained and in good condition. No additional vehicles acquired. Collection is standardised as much as equipment allows. Collection routes not optimised.
Human Resources: <ul style="list-style-type: none"> Effective structure of human resources 		X		No organogram available, but sufficient staff for waste management.



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Objective	Imp.	Par. Imp.	Not Imp.	Comments
Dissemination of information: <ul style="list-style-type: none">Develop and maintain a waste information systemBuild community awareness			X X	No record keeping of waste. No educational initiatives in place.
Management of illegal activities: <ul style="list-style-type: none">Develop cooperation strategies to prevent illegal activitiesAmend by-laws			X X	No strategies in place – illegal dumping still a major problem. By-laws not amended according to NEMWA.



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6 GAPS AND NEEDS ANALYSIS

After reviewing the 2007 IWMP, certain needs pertaining to the waste disposal service in the Municipality were identified that requires attention. These needs are summarised below.

- There are no waste minimisation strategies that have been developed. These need to be addressed and implemented.
- Should any new developments take place in the municipal area, the Municipality should include new developments for the provision of a waste collection and disposal service. It is essential that in conjunction with the Town Planning Section 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 illegal disposal of waste is common all over the municipal area. The illegal disposal should be addressed more extensively in order to manage and minimise the illegal activities pertaining to waste disposal. The Municipality should budget for the purchasing of mass containers to place in strategic places and open spaces where illegal dumping is regularly occurring and clean these containers at the local waste disposal sites when filled.
- A set of new Municipal by-laws should be drafted to address all aspects of the waste management hierarchy as required in terms of NEMWA.
- The Municipality should begin a system of proper record keeping with regards to waste types and quantities that are being received at the waste disposal sites. A Waste Information System (WIS) should be established and maintained to assist the Municipality in the management of their waste division. The information can then be provided to the Pixley Ka Seme District Municipality in order for them to provide it to the Provincial Authorities to be captured on the National Waste Information Centre (SAWIC). DEA has developed National Waste Information Regulations in terms of NEMWA under section 69(1)(y) and (ee) under which reporting is required.
- The Municipality indicated that there are sufficient personnel to provide waste collection services to all areas on a weekly basis. However, there is a need to increase personnel, create new positions and fill them. For example, positions need to be created and filled for three guards at the three waste disposal sites, respectively, in order to control the access onto the waste disposal



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sites and for record-keeping of incoming vehicles and waste quantities to ensure only permissible wastes are disposed.

- The Carnarvon waste disposal site was permitted on 30 November 1999 in terms of Section 20(1) of the Environment Conservation Act, 1989 (Act 73 of 1989). The site is not operated in terms of the permit conditions. The site should be upgraded (properly fenced, guard house with ablution facilities and proper storm water control measures) and the site operations should be upgraded (access controlled, waste compacted and covered on a regular basis).
- The Vosburg waste disposal site was permitted on 3 September 2008 in terms of in terms Section 20(1) of the Environment Conservation Act, 1989 (Act 73 of 1989). Although the infrastructure on site are sufficient, the site is not well operated and should be upgraded in this regard (access controlled, waste compacted and covered on a regular basis).
- The Vanwyksvlei waste disposal site is not licensed in terms of Section 49(1) of NEMWA. The sites should be licensed in terms of Section 45 of NEMWA following the NEMWA licensing process and performing the required specialist investigations, including an EIA. Although the infrastructure on site are sufficient, the site is not well operated and should be upgraded with this regard (access controlled, waste compacted and covered on a regular basis).
- Garden refuse are disposed of at the various waste disposal sites with no processing of the garden waste. The exact volumes of garden refuse need to be determined (entrance control at disposal facilities) to determine the feasibility of composting garden refuse.
- The Municipality should also extend the free basic refuse removal service to indigents in serviced settlements on an on-going basis.
- The Municipality's waste management vehicles that are used for collection are in a good condition, but still require regular maintenance. No equipment is available on the waste disposal sites for operations. The vehicle fleet should be maintained to render a regular waste collection service to all households and to comply with the minimum requirements, and waste disposal site equipment i.e. a TLB or FEL should be purchased to be used with waste disposal operations in each town.
- A detailed financial investigation should be conducted by the Municipality.



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- 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 be standardised. The distinction between the tariffs for waste collection at domestic, businesses and Government Institutions is supported and will 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.
- The extent and financial implications of the free basic refuse removal service to indigents should be determined to ensure that the cost shortfall not covered by the Equitable Share is budgeted for accordingly by the Municipality.
- The Municipality should compile a waste removal map/schedule which illustrates all the daily waste collection areas in the municipal area. Unserved areas will then also be identified and can be included in future waste collection planning. New developments should also be updated on this map/schedule.
- The Municipality should compile a list or database of all industries and medical waste facilities (including old age homes and other private institutions) in their area of jurisdiction, with a contact person and an indication of what is being done with their medical/industrial waste not collected by the Municipality, i.e. who collects the waste and where is it being disposed of.



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7 PERFORMANCE OF THE MUNICIPALITY

During this study and after reviewing the 2007 IWMP for the Pixley Ka Seme District Municipality, the following performance was noted.

The Municipality has increased the service delivery to most households and to indigents in the municipal area therefore the Municipality is performing well in this regard. Furthermore, the Vosburg waste disposal site has recently been licensed and the infrastructure was upgraded according to the license conditions (properly fenced with access gate and guard house facilities were built).

The waste collection vehicles are still in a good condition, but replacement plans need to be established to ensure the funds will be available for when replacement is due. The Carnarvon Waste disposal site also need to be upgraded (properly fenced with access gate and guard house facilities) and the operation at all the waste disposal sites need to improve (access controlled, waste compacted and covered on a regular basis).

The performance of the Municipality rates as average with much room for improvement.



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8 DESIRED END STATE

8.1 INTRODUCTION

Seven focus areas have been identified for the compilation of the IWMP for the Local Municipality. Based on the Gaps and Needs identified in the previous section, a Desired End State has been identified for each of the seven focus areas.

It is important to align the Desired End State in accordance with the National Waste Management Strategy. The official hierarchy adopted in the Government waste management hierarchy, in order of preference, is as follows:

- Waste avoidance
- Waste minimisation
- Waste re-use
- Waste recycling
- Waste treatment
- Waste disposal

It is important that there should be a target date by which these municipal strategic priorities are to be attained within the five years from the date the IWMP has been approved. The following timeframes are suggested for the strategic priorities:

- Immediate: 1 year
- Short-term: 2 to 3 years
- Medium term: 3 to 5 years
- Long term: 5 to 10 years



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8.2 WASTE DISPOSAL INFRASTRUCTURE

This section relates to the development, upgrading and legal compliance of the waste disposal infrastructure. This includes the identification of new infrastructure required, the licensing of existing unlicensed facilities, upgrading of the current infrastructure as well as the improvement of waste management practices. **Table 10** below provides the Desired End State for Waste Disposal Infrastructure in the Municipality.

Table 11: Desired End State for Waste Disposal Infrastructure

GOAL 1: Improve and develop infrastructure to comply with legislative requirements and municipal needs			
IMPLEMENTATION STRATEGIES			
IMMEDIATE	SHORT TERM	MEDIUM TERM	LONG TERM
Operate the Carnarvon and Vosburg Waste disposal sites according to the permit conditions. Identify shortcomings with regards to the operational requirements.	Resolve the identified operational shortcomings. Continue operation according to permit conditions.	Continue operation according to permit conditions.	Continue operation according to permit conditions. Audit and monitor waste disposal site operations.
Apply for funding through available funding mechanisms for the license applications and construction for the existing unlicensed Vanwyksvlei waste disposal site.	Apply for licenses for Vanwyksvlei waste disposal site. Conduct all required specialist investigations.	Upgrade existing Vanwyksvlei waste disposal sites and operate in accordance with license conditions.	Continue operation according to the license conditions. Audit and monitor waste disposal site operations.



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8.3 WASTE COLLECTION

The shortcomings in the available waste collection infrastructure have been identified. This will involve possible waste receptacles, new developments, unserved areas and route planning.

Table 11 below provides the Desired End State for Waste Collection in the Municipality.

Table 12: Desired End State for Waste Collection

GOAL 2: Provide effective waste collection			
IMPLEMENTATION STRATEGIES			
IMMEDIATE	SHORT TERM	MEDIUM TERM	LONG TERM
Identify new developments in the municipal area.	Implement waste collection services to new developments.	Implement waste collection services to new developments.	Implement waste collection services to new developments.
Identify and compile a map or schedule of serviced and unserved areas within the municipality.	Identify various service points for the serviced and unserved areas.	Extend services to unserved areas.	Update and manage the schedule to ensure all areas are receiving collection services.
Identify indigents that are not receiving waste collection services.	Extend free basic waste removal services to indigents.	Continue to identify indigents and extend free basic waste removal services.	Continue to identify indigents and extend free basic waste removal services.
Establish receptacle requirements in all areas within the municipality.	Determine the funding requirements for receptacles.	Implement the receptacle distribution for the identified municipal areas.	Continue and extend the receptacle service.
Apply for funding through available funding mechanisms in order to conduct a Municipal Services Partnership (MSP) / Section 78 study.	Conduct MSP / Section 78 study.	Implement outcome.	



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8.4 RESOURCE EXTENSION

This area involves the identification of shortcomings in the personnel, financial and equipment resources and development of strategies to ensure that the requirements are satisfied. The existing financial resources are analysed and new structures and strategies are developed. **Table 12** below provides the Desired End State for Resource Extension in the Municipality.

Table 13: Desired End State for Resource Extension

GOAL 3: Provide an Effective and a Cost Efficient Waste Management Service			
IMPLEMENTATION STRATEGIES			
IMMEDIATE	SHORT TERM	MEDIUM TERM	LONG TERM
Personnel Resources			
Develop detailed organogram of waste management personnel in terms of the NEMWA requirements.	Fill vacant positions and establish positions required for proper waste management.	Update organogram and appoint staff in vacant positions.	Update organogram and appoint staff in vacant positions.
Financial Resources			
Conduct a detail financial investigation for proper waste management budgeting.	Identify shortages in the budget and identify possible funding sources for these shortages and amend budget accordingly. Implement revised budget.	Identify shortages in the budget and identify possible funding sources for these shortages and amend budget accordingly. Implement revised budget.	Identify shortages in the budget and identify possible funding sources for these shortages and amend budget accordingly. Implement revised budget.
Review tariffs for waste collection and disposal and identify shortcomings.	Implement tariff model (as developed by DEA).	Implement tariff model and amend as required.	Implement tariff model and amend as required
Develop strategy for proper revenue collection.	Implement revenue collection strategy.	Implement revenue collection strategy.	Implement revenue collection strategy.
Equipment Resources			
Review current equipment and identify equipment that needs maintenance and/or replacement.	Develop an equipment replacement plan and acquire funding for the implementation of this replacement plan.	Replace equipment or extend vehicle fleet as required.	Update and amend equipment replacement plan and implement accordingly.



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8.5 WASTE MINIMISATION

This section involves the identification of specific waste minimisation strategies. This can include separation and collection at source, privatisation of reclamation activities and development of collection points throughout the area. **Table 13** below provides the Desired End State for Waste Minimisation in the Municipality.

Table 14: Desired End State for Waste Minimisation

GOAL 4: Decrease waste deposited on waste disposal site			
IMPLEMENTATION STRATEGIES			
IMMEDIATE	SHORT TERM	MEDIUM TERM	LONG TERM
Conduct a study to determine whether the following are feasible: <ul style="list-style-type: none"> Waste minimisation/recycling Establishment of composting facilities 	If feasible , apply for funding through available funding mechanisms for the establishment of waste minimisation infrastructure.	Establish, operate and maintain the waste minimisation infrastructure.	Establish, operate and maintain the waste minimisation infrastructure.
	If feasible , develop a composting strategy to divert green waste to waste disposal site.	Establish a compost recycling plant on the larger town waste disposal site or on the best strategically located waste disposal site.	Compost recycling plant fully operational and is operated in a sustainable manner.
	If feasible , establish mechanisms for promoting separation at source.	Roll out separation at source to 30% of households.	Roll out separation at source to 70% of households.
Establish Municipal Recycling Forum with stakeholders and hold quarterly forum meetings to co-ordinate waste minimisation in order to encourage growth on the recycling section and to discuss possible initiatives for, or by, entrepreneurs.			



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8.6 MANAGEMENT OF ILLEGAL ACTIVITIES

This relates especially 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. **Table 14** below provides the Desired End State for the Management of Illegal Activities in the Municipality.

Table 15: Desired End State for Management of Illegal Activities

GOAL 5: Minimise/prevent illegal activities			
IMPLEMENTATION STRATEGIES			
IMMEDIATE	SHORT TERM	MEDIUM TERM	LONG TERM
Develop an Illegal Dumping Management Strategy.	Implement Illegal Dumping Management Strategy (for example, place mass containers at identified dumping hot spots).	Implement Illegal Dumping Management Strategy (for example, establish community watch and incentive schemes).	Implement and update Illegal Waste Management Strategy.
Clean up illegal dumping areas.	Continue cleaning up illegal dumping areas.	Continue cleaning up illegal dumping areas.	Continue cleaning up illegal dumping areas.
Update the by-laws to address the NEMWA requirements.	Draft and promulgate by-laws.	Proper enforcement of by-laws.	Proper enforcement of by-laws and amend if necessary.
Develop a system for residents to report waste transgressions, for example illegal dumping.	Implement system.	Implement system.	Implement system.



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8.7 WASTE INFORMATION SYSTEM

This section covers the need for effective record keeping and development of a Waste Information System (WIS) as well as the sharing of available information and the co-operation of the various stakeholders within the Municipality. **Table 15** below provides the Desired End State for Waste Information System in the Municipality.

Table 16: Desired End State for Waste Information System

GOAL 6: Capacity building through information sharing			
IMPLEMENTATION STRATEGIES			
IMMEDIATE	SHORT TERM	MEDIUM TERM	LONG TERM
Establish a Waste Information System (WIS).	Keep proper records of waste quantities and types received at the waste management facilities. Provide information to the District Municipality.	Use records for proper planning and decision making.	Ensure that the future planning is effectively carried out.
Compile a list or database of all industries, private waste disposal sites and medical facilities in the municipal area.	Compile a list of industry waste management facilities.	Ensure that all industrial and medical waste are disposed of in a responsible manner.	Ensure that all industrial and medical waste are disposed of in a responsible manner.



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8.8 EDUCATION AND AWARENESS

This section addresses the need for education and awareness campaigns to be launched with regards to proper waste management. This can take place on a community level as well on a more strategic level between stakeholders. **Table 16** below provides the Desired End State for Education and Awareness in the Municipality.

Table 17: Desired End State for Education and Awareness

GOAL 7: An educated community that is aware of the principles of responsible waste management			
IMPLEMENTATION STRATEGIES			
IMMEDIATE	SHORT TERM	MEDIUM TERM	LONG TERM
Recruit environmental/waste education personnel.	Develop an education and awareness strategy and training materials to roll out education and awareness campaigns.	Continue and revise implementation of education and awareness campaigns in a sustainable manner.	Continue and revise implementation of education and awareness campaigns in a sustainable manner.
Develop an awareness campaign with regards to waste minimisation and the hierarchy of waste management.	Launch awareness campaign in the community, e.g. recycling competition at school level.	Amend and continue awareness campaign in order to reach entire community.	Amend and continue awareness campaign in order to reach entire community.
Develop information dissemination strategies between all stakeholders.	Implement information dissemination strategy, for example build community awareness through education.	Implement information dissemination strategy, for example communicate with stakeholders on a regular basis in the form of forums or workshops.	Implement and amend information dissemination strategy in order to ensure adequate communication between stakeholders.
Train waste disposal facility managers / operators to ensure disposal facilities can be operated in accordance with the permit/license requirements.			

Goals and Targets have been identified for each of the focus areas mentioned above. Alternative solutions are developed and evaluated in order to ensure that the most suitable scenario is selected for implementation. The scenarios or alternatives are evaluated “where possible” by cost-benefit analysis to determine its feasibility and efficiency.



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9 GOALS AND TARGETS

The following sections outline the Goals and Targets identified for each focus area and the possible alternatives for each.

9.1 WASTE DISPOSAL INFRASTRUCTURE

Goal 1: Improve and develop infrastructure to comply with legislative requirements and municipal needs.

Target: 1. Ensure that all the waste disposal sites in the Municipality are licensed and comply with legislative requirements.

9.1.1 Target 1: Ensure that all the waste disposal sites in the Municipality are licensed and comply with legislative requirements

As indicated in Section 3 of this report, the Municipality has three active waste disposal sites, viz. Carnarvon, Vosburg and Vanwyksvlei. Carnarvon and Vosburg are permitted/licensed.

None of the waste disposal sites are being operated according to the Minimum Requirements for Waste Disposal by Landfill (Second Edition, DWAF, 1998) and/or permit/license conditions. The infrastructure and operations at Carnarvon waste disposal site should be upgraded according to the permit conditions. The infrastructure at Vosburg and Vanwyksvlei is acceptable, but the operation of these sites needs to be upgraded. Vanwyksvlei should be licensed in terms of Section 45 of NEMWA.

Basic requirements for the safe disposal of waste on waste disposal site include the following:

- **Access control and signposting:** Waste disposals sites must be properly fenced off to keep people and animals out. Pickers, children and domestic animals should not be allowed onto any waste disposal site for safety reasons. Access control at the gate is required to monitor the types and volumes of waste being dumped at the site. A sign post at the gate should indicate the types of waste allowed and the operating hours of the site.
- **Daily compaction and cover:** Good waste disposal site management entails daily compaction and soil coverage of the waste at the workface to prevent wind scatter (windblown litter) and fly breeding. Compaction also uses airspace more efficiently.



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- **Recordkeeping:** Recordkeeping of the incoming waste types and quantities must be as accurate as possible given local circumstances as it is important for planning and reporting purposes. Ways of estimating waste volumes or weights in the absence of more accurate systems such as weighbridges must be explored.

In instances where a municipality does not have a weighbridge, it can make use of templates that were developed by DEA. These provide guidance on how waste quantities can be estimated for the different waste streams. It provides a list of typical vehicles used to dispose of waste in waste disposal facilities. This template makes use of estimations (by mass) that have been made based on the size of the vehicles measured in m³. It also contains possible pre-calculated and estimated density values which are based on the type of vehicle carrying a particular pre-classified waste type. Waste mass estimation system uses a formula that requires waste volume, waste density and waste loading to determine the mass entering a waste disposal facility.

- **Fires must be avoided:** Fires on waste disposal sites are difficult to control due to the presence of waste disposal gas. In addition, fires release harmful substances into the air. Strict enforcement of the minimum requirements for waste disposal sites as well as the permit/licence conditions and tipping fees at waste disposal sites in the absence of by-law enforcement may potentially contribute to incidences of illegal dumping. Therefore enforcement of by-laws is critical in combating illegal dumping.

The following two alternatives are considered:

- Alternatives:**
1. Investigate the feasibility for waste disposal regionalisation,
 2. Privatisation of waste management at the waste disposal sites.

Alternative 1: Investigate the feasibility for waste disposal regionalisation

Regionalisation seems to have become the trend of the future when it comes to waste management. Regionalisation can be defined as a licensed centralised waste management facility that receives waste for treatment, handling, and final disposal from multiple collection points over an entire regional municipal area. The trend of regionalisation has become popular in recent years due to a large number of local municipalities having trouble managing their waste disposal sites in a responsible and environmentally friendly way. The problems municipalities are faced with when it comes to waste management are various and may differ from municipality to municipality. Some of these could



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include amongst other, numerous unlicensed waste disposal sites, poor site designs, poor management of waste disposal sites, lack of expertise and knowledge, lack of capital, lack of staff, lack of skills, disinterest in waste management, improper planning etc.

The answer to some of the problems could be to establish one regional waste disposal site instead of many smaller ones scattered around the region. This would allow for some ease in the management of one large site instead of numerous smaller sites.

If the regionalisation study shows that the Municipality should construct a regional waste disposal site, there would be an advantage in terms of the management and financing of the waste management facilities in the area.

If the regionalisation option is shown to be feasible the regional waste disposal site should be upgraded and developed to cater for the entire region's waste disposal requirements. To assist in the management and transportation of the waste to the regional waste disposal site, small bulk transfer stations should be developed at the selected waste disposal sites and waste should be transported to the regional waste disposal site via bulk skips and long haul transport.

Analysis for Alternative 1:

The following calculations will show a basic analysis of the capital and operational cost of the two options, i.e. waste disposal site development vs. regionalisation, for the development of waste disposal site infrastructure within the municipal area. This calculation was done for a 10 year period. For the purpose of the calculation, a generic operating cost of R57/ton for waste management and R5/km/ton for waste transport was used with a Consumer Price Index (CPIX) of 5%. It was estimated that of the total waste being generated 40% will be taken to the Carnarvon waste disposal site, and 30% to the Vosburg and Vanwyksvlei waste disposal sites, respectively.

The Capital expenditure (Capex) and Operational expenditure (Opex) for waste disposal site development is shown below in **Table 18**.



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Table 18: Cost calculation for waste disposal site development

Capex				
Waste disposal site (10 year period)	Carnarvon	Vosburg	Vanwyksvlei	Sub-Total
License, upgrade and development	R 9 000 000	R 1 000 000	R 4 000 000	R 14 000 000
Site equipment	R 1 500 000	R 1 500 000	R 1 500 000	R 4 500 000
Sub-Total				R 18 500 000
Opex				
Operation of waste disposal site	Total (cumulative tonnes/annum) ¹	Operating cost/tonnes	Sub-Total	
Year 1 to 5	9 695	R 57	R 552 612	
Year 6 to 10	10 757	R 73	R 782 520	
Sub-Total			R 1 335 132	
TOTAL			R 19 835 132	

Note: 1. Determined from the Situation Analysis Report

For the purpose of the regionalisation calculation the transport distances between the waste disposal sites are summarised in **Table 19** below. It would be preferable for the regional site to be situated in Carnarvon, since it is centrally located in the municipal area.

Table 19: Estimated transport distances between waste disposal sites

Town From	Town To	Distance
Carnarvon	Vosburg	90 km
Carnarvon	Vanwyksvlei	80 km

The regionalisation option would typically involve one regional site (Carnarvon) with transfer stations at the other towns (Vosburg and Vanwyksvlei). Waste will be collected and temporarily stored in skips at these transfer stations and then transported to the regional site on a regular basis, where it will be disposed of.

One of the main aspects to consider when regionalising is the transport costs involved. It was determined from experience that the distance travelled from a transfer station to a waste disposal site should not exceed 50 km. It can be seen from the above figures that both distances is significantly more than the recommended 50 km. This will considerably increase the transport cost between the regional site and transfer stations, which will make this regionalisation option unfeasible. To support



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this statement, the estimated Capex and Opex for the regionalisation option are indicated in **Table 20** below:

Table 20: Cost calculation for regionalisation

Capex				
Waste disposal site (10 year period)	Carnarvon	Vosburg	Vanwyksvlei	Sub-Total
License, upgrade and development	R 9 000 000			R 9 000 000
Closure and rehabilitation		R 3 000 000	R 3 000 000	R 6 000 000
Transfer Station		R 1 500 000	R 1 500 000	R 3 000 000
Site equipment	R 2 500 000			R 2 500 000
Skip Loader long haul truck	R 2 000 000			R 2 000 000
19 m ³ skips @ R 50,000 per skip		R 150 000	R 150 000	R 300 000
Sub-Total				R 16 800 000
Opex – Waste Management				
Operation of waste disposal site	Total (cumulative tonnes/annum)	Operating cost/tonnes	Sub-Total	
Year 1 to 5	9 695	R 57	R 552 612	
Year 6 to 10	10 757	R 73	R 782 520	
Sub-Total			R 1 335 132	
Opex – Waste Transport				
Transfer Station	Distance (Return trip) (km)	R/km/tonne (year 1 to 5)	Estimated Waste (tonnes)	Estimated Cost
Year 1 to 5				
Vosburg	180	R 5.0	2 908	R 2 617 636
Vanwyksvlei	160	R 5.0	2 908	R 2 326 788
Year 6 to 10				
Vosburg	180	R 6.4	3 227	R 3 706 675
Vanwyksvlei	160	R 6.4	3 227	R 3 294 822
Sub-Total				R 11 945 920
TOTAL				R 30 081 052

Table 21 below shows the result from the cost analysis of the two options.



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Table 21: Result of the comparison for the costs of the two systems over a 10 year period

Total for waste disposal site Upgrade and Development	R 19 835 132
Total for Regionalisation	R 30 081 052

From the above result it can be concluded that the regionalisation option is more costly for the Municipality than the upgrade and development option. Since the infrastructure at the Vosburg and Vanwyksvlei waste disposal sites are already established and because of the vast traveling distances, regionalisation will not be a viable option for the Municipality. The initial infrastructure cost at the Vosburg and Vanwyksvlei waste disposal sites to close the current sites and construct transfer stations will be more expensive than to maintain and continue the operations in accordance with their authorisation conditions.

Alternative 2: Privatisation of waste management at the waste disposal sites

In order to establish the feasibility to privatise the management of one or more of the waste disposal sites within the Municipality, a Section 78 service delivery assessment should be conducted. A Section 78 (S78) assessment is a process required by the Municipal Systems Act (2000) to assess potential service delivery mechanisms for the provision of a municipal service. The S78 assessment is a strategic decision making process that may have long term service delivery implications. The purpose of a S78 assessment for waste management services is to select the most appropriate service delivery mechanism(s) that will ensure access to efficient, affordable, economical and sustainable waste management services at the waste disposal sites.

Analysis for Alternative 2:

A Section 78 (S78) assessment is a process required by the Municipal Systems Act (2000) and will cost the Municipality an estimated R 600 000. The cost-benefit of privatisation of the Municipality's waste collection services can only be determined after the study has been completed. It is therefore recommended that the Municipality allows for the study within their municipal budget in order to analyse the possible advantages to privatise the collection of waste within its boundaries.

Possible benefits of privatisation of the waste disposal site operations could include:

- Reduced operating cost of waste disposal sites,
- Reduced capital expenditure for the Municipality in terms of plant and equipment procurement,
- Reduced operational expenditure in terms of salaries,



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- Improved operation of waste disposal sites.

9.1.2 Legal requirements/framework

All waste disposal facilities should be licensed in terms of Section 45 of NEMWA. Transfer stations do not have to be licensed in terms of Section 45 of NEMWA if the facilities have a capacity to store less than 100 m³ of general waste at any one time. It therefore falls outside the parameters of the listed activities in Schedule 1 of NEMWA.

9.1.3 Resources and finances

- Municipal Budget
- Municipal Infrastructure Grants or Special Municipal Infrastructure Fund.
- National Government three year cycle and business plans have to be submitted and funds made available to District Municipalities.

9.1.4 The implications should there be lack of action on the strategic Goal 1

If Goal 1 is not implemented, the Municipality will experience environmental impacts associated with disposal such as the contamination of underground water resources, poorly run waste disposal facilities posing health and safety challenges to workers and reclaimers.

9.2 WASTE COLLECTION

Goal 2: Provide effective waste collection

- Targets:**
1. Maintain current service delivery to all areas within the Municipality and extend service delivery to all indigent populations where possible,
 2. Extend service delivery to any new developments and plan for future developments within the Municipality,
 3. Conduct a transportation study to identify and optimise collection routes and number of service points,
 4. Establish receptacle requirements within the Municipality and supply the receptacles to residents in order to optimise collection efforts.



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9.2.1 Target 1: Maintain current service delivery to all areas within the Municipality and extend service delivery to all indigent populations where possible

The extent and financial implications of the free basic refuse removal service to indigents should be determined to ensure that the cost shortfall not covered by the Equitable Share is budgeted for accordingly by the Municipality.

9.2.2 Target 2: Effectively plan to extend service delivery to any new developments within the Municipality

The Municipality should include new developments for the provision of a waste collection and disposal service, should any new developments take place in the Municipality. It is essential that in conjunction with the Town Planning Section, 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.

Alternative 1: Privatised waste collection for new developments

Analysis for Alternative 1:

The Municipality is currently attempting to enforce a strategy to ensure that any new developments within its jurisdiction should allow for a privatisation of its waste collection service. This will exempt the Municipality for a waste collection service to these areas. Although this will work well with middle and high income developments, low income developments will not be able to cater for this requirement. The Municipality will have to allow for the planning and extension of the current collection capacity if any low income housing developments take place.

9.2.3 Target 3: Conduct a transportation study to identify and optimise collection routes and number of service points

Transportation is an expensive component in the waste management cycle due to high fuel prices and vehicle wear and tear. Although it may seem to be a cost saving by reducing the number of trips required to transport the same volume of waste, overloading of vehicles increases wear and tear.

It is proposed that the Municipality conduct a transportation study to identify and optimise the waste transport system. Simple logical systems can be put in place (e.g. effective use of available



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infrastructure and resources). Larger municipalities might find optimisation models useful to determine the most cost effective transportation systems.

Alternative 1: Alternative vehicle and transport options

Analysis for Alternative 1:

Looking at more efficient and cheaper transport systems is encouraged, especially where such alternatives already exist and there will be no additional capital costs required to establish them. This could for example be one of the outcomes of the route optimisation study.

9.2.4 Target 4: Establish receptacle requirements within the Municipality and supply the receptacles to residents in order to optimise collection efforts

It is recommended that the Municipality investigates the option to standardise to best use and supply the selected receptacles to the different communities within the Municipality. The cost of the supply of the receptacles should be carried by the individual property owner to defray the financial burden on the Municipality and to ensure that the individual owners take care of their receptacles.

The following must be considered when selecting suitable receptacles:

- **Cost:** Wheelie bins are more costly than plastic bags, but have a longer lifespan.
- **Size:** The size of the receptacle will be determined by the bulk (volume) of non-recyclable waste generated by an average household in a certain area. The frequency of collection must be considered, as frequencies less than once a week become a health hazard in South African climatic conditions. The maximum size of receptacles for a household is therefore set at 240 l.
- **Pollution:** Plastic bags create an additional source of pollution if not re-used and/or recycled.
- **Compatibility:** The receptacles must be compatible with the type of collection vehicle. In areas where wheelie bins will be feasible, wheelie bins must be phased in as and when transport vehicles that are currently not compatible with wheelie bins are replaced. However, compactor trucks may not be the best method of collection for mixed recyclables.
- **Handling:** The receptacles must be easy to handle by the household and the Service Provider/Municipality and must be easy to clean and have no sharp edges. However, some high



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density areas on steep slopes (although there might be proper roads for trucks) might need other types of receptacles than areas on flat ground.

- **Vermin and vector control:** The receptacles must be impermeable to vermin and flies. This implies that receptacles must not allow moisture or rain water to enter and must not discharge any leachate.
- **Durability:** The receptacles must be fairly resistant to mechanical damage as well as be “animal proof”. Various domestic and other animals damage receptacles in search of food.
- **Availability:** The receptacles must be freely available in the market at competitive prices (to both the Municipality and consumers as the case may be).
- **Number of receptacles:** The size of the household and the volume of waste generated will determine the number of receptacles required. A fixed number can be provided per household and additional receptacles on request and possibly at a cost to the household.

The following specifications are applicable to all receptacles for domestic waste collection.

- Receptacles for the storage of non-recyclable and recyclable waste must be easily distinguishable,
- Receptacles for the storage of non-recyclable waste at households must be:
 - Fit for the safe storage of waste,
 - Such that pollution of the environment and harm to health are prevented,
 - Rigid and durable to within reason prevent accidental tipping, accidental spillage and leaking,
 - Intact and not corroded or worn out,
 - Covered to ensure that animals and insects cannot enter and that the waste cannot be blown away,
 - Not bigger than 240 l.
- Each household supplied with a bin or wheelie bin takes responsibility for the hygiene as well as safekeeping of the bin, and must not purposely damage it or use it for any other purpose than for keeping waste until collection day,
- The Service Provider/Municipality must take care to return the emptied receptacle to the same household from where it was collected for emptying,



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- Where returnable receptacles are in use, household members must mark his or her receptacle to assist the Service Provider/Municipality in returning the receptacle to the same household from where it was collected,
- Elderly and disabled person's households must have the choice to use smaller receptacles or bins that handle more easily than the standard bins provided by the Municipality.

Bulk Containers

Where bulk containers are the most applicable receptacle, the same standards apply as for receptacles as stipulated above. In addition, bulk containers must be fitted with reflectors and where appropriate be placed next to a platform for ease of access.

A formalised domestic waste collection system must be provided to transfer the waste from individual households to the bulk containers in cases where such containers are used for domestic waste. The job creation potential (i.e. involvement of community contractors) of such a domestic waste collection system must be optimised in favour of the local community.

It must be noted that skips are designed for collection of bulky waste such as building rubble or "hard" garden waste which will not become windblown during transportation. Skips are therefore not appropriate for domestic waste collection unless appropriate measures are put in place to prevent windblown litter from the skips i.e. covering nets.

Communal collection points

Communal collection points must be clearly demarcated areas with appropriate receptacles where household waste can be deposited for collection by the Service Provider/Municipality. The Municipality must ensure that communal collection points are kept tidy at all times.

The receptacles must be:

- Covered so as to prevent windblown litter,
- User friendly to allow even children and disabled persons to safely deposit waste into the receptacles.

The collection points must:

- Be easily accessible for waste collection vehicles,



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- Encourage waste separation at source.

Frequency of collection

Acknowledging that waste minimisation is encouraged; the frequency of waste collection must not encourage illegal dumping or cause a nuisance in terms of odours and volumes of waste being stored. Non-recyclable waste must be removed at least once a week.

Recyclable waste must be removed at least once every two weeks and removal must be coordinated with industry (the users of the recyclables) to minimise costs and the clogging of space at transfer stations and depots.

Waste deposited at communal collection points must be collected within 24 hours of receptacles being reported as full or at regular intervals so as not to attract vermin and increase health risks.

Bulk containers must be collected once filled up or within 24 hours of being reported as full, but not less than once a week.

Frequency of collection of recyclable and non-recyclable waste may differ depending on:

- The size of the bins provided and the volumes of waste generated,
- The area of collection in terms of:
 - type of service provided including types of vehicles and equipment used, and
 - distances between collection points and disposal sites to minimise transport costs,
- Climatic conditions – in South Africa's hot weather conditions, the collection of non-recyclable waste less than once a week is a health hazard.

9.2.5 Legal requirements/framework

Equitable waste collection services must be provided to all households within the jurisdiction of the Municipality. The Municipality should adhere to the National Waste Collection Standards developed by the Department: Environmental Affairs (DEA). These standards can be included in the waste management by-laws that are necessary to enforce waste collection practises.

The Municipality should also take cognisance of the indigent policy to provide free waste collection services to those who cannot afford the service.



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Weekly kerbside collection for all households in major towns are recommended with a community based waste collection system (making use of locals), which is recommended for densely populated areas such as informal settlements, which is not easy accessible. The collected waste will be taken to a centralised collection area from where the Municipality can collect the waste for disposal at a suitable or licensed waste management facility.

9.2.6 Resources and finances

Funding sources are the municipal budget and Equitable Share for assistance to provide free basic services to indigents. The resources are to provide a cost effective and sustainable waste collection services in the Municipality.

9.2.7 The implications should there be lack of action on the strategic Goal 2

- The Municipality will be in contravention of the National policy for the provision of basic refuse removal services to indigent households which requires that waste collection services should be delivered to indigent households.
- The Municipality will not contribute to government targets for 2016. Under Goal 2 the target for 2016 is 95% of urban households and 75% of rural households must have access to adequate levels of waste collection services.
- Further, it will contravene any applicable municipal by-laws including the Municipality's Constitutional obligation on the delivery of waste collection services.
- The poor and the most vulnerable will continue to live in unhygienic conditions posing health and safety challenges such as vector borne diseases.



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9.3 RESOURCE EXTENSION

Goal 3: Provide an Effective and a Cost Efficient Waste Management Service

- Targets:**
1. Effective structure and extension of human resources,
 2. Extend and maintain waste collection fleet for service delivery,
 3. Effective financial management for waste management,
 4. Implement improved tariff model,
 5. Decrease non-payment of tariffs.

9.3.1 Target 1: Effective structure and extension of human resources

It is recommended that the Municipality compiles a detailed organogram of waste management personnel and first fill any vacant positions. Thereafter the need for additional positions should be identified, the organogram updated and the new vacant positions filled.

The general human resource needs for the Municipality are the following:

- A Waste Management Officer that will be overseeing the entire Municipality's waste management,
- For each waste disposal site in the Municipality, the following human resources are recommended:
 - Senior supervisor overseeing the general workers, collection route, equipment, etc.,
 - One driver/operator for each of the trucks/equipment,
 - One supervisor overseeing the operation of the waste disposal site (including access control, record keeping, spotting, etc.)
 - At least four general workers.

The above is a recommendation for human resources in order to provide an adequate waste collection and disposal service in the Municipality.

The Municipality must ensure that the vacant positions are filled with suitably qualified personnel and that they receive the training required fulfilling their duties effectively.

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



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Municipality. Based on the fact that, for lower level employees the knowledge is available within the Municipality, it is recommended that experts be appointed to provide more specialised training.

9.3.2 Target 2: Extend and maintain waste collection fleet for service delivery

The Municipality has a few waste management vehicles but is in a severe shortage of equipment for waste disposal operation. The vehicle fleet needs to be extended in order to provide an adequate waste collection and management service. The current collection vehicles are still in a good condition, but equipment is needed all three waste disposal sites.

Fleet Management must allocate a budget to purchase new vehicles for operational purposes within the waste department. Collaboration is required with the fleet management section of the Municipality and external service providers to ensure that turn-around time for servicing the waste fleet is reduced.

Collection vehicles that are the most appropriate for the specific task and geographical terrain must be used. Collection vehicles used for the collection of non-recyclable waste might not be appropriate for the collection of recyclable waste.

Consideration must be given to the following:

- Type of waste to be removed – recyclable or non-recyclable,
- The geographical area of collection,
- The method of collection – for example, whether the receptacles in use need specialised equipment to be lifted or not,
- How much each type of waste can be compacted,
- Any leachate forming when compacting the waste,
- Whether different types of recyclables are collected in one receptacle at the households,
- Collection vehicles used for the collection and transportation of waste must not be used for any other purpose while collecting and transporting waste,
- Health issues (regular cleaning of the vehicles is required) must be considered,



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- Waste must be collected and transported in closed vehicles (covered to ensure no windblown litter generation) to prevent littering during transportation. Non-compatible vehicles must be phased out,
- Maintenance schedules must be adhered to and roadworthiness of vehicles ensured where applicable in order to ensure a reliable waste collection service.

Alternative 1: Privatisation of Waste Collection

Analysis for Alternative 1:

A Section 78 (S78) assessment is a process required by the Municipal Systems Act (2000) and will cost the Municipality an estimated R 600 000. The cost-benefit of privatisation of the Municipality's waste collection services can only be determined after the study has been completed. It is therefore recommended that the Municipality allows for the study within their municipal budget in order to analyse the possible advantages to privatise the collection of waste within its boundaries.

Possible benefits of privatisation of the waste collection services could include:

- Reduced operating cost of waste collection,
- Reduced capital expenditure for the Municipality in terms of trucks and equipment procurement,
- Reduced operational expenditure in terms of salaries,
- Improved waste collection services within the municipal area.

9.3.3 Target 3: Effective financial management for waste management

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

- Operational management 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 and reporting ability,
 - Accessibility of pay points to the public,
 - CRM,



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- Indigent Management with specific regard to allocate equitable share to the accounts.
- Pricing and tariffs:
 - Review policies and compile by-law for legal compliances including tariff policy, credit control, debt collection and indigent policy,
 - Identify gaps in terms of legislation and 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.

The current billing system does not seem to be effective. A pre-paid system should be investigated to be implemented where non-payment of fees is present. The Municipality must also take cognizance of the draft policy on Free Basic Refuse removal and develop an action plan for implementation.

It is further recommended that a detailed financial investigation be undertaken to investigate the operational management of vehicles, salaries, basic service allocation, credit control, pricing and tariffs, and other issues i.e. budget management etc.

9.3.4 Target 4: Implement improved tariff model

To provide a cost effective waste management service the tariff structure should be investigated to be viable and be standardised. The distinction between the tariffs for waste collection at domestic, businesses and Government Institutions is supported and will 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.



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The extent and financial implications of the free basic refuse removal service to indigents should be determined to ensure that the cost shortfall not covered by the Equitable Share is budgeted for accordingly by the Municipality.

In South Africa, each local municipality has a unique set of parameters that influences waste service delivery and tariff charges. Parameters can vary from the type of waste removed, municipal infrastructure and budgeted expenditure on unique services. A comprehensive tariff study is required to accommodate the following:

- Upgrading service delivery and introduction of waste services 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 an equal basis, either by the Municipality or by the community.
- In the medium term it is important that the tariffs identified for service delivery is comparable throughout each Local Municipal area in the District.
- Over a longer term services need to be identified and uniform tariffs implemented throughout the municipal 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.
- The Municipality must also take cognizance of the draft policy on Free Basic Refuse removal and develop an action plan for implementation.

DEA has developed a standard tariff model that can be used as a base for implementation and adaption by the Municipality for an implementation of an improved tariff model.

9.3.5 Target 5: Decrease non-payment of tariffs

To provide a cost effective waste management service, the payment of service tariffs should be improved. Formal households as well as businesses currently serviced are billed on a monthly basis



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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.

9.3.6 Legal requirements/framework

Section 24 of The Constitution of the Republic of South Africa (Act No. 108 of 1996) gives every person a right to an environment that is not harmful to their health or well-being. Schedule 5B assigns the responsibility for waste collection services and disposal to local government. Furthermore, the delivery of municipal services is defined both in the Municipal Structures Act (Act No. 117 of 1998) and the Municipal Systems Act (Act No. 32 of 2000). In addition to the mandate outlined in The Constitution and the Municipal Systems and the Municipal Structures Acts, the Waste Act (Act No. 59 of 2008) requires municipalities to provide containers for recyclables, the waste information system and integrated waste management planning.

The municipality must also draft waste management by-laws that are specific for their area of jurisdiction. The by-laws must be specific on the services that are provided and the charges and tariffs associated with the services. It must also provide for the regulation of services not provided. For example, if garden waste is not removed by the municipality, regulations must state how communities must deal with this waste stream. It must provide for permits to be issued to private companies or persons providing the service on behalf of the Municipality to allow control over these services. The by-laws should also make provision for the implementation of the waste management hierarchy. For example, the by-law may state that certain waste streams must be separated at source and taken to drop-off centres.



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9.3.7 Resources and finances

Several financial resources options for the implementation of the various recommendations were identified:

- Municipal Budget (Shortage of Municipal funds),
- Municipal Infrastructure Grants or Special Municipal Infrastructure Fund. National Government three year cycle and business plans have to be submitted and funds made available to District Municipalities,
- Equitable Share provided by Government should be used for subsidising refuse removal tariffs.

9.3.8 The implications should there be lack of action on the strategic Goal 3

If Goal 3 is not implemented the Municipality would not be able to provide the necessary waste management services as effective financial management and income generation is required for all aspects of management planning. Another problem is that due to the high demand for waste collection services and the limited resources available to municipalities, they often find themselves having to work overtime. This practice is closely regulated by the municipal financial legislation as well as the labour laws. In trying to cope with the increased demand, municipalities often transgress these legislative prescripts of ensuring a certain maximum number of hours a worker can be expected to work overtime as well as the maximum amount of money a municipality can spend on overtime payments. The solution is to balance service delivery and available resources. Innovative planning of collection rounds and schedules can significantly cut the overtime required.

9.4 WASTE MINIMISATION

Goal 4: Decrease waste deposited on waste disposal site

- Targets:**
1. Formalise and encourage recycling activities,
 2. Encourage waste minimisation.

9.4.1 Target 1: Formalise and encourage recycling activities.

Depleting natural resources, together with the environmental impacts of waste and the diminishing capacity of waste disposal sites, has prompted the need for reduced waste generation. The Waste



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Hierarchy which comprises five waste management categories: waste prevention (reduction), re-use, recycling, energy recovery and finally disposal, is applied internationally to reduce the waste ultimately disposed to waste disposal site.

Waste reduction across all levels of society, including at household level, should be encouraged. Awareness and education campaigns play an important role in the success of any reduce, re-use and recycling initiative. The socio-economic conditions prevailing in a specific municipality must be taken into consideration when establishing waste management programmes, as well as when deciding on the type of communication campaign to use. Incentives, together with awareness creation, have the potential to change consumer behaviour.

Incentives for minimising waste can include Pay-As-You-Throw charges, where the waste management charges correlate with the amount of waste being disposed. The less waste households dispose of, the less they pay. For example, charges are calculated on the basis of the number of bags collected or the bin size used for disposal. Apart from financial benefits, there are no real incentives for communities to participate in recycling initiatives. Financial incentives would include reduced disposal charges and financial returns.

Reclamation activities on many waste disposal sites around the country highlight the value of disposed materials. Ideally, re-usable and recyclable waste should be reclaimed before the waste reaches the waste disposal site.

Fluctuating markets for recyclables remain a threat for the sustainability of recycling initiatives. Regulation of the recycling sector by national government may offer some relieve and balance in the local markets. Low volumes of recyclables and the distance to the markets may hamper the success of recycling initiatives in smaller and remote municipalities.

Incentives, for example a cost saving on the monthly disposal charges, would encourage a business to participate in source separation. Buy-back centres are more viable in low income areas, where participating community members are rewarded for collecting and bringing in recyclables.

Separation at source is a relatively new concept in South Africa and hence not practiced in many municipalities. The bulk of the re-usable and recyclable waste is thus disposed to waste disposal site and largely lost to the recycling industry



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Separation at source and the need to collect the recyclables separately has only recently become a requirement with the promulgation of the Waste Act. Incorporating separate collection of recyclables into existing collection systems may be challenging.

Dual collection systems are not necessarily more expensive and time consuming. The total amount of waste to be collected is still the same, but now it has to be separated. Ways to achieve separate collection are:

- a) **Municipalities** can adapt their existing collection vehicles to collect both recyclables and general waste in a cost effective manner: existing municipal trucks can be partitioned into two-cabin trucks; or a truck and trailer system would keep the two waste streams separate in one collection round.
- b) Employing **contractors** to collect the recyclables shift the responsibility from the municipality to the contractor. The contractor receives a monthly fixed payment from the municipality which streamlines the municipal budget process.
- c) Involvement of and **partnerships** with the private sector to provide a kerb side collection service for recyclables would alleviate the cost and time implications on municipalities. Close collaboration with the municipality is however essential to ensure a smooth complementary collection service.
- d) Establishing **drop-off and buy-back centres** in strategic locations for the community members to deliver their recyclables can be another less costly exercise than providing a kerbside collection of the recyclables. Please note that the establishment of these facilities need not be at the cost of the municipality. The recyclers (private sector) are the intended recipients of the waste material and could therefore be approached to invest in collecting recyclables, as well as establishing drop-off and buy-back centres.

Recommendations are to:

- 1) Provide a same day dual collection service. Rear end loaders collect the non-recyclable waste from the wheelie bins and bush trucks collect the yellow bags filled with recyclable waste. All vehicles are owned and operated by the Municipality. The recyclable waste (in yellow bags) is taken to the drop-off centres where the recyclable materials are further sorted.
- 2) Provide a Municipal 3-bag same-day collection system. One to collect general waste (maximum of one black bag per week), the second for recyclables (no limit for green bags per week), and the third for garden waste (maximum of two blue bags per week). Waste can be collected with the



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existing fleet or with a separate cage truck. All waste is collected from residential areas in one trip only.

- 3) Employing contractors – dual same-day collection separation at source need to be rolled out to all non-rural areas. Black bags should be provided for general waste while orange bags for recyclables. Private contractors then pick up the orange bags while the municipal trucks collect the black bags. The contractors collect first and leave behind the badly sorted waste which is collected by the municipal trucks as part of the general waste for disposal to the local waste disposal site.

In order to ensure maximum diversion of re-usable and recyclable waste from waste disposal site, a wide range of re-use and recycling programmes, including composting should be initiated. It is important to ensure sustainability of such programmes through the provision of the necessary support, such as resources for establishing recycling and composting facilities and creation of sustainable markets for the products.

Dirty Material Recycling Facilities should be established at your large waste disposal site (Carnarvon) to divert recyclables from waste disposal site. Builders' rubble should be crushed and can be used in road construction. Garden waste should be chipped and compost should be made on a dedicated area on the waste disposal site. A composting mixer that is pulled by a tractor could be purchased for this action. The mixer adds water and turns the compost.

In order to ensure maximum recycling in the Municipality, it is recommended that a formal agreement be reached with waste recycling industries and companies. These companies will then work together with potential waste recyclers in the Municipality. DEA has signed agreements with the plastic, glass, waste tyre and Poly-Ethylene Terephthalate (PET) industries. To this end, it is further recommended that the DEA be approached to facilitate the recycling of the aforementioned waste streams. In addition to this, appoint a Waste Specialist to enhance the current programmes and to identify, monitor and evaluate recycling opportunities and initiatives within the Municipality.

9.4.2 Target 2: Encourage waste minimisation

Waste minimisation at source is more effective than recycling since it reduces removal and transport costs. It is therefore recommended that waste sorting and minimisation be encouraged amongst the households and businesses within the Municipality. Refer to Target 1 above for more detail with regards to waste minimisation.



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9.4.3 Target 3: Conduct waste minimisation study

Some of the initiatives mentioned in Target 1 above should be implemented as soon as possible. In the short term a waste minimization study should also be performed in order to determine from existing and new initiatives the volumes of waste that is currently being recycled, reused and recovered. With these study results, specific achievable targets can then be set to increase the volumes of waste (recyclable consumables) to be recycled in the medium and long term.

9.4.4 Legal requirements/framework

Waste minimisation should be encouraged via by-laws that should be updated to make provision for the implementation of the waste management hierarchy.

9.4.5 Resources and finances

Several financial resources options for the implementation of the various recommendations were identified.

- Municipal Budget (Shortage of Municipal funds),
- Municipal Infrastructure Grants or Special Municipal Infrastructure Fund. National Government three year cycle and business plans have to be submitted and funds made available to District Municipalities,
- Capital gains from the recycling market.

9.4.6 The implications should there be lack of action on the strategic Goal 4

If Goal 4 is not implemented, the Municipality will not adhere to the principles of the NEMWA and waste disposal airspace will not be optimised.



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9.5 MANAGEMENT OF ILLEGAL ACTIVITIES

Goal 5: Minimise/prevent illegal activities

- Targets:**
1. Develop an Illegal Dumping Management Strategy,
 2. Improve removal of illegally dumped waste.

9.5.1 Target 1: Develop an Illegal Dumping Management Strategy

The Municipality experiences problems with illegal dumping within its jurisdiction. 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. It is anticipated that a certain portion of these activities will be eliminated through proper community awareness programs, as discussed above.

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 Municipalities 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 Municipalities can take to minimise illegal dumping and introduce such a penalty system.

The first is that the Municipal by-laws must be formulated/revised and be enforced in order 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, or establishing garden refuse transfer stations throughout the town 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 enforcement of the by-laws and policy and strategy development by the



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Municipality will assist with the illegal dumping problem. 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 disposal facility.

The estimated costs of skips are summarised in **Table 22** below:

Table 22: Estimated Skip Costs

Size of skip	Cost of skip
5.5 m ³	R 7,000.00
6 m ³	R 7,500.00
9 m ³	R 9,000.00
11 m ³	R 10,100.00

9.5.2 Target 2: 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.

9.5.3 Legal requirements/framework

Section 24 of The Constitution of the Republic of South Africa (Act No. 108 of 1996) gives every person a right to an environment that is not harmful to their health or well-being. Illegal dumping should be prevented by enforcing the waste management by-laws of the Municipality.

9.5.4 Resources and finances

Several financial resources options for the implementation of the various recommendations were identified.

- Municipal Budget (Shortage of Municipal funds),



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- Municipal Infrastructure Grants or Special Municipal Infrastructure Fund. National Government three year cycle and business plans have to be submitted and funds made available to District Municipalities.

9.5.5 The implications should there be lack of action on the strategic Goal 5

If Goal 5 is not implemented, the municipal officials will not be able to enforce waste management requirements i.e. as set in by-laws. This will result in transgressions i.e. illegal dumping of waste. A system to involve residents to assist the municipal officials to report waste transgressions will help the short staffed Municipality to keep a watch full eye all over the municipal area.

9.6 WASTE INFORMATION SYSTEM

Goal 6: Capacity building through information sharing

- Targets:**
1. Develop and maintain a Waste Information System (WIS),
 2. Contribute to Inter Municipal Waste Information Workshops.

9.6.1 Target 1: Develop and maintain a Waste Information System

The National Waste Information System (SAWIS) as introduced by the Waste Act (Act No. 59 of 2008) is intended to provide a centralised data bank for waste management in South Africa. It standardises the recording of waste data and ensures that accurate and reliable data is easily available. Information captured on the Waste Information System (WIS) is accessible to all government departments, the private sector and the public in general. The Waste Information Regulations (GR 718 of 2010) regulate the reporting of waste information in order to improve waste management and ultimately protect the environment. These regulations apply to all waste management activities in South Africa, where all such facilities are to be registered. Good information management is critical in ensuring easy access of accurate and reliable data which could then be used in planning (the development of IWMPs). Plans informed by accurate data are likely to be relevant to the site specific conditions, practical and implementable. Easy access to accurate information is further also useful towards meeting reporting requirements, raising awareness and for capacity building.



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The main target would be to develop and maintain a WIS that compliments the national SAWIS. This system would allow for record-keeping 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 Provincial authority.

The costs involved in the development of a WIS will vary depending on the structure and contentiousness of the area. ***DEA has developed a generic WIS that may be provided to the Municipality for implementation.***

9.6.2 Target 2: Contribute to Inter Municipal Waste Information Workshops

The current difference in service delivery management within the Northern 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 Provincial Environmental Department.

9.6.3 Legal requirements/framework

Any person (including the Municipality) conducting an existing waste management activity listed in Annexure 1 of the National Waste Information Regulations under Section 69(1)(y) and (ee) of NEMWA must apply to DEA to be registered on the South African Waste Information System (SAWIS) to report on waste, including the types of waste, source from which waste comes from and quantity of waste in tons. The regulations are however only applicable to waste disposal sites where more than 150 tonnes of waste is being disposed of per day and is therefore the Regulations are not applicable to the Municipality. However, it is suggested that the Municipality should properly record the waste volumes disposed of for as long as the waste disposal sites are in operation.

9.6.4 Resources and finances

Several financial resources options for the implementation of the various recommendations were identified.

- Municipal Budget (Shortage of Municipal funds),



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- Municipal Infrastructure Grants or Special Municipal Infrastructure Fund. National Government three year cycle and business plans have to be submitted and funds made available to District Municipalities.

9.6.5 The implications should there be lack of action on the strategic Goal 6

If Goal 6 is not implemented, the performance within the municipal area will not improve. If personnel do not have the correct information at hand, they will not be able to properly plan and manage waste in their municipal area.

9.7 EDUCATION AND AWARENESS

Goal 7: An educated community that is aware of the principles of responsible waste management

Target: 1. Build Community Awareness.

9.7.1 Target 1: Build community awareness

The Municipality presently does not have any formal community awareness campaigns that are directed at informing the general community with regards to waste management.

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 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 road shows to demonstrate and inform people of waste related issues.

An Awareness Campaign is crucial to make people aware of the Integrated Waste Management Plan of the Municipality. This awareness campaign needs to have the full support of the Municipality and



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other Government Departments. This campaign will need to look at an integrated approach to community awareness; this can include one or more of the following campaigns:

- A:** Site visits by schools, community groups and businesses to a recycling centre.
- B:** Awareness programs at schools, crèches, hostels, etc.
- C:** Town and school clean up campaigns, with prizes for the most waste collected.
- D:** Awareness through plays, pantomimes, dances and song.
- E:** Teaching of community members to use waste as a resource in their homes and to make crafts, which can be sold.
- F:** Encouraging schools to establish recycling centres and use as much of the waste for arts, crafts, gardening and functional gadgets.
- G:** Adopt a spot campaign.
- H:** Environmental Clubs.
- I:** Community Awareness
- J:** Workshops

A brief description of each of the abovementioned campaigns follows:

A. Site visits by schools, community groups and businesses to a recycling centre

Each recycling centre will have trained staff that will be capable of handling visiting groups to the centre. This site visit will teach the visiting group exactly how a recycling centre is run. They will also be exposed to the downstream projects like the composting and vegetable gardens. These ideas can then be replicated at each of the schools or community houses.

B. Awareness programs at schools, crèches, and hostels

This will involve individual site visits to each school (can be done by Provincial environmental officials). Each school will be required to firstly arrange a clean-up campaign in and around the school. This waste is to be brought back to the school where it will be analysed. The students will be given the opportunity to find uses for each type of waste. They will also be shown examples of things made from waste. They will then be shown what to do with the waste. This could include crafts, swings, and sold as scrap for income, arts, handy tools, blocks or useful agricultural gadgets. The school will also be encouraged to establish a waste management system at the school. This could include a recycling centre and waste management policy.



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The students will then be introduced to the competition. This will include the following:

- Drawing and colouring in competition which depicts a dirty and clean environment,
- Make any toy from waste,
- Make a recreational item from tyres,
- Make any handy item from a PET bottle,
- Make anything from tin,
- Make anything from paper or cardboard,
- Make anything from glass.

The above categories are distributed between the grades by the Principle. The Provincial Environmental Department can allocate a small budget for the materials needed; will allocate a time period where they will return to monitor the progress. On completion the schools submit their best examples to the judging committee.

The final judging will be done by prominent members of the community and ended off with a ceremony and prize giving for the best categories.

The other competition can be run by “Collect-a-Can”, plastic or glass recycling companies and will also be introduced to each school. This involves the collection of tin cans only at each school. The school is encouraged to collect cans from homes, functions and public areas. These cans are sent to the recycling centre where the cans are weighed and documented. Each year the total tonnage is added up and submitted to Collect-a-Can Competition. The school with the most cans collected per school member wins a prize for the school.

C. Town and school clean up campaigns

Part of any waste program comes the initial cleaning up of the town, school or village. Here the local schools and church groups can be involved. To make the campaign more appealing there should be some sort of incentive like prizes, snacks or cash incentives for the schools benefit. This can easily be coordinated with the Department of Education and School heads.

Part of the clean-up would include a presentation on what the clean-up is all about and why it is being done. The opportunity should be taken to encourage the setting up of small recycling centres. On completion of the clean up the children will return to the respective schools with the waste collected. This waste will then be tipped out and analysed to see what types of waste was collected and why



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people threw it away in the first place. The students should then be encouraged to think of uses for the waste.

The Local Municipality will then take this waste away to the local waste disposal site.

D. Awareness through plays, pantomimes, dances and song

This campaign would also involve schools in the area. This would start with a visit to the relevant institution to introduce the program. The institution would then develop a pantomime, dance or song to encourage waste awareness. The group would be allocated a small budget to create costumes and props. They would then visit public meetings for school functions to promote waste awareness.

E. Teaching of community members to use waste as a resource in their homes and to make crafts from the waste

This approach would be encouraging any interested community member to use waste as a resource at their homes. Poor communities are normally the best recyclers and waste users as they have through necessity used waste to build their homes. Some ideas would be as follows:

- Using 2 l plastic bottles for rain gauges, funnel or for planting in.
- Using waste paper to make usable furniture, trays or bins.
- Using plastic bags to make bags, mats, jackets and hats. These items are of such good quality that they can be sold for income generation.
- Old glass bottles can be crushed and used to make concrete bricks and blocks.
- Tins can be used to make hats, lunch boxes, arty flowers, handbags and ashtrays.

F. Encouraging schools to establish recycling centres and use as much of the waste for arts, crafts, gardening and functional gadgets.

Schools can be taught how to use their waste for the arts and crafts programs or to be used in the vegetable gardens or be used to retain erosion banks.

G. Adopt a spot campaign.

The idea behind it is to encourage schools, businesses, Woman's groups, Municipalities etc. to adopt a part of the Municipality which is important to them. This might be a park area, which is over grown, dirty and vandalized. The nearby school can now adopt that site and it will be their responsibility to



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keep it in working order for the year. Sponsors can be approached to assist in fixing the park up of paying for tools and labour. A sign is then erected on site with the adopted group's name on it.

H. Environmental Clubs

- The establishment of environmental youth clubs is seen as an integral part of the programme that has a potential to draw youth involvement into implementing environmental outreach programs.
- Ward Councillors could be encouraged to revive or set up environmental desks where street representatives could be allocated.
- The Provincial Environmental Department will be intimately involved in establishing these clubs.

I. Community Awareness

The neighbouring schools are also involved in school competitions and drama performances in order to strengthen the public awareness campaign. Although there will be efforts made to inform the community about waste management and the importance of the environment, some community members will still burn their waste, hawkers will continue throwing waste on the ground despite the provision of waste bins for their convenience, the reason being they are creating more jobs for waste collection.

In order to enhance the public environmental awareness campaigns a few suggestions are made below:

- The environmental advisory unit within the Provincial Environmental Department should be engaged as their contribution could be enormous for the programme,
- The establishment of environmental youth clubs is seen as an integral part of the programme that has a potential to draw youth involvement into implementing environmental outreach programs,
- Community meetings, road shows, interaction through local radio stations, door-to-door distribution of information are tools that should be implemented to encourage the recycling activities,
- Local schools should be encouraged to participate in recycling activities and environmental education should be involved in school curriculum,
- Ward Councillors could be encouraged to revive or set up environmental desks where street representatives could be allocated,
- Meeting with traditional leadership to encourage their ownership and communication of such initiatives into the rural areas,



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- Publication of articles in local newspapers, printing of posters and information leaflets.

J. Workshops

Financial institutions should be engaging the community in environmental public awareness campaigns organized through workshops to inform the community about programmes and funders. The workshops should highlight to the community the importance of sorting their waste at home.

Although there were efforts made to inform the community about waste management and the importance of the environment, some community members still burn their waste, hawkers continue throwing waste on the ground despite the provision of waste bins for their convenience, the reason being they are creating more jobs for waste collection.

PUBLIC INFORMATION

The establishment of a library with vast information on recycling, waste minimisation and integrated waste management. Therefore, if someone is looking for information, a central office which could be at the existing Municipal offices will have a selection of books on the above subjects and numerous national and international publications on waste issues.



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10 FUNDING/RESOURCES AND FINANCES

The Municipality will have to source funding for the proposed goals and targets. The funding mechanisms used could be from internal sources (operational budgets) or outside sources like government departments, private sector, and international funders/donors.

Possible donor sources for the Municipality are as follows:

- Municipal Infrastructure grant (MIG)
- Department of Environmental Affairs (DEA) – Various programmes and partnerships
- Department of Public Works (DPW) – Extended Public Works Programme (EPWP) for labour intensive construction methods.
- Department of Trade and Industry (DTI) – Various Programmes and Schemes
- Industrial Development Corporation (IDC) – Green Energy Fund
- Royal Danish Embassy (DANIDA)
- World Bank
- United Nations Development Programme

The different alternatives to achieve the Desired End State have been identified. The alternative solutions must now be evaluated and from these the most feasible scenario, or combination, of scenarios, will be selected for drafting the IWMP for implementation by the Municipality.



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11 RECOMMENDATIONS

The following recommendations have been derived from the Situation Analysis and the Desired End State:

Target	Recommendations	Implementation Detail
Goal 1: Improve and develop infrastructure to comply with legislative requirements and municipal needs.		
Target 1: Ensure that all the waste disposal sites in the Municipality are licensed and comply with legislative requirements	License unlicensed Vanwyksvlei waste disposal site for continued operations	The site licensing procedure must be done in accordance with the Minimum Requirements for Waste Disposal by Landfill and the Licensing Process in terms of Section 45 of the NEMWA Investigations inter alia includes a topographical and topocadastral survey for waste disposal site upgrade designs and an Environmental Impact Assessment.
	Upgrade operations at all three waste disposal sites	The Carnarvon waste disposal site should be upgraded according to the permit conditions and/or Minimum Requirements for Waste Disposal by Landfill document, published by DWAF in 1998. The site should be upgraded (properly fenced, guard house with ablution facilities and proper storm water control measures) and the site operations should be upgraded (access controlled, waste compacted and covered on a regular basis). The Vosburg and Vanwyksvlei waste disposal site should be upgraded to comply with the permit/license conditions and Minimum Requirements for Waste Disposal by Landfill document, published by DWAF in 1998. Although the infrastructure on site are sufficient, the site is not well operated and should be upgraded in this regard (access controlled, waste compacted and covered on a regular basis).
	Conduct Audit Management of waste disposal sites to maintain favourable operations	A professional service provider should be appointed on an annual basis to audit each of the waste disposal sites according to license conditions or waste disposal management according to Minimum Requirements. The waste disposal site audit reports will enable the Municipality to take corrective steps on non-conformance items in order to improve the management at the waste disposal sites and in order to comply with applicable legislation.



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Target	Recommendations	Implementation Detail
	Appoint service providers to prepare upgrade designs, and put out tenders for the various construction work	A professional service provider should be appointed by the municipality to compile upgrade designs for each of the waste disposal sites and prepare drawings for contraction. The service provider will also assist with the tender letting process and site supervision of the construction work.



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Target	Recommendations	Implementation Detail
Goal 2: Provide effective waste collection		
Target 1: Maintain current service delivery to all areas within the Municipality and extend service delivery to all indigent populations where possible	Extend services to un-serviced areas	The Municipality should also extend the free basic refuse removal service to indigents in serviced settlements on an on-going basis.
Target 2: Effectively plan to extend service delivery to any new developments within the Municipality	Add new residential development areas as it develops	Extend services to include the proposed new developments in service delivery system.
Target 3: Conduct a transportation study to identify and optimise collection routes and number of service points	Optimise collection routes	Amend and optimise collection route.
Target 4: Establish receptacle requirements within the Municipality and supply the receptacles to residents in order to optimise collection efforts	Continue with current refuse collection system and phase in receptacles to existing development	Continue with current refuse removal system, but phase in Standard Refuse Receptacles with new collection equipment.



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Target	Recommendations	Implementation Detail
Goal 3: Provide an Effective and a Cost Efficient Waste Management Service		
Target 1: Effective structure and extension of human resources	Develop detailed organogram	Develop a detailed organogram of waste management personnel in terms of the NEMWA requirements.
	Fill current vacant positions and employ additional staff to service new areas and to manage disposal facilities	<p>It is recommended that the Municipality employ a Waste Management Officer to oversee the entire Municipality's waste management.</p> <p>For each waste disposal site, the following human resources are recommended:</p> <ul style="list-style-type: none"> • 1 x senior supervisor overseeing the general workers, collection route, equipment, etc., • 1 x driver/operator for each of the trucks/equipment, • 1 x supervisor overseeing the operation of the waste disposal site (including access control, record keeping, spotting, etc.), • At least 4 x general workers.
	Employ new staff as vacancies develop	Fill current vacant positions and create posts to extend human resources capacity to fulfil service requirements, if necessary.
	Provide training for low level staff and for specialised positions	Locally train low level staff and provide specialised training for specialised positions and ensure proper training of contracted personnel.
Target 2: Extend and maintain waste collection fleet for service delivery	Compile equipment replacement plan	Compile equipment replacement plan according to the needs of the Municipality.
	Purchase required equipment and replace equipment as and when required	Ensure budgeting and/or funding is in place to purchase new equipment and replace fleet as and when required according to the replacement plan.
	Maintain equipment	Maintain current collection fleet and negotiate maintenance contracts with vehicle suppliers.



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Target	Recommendations	Implementation Detail
Target 3: Effective financial management for waste management	Perform detailed financial investigation	Perform detailed financial investigation which will address the issues as described in Section 8.3.3 of this report.
Target 4: Implement improved tariff model	Evaluate level of service delivery and develop standardised tariffs for specific levels of service and update on a yearly basis	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 be standardised. The distinction between the tariffs for waste collection at domestic, businesses and Government Institutions is supported and will 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.
Target 5: Decrease non-payment of tariffs	Implement pre-paid system	Implement pre-paid system
All Goals and Targets	Update by-laws to comply with NEMWA requirements and review and update by-laws on a yearly basis	Update by-laws to comply with NEMWA requirements which will address all aspects of the waste management hierarchy. Review and update by-laws on a yearly basis.



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Target	Recommendations	Implementation Detail
Goal 4: Decrease waste deposited on waste disposal site		
Target 1: Formalise and encourage recycling activities.	Investigate possible recycling initiatives and identify stakeholders to become involved	Refer to Section 8.4.1 of this report and investigate possible recycling initiatives to promote and support as well as identifying stakeholders to become involve in recycling activities.
	Provide recycling containers throughout town	Identify strategic locations throughout town and provide recycling containers on these locations.
	Add additional containers to service new development areas	Place additional recycling containers in new development areas.
Target 2: Encourage waste minimisation	Promote waste minimisation under residents and businesses	Promote waste minimisation under residents and businesses
	Regular forum meetings with stakeholders	Regular forum meetings with stakeholders to co-ordinate waste minimisation and to encourage growth on the recycling section.
	Implement incentive schemes for in-house recycling for business and homes	Implement incentive schemes for in-house recycling for business and homes.
	Investigate the option of establishing a composting facility	Investigate the option of establishing a composting facility at a central location (possibly in Carnarvon).
Target 3: Conduct waste minimisation study	Conduct a waste minimisations study	A waste minimisation study should be undertaken in order to determine from existing and new initiatives the volumes of waste that is currently being recycled, reused and recovered.



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Target	Recommendations	Implementation Detail
Goal 5: Minimise/prevent illegal activities		
Target 1: Develop an Illegal Dumping Management Strategy	Establish community watch programme with incentive schemes	Establish community watch programme with incentive schemes.
	Provide accessible containers for illegal dumping	Provide accessible containers for illegal dumping throughout towns and settlements located at strategic positions.
Target 2: Improve removal of illegally dumped waste	Clean illegal dumping hot spot areas	Clean illegal dumping hot spot areas on a regular basis.
Goal 6: Capacity building through information sharing		
Target 1: Develop and maintain a Waste Information System (WIS)	Develop a WIS in accordance with SAWIS	Develop and standardise a WIS, which is in accordance with SAWIS; and coordinate the system with the Pixley Ka Seme District Municipality.
	Maintain and update the WIS	Maintain and update the WIS as the situation changes in the Municipality.
Target 2: Contribute to Inter Municipal Waste Information Workshops	Identify and attend Inter Municipal Waste Information Workshops	Coordinate with the Pixley Ka Seme District Municipality and attend information sharing sessions or workshops, which will be presented by the District Municipality and supported by the relevant Provincial officials.
	Compile list or database of all industries and medical facilities	Compile a list or database of all industries and medical waste facilities (including old age homes) in their area of jurisdiction, with a contact person and an indication of what is being done with their medical/industrial waste not collected by the Municipality, i.e. who collects the waste and where is it being disposed of.
Goal 7: An educated community that is aware of the principles of responsible waste management		
Target 1: Build community awareness	Build community awareness through appropriate campaigns	Refer to Section 8.7.1 of this report for possible community awareness campaigns and identify which will be most applicable to the Municipality. Also consider newspaper notices, flyers and road shows.



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12 IMPLEMENTATION PLAN

The following tables outline the proposed implementation plan for the Municipality to implement the abovementioned recommendations.



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Situation Analysis (Gaps and Needs)	Desired End State	Targets	Action	2014	2015	2016	2017	2018	Alternative	Resources		
										Human Resources	Equipment	Finance
Three active waste disposal sites, viz. Carnarvon, Vosburg and Vanwyksvlei. Carnarvon and Vosburg are licensed according to NEMWA. Carnarvon requires infrastructure upgrading in order to facilitate optimal management of the site.	Goal 1: Improve and develop infrastructure to comply with legislative requirements and municipal needs	Target 1: Ensure that all the waste disposal sites in the Municipality are licensed and comply with legislative requirements.	Appoint service providers to prepare upgrade designs for Carnarvon waste disposal site, and put out tenders for the construction work.		X	X			Alternative: Investigate the feasibility for waste disposal regionalisation within the Municipality	Existing staff and service providers	None	R 9 000 000 (including construction works)
Vanwyksvlei waste disposal site is not licensed in terms of Section 49 of NEMWA.			License unlicensed Vanwyksvlei waste disposal site and upgrade according to license conditions.		X	X				Existing staff and service providers	None	R 4 000 000 (including license application and construction works)
All of the operational waste disposal sites are not being operated according to Minimum Requirements and/or license conditions.			Upgrade operations at all three waste disposal sites. Audit the management of waste disposal sites.	X					Alternative: Privatisation of waste management at the waste disposal sites	Refer to Goal 2 & 3	Refer to Goal 2 & 3	Refer to Goal 2 & 3
					X	X	X	X		Existing staff and service providers	None	R 50 000 per site



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Situation Analysis (Gaps and Needs)	Desired End State	Targets	Action	2014	2015	2016	2017	2018	Alternative	Resources		
										Human Resources	Equipment	Finance
The Municipality should also extend the free basic refuse removal service to indigents in serviced settlements on an on-going basis.	Goal 2: Provide effective waste collection	Target 1: Maintain current service delivery to all areas within the Municipality and extend service delivery to all indigent populations where possible	Extend services to un-serviced areas.	X	X	X	X	X		Existing staff	None	None
The Municipality should include new developments for the provision of a waste collection and disposal service.		Target 2: Effectively plan to extend service delivery to any new developments within the Municipality	Provide new service delivery to residential development areas as it develops.	X	X	X	X	X	Alternative: Privatised waste collection for new developments	Existing staff	None	None
A transportation study needs to be conducted to optimise waste collection.		Target 3: Conduct a transportation study to identify and optimise collection routes and number of service points	Amend and optimise collection route.	X	X				Alternative: Alternative vehicle and transport options	Existing staff and service providers	None	None



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Situation Analysis (Gaps and Needs)	Desired End State	Targets	Action	2014	2015	2016	2017	2018	Alternative	Resources		
										Human Resources	Equipment	Finance
Optimise receptacle usage within the municipal area.		Target 4: Establish receptacle requirements within the Municipality and supply the receptacles to residents in order to optimise collection efforts	Continue with current refuse collection system.	X	X	X				Existing staff	None	None
			Phase in receptacles to existing development.				X	X		Existing staff	None	None, to be conducted by the Municipality



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Situation Analysis (Gaps and Needs)	Desired End State	Targets	Action	Alternative	Resources		
					Human Resources	Equipment	Finance
The Municipality does not have a detailed organogram for waste collection and for the proper management of the disposal facilities.	Goal 1: Provide an Effective and a Cost Efficient Waste Management Service	Target 1: Effective structure and extension of human resources	Develop and maintain detailed organogram.		Existing staff	None	None
			Fill current vacant positions.		Existing staff	As per the Municipality's organogram	None, to be negotiated by the Municipality
			Employ additional staff to service new areas and to manage disposal facilities.		Existing staff	Waste Management Officer. For each waste disposal site: • 1 x senior supervisor • 1 x driver/operator per truck/equipment • 1 x supervisor • 4 x general workers	None, to be negotiated by the Municipality
			Employ new staff as vacancies develop.		Existing staff	None	None, to be negotiated by the Municipality
	Goal 3: Provide an Effective and a Cost Efficient Waste Management Service		Provide training for low level staff and for specialised positions.		Existing staff and service providers	None	R 50 000 per annum



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Situation Analysis (Gaps and Needs)	Desired End State	Targets	Action	2014	2015	2016	2017	2018	Alternative	Resources		
										Human Resources	Equipment	Finance
The Municipality's waste management vehicles that are used for collection are in a good condition, but still require regular maintenance. No equipment is available on the waste disposal sites for operations. The vehicle fleet will have to be extended once waste collection services are extended to new areas when they developed.		Target 2: Extend and maintain waste collection fleet for service delivery	Compile and maintain equipment replacement plan.	X	X	X	X	X	Alternative: Privatisation of Waste Collection	Existing staff and service providers	None	R 40 000
			Purchase required equipment and replace equipment as and when required.	X	X	X	X	X		Existing staff and service providers	REL's, compactors, skip trucks, loaders and tipper trucks	None, as per vehicle replacement plan
			Maintain equipment.	X	X	X	X	X		Existing staff and service providers	None	None, to be included in the municipal budget
A detailed financial investigation should be conducted by the Municipality. The extent and financial implications of the free basic refuse removal service to indigents should be determined to ensure that the cost shortfall not covered by the Equitable Share is budgeted for accordingly by the Municipality.		Target 3: Effective financial management for waste management	Perform detailed financial investigation.	X						Existing staff and service providers	None	R 350 000



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Situation Analysis (Gaps and Needs)	Desired End State	Targets	Action	Alternative	Resources		
					Human Resources	Equipment	Finance
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 be standardised.		Target 4: Implement improved tariff model	Evaluate level of service delivery and develop standardised tariffs for specific levels of service and update on a yearly basis.		Existing Staff	None	None
		Target 5: Decrease non-payment of tariffs.	Implement pre-paid system.		Existing staff and service providers	None	R 120 000
		All Goals and Targets	Update by-laws to comply with NEMWA requirements. Review and update by-laws on a yearly basis.		Existing staff and service providers	None	R 100 000
The existing Municipal by-laws should be amended to address all aspects of the waste management hierarchy as required in terms of the National Environmental Management: Waste Management Act, 2008.					Existing staff and service providers	None	R 100 000 per year



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Situation Analysis (Gaps and Needs)	Desired End State	Targets	Action	Alternative	Resources		
					Human Resources	Equipment	Finance
<p>No formalised recycling activities taking place.</p> <p>Garden refuse are disposed of at the waste disposal sites with no processing of the garden waste. The exact volumes of garden refuse need to be determined (entrance control at disposal facilities) to determine the feasibility of composting garden refuse.</p> <p>No formalised waste minimisation activities are taking place.</p>	<p>Goal 4: Decrease waste deposited on waste disposal site</p>	<p>Target 1: Formalise and encourage recycling activities</p> <p>Target 2: Encourage waste minimisation</p>	Investigate possible recycling initiatives and identify stakeholders to become involved.		Refer to Goals 4 and 7	Refer to Goals 4 and 7	Refer to Goals 4 and 7
			Provide recycling containers throughout town located at strategic places.	X	Existing staff and service providers	None	R 100 000
			Provide additional containers to service new development areas.		Existing staff and service providers	None	R 100 000 per year
			Promote waste minimisation under residents and businesses.		Refer to Goals 4 and 7	Refer to Goals 4 and 7	Refer to Goals 4 and 7
			Regular forum meetings with stakeholders to co-ordinate waste minimisation and to encourage growth on the recycling section.		Existing staff and service providers	None	None



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Situation Analysis (Gaps and Needs)	Desired End State	Targets	Action	2014	2015	2016	2017	2018	Alternative	Resources		
										Human Resources	Equipment	Finance
			Implement incentive schemes for in-house recycling for business and homes.		X					Existing staff and service providers	None	None
			Investigate the option of establishing a composting facility at a central location (possibly Carnarvon).			X				Existing staff and service providers	None	No costs assigned, to be determined when feasible
		Target 3: Conduct waste minimisation study	Conduct a waste minimisation study	X						Existing staff and service providers	None	R 300 000



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Situation Analysis (Gaps and Needs)	Desired End State	Targets	Action	Alternative	Resources		
					Human Resources	Equipment	Finance
The illegal disposal of waste is common all over the municipal area.	Goal 5: Minimise/prevent illegal activities	Target 1: Develop an Illegal Dumping Management Strategy	Establish community watch programme with incentive schemes.		Existing staff and service providers	None	R 25 000 per year
			Provide accessible containers for illegal dumping throughout towns and settlements.		Existing staff and service providers	Skip Truck	R 1 200 000 for the vehicle and R 10 000 per skip – capex
		Target 2: Improve removal of illegally dumped waste	Clean illegal dumping hot spot areas.		Existing staff, operator, driver and/or service providers	TLB and a 6 m ³ truck	TLB: R 700 000 capex Truck: R 900 000 capex or R 600 000 per year for service providers



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Situation Analysis (Gaps and Needs)	Desired End State	Targets	Action	2014	2015	2016	2017	2018	Alternative	Resources		
				Human Resources	Equipment	Finance						
The Municipality must develop a Waste Information System (WIS) for waste reporting purposes, so that waste information can be reported to the District Municipality where the District Municipality can then communicate the information to Provincial Authorities.	Goal 6: Capacity building through information sharing	Target 1: Develop and maintain a WIS	Develop WIS in accordance with SAWIS.		X					Existing and new staff	None	None
			Maintain and update WIS as the situation changes in the Municipality.			X	X	X		Existing and new staff	None	None
The Municipality has to compile a list or database of all industries and medical waste facilities (including old age homes) in their area of jurisdiction, with a contact person and an indication of what is being done with their medical / industrial waste not collected by the Municipality i.e. who collects the waste and where is it being disposed of.		Target 2: Contribute to inter municipal Waste Information Workshops	Identify and attend Inter Municipal Waste Information Workshops.	X	X	X	X	X		Existing and new staff	None	None
			Compile and maintain list/database of all industries and medical facilities.	X	X	X	X	X		Existing and new staff	None	None



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Situation Analysis (Gaps and Needs)	Desired End State	Targets	Action	2014	2015	2016	2017	2018	Alternative	Resources		
										Human Resources	Equipment	Finance
Responsible waste management within the community is lacking.	Goal 7: An educated community that is aware of the principles of responsible waste management	Target 1: Build community awareness	Build community awareness through appropriate campaigns. Also consider newspaper notices, flyers and road shows.	X	X	X	X	X		Existing staff and service providers	None	R 50 000 per year



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13 SUMMARY

13.1 WASTE DISPOSAL INFRASTRUCTURE

The Municipality has jurisdiction over three waste disposal sites, viz. Carnarvon, Vosburg and Vanwyksvlei. All three sites are managed by the Municipality. Carnarvon and Vosburg are permitted/licensed. All the waste disposal sites are experiencing operational problems in varying degrees, but mainly as a result of insufficient funding, equipment and personnel shortage as well as interference by uncontrolled reclaiming activities on daily operations. None of the sites are covered on a daily basis and wind-blown litter, vectors, dust and odours are common concerns.

The Carnarvon waste disposal site was permitted on 30 November 1999 in terms of Section 20(1) of the Environment Conservation Act, 1989 (Act 73 of 1989). The site is not operated in terms of the permit conditions. The site should be upgraded (properly fenced, guard house with ablution facilities and proper storm water control measures) and the site operations should be upgraded (access controlled, waste compacted and covered on a regular basis).

The Vosburg waste disposal site was permitted on 3 September 2008 in terms of in terms Section 20(1) of the Environment Conservation Act, 1989 (Act 73 of 1989). Although the infrastructure on site are sufficient, the site is not well operated and should be upgraded in this regard (access controlled, waste compacted and covered on a regular basis).

The Vanwyksvlei waste disposal site is not licensed in terms of Section 49(1) of the National Environmental Management: Waste Act (NEMWA), (Act 59 of 2008). However, the site was recently upgraded (fenced and a guard house facility). The license application was compiled for the Municipality, but it has not been submitted to the relevant Authorities.

13.2 WASTE COLLECTION

Should any new developments take place in the municipal area, the Municipality should include new developments for the provision of a waste collection and disposal service. It is essential that in conjunction with the Town Planning Section 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.



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The Municipality should also extend the free basic refuse removal service to indigents in serviced settlements on an on-going basis.

It is recommended that the Municipality investigates the option to standardise to best use and supply the selected receptacles to the different communities within the Municipality. The cost of the supply of the receptacles should be carried by the individual property owner to defray the financial burden on the Municipality and to ensure that the individual owners take care of their receptacles.

13.3 RESOURCE EXTENSION

The Municipality indicated that there are sufficient personnel to provide waste collection services to all areas on a weekly basis. However, there is a need to increase personnel, create new positions and fill them. It is recommended that the Municipality compiles a detailed organogram of waste management personnel and first fill any vacant positions. Thereafter the need for additional positions should be identified, the organogram updated and the new vacant positions filled.

The general human resource needs for the Municipality are the following:

- A Waste Management Officer that will be overseeing the entire Municipality's waste management,
- For each waste disposal site in the Municipality, the following human resources are recommended:
 - Senior supervisor overseeing the general workers, collection route, equipment, etc.,
 - One driver/operator for each of the trucks/equipment,
 - One supervisor overseeing the operation of the waste disposal site (including access control, record keeping, spotting, etc.)
 - At least four general workers.

The above is a recommendation for human resources in order to provide an adequate waste collection and disposal service in the Municipality.

The Municipality's waste management vehicles that are used for collection are in a good condition, but still require regular maintenance. No equipment is available on the waste disposal sites for operations. The vehicle fleet should be maintained to render a regular waste collection service to all households and to comply with the minimum requirements, and waste disposal site equipment i.e. a TLB or FEL should be purchased to be used with waste disposal operations in each town. Fleet Management must allocate a budget to purchase new vehicles for operational purposes within the



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waste department. Collaboration is required with the fleet management section of the Municipality and external service providers to ensure that turn-around time for servicing the waste fleet is reduced.

The payment of services in the Municipal Area is low due to various reasons. The current billing system does not seem to be effective. A pre-paid system should be investigated to be implemented where non-payment of fees is present. The Municipality must also take cognizance of the draft policy on Free Basic Refuse removal and develop an action plan for implementation.

It is further recommended that a detailed financial investigation be undertaken to investigate the operational management of vehicles, salaries, basic service allocation, credit control, pricing and tariffs, and other issues i.e. budget management etc.

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 be standardised. The distinction between the tariffs for waste collection at domestic, businesses and Government Institutions is supported and will 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.

The extent and financial implications of the free basic refuse removal service to indigents should be determined to ensure that the cost shortfall not covered by the Equitable Share is budgeted for accordingly by the Municipality.

The existing draft Municipal By-Laws should be amended to address all aspects of the waste management hierarchy as required in terms of the National Environmental Management: Waste Management Act, 2008.

13.4 WASTE MINIMISATION

No waste minimisation strategies or recycling initiatives are being undertaken by the Municipality at present. This can also be attributed to the lack of available markets for the recycled materials as well as the extensive transport costs in the Northern Cape with regards to recycling initiatives.

In order to ensure maximum recycling in the Municipality, it is recommended that a formal agreement be reached with waste recycling industries and companies. These companies will then work together with potential waste recyclers in the Municipality. DEA has signed agreements with the plastic, glass, waste tyre and Poly-Ethylene Terephthalate (PET) industries. To this end, it is further recommended that the DEA be approached to facilitate the recycling of the aforementioned waste streams. In



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addition to this, appoint a Waste Specialist to enhance the current programmes and to identify, monitor and evaluate recycling opportunities and initiatives within the Municipality.

Council should identify and implement waste minimization and recycling initiatives to reduce the tonnage of waste reaching the waste disposal site and which will subsequently create jobs for those who are interested to participate in recycling programs.

Recycling of waste will lengthen the lifespan of the waste disposal site. Through proper recycling it might be possible to remove as much as 30% - 50% of all material earmarked for waste disposal. The Municipality has to 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 re-tread tyres. This levy will go into a national fund that will be responsible for the disposal and possible recycling of used tyres.

The Municipality should also develop a garden refuse strategy and investigate the feasibility to establish a composting plant at the Carnarvon waste disposal site. Garden refuse are disposed of at the various waste disposal sites with no processing. The exact volumes of garden refuse need to be determined (entrance control at disposal facilities) to determine the feasibility of composting garden refuse.

13.5 MANAGEMENT OF ILLEGAL ACTIVITIES

The Municipality experiences problems with illegal dumping within its jurisdiction. 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 Municipalities 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 Municipalities can take to minimise illegal dumping and introduce such a penalty system.



KAREEBERG LOCAL MUNICIPALITY INTEGRATED WASTE MANAGEMENT PLAN FINAL

It is recommended that a combination of activities be implemented to find an effective solution to the illegal dumping of waste. The enforcement of the by-laws and policy and strategy development by the Municipality will assist with the illegal dumping problem. 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 disposal facility.

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

13.6 WASTE INFORMATION SYSTEM

The Municipality should begin a system of proper record keeping with regards to waste types and quantities that are being received at the waste disposal sites. A Waste Information System (WIS) should be established and maintained to assist the Municipality in the management of their waste division. The information can then be provided to the Pixley Ka Seme District Municipality in order for them to provide it to the Provincial Authorities to be captured on the National Waste Information Centre (SAWIC). DEA has developed National Waste Information Regulations in terms of NEMWA under section 69(1)(y) and (ee) under which reporting is required.

The Municipality has to compile a list or database of all industries and medical waste facilities (including old age homes) in their area of jurisdiction, with a contact person and an indication of what is being done with their medical / industrial waste not collected by the Municipality i.e. who collects the waste and where is it being disposed of.

The current difference in service delivery management within the Northern 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 Provincial Environmental Department.



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13.7 EDUCATION AND AWARENESS

The Municipality presently does have some form of formal community awareness campaigns that are directed at informing the general community with regards to waste management.

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 road shows to demonstrate to and inform people of waste related issues.



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Appendix 1 – Advertisements, minutes and attendance registers of the Public Participation Meetings



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NOTICE OF PUBLIC PARTICIPATION PROCESS & PUBLIC MEETING ON THE DEVELOPMENT OF PIXLEY KA SEME DISTRICT MUNICIPAL INTEGRATED WASTE MANAGEMENT PLAN (IWMP)

Description of the Activity:

The Department of Environmental Affairs appointed WorleyParsons RSA to assist with the review of the Integrated Waste Management Plan (IWMP) for the Pixley ka Seme District Municipality. The development of an Integrated Waste Management Plan (IWMP) is a requirement for all government spheres responsible for waste management in terms of the National Environment: Waste Act, 2008 (Act. 59 of 2008) (NEMWA) for government to properly plan and manage waste. The compilation of this IWMP was done in line with the "Guideline for the Development of Integrated Waste Management Plans (IWMP's) (DEA, 2012) and in accordance with Section 12 of NEMWA.

The process WorleyParsons RSA followed in order to compile the IWMP will consist of two phases, the first being a "Situation Analysis" and the determination of the "Desired End State" for waste management within the Pixley ka Seme District Municipal Jurisdiction. The second phase will consist of identifying, evaluating and selecting alternative methods/approaches for achieving the desired end state. The municipality will be responsible for the implementation of the IWMP and the evaluation and review of the plan to ensure the respective objectives are met.

The draft situation analysis (phase one) of the integrated waste management plan of the Municipality has been compiled and it will be presented at the public meeting. The main objective of the situation analysis is to analyse and quantify all aspects pertaining to the management of waste within the District Municipality's boundary (including all types of settlements).

It includes the current status with regards to the delivery of waste services, number of residents in the municipality, demographic profile and socio-economic

composition. It also includes the amount and type of waste that is being generated, recycled, recovered, treated and disposed. Information on resources i.e. financial and human capital including equipment is also indicated in the Situation Analysis.

Location:

The Pixley ka Seme District Municipality offices are situated in De Aar in the Northern Cape.

Public Meeting:

A public meeting will be held on Wednesday 22 May 2013 at 10:00 at the Pixley ka Seme District Municipality Boardroom, Culvert Street, Industrial Area De Aar. The meeting is aimed at introducing the situational analysis to the public; and to provide a platform to discuss/solicit input regarding waste management issues in the District,

Interested and Affected Party:

All interested and affected parties (I&APs) wishing to participate in the Public Participation Process are invited to comment on the Draft Situation Analysis Report to ensure that the document is a true reflection of the waste management situation in the District Municipality.

Parties or persons wishing to register as an I&AP are requested to forward their contact details and comments/or concerns in relation to the project to the WorleyParsons RSA contact person provided below.

Queries regarding the above matter should be forwarded to:












WORLEYPARSONS
PO BOX 22
MENLYN
0063
TEL: 012- 745 2090
FAX: 012- 745 2001

WASTE MANAGER:

FRANCOIS HUMPHRIES
082 876 7453
Francois.humphries@worleyparsons.com

PARTIES WISHING TO OBTAIN ADDITIONAL INFORMATION REGARDING THIS PROCESS ARE REQUESTED TO FORWARD THEIR CONTACT DETAILS, ISSUES AND/OR CONCERNS IN RELATION TO THE PROJECT TO WORLEYPARSONS TO THE ABOVE-MENTIONED CONTACT PERSON. PLEASE NOTE THAT YOU SHOULD SUBMIT YOUR CONCERNS/QUERIES ON OR BEFORE THE 12TH OF JUNE 2013. THE DOCUMENT IS CURRENTLY AVAILABLE FOR REVIEW AT THE DISTRICT MUNICIPALITY.

MEETING ATTENDANCE RECORD

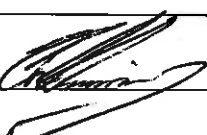
Date	22 May 2013				
Meeting topic	Public Participation Meeting for the Draft Situation Analysis for the IWMP of the Pixley Ka Seme District Municipality				
Held by	WorleyParsons				
Venue	Pixley Ka Seme District Municipality Boardroom, Culvert Street, Industrial Area, De Aar.				
NAME	SIGNATURE	POSITION	CONTACT NUMBER	EMAIL ADDRESS	
PIETER DE CONING		WORLEY PARSONS RSA WASTE ENGINEER	082 774 4412	pierf.deconing@worleyparsons.com	
Sam Bickpala		Snr. Manager: SSC	053 631 0891	didipala.sam5@gmail.com	
Viv Jones		" " INFRASTRUCTURE	"	pmu1@telkomsa.net	
Arsha Khan		HOB	053 382 3002	arsha@x5.net.co.za	
EVAN PAINTING		Technical Manager	083 252 9409	paintinge@hotmail.co.za	
THULANI MITHOMBENI		ENVIRONMENTAL OFFICER	072 409 2277	tmthombeni@de.ncape.gov.za	
SONWABILE NKONDESHE		ASD: LGTS	083 693 2363	Shkondesh@environment.gov.za	
Tinandeka Nondoga		DD: Municipal Waste Support	012 310 2220	tnondoga@environment.gov.za	
SINDISWA DUNA		KEO: MWC	012-3103617 073 2732768	SP.duma@environment.gov.za	
MAVELA RENEE		Communication Manager	0785 046 240	ravelarenere@gmail.co-	
Mashudu Mutanga		Sr. Environmental Health Practitioner	073 9420 144	mashudumutanga@gmail.com	



COMMENT RECORD

Project No: 27474J - PWO
Project: DEA – DEVELOPMENT OF IWMP FOR PIXLEY KA SEME DM

Public Meeting: Draft Situation Analysis, IWMP project

PARTICIPANT NAME & ORGANISATION		DATE	22 May 2013
PRESENT	See Attendance Register	TIME START	10:15
WORLEYPARSONS:	Pieter de Coning	TIME FINISH	13:30
		LOCATION	Pixley Ka Seme DM Boardroom
		RECORDER	P de Coning
		DOC NO	Meeting Minutes
		FILE LOC	
		PROJ REF	27474J
SIGNATURE ORIGINATOR		DATE SIGNED	12/07/2013

RECORD OF COMMENTS

Here follows a summary of comments given by the Interested and Affected Parties that were present at the meeting as mentioned above. The summary below describes the comments as they were given by the individuals, in chronological order, during the meeting.

PERSON	COMMENT DETAILS
TM	<p>Ms Thandeka Mandigora, Deputy Director: Municipal Waste Support, from Department of Environmental Affairs (DEA) opened the meeting, welcomed everyone and gave a brief introduction regarding the IWMP project. She explained the purpose of the meeting before handing over to Mr. Pieter de Coning (PdC) to present the findings and the Draft Situational Analysis.</p>
AvS	<p>Mr Albertus van Schalkwyk, Head of Department: from Kareeberg LM made the following comments:</p> <ul style="list-style-type: none">The Draft Situation Analysis (hereafter referred to as the Document) states that the Municipality does not yet deliver a 100% services. He states this is incorrect as all residential areas do receive a waste collection service (ie. 100%), only farms are not serviced. He further states that it is not possible for the Municipality to service the farms and they will never provide a service to them due to the impracticality and cost thereof. (PdC informs him the figures regarding percentage serviced are based on Census 2011 figures as required by the guideline document, but agree that the information received from the Municipality indicated that all residential areas do receive a service. The figures will be clarified in the document.)He mentions that the minimum salary for a municipal official is approximately R6000 per month, and to have a person on each site, especially the smaller town's sites, is not possible for the



PERSON	COMMENT DETAILS
	<ul style="list-style-type: none">• He mentions that the minimum salary for a municipal official is approximately R6000 per month, and to have a person on each site, especially the smaller town's sites, is not possible for the Municipality and he also does not see the need for such a person. Smaller towns such as Vanwyksvlei only have 4 municipal workers who are responsible for all the services in the town, not only waste management.• He mentions that MIG has rejected their application for funding the upgrading of Carnavon landfill due to the high expected cost of development in line with the new liner requirements. (PdC briefly explains the new liner requirements and the cost involved. Although this does not form part of the IWMP it is important to understand the cost involved in developing landfill sites looking at the next phase of the IWMP. TM takes note of this issue and will pursue the issue with the likes of MIG and CoGTA.)• He further mentions that recycling is not a feasible option due to small quantities and vast distances of transport.• They burn the waste on each of their sites on a weekly basis as they have limited equipment available for operations in accordance with the license conditions and/or minimum requirements. They usually hire in a TLB of loader to do clean up the sites from time to time, usually once of twice a year.• He mentions due to the fact that landfills are far away from the residential areas the burning of waste does not impact on the residential areas and also reduce the impact in terms of groundwater contamination. He further states that due to the dry conditions in the Northern Cape that groundwater contamination is not a concern for them and there is no groundwater extraction taking place near the landfills. (Mr Sam Diokpala (SD) commented that AvS's statement regarding groundwater pollution is incorrect. PdC agreed and explained.)
EP	<p>Mr Evan Painting, Technical Manager, from Thembililhe LM made the following comments:</p> <ul style="list-style-type: none">• It is a challenge to budget for effective delivery of waste management services. He asks whether the IWMP will inform how to source and allocate funding as well as provide information into tariff setting. (TM made comments regarding the above which is included below).• He made similar comments regarding the percentage service delivery mentioned in the document as well as the cost and need to have personnel on sites.
TM	<p>Ms Thandeka Mandigora, Deputy Director: Municipal Waste Support, from Department of Environmental Affairs (DEA) made the following comments:</p> <ul style="list-style-type: none">• She mentions that municipalities have various "mechanisms" available through the DEA to assist municipalities in their specific needs in terms waste management. The compilation of these IWMP's is but one of the efforts DEA is busy with to assist municipalities.• DEA has a tariff implementation plan/model, assisting municipalities to determine tariffs etc. DEA can even provide training on how to use this model. The model is available from the South African Waste Information Centre (SAWIC) website.• DEA has also developed a generic set of by-laws which could be used as a base model which could be adapted for each municipality to establish new by-laws.



PERSON	COMMENT DETAILS
	<ul style="list-style-type: none">• DEA can also assist and even present to municipalities the funding mechanism available to assist in the needs of municipalities with regards to waste management.• DEA is also launching a new program soon, "Working on Waste", whereby they will further assist municipalities to improve waste services. The main condition for this program is that the project should create new job opportunities. Municipalities can for instance apply for funding to provide a waste officer at the landfills to monitor landfill operation and manage the sites.• She mentions the website SAWIC has a waste information system in place where municipalities should provide information on the waste type and volume they receive at their landfills. That is one of the reasons a waste officer is required on site to capture the amounts and ensure that the correct type of wastes are disposed of on sites.
SD	<ul style="list-style-type: none">• Mr Sam Diokpala Senior Manager SSC comments that the Document refer mostly to household waste. He comments that there is no specific information regarding commercial and industrial waste. He would like to see some specific figures with regards to industrial wastes. (PdC mentions that the scope of the IWMP does not include collecting information from commercial service points and industries etc. and that such information should be supplied by the Municipalities. Large industries are supposed to submit their own industrial waste management plans similar to the IWMP's from municipalities. PdC stated that a clarifying statement in this regard will be included in the final document.)• He further stated that the Document makes no allowance for sewage sludge management. (PdC stated that this does not form part of the IWMP and should be included in the Water Management Plan for each Municipality. Also, sewage sludge could be classified as a hazardous waste which does not form part of the scope of work.)• He further comments that the Document does not compare the findings with the previous IWMP's. (PdC states that WP did compare it to the previous IWMP's we had received from municipalities. However we are at the Situation Analysis stage and a comparison would be included later in the IWMP document.)• He also questions why many of the issues raised in the previous IWMP's such as licensing of landfills, have not yet been addressed. (PdC gave possible examples on why this has not taken place. It is noted that this should be addressed in the final Document.)
TM	<p>Ms Thandeka Mandigora, Deputy Director: Municipal Waste Support, from Department of Environmental Affairs (DEA) closed the meeting and thanks everyone making time in their busy schedules to attend. She also invited all the parties to contact her for assistance on any of the mechanisms mentioned by her during the presentation. She invited everyone to a light snack before they depart to the various destinations.</p>

END OF RECORDS



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NOTICE OF PUBLIC PARTICIPATION PROCESS & PUBLIC MEETING ON THE DEVELOPMENT OF PIXLEY KA SEME DISTRICT MUNICIPAL INTEGRATED WASTE MANAGEMENT PLAN (IWMP)

Description of the Activity:

The Department of Environmental Affairs appointed WorleyParsons RSA to assist with the review of the Integrated Waste Management Plan (IWMP) for the Pixley ka Seme District Municipality. The development of an Integrated Waste Management Plan (IWMP) is a requirement for all government spheres responsible for waste management in terms of the National Environment: Waste Act, 2008 (Act. 59 of 2008) (NEMWA) for government to properly plan and manage waste. The compilation of this IWMP was done in line with the "Guideline for the Development of Integrated Waste Management Plans (IWMP's) (DEA, 2012) and in accordance with Section 12 of NEMWA.

The process WorleyParsons RSA followed in order to compile the IWMP consisted of three phases, the first being a "Situation Analysis" and the determination of the "Desired End State" for waste management within the Pixley ka Seme District Municipal Jurisdiction. The second phase consisted of identifying, evaluating and selecting alternative methods/approaches for achieving the desired end state. The alternative solutions were evaluated and from these the most feasible scenario, or combination of scenarios, was selected for drafting the IWMP. The draft IWMP (third phase) will be presented at the public meeting. The municipality will be responsible for the implementation of the IWMP and the evaluation and review of the plan to ensure the respective objectives are met.

It includes an implementation plan which details how the targets set in the goals will be attained as well as what resources will be required to attain the targets in the next five years. In this instance, the implementation plan has been developed in a manner that summarises the entire IWMP planning process in order to demonstrate how each of the steps fit into each other.

Location:

The Pixley ka Seme District Municipality offices are situated in De Aar in the Northern Cape.

Public Meeting:

A public meeting will be held on Tuesday, 05 November 2013 at 10:00 at the Pixley ka Seme District Municipality Boardroom, Culvert Street, Industrial Area De Aar. The meeting is aimed at introducing the draft IWMP to the public; and to provide a platform to discuss/solicit input regarding waste management planning in the District.

Interested and Affected Party:

All interested and affected parties (I&APs) wishing to participate in the Public Participation Process are invited to comment on the Draft IWMP Report to ensure that the waste management plan and solutions proposed for waste management in the District Municipality is comprehensively addressed for implementation.

Parties or persons wishing to register as an I&AP are requested to forward their contact details and comments/ or concerns in relation to the project to the WorleyParsons RSA contact person provided below.

Queries regarding the above matter should be forwarded to:

WORLEYPARSONS

PO Box 22
Menlyn, 0063
Tel: 012- 745 2080
Fax: 012- 745 2001

WASTE SPECIALIST:

PIETER DE CONING
Pieter.deConing@worleyparsons.com

Parties wishing to obtain additional information regarding this process are requested to forward their contact details, issues and/or concerns in relation to the project to WorleyParsons to the above-mentioned contact person. Please note that you should submit your concerns/queries on or before the 27th of November 2013. The document is currently available for review at the District Municipality.



MEETING ATTENDANCE RECORD

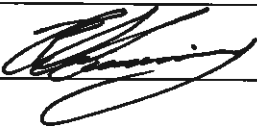
Date	05 November 2013				
Meeting topic	Pixley ka Seme District Municipality – Public Meeting for the review of the IWMP				
Held by	DEA / WorleyParsons				
Venue	Pixley ka Seme District Municipality Boardroom, Culvert Street, De Aar				
NAME	SIGNATURE	POSITION	CONTACT NUMBER	EMAIL ADDRESS	
P. DE CONING		SENIOR ENGINEER WORLEY PARSONS	082 774 4412	pieter.deconing@worleyparsons.com	
S. NKONDESHE		ASSISTANT DIRECTOR LOCAL GOVERNMENT SUPP.	0836932363	snkondesh@environment.gov.za	
A.T. Mekgwe		PEO/DENCL	082 625 3237	amekgwe@ncpp.gov.za	
P. Radzuma		Control Environment Officer's A	012 375 1670	Praduma@environment.gov.za	
T. MANDIGORA		DDI-DEA	012 3103220	tmandigora@environment.gov.za	
P.S. Madlisa		Environmental Health Practitioner	0730521150	pmadlisa@yashan.com	
T. ZINGANXHE		UBUNTU MUN	0835365446	terro@ubuntu.gov.za	



COMMENT RECORD

Project No: 27474J - PWO
Project: DEA – DEVELOPMENT OF IWMP FOR PIXLEY KA SEME DM

Public Meeting: Review of Draft IWMP

PARTICIPANT NAME & ORGANISATION		DATE	5 November 2013
PRESENT:	See Attendance Register	TIME START	10:30
APOLOGIES:	Xolile Geco (Siyancuma LM) Mashudu Mukoma (Pixley Ka Seme DM)	TIME FINISH	13:00
		LOCATION	Pixley Ka Seme DM Boardroom
		RECORDER	P de Coning
		DOC NO	Meeting Minutes
		FILE LOC	
		PROJ REF	27474J
SIGNATURE ORIGINATOR		DATE SIGNED	5/12/2013

RECORD OF COMMENTS

Here follows a summary of comments given by the Interested and Affected Parties that were present at the meeting as mentioned above. The summary below describes the comments as they were given by the individuals, in chronological order, during the meeting.

PERSON	COMMENT DETAILS
TM	Ms T Mandigora , Deputy Director: Municipal Waste Support, from Department of Environmental Affairs (DEA) opened the meeting, welcomed everyone and gave a brief introduction regarding the IWMP project. She explained the purpose of the meeting before handing over to Mr. Pieter de Coning (PdC) to present the Draft IWMP.
AM	<p>Me A Mekgwe, Provincial Department of Environment and Nature Conservation made the following comments:</p> <ul style="list-style-type: none"> She mentions that the new Petrusville Landfill is actually licensed for operation and the IWMP is incorrect on this aspect. (PdC indicates that WP could not obtain any information on the license from the South African Waste Information Centre and the official at Petrusville was also not aware that it has been licensed. The information will be updated once AM can provide WP with the permit information.) AM undertakes to send through this information as well as other differences that she may pick up.
TZ	<p>Mr T Zingange, Ubuntu LM made the following comments:</p> <ul style="list-style-type: none"> TZ indicates that Ubuntu LM would have liked to have been more involved with the process of



PERSON	COMMENT DETAILS
	<p>drafting the IWMP. He does not agree that the Victoria West Landfill is in possession of a licence. It is also not mentioned that Ubuntu has submitted an application for a license of a new landfill site. (PdC mentions that invites have been sent out by WP to all municipalities since the beginning of the project to be part of the process. This included site visits in April and the public meeting held in May regarding the situational analysis. Proof of this can be provided. Differences or errors as mentioned above should have already been addressed at that stage. However factual information can still be worked into the document.) TZ requests that the information regarding the existing license be sent to him. (PdC will send the information.)</p> <ul style="list-style-type: none">• He indicates that they are awaiting feedback on the submission of the license application. (AM indicates that the application is incomplete and they have drafted a letter to Ubuntu LM stating this.) TZ requests that the department indicate what is required for the application. (PdC mentions that the regulations stipulate what is required and the consultant handling the application should also be aware of the requirements, and should have submitted a complete document. AM agrees.)• TZ also mentions the difficulty of implementing waste projects due to the low priority view it receives from council and the funding allocated to it.
AM	<p>Ms A Mekgwe, Department of Environment and Nature Conservation made the following comments:</p> <ul style="list-style-type: none">• She mentions her concern regarding the implementation of proposed options in the plan due to budget constraints. (PdC informs that the proposed options are the most economically feasible and sustainable options and that the prices/figures should be used as a guideline. Specific prices will have to be sourced to implement the proposed options. Note should also be taken that the options span over various financial years and will not necessarily take place all at once. Some also depends on preceding studies etc.)
TM	<p>Ms T Mandigora, Deputy Director: Municipal Waste Support, from Department of Environmental Affairs (DEA) made the following comments:</p> <ul style="list-style-type: none">• She mentions that municipalities have various "mechanisms" available through the DEA to assist municipalities in their specific needs in terms waste management. The compilation of these IWMP's is but one of the efforts DEA is busy with to assist municipalities.• DEA has a tariff implementation plan/model, assisting municipalities to determine tariffs etc. DEA can even provide training on how to use this model. The model is available from the South African Waste Information Centre (SAWIC) website.• DEA has also developed a generic set of by-laws which could be used as a base model which could be adapted for each municipality to establish new by-laws.• DEA can also assist and even present to municipalities the funding mechanism available to assist in the needs of municipalities with regards to waste management.• DEA is also launching a new program soon, "Working on Waste", whereby they will further assist municipalities to improve waste services. The main condition for this program is that the project should create new job opportunities. Municipalities can for instance apply for funding to provide a waste officer at the landfills to monitor landfill operation and manage the sites.• She mentions the website SAWIC has a waste information system in place where municipalities



PERSON	COMMENT DETAILS
	<p>should provide information on the waste type and volume they receive at their landfills. That is one of the reasons a waste officer is required on site to capture the amounts and ensure that the correct type of wastes are disposed of on sites.</p> <ul style="list-style-type: none">• She further mentions that only Municipalities with an IWMP will in future receive funding from government for waste projects. Therefore the Municipalities that were part of this project are very fortunate to have an IWMP.• It is the Local Municipalities and the District Municipality's responsibility to submit the IWMP developed on their behalf to the provincial department for approval.
PdC	<ul style="list-style-type: none">• Mr de Coning from WP request that all comments should be submitted in writing. Comments will be reviewed and included into the Final IWMP document.• He thanks Mr. Nkondeshe for his assistance organising the venue in Ms Mukoma's absence.
TM	<p>Ms Thandeka Mandigora, Deputy Director: Municipal Waste Support, from Department of Environmental Affairs (DEA) closed the meeting and thanks everyone for making time in their busy schedules to attend. She also invited all the parties to contact her for assistance on any of the mechanisms mentioned by her during the presentation. She invited everyone to a light snack before they depart to the various destinations.</p>

END OF RECORDS



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Appendix 2 – Comments from the Interested and Affected Parties and the Response



The following comments were raised by Department: Environmental Affairs (DEA). The response of WorleyParsons on each comment can be seen in the adjacent column. Please note that the page numbers in the first column comply with the Draft Situation Analysis Document and that it may vary after the required amendments have been made.

Page nr	HEADING	COMMENT RAISED	RESPONSE GIVEN
Page 1	Introduction	The introduction of this report must introduce the DM, including the LMs under it. Include maps for all LM's where possible.	The DM is introduced in Section 3.2: Introduction and Background . A locality map of the LM's within the DM's is included.
		Most of the information about the Waste Act must be captured under legislative requirements	Noted. Refer to Section 2: Legislative Requirements .
		Instead of saying that the Municipality will be responsible for implementing the IWMP, rather stipulate the key steps in the IWMP development process as this might be mistaken for the actual implementation. At this stage you have just explained the IWMP development process.	Amended on Page 1 .
		Pls clarify that the evaluating and reviewing of the plan although part of the IWMP development process happens outside the IWMP development steps and it is a legal requirement.	Amended on Page 1 .
Page 2 and 3	Legislative requirements: NWMS	You may need to list the goals that are relevant to municipalities as identified by NWMS.	Listed in Section 6.9: Roles and Responsibilities of the PKSDM and the Local Municipalities .
		Most of the legislation listed does adequately indicate the responsibilities of the municipalities; however the sections of these pieces of legislations are just copied as they are.	Noted. This is done to specifically list the responsibilities as a quick reference.
		Need to clarify that the manner in which municipalities are expected to	Added as introductory sentence to



Page nr	HEADING	COMMENT RAISED	RESPONSE GIVEN
		manage waste should be in accordance with the waste management hierarchy and that they should give effect to the legislation listed. Apart from giving effect to the legislation where possible unpack and provide a status quo on whether these requirements are met or not.	Section 2: Legislative Requirements.
Page 6		Instead of stipulating what is stated on the guideline regarding why a situation analysis is conducted rather get straight to the point. This phase of an IWMP entails reporting on the status quo of how waste is managed at PKSDM.	The relevant paragraph has been omitted and replaced with a single sentence in Section 3: Situation Analysis.
Page 7-8	Situation Analysis: bullet 3.2-3.4	Information capture must be part of an introduction of this report.	Noted. It is part of Section 3.1: Methodology.
		Instead of saying Background (3.2.) rather state this to be the Introduction as you are now introducing the DM.	Amended to 3.2: Introduction and Background.
		3.2 Second paragraph, what is meant by seat? Are you saying the head office, main town? Pls clarify.	Changed to <i>head office.</i>
		'The majority of its population are Coloured population' Is this of the entire DM or just De Aar?	Sentence has been amended in order to clarify statement.
		In addition to what has been stated, pls provide a brief summary of the developmental status of the DM i.e. infrastructure, roads, electricity etc.	Additional information has been provided in Section 3.2: Introduction and Background.
		Is Afrikaans the only spoken language in this DM?	As mentioned, Afrikaans is the <i>most</i> spoken language.
		3.5. Demographics: There is no need to explain what information is to be presented under demographics. Just get straight to the point and the same goes for other sections as well.	The relevant paragraph has been omitted.



Page nr	HEADING	COMMENT RAISED	RESPONSE GIVEN
		Provide more meat to the bones i.e. do the writing up on demographics of the area PKSDM is made up of 8 LM and the population is X amount of people with X LM being the most populated with X amount of people and X LM being the least populated with X amount of people.	The information in Table 1 has been summarised in words as well.
		X no. of residents in the DM are females, X are males. The DM has a young population as there are X no of young people between the ages of this or that.	The information in Figure 2 has been summarised in words.
		Provide more information on the settlement types found in the DM i.e. 50% comprises of formal structures whilst 30 % is rural, 20% is made up of informal settlements and pls provide a breakdown as to where exactly are those located in the different LM's under the DM.	This information has not yet been published by StatsSA and is also not available from the Local Municipalities.
		How many households do each of the LM's under the DM have?	An additional column has been inserted in Table 1 .
		We need the overall status of the demographics and the narrative that goes with it.	Narratives are included after each sub-section within Section 3.5: Demographics .
Page 9,21	Population	In page 9: The report indicates that from 2001-2011, the DM experienced the population growth rate of 1.1%. In page 21: Table 3 and 4 calculated the current waste generation figures at the population growth rate of 1.10%. The above 1.1% and 1.10% is contrary to the percentage as estimated by StatsSA census 2011 which is 1.12%	The <i>Census 2011 Municipal report Northern Cape</i> indicates a growth rate of 1.1% (page 55). Only 2 significant numbers were used for calculation purposes. Tables 3 and 4 have been corrected to 1.1%.



Page nr	HEADING	COMMENT RAISED	RESPONSE GIVEN
Page 12	Income levels	<p>The reports indicate that the average household income in the DM is R75 237 per annum and is considered to be low income.</p> <p>In terms of the DEA IWMP guidelines which this report has relied on so much, the R75 237 is considered to be middle income as oppose to the low income.</p> <p>You may also need to revisit the amount of R75 237 as the average amount calculated from the Table 2 which in the end it does not correspond.</p>	<p>The published (StatsSA) income is R75 237, but the calculated income is lower. It has been more clearly explained in Section 3.5: Demographics under sub-section Income Levels.</p>
Page 14-19	Refuse Removal per Households	<p>Are there no White people in the DM because only Coloured and Black people are mentioned?</p>	<p>As indicated in Figure 6, there are also White and Indian/Asian people, but only the majority (Coloured and Black African) are mentioned in the narrative below the figure.</p>
		<p>Income levels from what main economic activities? Farming, government grants, formal employment, informal employment etc.</p>	<p>This specific information could not be obtained.</p>
		<p>This report gives a good indication regarding the level of waste removal per each local municipality. It is however advisable to make a summary of the DM based on the individual municipal information provided.</p>	<p>A summary is already included. Refer to Figure 18.</p>
		<p>Though the report indicates the number of households receiving waste management services, it fails to indicate the number of indigents receiving and not receiving the refuse removal.</p>	<p>This information was not available from the Local Municipalities.</p>
		<p>3.5.1 Refuse Removal per household. Pls provide the source of your information.</p>	<p>As mentioned in the beginning of Section 3.5: Demographics, all information was obtained from the <i>Census 2011 Municipal report Northern Cape</i>.</p>



Page nr	HEADING	COMMENT RAISED	RESPONSE GIVEN
		<p>It's not just rubbish removal that is judged but rather waste management services which also includes street cleansing and other services that municipalities ought to provide.</p> <p>Rubbish removal according to what standards? I am assuming that this is in accordance with the Standards for domestic waste collection. Which are supposed to be applied differently in the various settlement types.</p>	<p>The other aspects of waste management are discussed in Sections 3.8 and 3.9 and are not available from census figures.</p> <p>This section only provides the information as published by StatsSA (Census 2011).</p>
Page 20	Waste generation per capita: bullet 3.6.2	<p>The report indicates that the average income level in the DM is R74 237. This amount is contrary to what has been indicated in page 12 under income level.</p> <p>3.6.1 No need to explain what this is about.</p> <p>How have the waste generation per capita figures been generated and pls provide the sources of information used to arrive at these figures.</p> <p>Same goes for the population growth rates, from which years? Are there year on year, 5 yearly or every 10 years?</p>	<p>Apology for the typing error.</p> <p>It has been omitted.</p> <p>Tables 3 and 4 indicate how the figures were generated. The source has been added.</p> <p>The growth rate figure has been explained in Section 3.6.2: Waste Generation per Capita.</p>
Page 19-30	Waste Quantities and types	This report provide an information regarding waste quantity and type per individual local municipality but fail to give a summary of DM as per information provided in the individual municipalities.	It was decided not to include a summary of a summary, but a descriptive paragraph has been included that indicates ranges.
Page 32-87	Recycling, treatment and Disposal	<p>Good information provided on the waste disposal facilities.</p> <p>This report only focuses on waste recycling, treatment and disposal however on this section; you're supposed to give a status of each waste management facilities that exists with the LMs and DM therefore. Waste management</p>	<p>Noted.</p> <p>All mentioned aspects are described in Section 3.8: Status of Waste Collection Services.</p>



Page nr	HEADING	COMMENT RAISED	RESPONSE GIVEN
		facilities information is not restricted to recycling, treatment and disposal only.	
		Pg 32, Pls shy away from making general statements, rather be specific as to what LM within the DM are you referring to 'in some areas within the DM , limited volumes of garden waste are collected'.	Noted and amended.
		3.7.3. Provide the status quo on how waste is treated and disposed of in the different LM's under the DM and the status of their facilities i.e. licensed or not? Including privately owned facilities if there are any.	Everything mentioned is discussed in Section 3.7.3: Treatment and Disposal .
		Pls try to write the landfills according to the LM's instead of just indicating the towns where there are located.	The landfills are already written according to LM's and the names of the landfills are also the names of the towns.
Page 88	Status of waste collection	Just provide an overall picture of the status of waste collection in the DM instead of repeating what is on the guideline.	First paragraph of Section 3.8: Status of Waste Collection Services omitted.
		Need to provide more information on whether the residents receive a waste collection service if so how many and how many are indigents for all LM's.	The information with regards to indigents was not available.
		Also need to indicate the no of times the service is provided in order that we can ascertain whether the service rendered is acceptable, limited or no service at all apart from indicating the modes of transport used to render the service.	This information is already provided. Most LM's provide a weekly service, since the towns in the DM are relatively small.
Page 103, 104-108	Financing and budget for waste management	The budget for waste management is not broken down into cost drivers. There is also no summary of the whole DM except the individual LMs information on the budget	The cost drivers were in most cases not available.
		Apart from indicating the LM's budgets it is crucial that information on the DM is stipulated i.e. How much money does the DM receive and from where and	This information could not be obtained when compiling this



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Comments raised by Interested and Affected Parties
Draft Situation Analysis

Page nr	HEADING	COMMENT RAISED	RESPONSE GIVEN
		what does it do with this money? Are the functions that it performs according to its Constitutional mandate? Does it have programs to help the LM's and if so how much money does it allocate for that?	document, but it will be included into the plan.
Page 122	Illegal Dumping	Illegal dumping is a problem in the DM. This info is supposed to be presented way up in the report. Problematic waste streams that are common to all LM's and the DM were also not included.	Noted.
		What are the hot spots for illegal dumping in the various LM's?	As mentioned, it is mainly in the informal settlements.
		3.1.2 Pls name these new developments	Names of new developments were not provided.
Page 123	Gaps and needs assessments	Need to separate the gaps and needs of the DM vs those of the LM's. Remember that there must be a DM IWMP that the DM should use to improve its functions w.r.t. waste management as well as general gaps and needs assessments of the specific LM's under the DM.	The information required to evaluate the DM could not be obtained when compiling this document, but it will be included in the plan.
		The status quo of the DM must be separate to those of the LM.	The required information could not be obtained when compiling this document.
		I fail to understand what the shortcomings are of the various LM's as no detailed information was given as to what the actual problems are.	Amendments were made to make it more specific.
		No organogram was provided for the DM and the LM's	As mentioned before, no organograms were available (except for Thembehlhe LM).
		The budgets were not broken down therefore it is difficult to understand how much money does the DM get, what it does with it and same goes for the	As mentioned before, the cost drivers were in most cases not



Page nr	HEADING	COMMENT RAISED	RESPONSE GIVEN
		LM's	available. Therefore, it listed under Gaps and Needs .
		Need to unpack the figures and statistics and you should clearly indicate for what areas are those for? What towns, Townships, rural area within the DM or LM's are those referring to?	Unsure as to what this comment is referring to.
		What are the common and problematic waste streams that are found in the DM in general that are experienced by all LM's and that should be elevated to the DM level, or even to a Provincial level?	This is referred to in Section 3.6.4: Waste Type Analysis .
		Does the DM and LM's have sufficient capacity to deliver on the waste mandate as per the Waste Act requirements? And associated legislation?	A new section has been added to evaluate these issues. Refer to Section 4: Review of the 2007 IWMP .
		Are there any waste management strategies employed by the DM and LM's and are those suitable for what is required of them?	This is discussed throughout the document.
		Are there any recycling initiatives in the various LM's and if so who is driving them? Are the formal or informal and what is mostly recycled? And more or less how many people are employed? Here we want to ascertain the potential for recycling and job creation.	The recycling issues were mentioned earlier in the report and will be discussed in more detail in the alternatives report and the IWMP.
		How much waste is generated by the LM's and from what areas and do they receive adequate waste collection services? Here we want to know where does the majority of the waste comes from and what is done with it? Is it safely disposed of? To some degree, information on the status of landfill operations was provided; need to just tie this to the generation rates.	The waste generation for the DM is discussed in Section 3.6.2: Waste Generation per Capita . More detail with regards to every LM is discussed in their respective reports.
		No future waste generation rates were provided. Need to know how much	Future waste generation is



Page nr	HEADING	COMMENT RAISED	RESPONSE GIVEN
		more or less is waste generation in the various LM's is likely to be so that we can put in place measures now to deal with it.	already included in Section 3.6.3: Future Waste Generation Rates and Quantities . This will be taken into considerations when the plan is compiled.
		Please provide more meat, be precise as to what area experiences what problems and just paint the situation as it is on the ground. This in order that proper goals and targets that speak to the individual challenges will be set.	This section is a summary of the detail provided in the report. The proposed measures will be discussed in detail in the alternatives reports for the individual LM's.
Page 130-136	Desired end state	<p>Municipalities are required to identify their own goals and objectives which they will be able to implement given their available resources in terms of finances, infrastructure, human resources and etc.</p> <p>The information captured in DEA IWMP guidelines document is meant to guide or give an example as to how each municipality can capture their own specific goal.</p> <p>You may need to revise this section since everything in this section is copied from the guidelines which may not be relevant or applicable to PKSDM</p>	The entire Section 6: Desired End State has been amended. New goals and objectives have been compiled, which is more relevant to the specific LMs.
General but important	Organogram	There is no indication of the waste management structure within the DM except per individual Lms.	This information could not be obtained when compiling this document, but it will be included into the plan.



Page nr	HEADING	COMMENT RAISED	RESPONSE GIVEN
	DEA IWMP Guideline	<p>It has been established that you there was an over reliance on the DEA IWMP guidelines when compiling this report which resulted in capturing most of the guideline information unnecessary in this report.</p> <p>As indicated before, the guideline is meant to assist municipalities in terms of how and what information is required per each section or stages of the IWMP development process.</p> <p>Please delete all the information that was copied from the Guideline since it does not reflect the ground truth of this DM.</p>	<p>Noted. The information that was copied from the Guideline was omitted or amended.</p>
	Printing	<p>Please print the documents both sides to avoid an unnecessary overuse of papers.</p>	



The following comments were raised by the Northern Cape Department of Environment and Nature Conservation. The response of WorleyParsons on each comment can be seen in the adjacent column.

COMMENT RAISED	RESPONSE GIVEN
3.6.6 Medical Waste: The responsibility is not only of DOH, private institution must get a service provider for their waste too.	Noted. This paragraph has been amended to include the responsibility of private institutions with regards to health care risk waste.
Hazardous Waste such as salt, tar and containers of farmers for hazardous waste must be included, those are the waste that have also been identified at the disposal sites.	Noted. Hazardous waste refers to the overarching term and do not distinguish between types of hazardous waste.
Emthanjeni disposal site only one cell is lined not the whole are, not even sure the area which is used now if it is lined because they dispose haphazardly.	During the site visit, the local official assured WorleyParsons that the waste is being disposed of on the lined cell and that waste is being covered on a daily basis. However, the concern of NCDENC is noted and has been mentioned in the report.
Britstown: they do not use a hole system, is the same as De Aar, pushing waste on the site and cover, check your pics they look like Carnarvon pictures.	The local official responsible for the waste disposal site in Britstown informed WorleyParsons during the site visit of the disposal procedure followed at the site. The pictures as presented in the report were taken at the disposal site in Britstown and are not confused with Carnarvon.
Kareeberg: department has no records of Vanwyskvei been licensed.	The source (Cost estimation by Aurecon in 2012) that was used to obtain the information was incorrect and this has been amended in the report.
Prieska: the Municipality appointed landfill securities, 6 of them.	Noted. This was not mentioned during the site visit and interviews on 26 March 2013 nor was any security personnel visible. However, this has been mentioned in the report.
Douglas: please make sure of the fence because my last inspection they were erecting a fence onsite.	Noted. During the site visit of WorleyParsons on 25 March 2013, there was no indication of a fence being erected.
Campbell: no incinerator are been used for burning waste or approved to do such function by the department.	The onsite incinerator is being used for the burning of waste. It was confirmed by the local official during the site visit of WorleyParsons and there were visual evidence of waste being burned. It has, however, been amended in the report that this action is not approved.



COMMENT RAISED	RESPONSE GIVEN
Hopetown: no application has been send to the department by Hopetown, still waiting an application.	Apologies for this mistake. It has been confirmed that Thembelihle Local Municipality is about to start the process of commissioning the new waste disposal site.
Umsobomvu does not use cell structure but dispose haphazardly.	There were cell structures in place at the Colesberg and Noupoot waste disposal sites during the site visits (9 April 2013) conducted by WorleyParsons, respectively, but waste is not properly disposed of.
All municipalities are under costing the waste services and their budget is not re-infenced, money can be taken for other purposes.	Noted. This has been mentioned in the reports.
Illegal dumping is in both formal and informal settlements.	Noted. This is mentioned in the report with emphasis on the informal settlements.



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Appendix 3 – Waste Disposal Site Authorisations



DEPARTMENT OF ENVIRONMENT AND NATURE CONSERVATION

ISEBE LEZENDALO NEZOLONDOLOZO

LEFAPHA LA TIKOLOGO LE TSHOMARELO YA TLHAGO

DEPARTEMENT VAN OMGEWING EN NATUURBEWARING

Metlife Towers
T-Floor
Private Bag X6102
KIMBERLEY
8300

Isakhiwo Se Metlife
T-Floor
Inqoxowa yeposi X6102
KIMBERLEY
8300

SASKO BUILDING
90 Long Street
KIMBERLEY

Tel: 053 807-7430
Fax: 053 831-3530

Moago wa Metlife
T-Floor
Kgatsanaposo 6102
KIMBERLEY
8300

Metlife Towers
T-Floor
Privaatsak X6102
KIMBERLEY
8300

HOD
Tel: 053 807-7300
Fax: 053 807-7367
Corporate Services
Tel: 053 807-7300
Fax: 053 807-7328

A Mekgwe

Enquiries :
Dipatlisiso :
Imibuzo : NNO 25/1
Navrae : **12/9/P34**

Reference :
Tshupelo :
Isalathiso :
Verwysings :

28 January 2011

Date :
Letlha :
Umhla :
Datum :

Mr G. B. Du Toit
Kareeberg Municipality
P.O.Box 10
Carnarvon
8925

Fax: (053) 382 3142

Dear Sir

**PERMIT IN TERMS OF SECTION OF 20 OF THE ENVIRONMENT CONSERVATION ACT, 1989
(ACT NO.73 OF 1989)**

Please find hereto attached a permit/permit amendment issued in terms of S.20 of the ECA (ACT 73 OF 1989)
(as amended)

Please be advised that future permit amendment applications should be addressed to:

Head Of Department: Environment & Nature Conservation

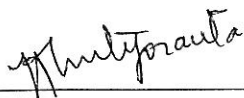
Department of Environment & Nature Conservation
Private Bag X6102
KIMBERLEY
8300

This is also to advise you that applications for authorization of permit amendment, exemptions, waste delisting, emergency and or once of authorizations will be processed only if the Department of Environment and Nature Conservation is in receipt of the latest external audit report, Annexure IV of the permit or any other documents specified in the permit/authorisation that needs to be submitted to DENC/DWAF annually or at frequencies stipulated in the permit.



Furthermore, please note that due to the permitting process being handled by two Department, the **minimum** time for processing any application regardless of details is four and half months. You are therefore advised to apply well in advance.

Yours faithfully



Mr J.J. Mutyorauta
DIRECTOR: ENVIRONMENTAL MANAGEMENT

DATE OF DECISIONS: 31st January 2011

Cc: Mr. F. Khan
Fax: (012) 4601 336



environment & tourism

Department:
Environmental Affairs and Tourism
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001 • Fedsure Building, 315 Pretorius Street, Pretoria, 0002. Tel: (+27 12) 310 3911 Fax: (+27 12) 322 2682

Ref: 12/9/11

Enquiries: Ms K. Ntoampe

Tel. 012 310 3920 Fax: 012 310 3753 Email Address: kntoampe@deat.gov.za

Mr Albertus Van Schalkwyk
Kareeberg Municipality
P.O. Box 10
Carnarvon
8925

Fax: 053 382 3142

Dear permit holder

PERMIT IN TERMS OF SECTION 20 OF THE ENVIRONMENT CONSERVATION ACT, 1989 (ACT NO. 73 OF 1989)

Please find hereto attached a permit /permit amendment issued in terms of S.20 of the ECA (ACT 73 OF 1989) (as amended)

Please be advised that future permit amendment applications should be addressed to:

The Director: Authorisations and Waste Disposal Management
Department of Environmental Affairs and Tourism
Private Bag X447
Pretoria
0001

This is also to advise you that applications for authorization of permit amendment, exemptions, waste delisting, emergency and or once off authorizations will be processed only if the Department of Environmental Affairs and Tourism (DEAT) is in receipt of the latest external audit report, annexure II of the permit or any other documents specified in the permit/ authorisation that needs to be submitted to DEAT/DWAF annually or at frequencies stipulated in the permit.

Furthermore, please note that due to the permitting process being handled by two departments, the **minimum** time for processing any application regardless of details required is four and half months. You are therefore advised to apply well in advance.

Yours Sincerely


Ms Nosipho Ngcaba

Director-General

Department Environmental Affairs and Tourism

Letter signed by Ms Kelello Ntoampe

Designation: Director: Authorisations and Waste Disposal Management

Date: 12 SEPTEMBER 2008

Muhasho wa zwa Vhupo na Vhuendelamashango • LiTiko le Tesimondzawo netekuVakasha • Isebe lemiCimbi yokusiNgqongileyo noKhenketho
Ndzawulo ya Tinhaka & Mbango • Department. Omgewingsake en Toerisme • Lefapha la Tikoloho le Bohanhlaudi • Lefapha la Bojanala
Kgoro ya Tikologo le Boeti • UmNyango wezeBhuduluko nokuVakatjha • Umnyango Wezemvelo Nokuvakaha



environment & tourism

Department:
Environmental Affairs and Tourism
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001 • Fedsure Building, 315 Pretorius Street, Pretoria, 0002. Tel: (+27 12) 310 3911 Fax: (+27 12) 322 2682

Ref. 12/9/11

Enquiries: Kelello Ntoampe

Tel: (012) 310-3920 Fax: (012) 320-3753 Email: kntoampe@deat.gov.za
www.deat.gov.za

PERMIT NUMBER: 12/9/11/P34

CLASS: G:C:B-

WASTE DISPOSAL SITE: VOSBURG WASTE DISPOSAL SITE

LOCATION: ERF 1 OF THE MUNICIPAL COMMUNAL PROPERTY, DISTRICT
OF VICTORIA-WEST

PERMIT HOLDER: KARENBERG MUNICIPALITY

ADDRESS: P.O. BOX 10, CARNARVON, 8925

PERMIT IN TERMS OF SECTION 20 OF THE ENVIRONMENT CONSERVATION ACT, 1989 (ACT NO. 73 OF 1989) AS AMENDED

I, Nozipho Ngcaba, in my capacity as Director-General of the National Department of Environmental Affairs and Tourism (hereinafter referred to as "the Department"), in terms of section 20(1) of the Environment Conservation Act, 1989 (Act No. 73 of 1989) (as amended), hereby authorise the abovementioned Permit Holder to operate the abovementioned waste disposal site, subject to the conditions specified herein.

Muhasho wa zwa Vhupo na Vhuendelamashango • LiTiko le Tesimondzawo netekuVakasha • Isebe lemiCimbi yokusiNgqongileyo noKhenketho
Ndzawulo ya Tinhaka & Mbango • Department: Omgewingsake en Toerisme • Lefapha la Tikoloho le Bohanhlaudi • Lefapha la Bojanala
Kgoro ya Tikologo le Boeti • UmNyango wezeBhuduluko nokuVakatjha • Umnyango Wezemvelo Nokuvakaha

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PERMIT CONDITIONS

In this Permit, Director means the Director: Authorisations and Waste Disposal Management of the National Department of Environmental Affairs and Tourism who may be contacted at the address below:

Director: Authorisations and Waste Disposal Management
Department of Environmental Affairs and Tourism
Private Bag X447
Pretoria
0001

In this Permit, "Regional Director" means the Regional Director: Northern Cape of the Department of Water Affairs and Forestry who may be contacted at the address below:

Regional Director: Northern Cape
Department of Water Affairs and Forestry
Private Bag X6101
KIMBERLEY
8300

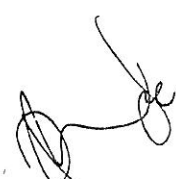
1. SITE DETAILS

1.1 LOCATION

1.1.1 This permit authorises the operation of a waste disposal site situated on Erf 1 of the Kareeberg Municipal Communal Property, District of Victoria-West, Northern Cape Province. (hereinafter referred to as "the Site") according to Authorisation Application Report compiled by Kwezi V3 Engineers, dated December 2006 (hereinafter referred to as "the Report"), submitted by the Permit Holder.

1.1.2 The location of the site must be according to the co-ordinates indicated on the permit application form, submitted by the permit holder which is defined as follows:

Number of corner	Latitude	Longitude
A	3384316.04	10833.06
B	3384303.05	10665.91
C	3384400.54	10485.43
D	3384473.05	10530.24
E	3384500.11	10457.67
F	3384591.46	10486.76
G	3384479.51	10939.19





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1.2 DOCUMENTS CONSIDERED

- 1.2.1 Authorisation Application Report for Vosburg Landfill site compiled by Kwezi V3 Engineers, dated December 2006
- 1.2.2 Application form, dated 07 December 2006, submitted by the Permit Holder.

"Hereafter referred as the reports"

- 1.2.3 A Record of Decision (RoD) from the Department of Water Affairs and Forestry, dated 29 April 2008.
- 1.2.4 Environmental Authorisation issued by the Northern Cape Department of Tourism, Environment and Conservation, dated 01 June 2008.

1.3 SITE SECURITY AND ACCESS CONTROL

- 1.3.1 The permit holder must prevent unauthorised access to the site, as far as practicable. The site must be fenced with a 1.8 fence, with gates of the same height at all entrances, to reasonably prevent unauthorised entry and curtail the spreading of wind-blown waste.
- 1.3.2 The permit holder must ensure that all entrance gates are manned during the hours of operation and locked outside the hours of operation.
- 1.3.3 The permit holder must prevent the acceptance of waste not authorised at the site as per condition 3.1 below.
- 1.3.4 Acceptance of waste may only take place between 06h00 and 18h00, Monday to Friday, and 08h00 and 14h00, Weekends and Public Holidays.
- 1.3.5 Weatherproof, durable and legible notices in at least 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

2 MANAGEMENT

2.1 GENERAL MANAGEMENT

2.1.1 The activities must be managed and operated:

- (a) in accordance with a documented management system, which identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents and non-conformances and those drawn to the attention of the permit holder as a result of complaints; and



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- (b) by sufficient persons who are competent in respect of the responsibilities to be undertaken by them in connection with the operation of the activities.

2.1.2 Records demonstrating compliance with condition 2.1.1 must be maintained.

2.1.3 Any persons having duties that are or may be affected by the matters set out in this permit must have convenient access to a copy that must be kept at or near the place where those duties are carried out.

2.2 EMERGENCY PREPAREDNESS PLAN

2.2.1 The Permit Holder must maintain and implement an emergency preparedness plan and review it after each emergency and or major accident. The plan must among others include:

- a) Vehicle/Machinery Fire
- b) Landfill Site Fire
- c) Slope Failure
- d) Natural disaster such as floods

3. PERMISSIBLE WASTE

3.1 Any portion of the Site which has been constructed or developed according to condition 4 of this Permit, may be used for the disposal of waste which is classified as general waste according to the latest edition of the "Minimum Requirements" series of documents as published by the Department of Water Affairs and Forestry (DWAF) or by the Department of Environmental Affairs and Tourism in future, (hereinafter referred to as the "Minimum Requirements series"), as suitable for disposal at a General landfill site.

3.2 Waste listed under Annexure 1 must not be allowed on site.

4. CONSTRUCTION

4.1 GENERAL CONSTRUCTION REQUIREMENTS

4.1.1 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 the condition listed under condition 4 of this Permit.

4.1.2 Construction within the site shall be carried out under the supervision of a registered professional engineer and according to the approved Site layout plan number 193090PW0-D01-0, dated December 2006 (Annexure V hereafter).



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- 4.1.3 Works shall be constructed and maintained on a continuous basis by the Permit Holder to divert and drain from the Site 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 (50) (hereinafter referred to as the "estimated maximum precipitation"). Such works shall, under the said rainfall event, maintain a freeboard of half a meter.
- 4.1.5 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 from 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.
- 4.1.6 The Permit Holder shall take all reasonable steps, such as suitable zoning and/or written agreements with adjacent landowners, to establish and maintain an unbuilt area or "buffer zone" of 400 metres between the Site and the nearest residential area and/or light industrial areas during the operative life of the Site. Heavy industries or industries which may cause nuisance conditions may be permitted within the buffer zone in terms of the applicable legislation.
- 4.1.7 The maximum height of the Site above ground level shall not exceed 3 metres.
- 4.1.8 The Permit Holder must construct berms to prevent storm water from coming into contact with waste.
- 4.1.9 Upgrading and or modification of the facility in terms of waste storage, treatment and handling should be communicated to the Director.
- 4.1.10 The permit holder shall make provision for sanitation facilities on site in line with the Occupational Health and Safety Act, 1993 (Act 85 of 1993).
- 5. GENERAL IMPACT MANAGEMENT AND OPERATION**
- 5.1 Waste disposal and operation shall be done according to the relevant minimum requirements (where applicable), the conditions of this Permit and any other written instruction by the Director in consultation with the Regional Director.
- 5.2 Waste disposed of on the site shall be compacted and covered on a weekly basis with a minimum of 150 millimetres of soil or other material approved by the Director in consultation with the Regional Director.
- 5.3 Waste types and classes referred to in Annexure 1 that are not permitted under condition 3 above must be redirected to a waste disposal site permitted for these waste types and classes.
- 5.4 No heavy machinery must be in operation on the site between 17H00 in the evening and 06H00 the next morning during weekdays, and between 14H00 and 08H00 the next morning during weekends
- 5.5 The permit holder shall take reasonable steps to ensure that the site is operated in such a manner that nuisance conditions or health hazards, or the potential creation of nuisance conditions or health



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hazards, are prevented.

- 5.6 The permit holder shall take all reasonable steps to ensure the health and safety of workers and employees on site, in terms of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).
- 5.7 Waste disposed off on the site may be reclaimed provided the reclamation activity does not add any negative impact on the environment, safety precautions are adhered to and there is no interference with control and proper operation of the site.
- 5.8 Waste deposited on the site may not be allowed to burn and suitable measures shall be implemented to prevent fires on the site or extinguish fires which may occur.
- 5.9 Suitable fencing and indigenous vegetation must be established around the site to effectively screen the site from nearby roads and residential areas.
- 5.10 The permit holder shall take all reasonable steps to ensure that:
- a) Records in terms of volume and the source of all wastes received as per Annexure II are kept
 - b) Fugitive emissions of substances (excluding odour and noise) shall not cause pollution. The permit holder shall not be taken to have breached this condition if appropriate measures have been taken to prevent or where that is not practicable, to minimise those emissions.
 - c) Litter and mud arising from the activities shall not cause pollution. Litter and mud arising from the activities must be cleared from affected areas outside the site as soon as practicable and wind blown waste and litter must be picked up and removed from fences and vegetation on a daily basis.
 - d) All liquid wastes, whose emissions to water or land could cause pollution, shall be provided with secondary containment and or diverted to sewer only after receiving approval from the relevant municipality .
 - f) Emissions from the activities shall be free from odour at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Department, residents and or interested and affected parties.
 - g) Emissions from the activities shall be free from noise at levels likely to cause annoyance, harm or disturb the peace of people around the site.
 - h) Scavenging animals, scavenging birds and other pests shall not cause pollution. The permit holder shall not be taken to have breached this condition if appropriate measures have been taken to prevent or where that is not practicable, to minimise such pollution.

6. MONITORING

6.1 MONITORING METHODS AND PARAMETERS



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6.1.1 The Permit Holder must carry out all tests required in terms of this permit 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).

6.1.2 The Permit Holder must put in place a monitoring and measurement plan that must amongst others include tonnage and the source of waste if received from a non residential person(s).

6.2 WATER MONITORING

6.2.1 The Permit Holder must establish and maintain one borehole upstream and downstream of the site for the shallow aquifers with 6 months from the date of this permit.

6.2.2 Monitoring boreholes must be equipped with lockable caps. The Department and the DWAF reserves the right to take water samples at any time and to analyse these samples or have them analysed.

6.3 BACKGROUND MONITORING

6.3.1 Samples from the upstream borehole(s) where the ground water in the borehole is at an expected higher hydraulic pressure level of the groundwater under the Site must be considered as background monitoring. Background groundwater monitoring must be conducted on a six monthly basis during each monitoring occasion for the water quality variables listed in Annexure III.

6.4 DETECTION MONITORING

6.4.1 Monitoring must be conducted six monthly at the downstream borehole(s) for the water quality variables listed in Annexure IV.

7 INVESTIGATIONS

7.1 If, in the opinion of the Director, environmental pollution, nuisances or health risks may be or is occurring on the Site, the Permit Holder must initiate an investigation into the cause of the problem or suspected problem.

7.2 If, in the opinion of the Regional Director, water pollution may be or is occurring the Permit Holder must initiate an investigation into the cause of the problem or suspected problem. Such investigation must include the monitoring of the water quality variables, at those monitoring points and such frequency as may be specified by Regional Director.

7.3 Investigations carried out in terms of conditions 7.1 and 7.2 above must include the monitoring of the relevant environmental pollution, nuisance and health risk variables, at those monitoring points and such frequency to be determined in consultation with the Director.

7.4 Should the investigation carried out as per conditions 7.1 and 7.2 above reveal any unacceptable levels of pollution, the Permit Holder must submit mitigation measures to the satisfaction of the Director.



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8. AUDITING

8.1 INTERNAL AUDITS

- 8.1.1 Internal audits must be conducted annually by the permit holder and on each audit occasion an official report must be compiled by the relevant auditor to report the findings of the audits, which must be made available to the external auditor specified in condition 8.2.1.

8.2 EXTERNAL AUDITS

- 8.2.1 The permit holder must appoint an independent external auditor to audit the site biennially and this auditor must compile an audit report documenting the findings of his/her audit, which must be submitted by the permit holder according to condition 9.9

8.2.2 The audit report must

- a) specifically state whether conditions of this permit are adhered to.
- b) include an interpretation of all available data and test results regarding the operation of the site and all its impacts on the environment.
- c) Specify target dates for the implementation of the recommendations by the permit holder to achieve compliance.
- d) contain recommendations regarding non-compliance or potential non-compliance and must specify target dates for the implementation of the recommendations by the permit holder and whether corrective action taken for the previous audit non conformities was adequate.
- e) show monitoring results graphically and conduct trend analysis

8.3 DEPARTMENTAL AUDITS AND INSPECTIONS

- 8.3.1 The Department reserves the right to audit or inspect the Site without prior notification at any time and frequency as may be determined by the Director.
- 8.3.2 The permit holder must make any records or documentation available to the Director upon request, as well as any other information he/she may require.
- 8.3.3 The findings of these audits or inspections must be made available to the permit holder within 30 days of the end of the audit or inspection. Information from the audits must be treated in accordance with the Promotion of Access to Information Act, 2000 (Act 2 of 2000).

9. REPORTING

- 9.1 The permit holder must, within 24 hours notify the Director and the Regional Director of the occurrence or detection of any incident on the Site, or incidental to the operation of the Site, which has the potential to cause, or has caused pollution of the environment, health risks, nuisance conditions or water pollution.



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- 9.2 The Permit Holder must, within 14 days, or a shorter period of time, if specified by the Director and/or the Regional Director, from the occurrence or detection of any incident referred to in condition 9.1, submit an action plan, which must include a detailed time schedule, and resource allocation signed off by top management, to the satisfaction of the Director and/or the Regional Director of measures taken to -
- a) correct the impact resulting from the incident;
 - b) prevent the incident from causing any further impact; and
 - c) prevent a recurrence of a similar incident.
- 9.3 In the event that measures have not been implemented within 21 days of the incident to address impacts caused by the incident referred to in condition 9.1, or measures which have been implemented are inadequate, the Director and/or the Regional Director may implement the necessary measures at the cost and risk of the Permit Holder.
- 9.4 The Permit Holder must keep an incident report and complaints register, which must be made available to external auditor, Departmental and DWAF officers for the purpose of the audit.
- 9.5 The Department must be notified without delay in the case of any significant adverse environmental and health effects and the breach of any condition in this permit.
- 9.6 Prior written notification shall be given to the Director prior to the permanent cessation of any operational activities and the permit holder must comply with condition 10.1 below.
- 9.7 The Department must be notified within 7 days of any changes to the management of the site including the name of the incoming person together with evidence that such person has the required technical competence.
- 9.8 The Department must be notified within 14 days of the following changes:
- a) Permit Holder's trading name, registered name or registered office address;
 - b) steps taken with a view to the Permit Holder going into bankruptcy, entering into composition or arrangement with creditors, or in the case of them being in a partnership, dissolving the partnership.
- 9.9 Each external audit report referred to in condition 8.2 must be submitted to the Director within 30 days from the date on which the external auditor finalised the audit.
- 10. REHABILITATION AND CLOSURE OF THE SITE**
- 10.1 REHABILITATION PLAN
- 10.1.1 The Permit Holder must rehabilitate the Site or any portion thereof, in accordance with a closure report and rehabilitation plan, which must be submitted to the Director and the Regional Director for approval at least one year prior to the intended closure of the Site, or shorter in

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cases of unplanned cessation of activities.

10.2 CLOSURE OF THE SITE

10.2.1 Immediately following the cessation of operations the surface of the Site must be covered and the Site must be maintained in such a way that:

- a) the formation of pools due to rain is prevented;
- b) free surface runoff of rain-water is ensured;
- c) contamination of stormwater is prevented;
- d) no objects or material which may hamper the rehabilitation of the site are present and;
- e) little or no erosion occurs, until the approved rehabilitation plan referred to in condition 10.1 is completely implemented.

10.2.2 The Permit Holder shall remain responsible for the Site, or any of its impacts on the environment, after operations on the site have ceased.

11. LEASING AND ALIENATION OF THE SITE

11.1 Should the permit holder want to alienate or lease the Site, he/she shall notify the Director in writing of such an intention at least 120 days prior to the said transaction.

11.2 Should the permit holder want to transfer holder-ship of this, he/she shall notify and obtain approval from the Director for such a transfer, at least 120 days prior to the said transfer.

11.3 Any subsequent Permit Holder shall be bound by the conditions of this Permit.

12. GENERAL

12.1 This permit shall not be transferable unless such transfer is subject to condition 11.2.

12.2 This permit shall not be construed as exempting the permit Holder from compliance with the provisions of the National and Provincial Legislation and any relevant Ordinance, Regulation, By-laws and relevant National Standards and norms.

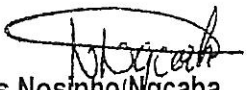
12.3 Transgression of any condition of this Permit could result in the validity of the Permit being terminated by the Department.

12.4 The Permit Holder must provide the Director with any information which he/she may require to enable him/her to fulfil the objective of the Environment Conservation Act, 1989 (Act 73 of 1989) as amended or any current legislation for waste management purposes.



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12.5 This Permit is valid for a period of three years and shall be reviewed immediately when there is sufficient ground water quality results. Based on the results of the review, compliance to permit conditions or recommendations from audit reports and or changing legislation, the Permit could be amended or withdrawn or validity thereof extended.


Ms Nosipho Ngcaba
DIRECTOR-GENERAL

DATE: 3/9/2008





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ANNEXURE I

WASTE WHICH MAY NOT BE ACCEPTED ON THE SITE: CONDITION 3.1

1. Waste where specific control has been established in terms of the Nuclear Energy Act, 1993 (Act 131 of 1993).
2. Waste types controlled in terms of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002) and the Electricity Act, 1987 (Act 41 of 1987), unless written permission has been obtained from the Regional Director.
3. Waste which is defined, according to the Minimum Requirements, as an extreme hazard or Hazard Group 1 (HG1); high hazard or Hazard Group 2 (HG2); moderate hazard or Hazard Group 3 (HG3) and low hazard or Hazard Group 4 (HG4), unless an application for delisting has been successfully submitted to the Manager: Waste Discharge and Disposal through the Regional Director and written approval was obtained from the Manager: Waste Discharge and Disposal for the disposal of this waste on the Site.
4. Flammable wastes, with a closed cup flash point less than 61°C.
5. Corrosive substances, as defined and described in the Minimum Requirements as Class 8 (1998 edition: page 6-8, Diagram III).
6. Oxidising substances and organic peroxides, as defined and described in the Minimum Requirements as Class 5 (1998 edition: page 6-8, Diagram III).
7. Any waste with a substance which is a Group A and/or Group B carcinogen/mutagen. Group A carcinogens/mutagens have been proven in humans, both clinical and epidemiological. Group B carcinogens/mutagens have been proven without doubt in laboratory animals.
8. Any waste with a substance at a concentration greater than 1% where the substance is a Group C and/or Group D carcinogen/mutagen. Group C carcinogens/mutagens have shown limited evidence in animals. Group D carcinogen/mutagen - the available data is inadequate and doubtful.
9. Any infectious 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, pathological wastes, sharps, human and animal anatomical wastes and isolation wastes that contain infectious substances.
10. All materials which fall in Class 1 (explosives), Class 2 (compressed gases) and Class 7 (radioactive materials), as defined and described in the Minimum Requirements.
11. Any waste with a pH less than 6 or greater than 12.
12. Any waste which is difficult to analyse and classify.
13. Any complexes of heavy metal cations, paint and paint sludges, or laboratory chemicals.



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14. 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 its toxic, physical, chemical or persistent characteristics and which corresponds with the UNEP definition of hazardous waste;
15. Medical waste; and
16. 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.



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ANNEXURE II**INFORMATION WHICH SHALL BE SUBMITTED ON AN ANNUAL BASIS: CONDITION 5.10 (a)**** = Indicate with an X. Please print legibly.*

NAME OF SITE: _____	DATE OF REPORT: _____ (yy/mm/dd)
---------------------	----------------------------------

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

Name	Telephone	
Postal Address	Fax	
	Postal Code	

2. Operator in control of disposal site:

Name	Telephone	
Identity number	After hours	
Educational		
Qualifications (*)		

3. Latest estimated lifetime of the disposal site: _____ yr.**4. Indicate the type of waste and approximate quantities of waste disposed of 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 Source)			
Industrial (not hazardous) - (specify Source)			
TOTAL			

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

Salvaging undertaken?	Yes	
Type	(Collector's Name & final destination of Waste)	Quantity (m ³)
Paper/wood fibre		
Plastics		
Glass		
Rubber		
Textile		
Other (specify)		
Other (specify)		
TOTAL		



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Receptor	Source	Harm	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk Management	Residual risk
What is at risk? What do I wish to protect?	What is the agent or process with potential to cause harm?	What are the harmful consequences if things go wrong?	How might the receptor come into contact with the source?	How likely is this contact?	How severe will the consequences be if this occurs?	What is the overall magnitude of the risk? (Low-Medium-High)	On what did I base my judgement?	How can I best manage the risk to reduce the magnitude?	What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment)
Local human population	Airborne dusts /particulates	Nuisance -dust on cars, clothing etc.	Deposition from air						
Local human population	Noise from machine	Nuisance loss of amenity, loss of sleep	Air transport						
Local human population	Fugitive releases, waste, litter and mud on roads	Nuisance loss of amenity.	Vehicles entering and leaving the Site. Waste escaping the Site						
Local human population	Odour	Nuisance loss of amenity.	Air transport						
Local human population	Scavenging birds and animals	Nuisance loss of amenity.	Air transport and over land						
	Pests (e.g. flies)	Nuisance loss of amenity.	Air transport and over land						
Local human population	Flooding of Site	If waste is washed off site it may cause contamination	Flood waters						
Groundwater and surface waters	Fire on site leading to run-off from polluted fire fighting waters.	Contaminating of groundwater and aquatic ecosystems	Direct and indirect run-off						
Local human population and/or livestock gaining unauthorised access to the activities	All non-site hazards- particularly relating to waste handling & storage activity	People/ livestock coming into contact with hazards	Direct physical contact						
		Arson and/or vandalism causing the release of polluting materials	Arson-air. Liquids polluting watercourses and/or groundwater						
Groundwater	Contaminated run-off from waste	Contaminating of groundwater	Soil to groundwater to borehole						
Local human population	Smoke from burning of waste in case of fire	Nuisance, loss of amenity, loss of sleep. Respiratory irritation/illness	Air transport						



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Receptor	Source	Harm	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk Management	Residual risk
What is at risk? What do I wish to protect?	What is the agent or process with potential to cause harm?	What are the harmful consequences if things go wrong?	How might the receptor come into contact with the source?	How likely is this contact?	How severe will the consequences be if this occurs?	What is the overall magnitude of the risk? (Low-Medium-High)	On what did I judge?	How can I best manage the risk to reduce the magnitude?	What is the magnitude of the risk after management? This residual risk will be controlled by Compliance Assessment.

EXPAND TABLE AS PER YOUR RISKS

I, the undersigned, declare that the information stated above and the risk assessment below is to my knowledge a true reflection of the status at the Vosburg waste disposal site.

Signature:

A. T. MEKGWE

Name:

A. T. MEKGWE

Capacity:

CEO

Place:

Kimberley

Date 01.02.2011

[Signature]



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ANNEXURE IV

WATER QUALITY VARIABLES REQUIRED FOR DETECTION MONITORING: CONDITIONS 6.4

(a) Bi-annually for:

Alkalinity (P.Alk)
Chemical oxygen demand (COD)
pH
Total dissolved solids (TDS)
Chlorides (Cl)
Nitrate (NO₃-N)
Potassium (K)

(b) Annually for:

Electrical conductivity (EC)
Calcium (Ca)
Magnesium (Mg)
Sodium (Na)
Sulphate (SO₄)
Fluoride (F)



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ANNEXURE III

WATER QUALITY VARIABLES REQUIRED FOR BACKGROUND MONITORING :CONDITIONS 6.3

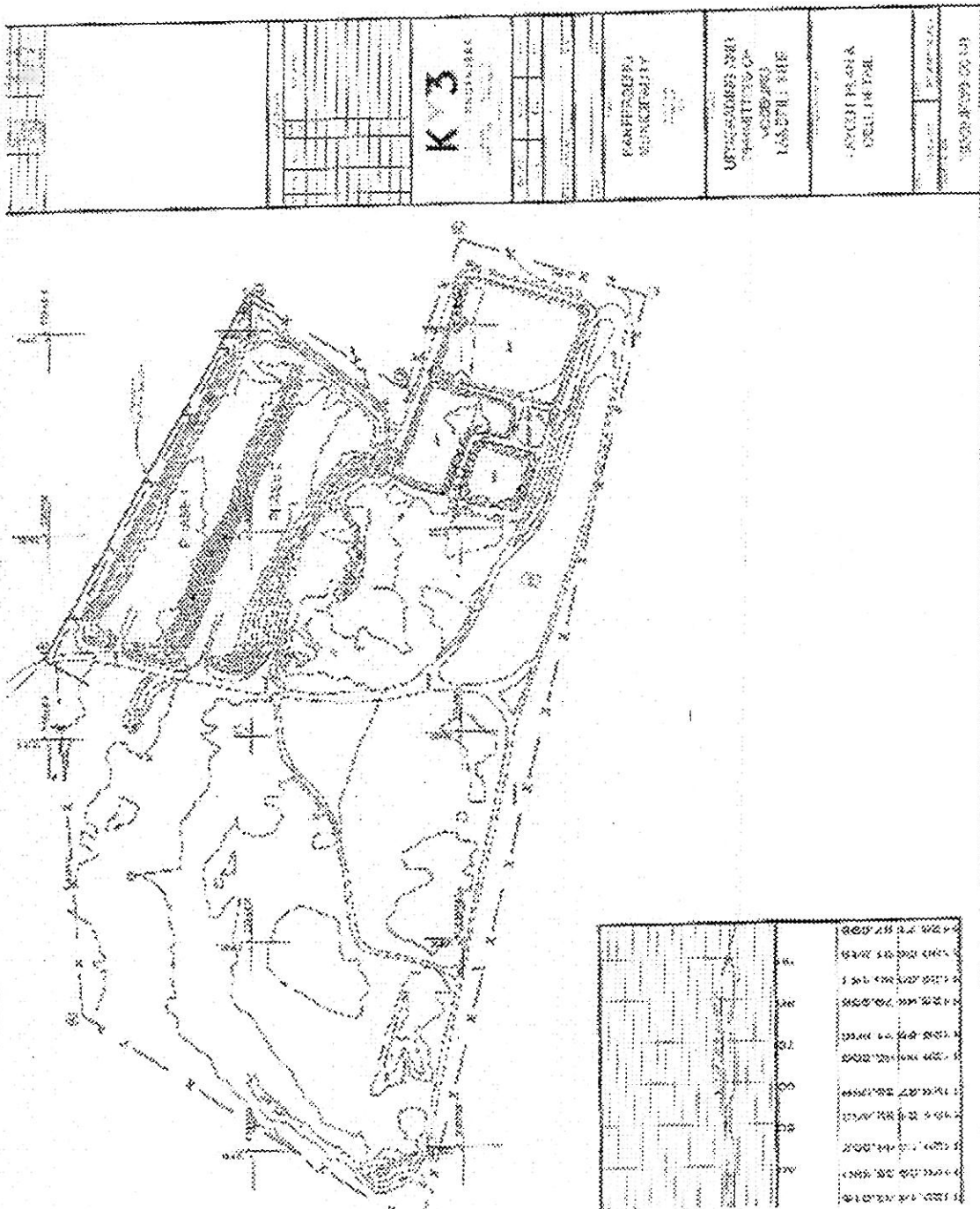
Alkalinity (P.Alk)	Free & saline ammonia as N ($\text{NH}_4\text{-N}$)
Calcium (Ca)	Boron (B)
Chromium (hexavalent) (Cr^{6+})	Magnesium (Mg)
Chromium (Total) (Cr)	Cadmium (Cd)
Chemical oxygen demand (COD)	Chloride (Cl)
Cyanide (CN)	Fluoride (F)
Mercury (Hg)	pH
Lead (Pb)	Sodium (Na)
Nitrate (as N) ($\text{NO}_3\text{-N}$)	Electrical conductivity (EC)
Phenolic compounds (Phen)	Sulphate (SO_4)
Potassium (K)	
Total dissolved solids (TDS)	



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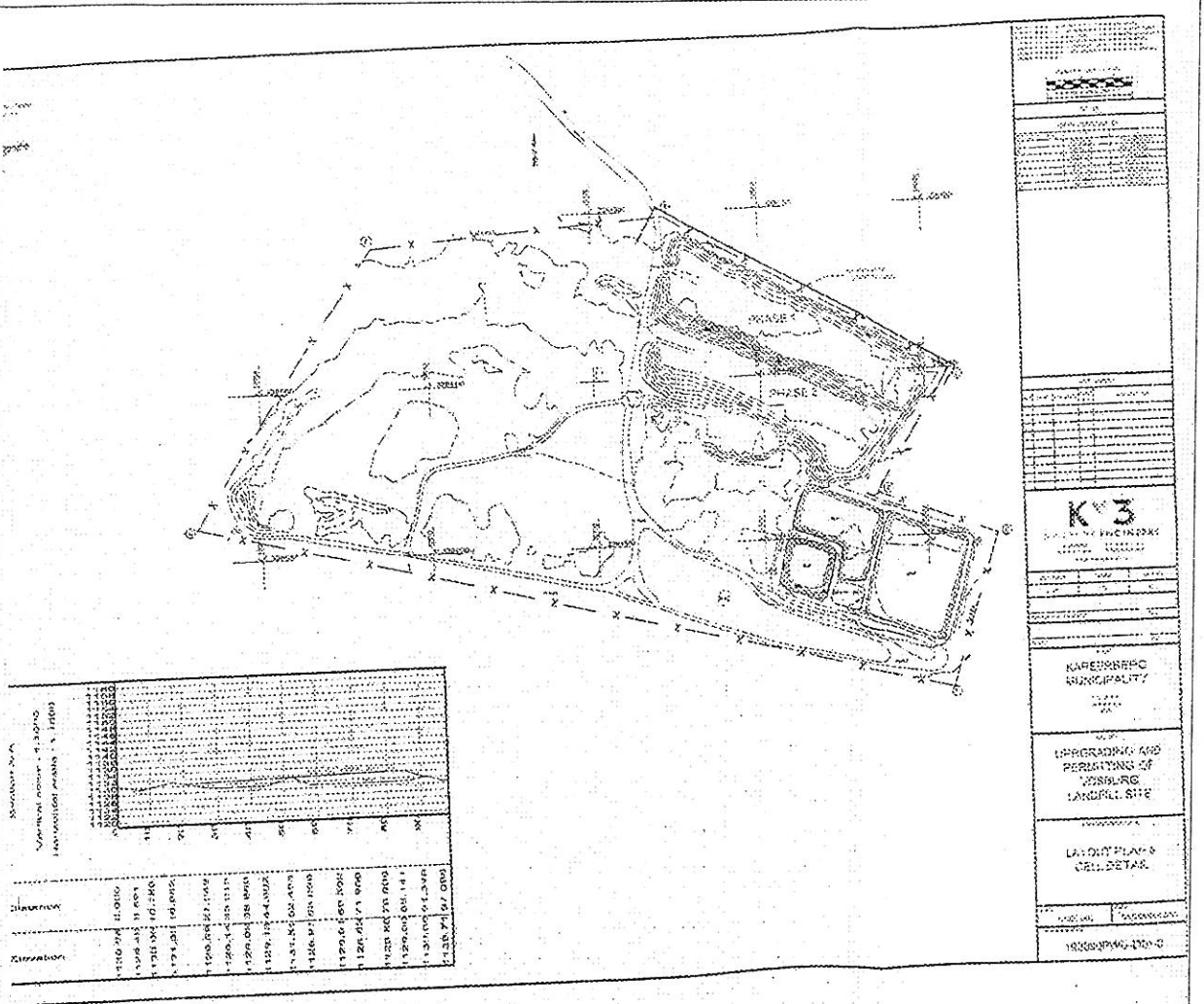
ANNEXURE V

SITE LAYOUT PLAN (DRAWING): CONDITION 4.1.2





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