EDEN
DISTRICT MUNICIPALITY
UMASIPALA WESITHILI
DISTRIKSMUNISIPALITEIT

INTEGRATED WASTE MANAGEMENT PLAN

(2nd Generation)

Final Report
September 2014

Compiled by:

Jan Palm Consulting Engineers
Specialist Waste Management Consultants
P O Box 931
BRACKENFELL, 7561

Tel: (021) 982 6570
Fax: (021) 981 0868
E-mail: info@jpce.co.za

EDEN DISTRICT MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN

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ANNEXURES:

ABBREVIATIONS

COD	Chemical Oxygen Demand in mg/ă
DEA	Department of Environment Affairs
D:EA&DP	Department of Environmental Affairs and Development Planning
DWA	Department of Water Affairs
EH	Environmental Health
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
Haz	Hazardous
HCGW	Health Care General Waste
HCRW	Health Care Risk Waste
HCW	Health Care Waste
HDPE	High Density Polyethylene
kg	kilogram
kă	kilolitre
ă	litre
m^3pa	cubic meter per annum
t/a	ton per annum
VWMF	Vissershok Waste Management Facility
WWT	Waste Water Treatment
CNC	Cape Nature Conservation
IWMP	Integrated Waste Management Plan
JPCE	Jan Palm Consulting Engineers
EDM	Eden District Municipality

EDEN DISTRICT MUNICIPALITY

INTEGRATED WASTE MANAGEMENT PLAN

1. PREFACE

1.1 INTRODUCTION

The second generation of this Integrated Waste Management Plan (IWMP) has been formulated by Jan Palm Consulting Engineers (JPCE) on behalf of the Eden District Municipality to address the challenge of waste management in Eden, home to some 602,000 people. The first generation IWMPs were developed in 2006 and were subsequently commented on and evaluated by the Department: Environmental Affairs and Development Planning (D:EA&DP). JPCE was appointed via a public tender process in 2013 by the Eden District Municipality to develop the second generation IWMPs for the Eden District, Bitou, George, Hessequa, Knysna, Mossel Bay and Oudtshoorn Municipalities. The Department of Environmental Affairs and Development Planning has assisted Kannaland Municipality with the updating of their second generation integrated waste management plan. The information of Kannaland Municipality is included in the regional integrated waste management plan.

The terms of reference for the development of the Eden District second generation IWMP documents include a status quo analysis, strategic objectives and an implementation plan. In summary the status quo study must describe the following:

- Scope of the Plan
- Policies and Legislation
- Demographics
- Waste Quantities and Characteristics
- Existing Waste Management Strategies, Systems and Practices
- Economics and Financing of Waste Management
- Organisational Structure
- Key Stakeholders
- Identification and Prioritisation of Needs
- Summary Situation Analysis

The strategic objectives, based on the system analysis and recommendations should focus on aspects such as:

- Waste Prevention, Minimisation, Re-use and Recycling
- Collection and Transport
- Waste Treatment
- Waste Disposal, including hazardous, mine, medical waste and water treatment sludge.
- General Strategic Objectives.

The Implementation Plan is a Master Plan for Waste Management within the jurisdictional area and should include the following:

- Policy Instruments
- Partnerships
- Legislative Instruments and requirements
- Economic Instruments
- Financial Management

Refer to **Annexure 4** of this report for the full Terms of Reference.

The IWMP is a statutory requirement of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) that has been promulgated and came into effect on 1 July 2009 and that has as its goal the transformation of the current methodology of waste management, i.e. collection and disposal, to a sustainable practice focussing on waste avoidance and environmental sustainability. Implementation of this IWMP will be through municipal by-laws and in accordance with an implementation schedule. The development of the IWMP is necessary as it will be an integral tool to identify current needs and act as a guide towards sustainable waste management. With regular

updates of this document the changing needs as well as progress in the waste management field can be tracked and strategies adapted accordingly. It also provides a framework for budgeting purposes. The IWMP must be incorporated as part of each Municipality's Integrated Development Plan (IDP), but is submitted as a separate document.

The primary objective of integrated waste management (IWM) planning is to integrate and optimise waste management, in order to maximise efficiency and minimise the associated environmental impacts and financial costs, and to improve the quality of life of all residents within the Eden District.

This document underlines the following principles of the National Waste Management Strategy:

- The prevention of waste generation;
- The recovery of waste of which the generation cannot be prevented, and
- The safe disposal of waste that cannot be recovered

1.2 BACKGROUND AND GENERAL DESCRIPTION

The goals and objectives identified in the first generation IWMP and the objectives reached are as follows:

OBJECTIVES	TARGET	IMPLEMENTATION	OBJECTIVE REACHED
DISPOSAL INFRASTRUCTURE DEVELOPMENT			
Regional Disposal Site	Provide for a regional disposal facility for domestic waste from 2010 onwards	Investigate alternatives for the disposal of domestic waste from 2010 and onwards, or negotiate new contract for disposal at PetroSA	Contracts renewed with PetroSA. Received Waste Licence to operate Regional Landfill facility
Garden Refuse	Develop a Composting Strategy for District	Determine the feasibility of composting and the outsourcing of operation	Process followed to outsource operation of regional composting facilities. Not feasible. Will be included in Alternative Waste Technology investigation in second generation IWMP
Health Care Risk Waste	Establish and maintain proper control over the disposal of medical and Health Care Risk Waste	Identify all Health Care Risk Waste generators. Record Health Care Risk Waste quantities generated, collected and disposed of by all generators. Improve public awareness	Eden Integrated Waste Information System Developed. 300 Generators, Transporters and Treaters registered
Industrial and Hazardous Waste	Establish and maintain proper control over the disposal of industrial and hazardous waste	Identify all industrial waste generators. Record industrial waste types and quantities generated, collected and disposed of by all generators. Improve public awareness	Eden Integrated Waste Information System Developed 25 Generators registered
WASTE INFORMATION SYSTEM			
	Develop a Master WIS	Integrate Local Municipal Information into Master WIS	System developed
	Chair Workshops	Chair Quarterly Waste Management Forum Workshops	Eden Integrated waste Management Forum meet on a two monthly basis
	Compile Generic By-Laws	Revise and update By-Laws as required	Generic Waste Management By-Laws compiled.

OBJECTIVES	TARGET	IMPLEMENTATION	OBJECTIVE REACHED
			Municipalities to promulgate.
WASTE MINIMISATION			
Waste Minimisation Strategy	Encourage Waste Minimisation and Recycling in District	Improve Public Awareness. Assist Local Municipalities with Continual Awareness Programme	The Wise Up On Waste education program launched. Strategy will form part of the second generation IWMP

The planning phase of the second generation IWMP included the following:

A project meeting was held at the Eden District Municipal offices in Mossel Bay on the 29th of January 2013, which was attended by the consultants, the waste managers of the Eden District (local and district Municipalities) and D:EA&DP officials. Please refer to **Annexure 1** for the minutes of this meeting. The purpose of the meeting was to discuss the scope of the project and the road ahead. The involvement and input from each waste manager was discussed. It was decided that the draft IWMP of each Municipality in the Eden District will be developed and presented to each council, after which it will go out for public comment and input. After the comment phase, the final documents will be developed.

With the compilation of the second generation IWMP the review report of DEADP, dated September 2005, on the first generation IWMP was consulted.

It was decided during this project meeting, with the development of the first generation IWMPs in mind, that no public participation meetings will be held during the development of the second generation IWMP. The reason for this decision was that in the development of the first generation IWMPs these meetings were poorly attended, there was little interest from the public and irrelevant issues were raised at the meetings which did not contribute to the IWMP development.

The public was sufficiently informed and given reasonable time when the draft IWMP went out for comment in that the draft document itself served as a base on which they could make informed comments and relevant contributions. A notice was placed in the local newspapers throughout the Eden District when the draft IWMP was open for public comment. The notice stated where a document could be obtained and the date on which all comments closed. A copy of this notice is attached to the final IWMP as **Annexure 5**. No comments were received during the given period.

The participants in the Eden District IWMP second generation process are Mr Morton Hubbe (Chief Eden District Waste Management, Project Co-ordinator, Eden District Municipality), Jan Palm Consulting Engineers (Consulting Civil Engineers specializing in Solid Waste Management) with communication and input from various officials from the Department: Environmental Affairs & Development Planning (D:EA&DP) and the respective solid waste managers and officials of each local municipality within the Eden District. During the public comment phase, other participants had the opportunity to contribute to the IWMP development before the final document was released, e.g. NGOøs.

After the initial project meeting the consultant sent out a questionnaire to the municipal officials in preparation for a meeting between them to obtain the status quo information for the IWMP. See **Annexure 2** for the questionnaire that was sent. The consultant conducted a visit to each operational waste site in the District and held meetings with the various officials. Further communication with the Waste Managers and their colleagues are on-going to ensure the effective update of the IWMP.

JPCE attended a meeting at the D:EA&DP offices on 5 April 2013 with Mr Hanekom, Mr Gilbert and Mr Hoon to discuss the required content of an IWMP as seen by D:EA&DP. D:EA&DPøs latest IWMP checklist was obtained following this meeting and the additional information that is required according to this checklist was requested from the Eden Municipalities.

The waste streams and quantities discussed in this IWMP include household waste, garden (green) waste and builderøs rubble. Medical waste and hazardous wastes are discussed under the by-law section of this document.

1.3 GENERAL DESCRIPTION

The Eden District Municipality (EDM) is located along the south-eastern coast and hinterland of the Western Cape Province. It stretches roughly for 350 km along the Indian Ocean coast, from the

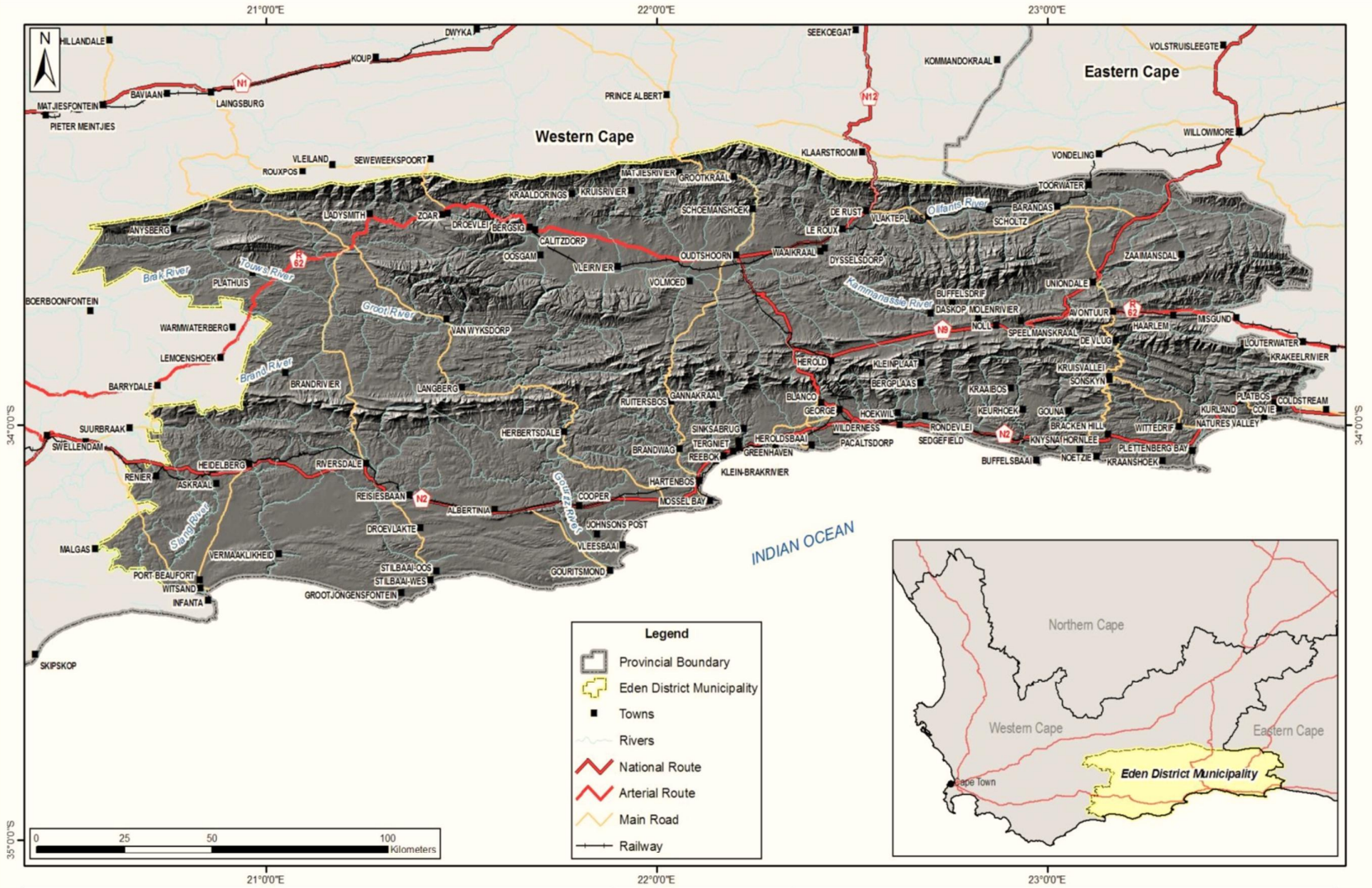
Bloukrans River in the east to Witsand at the Breede River Mouth in the west and covers approximately 23 330 km2 (**Figure 1-1**). The northern boundary of the EDM is formed by the Klein and Groot Swartberg Mountain ranges from the town of Anysberg in the northwest to Toorwater in the northeast. The EDM comprises seven municipalities, namely Oudtshoorn, Kannaland, Mossel Bay, George, Hessequa, Knysna and Bitou (Plettenberg Bay).

Section 1.3 of this IWMP represents a desk study of available information on geology, land use, ground and surface water, topography and environmentally sensitive areas.

The following sources of information were used in the desk study:

- Colour composite LANDSAT image at 1:250,000 scale;
- 1:50,000 scale topographic maps
- 1:250,000 scale topo-cadastral maps
- 1:250,000 geological map series
- 1:500,000 hydrogeological map series
- Eden District Municipality Spatial Development Framework (2003)

Figure 1-1 shows the extent of the Eden District



CLIENT	Eden District Municipality	COMPILED	GOES
PROJECT	IWMP revisions		
DRW. TITLE	Locality Map	SCALE	NTS

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Engineers and Scientists

Figure 1-1

1.3.1 Biophysical Environment

The coastline of this large area varies dramatically, from white sandy beaches to rocky cliffs. This region is often described as one of the most beautiful in South Africa, with the Garden Route as the centre of its tourism industry.

The EDM is endowed by rich natural resources and landscapes, the most prominent of which are associated with the coastal zone, the indigenous forests on the coastal plateaux and the dry Succulent Karoo environment of the Klein Karoo.

The main access routes to the region are the national road (N2) via Swellendam in the west, and Coldstream in the Eastern Province, as well as the regional road (R62). Various mountain passes provide access from the coastal areas to the Klein Karoo region in the north, beyond the Outeniqua mountain range.

1.3.1.1 Topography

The EDM is characterised by a variety of topographical units, which, together with their associated geology, determine the broad vegetation types of the area. The coastal platform is relatively flat or undulating, but deeply incised by river valleys. This zone rises from sea-level to an average altitude of 230 m. The topography consists of coastal platforms, river valleys, mountain foothills, the upper plateaus up to 400 m above sea-level and mountain ranges, which form a large part of the northern part of the study area.

The coast of the EDM is characterised by four types of coastal geomorphology. These include fine grained sandy beaches, wave cut rocky platforms, exposed rocky headlands, and pebble / shingle beaches. These characteristics often create a highly diverse interface between the ocean and the terrestrial area. The coastline is characterised by a number of estuaries, river mouths and lagoons. The importance of the Outeniqua and Langeberg ranges in terms of how they divide the area into different regions is emphasised by elevation and slope maps. There is an extensive coastal platform ranging from 5 ï 40 km wide, linking the coastal zone to the foothills of the mountains. The mountains separate the coastal region from the Little Karoo and thus form a natural barrier between the Southern Cape and the interior. Deeply incised river valleys on the otherwise flat to undulating coastal platform inhibit transportation infrastructure.

There are six main topographic highs in the area:

- The Langeberg Mountain range extends from the Boesmansbos Wilderness Area (north of Heidelberg) in the west to Herbertsdale in the east.
- The Outeniqua Mountain range extends further east from north of Friemersheim to the area north of Karatara and Rheenendal.
- The Rooiberge extends from Ladismith in the west to Armoed in the east.
- The Kammanassie Mountains extend from Dysselsdorp in the west to Uniondale in the east.
- The northern boundary of the EDM is formed by the Klein and Groot Swartberg Mountain ranges.
- The Kouga Mountain range forms the eastern boundary of the EDM.

1.3.1.2 Hydrology

The geomorphological character of the coast is strongly influenced by rivers that flow from the upper catchment areas. Most of the rivers are generally associated with dark or clear acidic water, with many invertebrates and fish that are endemic to the area. The main rivers in the study area are listed below (Eden SDF, 2003):

- Breede River: Flows into the sea at St. Sebastian Bay near the coastal town of Witsand. The estuary is a popular fishing area and is notable for shellfish, including oysters. The river is tidal for approximately 36 km up to Malgas.
- Duivenhoks River: This river is located east of the Breede River and has its main catchment in the Langeberg Mountains north of Heidelberg.
- Goukou River: The town of Still Bay is located adjacent to this river. The river divides the town and is tidal for ~ 2 km inland.
- Gouritz River: Named after the Gouriqua KhoeKhoe people who lived in the area. This river supports a rich birdlife and presents very good fishing spots for commercial and sports fishermen near its mouth.
- Hartenbos River: Since the Hartebeeskuil Dam was built in 1970, the mouth has usually been closed. This has led to increased salinities and eutrophication and degradation of the estuary.

- Little Brak River: This river provides an important estuary for bait organisms and bird species, but still contains remains of oil contamination from the Venpet/Venoil incident in 1977.
- Great Brak River: The greater of the two ôbrakô (ôbrackishô) rivers, the Great Brak reaches the sea between George and Mossel Bay. The Great Brak has a lagoon at its mouth and some industrial activities along the banks. The estuary is important for bait organisms and birds.
- Maalgate River: The Maalgate River reaches the ocean west of Herolds Bay.
- Gwaing River: The Gwaing River mouth is located east of Herolds Bay.
- Kaaimans River: This river reaches the ocean to the west of Wilderness. The main tributaries are the Swart River and the Silver River.
- Touw River: The Touw River mouth is located to the east of Wilderness. The river is an integrated marsh and river system interlinked with Rondevlei, Bo-Langvlei, Onder-Langvlei and Serpentine. The main tributaries are the Duiwe River and Little Keur River.
- Swartvlei River: The river is located near Sedgefield. The system is very important for birds, estuarine fish and bait organisms, as it is relatively undisturbed.
- Goukamma River: The Goukamma River mouth is located at Buffels Bay and supports an extremely rich birdlife.
- Knysna River: The Knysna River flows into the Knysna Lagoon, within which 90% of tidal exchange takes place. It is extremely important for many estuarine species and in particular is a breeding ground for oyster farming.
- Piesang River: The Piesang River mouth is located to the west of Plettenberg Bay.
- Keurbooms River: The river mouth is located to the east of Plettenberg Bay, near Keurboomstrand. The main tributaries to the river are the Bos River, Leermansdrift River, and Bitou River. There are extensive tidal flats at the river mouth, which are important for bait organisms and birds.
- Bloukrans River: This river forms the eastern boundary of the EDM. It follows an extremely deep gorge and has a unique aesthetic quality.

1.3.1.3 Estuaries, Lagoons and Lakes

At least 24 important estuaries and river mouths occur in the EDM. The Lakes area between Wilderness and Knysna is unique in that there is a string of five inland lakes. These lakes are inland of a high coastal dune and at an altitude just above sea level. Four of the lakes, namely Rondevlei, Langvlei, Bo-Langvlei and Groenvlei have fresh water whereas the other is brackish in nature.

Knysna Lagoon is also an important river mouth and estuary of the area. The lagoon is an important environmental habitat and sensitive to over-exploitation. It also provides a number of tourism, ecotourism, adventure tourism and industrial opportunities. It provides a natural harbour that today is deep enough to allow for the passage of medium-sized ships. More than 200 species of fish are found in the lagoon. Oyster cultivation is an important activity in the lagoon. The lagoon is also the home of a rare seahorse. (Eden SDF, 2003)

1.3.1.4 Geohydrology

Geology

The most dominant formations are:

- Kaaimans Group: This formation occurs in narrow strips in the coastal plains between Great Brak River and Knysna.
- Cape Granite Group: This formation is found as a group of rocks confined to outcrops between the Great Brak River and George and also between the Wilderness and Karatara.
- Table Mountain Group: This formation presents a most important rock group in terms of geohydrological importance. The width of this group steadily increases from west to east and form the bulk of the mountain ranges, as described above.
- Bokkeveld Group: The Bokkeveld Group is present in a very narrow fold along the coastal plateau.
- Uitenhage Group: The region where this formation is predominant includes the Knysna and Plettenberg Bay areas.

Potentially high permeability soils are associated with alluvium which is restricted to narrow bands following drainage channels and sandy soils (**Figure 1-2**) and undifferentiated coastal and inland deposits which comprise unconsolidated to semi-consolidated sand and calcrete.

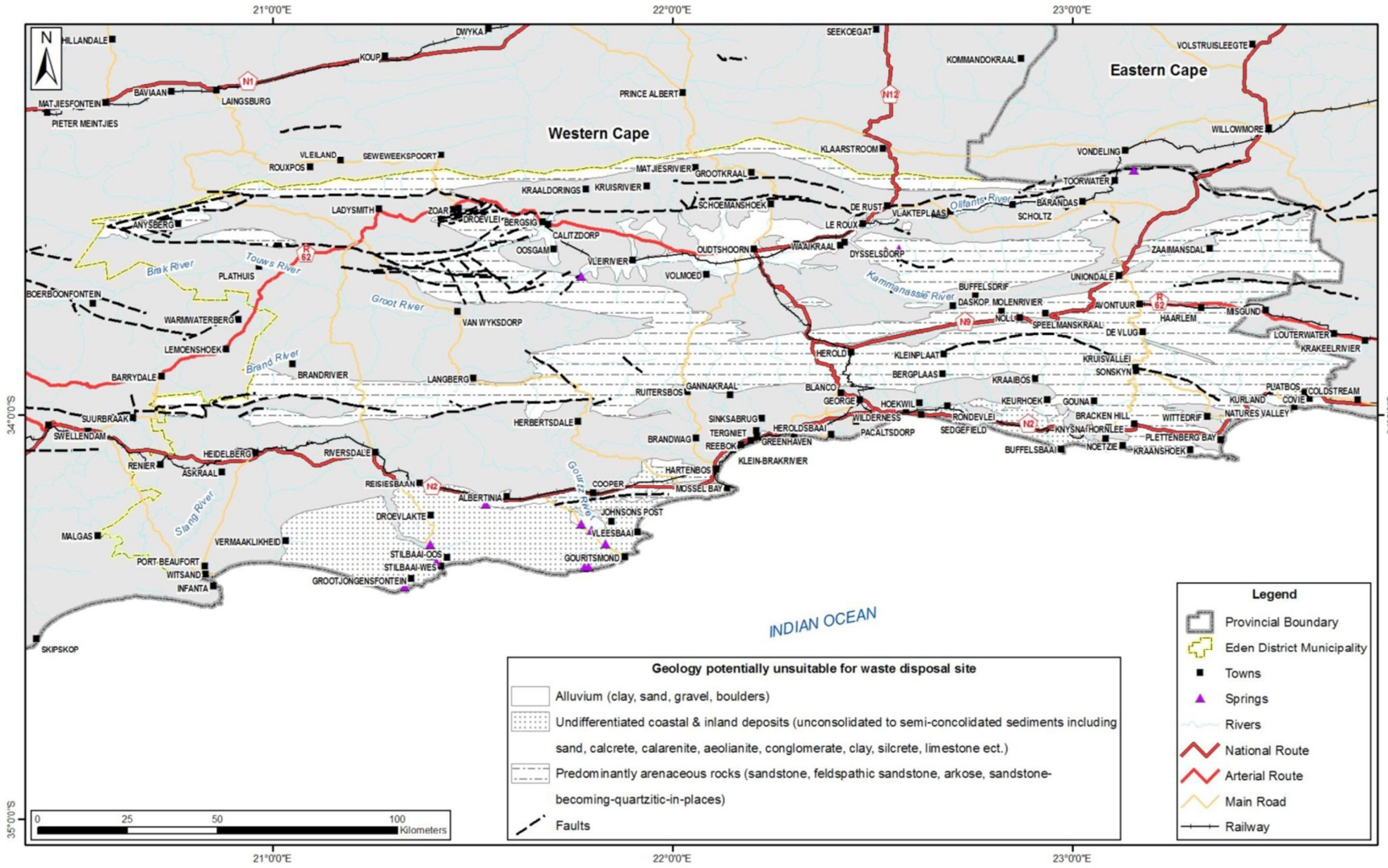
Aquifer Classification and Vulnerability

The whole area along the coast between Witsand and Vleesbaai is classed as a Major Aquifer according to the DWAF national classification (**Figure 1-3**) (Parsons, 1995 and Parsons and Conrad, 1998). A large part of the area comprises aranaceous rocks, including sandstone, felspathic sandstone, arkose and quartzites in places (**Figure 1-2**), which are also classed as a Major Aquifer and coincide with areas of good quality groundwater fit for human consumption (**Figure 1-2**). Areas classed as Major Aquifers are potentially unsuitable for a waste disposal site. Important local aquifers also exist (see wellfields presented in **Figure 1-3**).

Figure 1-4 presents a map showing the aquifer vulnerability of the EDM. Vulnerability is determined by evaluating seven parameters, namely:

- Depth to groundwater
- Recharge
- Aquifer media
- Soil media
- Topography
- Impact on vadose zone
- Hydraulic conductivity

Aquifer vulnerability is defined as the likelihood for contamination to reach a specified position in the groundwater system after being introduced at some point above the uppermost aquifer. On a scale of Least, Moderate and Most Vulnerable, the area along the coast between Witsand and Vleesbaai is described as being most vulnerable (Parsons and Conrad, 1998).



CLIENT	Eden District Municipality	COMPILED	GOES
PROJECT	IWMP revisions		
DRW. TITLE	General Geology	SCALE	NTS

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Figure 1-2

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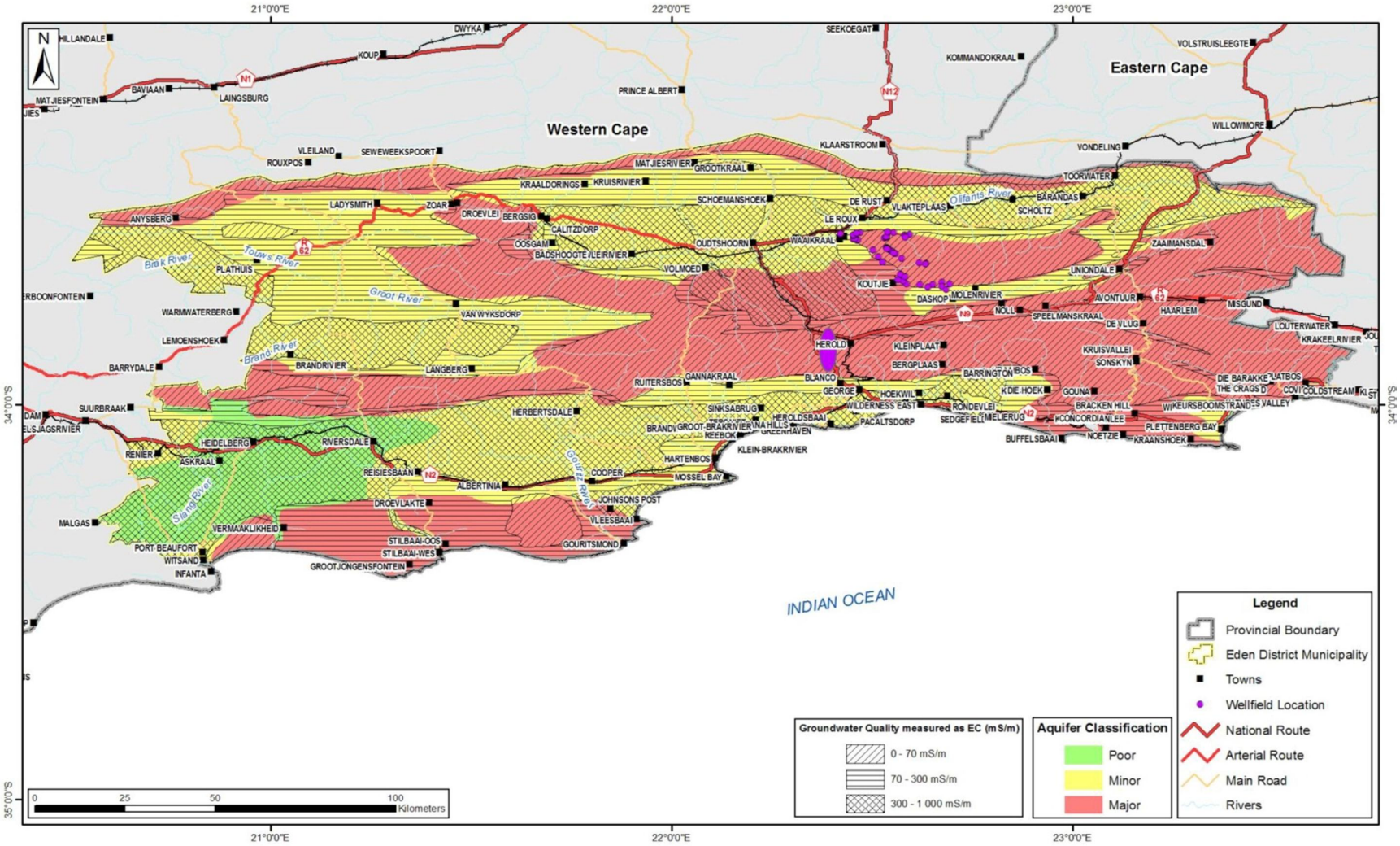

CLIENT	Eden District Municipality	COMPILED	GOES
PROJECT	IWMP revisions		
DRW. TITLE	Aquifer Classification and groundwater quality	SCALE	NTS

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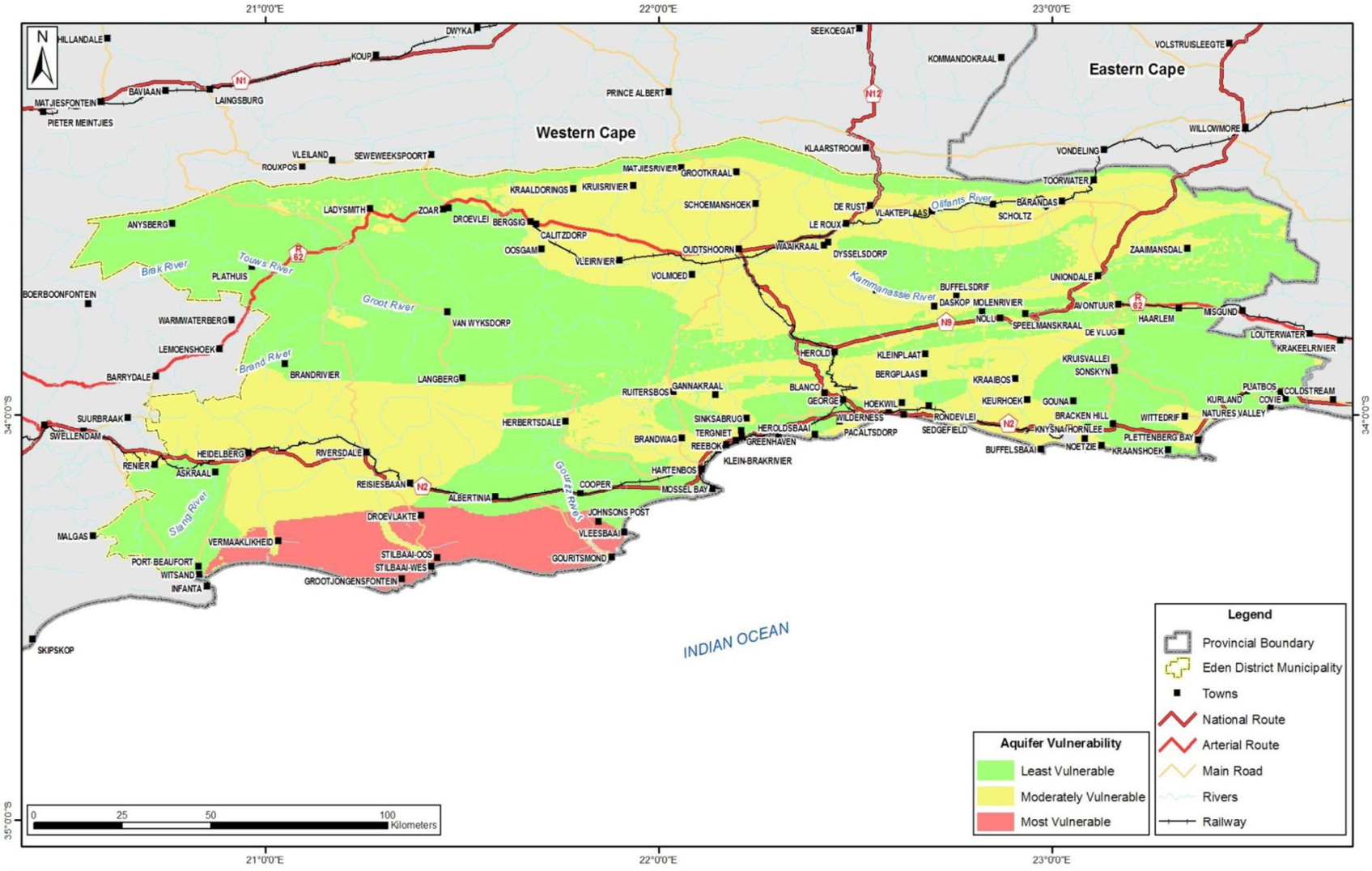
Figure 1-3



CLIENT	Eden District Municipality	COMPILED	GOES
PROJECT	IWMP revisions		
DRW. TITLE	Aquifer Vulnerability	SCALE	NTS

SRK Consulting
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Figure 1-4

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1.3.2 Environment

The EDM comprises a number of unique natural features and ecosystems, as described below.

1.3.2.1 RAMSAR Site

One registered Ramsar Site occurs in the EDM, namely the Wilderness Lakes Ramsar Site. The Wilderness Lakes comprise a series of interconnected coastal lakes, parallel to the coastline, that are linked to an estuary and lagoon that opens periodically to the sea.

The Wilderness Lakes are located 14 km east of George and 30 km west of Knysna. The Lakes are one of the few coastal lake systems in Southern Africa. These together with the nearby Swartvlei system are the only warm-temperate coastal lakes having a marine connection. These lakes form a valuable refuge for several water-bird species during the winter months as conditions deteriorate at the inland wetlands where they breed, usually because these wetlands dry up. (Eden SDF, 2003)

The site regularly supports a wide variety of water birds (maximum 72 species) or waterfowl (maximum 57 species). Three easily identifiable vegetation components exists at the Wilderness lakes, and a fourth above the 5 m contour above mean sea level outside the area to the north. These four components are aquatic, semi-aquatic, coastal fynbos and forest. (Eden SDF, 2003) The National Parks Board manages the entire wetland on behalf of the state according to the provisions of the National Parks Act. The entire area falls within the Wilderness National Park, which was proclaimed in April 1983. The contiguous Lakes Nature Reserve, comprising Rondevlei and surrounding land (212 ha), was added in 1992.

1.3.2.2 Heritage Site

There is a Heritage Site at Buffelspoort, situated along the northern boundary of the EDM. Also the Grootkop Heritage Reserve, Erf 130, Oudtshoorn, situated around the Grootkop Landfill site.

1.3.2.3 National Parks

The EDM has two national parks, namely the Lake Areas National Park and the Knysna National Lake Area (Table 1-1). A small section of the Tsitsikamma National Park falls within the EDM.

Table 1-1 National Parks in the EDM

Conservation Areas			
Town/Vicinity	**Conservation Areas**	**Size**	**Managed by**
Knysna	Knysna National Lake Area	15 000 ha	SANParks
Wilderness	Wilderness National Park	10 600 ha	SANParks
Keurbooms	Tsitsikamma National Park	****	SANParks

Knysna Lagoon was proclaimed as a Lakes Area in terms of the Lakes Area Development Act, 1975 (Act 39 of 1975) in 1985. The area consists of approximately 15 000 ha, which include the estuary, and its tidal mudflats and salt marshes. The area is also home to the endangered Knysna seahorse and a large diversity of marine life and is biologically the richest and the largest estuary in the Western Cape (Eden SDF, 2003).

The Wilderness National Park was proclaimed in 1985 under the Lake Areas Development Act, 1975 (Act 39 of 1975). This lake system comprises the estuarine Swartvlei Lake as well as four other freshwater lakes, namely Langvlei, Bo-Langvlei, Rondevlei and Groenvlei. These lakes are connected by the Touw River and host a variety of aquatic species and are internationally recognised as a wetland of international importance.

A portion of the Tsitsikamma National Park between the Bloukrans River and Nature's Valley near Keurboomsrivier falls within the EDM.

Conservation Areas

Table 1-2 lists the primary conservation areas within the EDM.

The Gamka Nature Reserve covers most of the Gamka Mountain range. The reserve was established in 1974 with the objective to conserve a population of endangered Cape Mountain Zebra and their natural habitat.

The Goukamma Nature and Marine Reserve is situated in the vicinity of Sedgefield between George and Knysna. The 2 500 ha nature reserve, with a coastline of 14 km, and the adjacent marine reserve extend seawards for 1.8 km. It includes a long beach, an extensive dune field with some of the highest vegetated dunes in South Africa, the Goukamma River and its estuary, and the Groenvlei Lake.

Table 1-2 Primary Conservation Areas in the EDM.

Conservation Areas	Size	Managed by
Gamka Mountain Nature Reserve	10 428 ha	WCNCB
Goukamma Nature and Marine Reserve	2 900 ha	WCNCB
Grootvadersbosch Nature Reserve	250 ha	WCNCB
Boosmansbos Wilderness Area	15 202 ha	WCNCB
Baviaanskloof Wilderness Area	15 321 ha	WCNCB & Eastern Cape Nature Conservation
Kammanassie Nature Reserve	49 430 ha	WCNCB & Private
Keurbooms River Nature Reserve	740 ha	WCNCB
Outeniqua Nature Reserve	38 000 ha	WCNCB
Robberg Nature and Marine Reserve	1 897 ha	WCNCB
Swartberg Nature Reserve	121 000 ha	WCNCB
Gamkapoort Nature Reserve	12 176 ha	WCNCB
Doring Rivier Wilderness Area	12 519 ha	WCNCB
Rooiberg Nature Reserve	12 839 ha	WCNCB

The Grootvadersbosch Nature reserve is situated in the Langeberg, about 22 km northwest of Heidelberg, and comprises 250 ha of forest. It includes a portion of the Boosmansbos Wilderness Area.

The Kammanassie Nature Reserve is situated between Uniondale and De Rust. The total extent of the area managed as a conservation area is 49 430 ha of which 21 532 ha is privately owned declared Mountain Catchment Area.

The Keurbooms River Nature Reserve includes an estuary and a river, and overlooks the Keurbooms estuary.

The Outeniqua Nature Reserve is located near George and is accessible from Mossel Bay, Knysna and Oudtshoorn. The primary function of this nature reserve is the conservation of water resources.

The Robberg Nature Reserve covers the Robberg Peninsula near Plettenberg Bay as well as a significant marine area. The reserve is of archaeological significance.

The Swartberg Nature Reserve is situated in the vicinity of Oudtshoorn in the Swartberg Mountains between the Great and Little Karoo.

A portion of the Baviaanskloof Wilderness Area is located within the EDM. This wilderness area falls under the jurisdiction of the Eastern Cape Government.

Section 1.3 taken from Eden District Municipality: Waste Disposal Site ñWindowò Identification, May 2008, SRK Consulting.

1.4 DEMOGRAPHICS

The statistics relating to population were taken from Statistics SA. The latest 2011 Census population figures were used. The total population for each local municipality was taken from each respective IWMP and reflected in Table 1-2 below. The respective population growth rates were applied to estimate the 2013 and 2020 population figures. The growth rates since 2001 are shown in table 1-3:

Table 1-3: Population Figures

Municipality	Growth rate	2011	2013	2020
Bitou	5.22%	49161	54427	77715
George	2.59%	193686	203849	243805
Hessequa	1.77%	52644	54524	61649
Kannaland	0.33%	24767	24931	25512
Knysna	2.77%	68655	72511	87795
Mossel Bay	2.24%	89424	93475	109155
Oudtshoorn	1.25%	95919	98332	107265
TOTAL		**574256**	**602049**	**712897**

The estimated 2013 socio-economic profile in The Eden District according to annual household income is given in Table 1-3.

Table 1-4: Population Profile According to Household Income (Estimated 2013 figures)

Municipality	No of Households	Population (2013)	Persons per Household	Very Low and Low Income	Middle Income	High and Very High Income
Bitou	18468	54427	2.9	64.02%	13.80%	22.18%
George	56400	203849	3.6	51.80%	17.29%	30.91%
Hessequa	16438	54524	3.3	49.19%	22.48%	28.33%
Kannaland	6249	24931	4.0	63.30%	18.60%	18.10%
Knysna	23097	72511	3.1	56.72%	14.99%	28.30%
Mossel Bay	29382	93475	3.2	52.75%	15.41%	31.85%
Oudtshoorn	22469	98332	4.4	55.79%	18.91%	25.30%
EDM	**172503**	**602049**	**3.5**	**56.22%**	**17.35%**	**26.42%**

Due to the fact that the Eden District Municipality covers a large geographical area, it is important to consider the population distribution across the area as this is an indication of where the largest volume of waste will be generated.

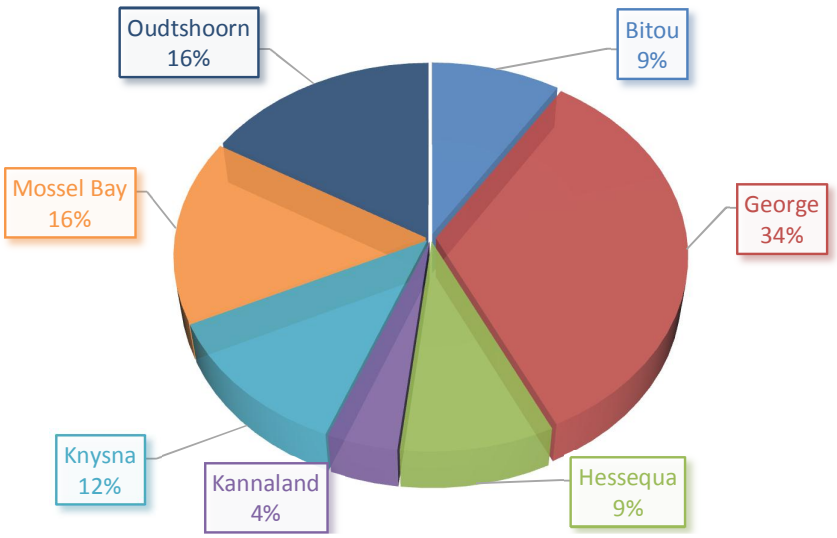


Figure 1-5: Graphical Display of Population Distribution

From the above it can be seen that the bulk of the waste will be generated in the George municipal area.

1.5 TRANSPORT INFRASTRUCTURE

The major route through the Eden District Municipality is the N2 highway which connects the Hessequa, Mossel Bay, George, Knysna and Bitou Municipalities. The major route through the Kannaland and Oudtshoorn Municipalities is the R62.

1.6 BACKGROUND POLICY AND LEGISLATION

The fragmented and uncoordinated way pollution and waste has been dealt with, as well as insufficient resources to implement and monitor existing legislation, contributes largely to the unacceptably high levels of pollution and waste in South Africa. Through the promulgation and implementation of various pieces of policies, legislation, standards and guidelines as well as the implementation of co-operative governance as envisaged in the Constitution this situation will be improved. The current fragmentation, duplication and lack of co-ordination will be eliminated.

Pollution and waste management is not the exclusive preserve of government. The private sector and civil society have crucial roles to play. The fostering of partnerships between government and the private sector is a prerequisite for sustainable and effective pollution and waste management to take place. Similarly, the spirit of partnerships and co-operative governance between organs of state is equally important due to the crosscutting nature of pollution and waste management.

1.6.1 Constitution of the Republic of South Africa

In 1996 the new Constitution created the right to the environment as a fundamental right. This fundamental right to the environment ensures everyoneøs right to an environment that is not harmful to their health or well-being. South African law, the environment and all South Africans have a constitutional right to have the environment protected for present and future generations.

This means that there must be reasonable legal and other measures to prevent ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

All legislation has to fall within the stipulations of the Constitution. The following sections are of particular relevance where waste is concerned:

- **Section 24(a)**

Provides everyone the right to an environment that is not harmful to a personøs health and well-being.

- **Section 24(b)**

Provides everyone the right to have the environment protected through reasonable legislative and other measures. The implementation of section 21, 22 and 26 of the Environment Conservation Act, 1989 is such a legislative measure to protect the environment.

- **Section 25**

Provides for property rights. The Constitution makes provision for both property rights and the right to a healthy environment. A situation may arise in extreme cases where there is a conflict due to rejecting an application for a listed activity from taking place. In such cases it will be up to the court to decide whether the interest of the community (right to a healthy environment) weights heavier than the right of the individual.

- **Section 32**

Provides the right to access to information. The lack of information is one of the major obstacles in environmental impact management. Provision has been made in the regulations in terms of section 26 of the Environment Conservation Act, 1989, that any report submitted becomes a public document.

- **Section 38**

Provides *locus standii* or the ôright to get involved" to any member of the public. This means that any member of the public has the right to take appropriate action to prevent environmental damage. This may include taking action against the relevant authority for failing to perform its duties in preventing environmental damage or an individual or authority who is in the process of undertaking listed activities in terms of section 21 of the Environment Conservation Act, 1989, without the necessary authorisation to undertake such activities.

- **Section 41**

Provides principles for co-operative governance and intergovernmental relations. The Constitution allocates legislative authority as well as executive and administrative powers to all three levels of government. Schedules 4 and 5 determine the functional areas of government. The environment is a cross-sectoral matter and it is therefore important that co-operation between government on all levels is necessary. Furthermore, Chapter 7 of the Constitution of South Africa (Act 108 of 1996) describes the role and responsibilities of Local Government, which include the objectives in Section 152:

ñThe objects of local government are:

- to promote social and economic development.
- to promote a safe and healthy environment...ò

These principles are further developed in the National Environmental Management Act 1998 (Act 107 of 1998).

The Constitution (Act No. 108 of 1996) is relevant to pollution and waste management for two reasons. Firstly, the Bill of Rights (Chapter Two of the Constitution) contains a number of rights relevant to integrated pollution and waste management, to the extent that an Act or particular statutory provision that does not uphold these rights, is unconstitutional. Secondly, the Constitution provides the legal basis for allocating powers to different spheres of government, and is thus relevant to the institutional regulation of integrated pollution and waste management.

Sovereign

The Constitution states that South Africa is a sovereign, democratic State. In terms of environmental management, it is important to recognize that sovereignty includes the ability to limit sovereign powers by entering into international agreements where the need arises.

The Bill of Rights

The most pertinent fundamental right in the context of integrated pollution and waste Management is the Environmental Right (Section 24), which provides that:

"Everyone has the right

(a) to an environment that is not harmful to their health or well-being; and
(b) to have the environment protected, for the benefit of present and future generation through reasonable legislative and other measures that –
(i) prevent pollution and ecological degradation;
(ii) promote conservation; and
(iii) secure ecologically sustainable development and the use of natural resources while promoting sustainable economic and social development. "

This section of the Bill of Rights specifically imposes a duty on the State to promulgate legislation and take other steps to ensure that the right is upheld and that, among other things, pollution and ecological degradation are prevented.

1.6.2 National Environmental Management Act

The NEMA provides for co-operative environmental governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state; and to provide for matters connected therewith.

As the principal framework act for environmental issues, it has direct relevance to the implementation of the National Waste Management Strategy, one of the key implications being the designation of the DEAT as lead agent for the environment. Chapter 7 of NEMA has important direct implications for the achievement of the NWMS initiative.

The environment as defined in NEMA is the natural environment along with its physical chemical, aesthetic and cultural properties that influence human health and well-being.

NEMA contains the following environmental principles:

- Environmental management must put people and their needs at the forefront, and must serve their interest fairly.
- Development must be socially, environmentally and economically sustainable. This means that the following things must be considered before there is development:

    a) Disturbance of ecosystems and loss of biodiversity
    b) Pollution and degradation of the environment
    c) Disturbance of landscapes and sites where the nation's cultural heritage is found
    d) Non-renewable resources must be used responsibly
    e) The precautionary principle must be applied
    f) Negative impacts must be anticipated and prevented and if they can't be prevented they must be minimized or remedied.
- Environmental management must be integrated. The best practical environmental option must be pursued.
- Environmental justice must be pursued so that there is not unfair discrimination in the way that negative environmental impacts are distributed
- There should be equitable access to environmental resources, benefits and services to meet basic human needs. Special measures may be taken to ensure access for persons disadvantaged by unfair discrimination.
- Responsibility for environmental health and safety of any policy, programme or project must continue throughout the life cycle of a project
- Public participation in environmental decision-making must be promoted. The participation of vulnerable and disadvantaged groups must be ensured
- Decisions must take into account the interests, needs and values of all interested and affected parties. This includes recognizing all forms of knowledge including traditional and ordinary knowledge
- Community well-being and empowerment must be promoted through environmental education
- The social, economic and environmental impacts of the activities must be assessed
- The rights of workers to refuse to do work that is harmful to human health or the environment and to be informed of dangers must be respected
- Decisions must be taken in an open and transparent manner and access to information provided in accordance with the law
- There must be inter government co-ordination and harmonization of policies and laws
- Actual or potential conflicts of interest between organs of state must be resolved through conflict resolution procedures
- Global and international responsibilities relating to the environment must be discharged in the national interest
- The environment is held in a public trust for the people and the use of environmental resources must serve the public interest, and be protected as the people's common heritage
- The polluter must pay for the costs of remedying pollution, environmental degradation and adverse health impacts
- The vital role of youth and women in environmental management must be recognized and their full participation promoted
- Sensitive or stressed ecosystems must receive special attention in planning which might affect them especially when they are subject to significant resource usage and development pressure.

NEMA also stipulates in Section 24 that there must be an environmental impact assessment before any activity or development that needs permission by law and which may significantly affect the environment.

Section 28 places a specific duty of care on every person to prevent, or mitigate and remediate, environmental damage and pollution. Any person, who was responsible for, or directly or indirectly

contributed to the pollution, can be held liable. This includes the owner of the land at the time the pollution occurred or their successor in title, a person in control of the land at that time, or any person who negligently failed to prevent the situation.

The public can use NEMA to exercise their rights when they believe that the right procedures were not followed. Therefore it is extremely important to make sure that when there is a proposed development where the municipality is involved e.g. change of land-use ï to make sure that the consultant and/or developers follow the right procedures.

The NEMA Environmental Impact Assessment Regulations

Sections 24 and 44 of NEMA make provision for the promulgation of regulations that identify activities that may not commence without environmental authorisation or existing activities in respect of which an application for environmental authorisation is required. In this context, EIA Regulations contained in three General Notices in terms of NEMA (GN R385, 386 and 387) (came into force on 3 July 2006.)

The 2006 Regulations were repealed by the June 2010 EIA Regulations (GN R543). The purpose of the Regulations is to regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities in order to avoid detrimental impacts on the environment, or where it can con be avoided, ensure mitigation and management of impacts to acceptable levels, and to optimise positive environmental impacts, and for matters pertaining thereto.

1.6.3 Environment Conservation Act, 1989 (Act No. 73 of 1989)

On 1 July 2009 the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (ñthe Waste Actò) came into effect. The Waste Act repealed Section 20 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) (ñECAò) and introduces new provisions regarding the licensing of waste management activities.

The Environment Conservation Act, 1989 Waste Tyre Regulations (2009) which were published on 13 February 2009 came into effect on 30 June 2009, and makes provision for effective and integrated management of waste tyres in the country. It provides regulations for tyre producers, tyre dealers and waste tyre stockpile owners.

The regulations furthermore require the compilation of industry waste tyre management plans and waste tyre stockpile abatement plans and details the requirements for waste tyre storage areas.

1.6.4 The DWAF's Minimum Requirements (1998)

DWAF has compiled a set of guidelines called ñThe Minimum Requirementsò of which the second edition was published in 1998. These guidelines are implemented through and enforced by the Landfill Site Permit. Once a Minimum Requirement is included in a Landfill Site Permit, it is legally enforceable.

1.6.4.1 Waste Classification

Waste types are graded into two classes, General (G) and Hazardous (H).

- General Waste (G) is a generic term applied to all urban waste that is produced within the domain of local authorities. It comprises rubble, garden, domestic, commercial and general dry industrial waste. It may also contain small quantities of household hazardous waste substances disposed within it e.g. batteries, insecticides, etc.

  General waste may be disposed of on any permitted landfill. However, General Waste sites located in areas with a positive climatic water balance must have leachate management systems, since General Waste can produce leachate with unacceptably high pollution potential.

- Hazardous Waste (H) is waste which has the potential, even at low concentrations, to have a significant adverse effect on public health and/or the environment. The following types of waste should be regarded as potentially hazardous, namely:

Hazardous Waste is further classified in terms of Hazard Ratings, based on Acute Mammalian Toxicity, Ecotoxicity, Environmental bioaccumulation in the food chain and Chronic Toxicity. Hazardous Waste is thus classified into:

Hazard Rating 1: Extreme Hazard
Hazard Rating 2: High Hazard
Hazard Rating 3: Moderate Hazard
Hazard Rating 4: Low Hazard

1.6.4.1.1 Definition of Hazardous Waste

A Hazardous Waste is defined as:

ñAn inorganic or organic element or compound that, because of its toxicological, physical, chemical or persistency properties, may exercise detrimental acute of chronic impacts on human health and the environment. It can be generated from a wide range of commercial, industrial, agricultural and domestic activities and may take the form of liquid, sludge or solid. These characteristics contribute not only to degree of hazard, but are also of great importance in the ultimate choice of a safe and environmentally acceptable method of disposal.ò

Further to this, a Hazardous Waste can be defined as a waste that directly or indirectly represents a threat to human health or the environment by introducing one or more of the following risks:

- Explosion or fire;
- Infections, pathogens, parasites or their vectors;
- Chemical instability, reactions or corrosion;
- Acute or chronic toxicity;
- Cancer, mutations or birth defects;
- Toxicity, or damage to the ecosystems or natural resources;
- Accumulation in biological food chains, persistence in the environment, or multiple effects to the extent that it requires special attention and cannot be released into the environment or be added to sewage or be stored in a situation which is either open to air or from which aqueous Leachate could emanate.

The definition of Hazardous Waste is very broad, since wastes can vary substantially in nature, composition, size, volume, appearance and degree of harmfulness. In terms of the Minimum Requirements, therefore, Hazardous Wastes are grouped into four Hazard Ratings

This further classification, termed the Hazard Rating, differentiates between a Hazardous Waste that is fairly or moderately hazardous and one that is very or extremely hazardous. The Hazard Rating also indicates the class of Hazardous Waste landfill at which the waste may be disposed.

Hazard Rating 1 (extreme risk)
Hazard Rating 2 (high risk) } = H:H Landfill

Hazard Rating 3 (moderate risk)
Hazard Rating 4 (low risk) } = H:H or H:h Landfill

An H:H landfill is more stringently designed, operated and monitored than an H:h landfill.

1.6.4.1.2 Classification of Hazardous Waste

There are four steps in the classification of a Hazardous Waste

- Identification of the waste or waste stream as probably Hazardous.
- Testing and analysis to determine the hazardous properties, characteristics and components of a waste. This will confirm whether the waste is Hazardous or not.
- Classification and treatment in accordance with SANS Code 0228 ñThe Identification and Classification of Dangerous Substances and Goodsò
- Analysis and Hazard Rating of the waste or its residue, in order to determine the Hazard Rating and the Minimum Requirements for disposal.

An additional step would be re-examination of an existing classification with the objective of possible delisting and reclassification. This would apply in cases where, because of pre-treatment, low concentration, low mobility or other applicable factors, waste can delist to a lower Hazard Rating.

1.6.4.1.3 Analysis to confirm that a waste is a Hazardous Waste

If it is probable that the waste is a Hazardous Waste, it must be tested for its properties and analysed for its substances. These are then compared to the lists of characteristics, properties and substances in SANS Code 0228, the Basal Convention, and the Waste Classification Tables in the Minimum Requirements.

If the properties and substances of the waste are not listed in SANS Code 0228, but conform to the Basel Convention or one of the nine classes in the Code, the waste is probably a Hazardous Waste. The Department should then be approached for guidance.

1.6.4.1.4 SANS Code 0228

SANS Code 0228: ñThe Identification and Classification of Dangerous Goods and Substancesò is a system for classifying hazardous substances for transport purposes. In the Code, hazardous substances are given an identification number and divided into nine classes:

Class 1 Explosives
Class 2 Gases
Class 3 Flammable liquids
Class 4 Flammable solids
Class 5 Oxidising substances and organic peroxides
Class 6 Toxic and infectious substances
Class 7 Radioactive substances
Class 8 Corrosives
Class 9 Other miscellaneous substances.

The waste must be tested against the nine classes, to see into which class it falls (it may fall into more than one class). The Minimum Requirements for that class must then be complied with.

The Hazardous Waste classification table is derived from SANS Code 0228. The typical generators of Hazardous Waste are divided into typical industrial groups. The groups indicate an industry which is expected to generate the largest quantity of Hazardous Waste material.

1.6.5 The Western Cape Health Care Waste Management Amendment Act, 2007 (No 6 of 2010)

Act 7 of 2007 was amended in 2010 so as to align the terminology with that used in the National Environmental Management: Waste Act, 2008; to define or redefine certain expressions; to delete certain unnecessary definitions; to provide for the issuing of compliance notices; to amend the provisions relating to offences and penalties; to make further provision regarding regulations; to effect certain textual changes; and to provide for matters incidental thereto. The Health Care Management Bill provides for the effective handling, storage, collection, transportation, treatment and disposal of health care waste by all persons in the Province of the Western Cape; and provides for matters incidental thereto.

The object of this Act is to promote integrated health care waste management and therebyð

(a) reduce the risks of health care waste to human health;
(b) prevent the degradation of the environment;
(c) prevent the illegal dumping of health care waste;
(d) promote sustainable development, and
(e) ensure responsible management of health care waste within the Province.

Under this Act a Municipality must:

(a) enforce the relevant provisions of this Act within its area of jurisdiction;
(b) perform audits of generators, transporters, treaters or disposers of health care waste within its area of jurisdiction to ensure compliance with the provisions of this Act;

(c) report annually to the Provincial Minister on the number of incidents of illegal dumping of health care risk waste within its area of jurisdiction, the number of incidents of illegal dumping of health care risk waste pursued in a court of law, and the number of incidents of illegal dumping of health care risk waste successfully convicted in a court of law.

Health Care Waste is produced by hospitals, clinics, physicians, offices, dentists, funeral homes, veterinary clinics and medical- and research laboratories.

Currently only 10-15% of medical waste is considered infectious. The enormous volumes of health care waste requiring special handling and disposal for all infectious and pathological waste are responsible for the current re-evaluation of the terminology for health care waste.

The modern trend in infection control is dictated by the risk posed by the procedure and not by the diagnoses. Thus health care waste is divided into Health Care General Waste (HCGW) and Health Care Risk Waste (HEALTH CARE RISK WASTE). Health Care Risk Waste generally indicates infectious waste, pathological waste, sharps, chemical and pharmaceutical waste, radioactive and cytotoxic waste.

1.6.6 The Western Cape Health Care Waste Management Amendment Act, 2007: Western Cape Health Care Risk Waste Management Regulations, 2013

These regulations were published in the Western Cape: Provincial Gazette Extraordinary 15 March 2013. These are the regulations set out in the Schedule under section 14 of the Western Cape Health Care Waste Management Act, 2007.

The regulations address the requirements for packaging, storage, internal transport, external transport, vehicles, drivers, treatment and disposal of health care risk waste. Furthermore the required training, registration of health care risk waste generators, transporters, treaters and disposers, reporting, auditing and record keeping is discussed. Health care waste management plans must be prepared by those who meet the criteria listed. The required actions regarding compliance notices are also listed.

All addressed forms in the regulations are given in the Annexures:

Annexure 1: Minimum Requirements for health care risk waste containers
Annexure 2: Minimum Requirements for storage of health care risk waste in terms of regulation 3
Annexure 3: Form 1, Minimum Requirements for a tracking document
Annexure 4: Minimum Requirements for information to be contained in a Health Care Waste Management Plan
Annexure 5: Form 2.1, IPWIS registration form for health care risk waste generators, transporters, treaters and disposers
Annexure 6: Form 2.2, Registration Certificate; Form 3.1, Monthly record keeping form for generators; Form 3.2 Monthly record keeping form for transporters, treaters and disposers
Annexure 7: Form 4.1, Compliance Notice; Form 4.2, Compliance certificate

1.6.7 National Water Act (Act no. 36 of 1998)

The purpose of the Act is to ensure that the Municipality's water resources are protected, used, developed and conserved in ways which take into account the protection of aquatic and associated ecosystems; that addresses basic human needs; that ensures the reduction and prevention of pollution; and that meets international obligations.

Section 19 of the NWA deals with landowners and users involved in any activity or process which causes, has caused or is likely to cause pollution of water resources. Such landowners and users are obliged to take all reasonable measures to prevent any such pollution from occurring, continuing or recurring. This includes measures to comply with any prescribed waste standard or management practice.

Furthermore, the NWA requires anyone who intends undertaking a water use, as defined, to obtain a licence. The water uses that may be relevant to waste management activities are:

- discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit; and
- disposing of waste in a manner which may detrimentally impact on a water resource.

The applications for permits, licenses and exemptions made before the promulgation of this Act could still be dealt with in terms of the Water Act 1956 (Act No. 54 of 1956).

1.6.8 National Environment Management: Air Quality Act 2004 (Act No. 39 of 2004)

This Act has been promulgated in order to reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development. It also provides for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto.

The object of this Act is:

a) to protect the environment by providing reasonable measures for-

   (i) the protection and enhancement of the quality of air in the Republic;
   (ii) the prevention of air pollution and ecological degradation; and
   (iii) securing ecologically sustainable development while promoting justifiable economic and social development; and

b) generally to give effect to section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people.

1.6.9 Municipal By-Laws

The Eden District Municipal Health By-Laws, promulgated in 2008, ensures the effective management of Health Care Waste in the whole of the Eden District and the health safety matters of Hazardous waste.

With the Regional Landfill Facility that will be in operation in the year 2016, the necessary by-laws must be compiled and promulgated to effectively manage the facility and associated activities.

The by-laws of each municipality in the Eden District are shortly discussed below and need to be revised as listed.

1.6.9.1 Bitou Municipality

The Bitou existing by-laws ensure the effective management of solid waste in the Bitou Municipality in terms of collection and disposal and also make provision to separate waste at source. The by-laws also prohibit littering and illegal dumping and provide mechanisms to deal with offenders. The by-laws are not in conflict with other legislation. However, the by-laws need to be revised to make the local government legislation more effective and to make provision for:

- The registering of health care risk waste generators at the Municipality
- The registering of hazardous waste generators at the Municipality
- The call for Industry Waste Management Plans
- Address minimisation and recycling

1.6.9.2 George Municipality

The George existing by-laws ensure the effective management of solid waste in the George Municipality in terms of collection and disposal and also make provision to separate waste at source. The by-laws also prohibit littering and illegal dumping and provide mechanisms to deal with offenders. The by-laws are not in conflict with other legislation. However, the by-laws need to be revised to make the local government legislation more effective and to make provision for:

- The registering of health care risk waste generators at the Municipality
- The registering of hazardous waste generators at the Municipality
- The call for Industry Waste Management Plans
- Address minimisation and recycling

1.6.9.3 Hessequa Municipality

The Hessequa existing by-laws ensure the effective management of solid waste in the Hessequa Municipality in terms of collection and disposal and also make provision to separate waste at source. The by-laws also prohibit littering and illegal dumping and provide mechanisms to deal with offenders. The by-laws are not in conflict with other legislation. However, the by-laws need to be revised to make the local government legislation more effective and to make provision for:

- The registering of health care risk waste generators at the Municipality
- The registering of hazardous waste generators at the Municipality
- The call for Industry Waste Management Plans
- Address minimisation and recycling

1.6.9.4 Knysna Municipality

The Knysna existing by-laws ensure the effective management of solid waste in the Knysna Municipality in terms of collection and disposal and address domestic waste, garden waste, builderôs rubble, commercial waste and industrial waste. The by-laws also prohibit littering and illegal dumping and provide mechanisms to deal with offenders. The by-laws are not in conflict with other legislation. However, the by-laws need to be revised to make the local government legislation more effective and to make provision for:

- The registering of health care risk waste generators at the Municipality
- The registering of hazardous waste generators at the Municipality
- The call for Industry Waste Management Plans
- Address minimisation and recycling

1.6.9.5 Mossel Bay Municipality

The Mossel Bay by-laws address household waste, garden waste, builderôs rubble, hazardous wastes and trade waste. It is made clear in the by-laws how the generators of these different types of waste should handle/dispose it. It is also made clear that the Municipality is not the service provider in terms of hazardous and medical waste. The by-laws also call for the submission of operational plans for refuse and waste minimisation, recycling, reuse, sorting and recovery by new business and manufacturing premises and industries. However, the by-laws need to be revised to make the local government legislation more effective and to make provision for:

- The registering of all health care risk waste generators at the Municipality
- The registering of all hazardous waste generators at the Municipality

1.6.9.6 Oudtshoorn Municipality

The Oudtshoorn existing by-laws ensure the effective management of solid waste in the Oudtshoorn Municipality in terms of collection and disposal and also make provision to separate waste at source. The by-laws also prohibit littering and illegal dumping and provide mechanisms to deal with offenders. The by-laws are not in conflict with other legislation. However, the by-laws need to be revised to make the local government legislation more effective and to make provision for:

- The registering of health care risk waste generators at the Municipality
- The registering of hazardous waste generators at the Municipality
- The call for Industry Waste Management Plans
- Address minimisation and recycling

1.6.9.7 Kannaland Municipality

No By-laws exist in the Kannaland Municipality to regulate waste management practices.

The Eden Integrated Waste Management Forum has compiled a generic Integrated Waste Management By-Law which the municipalities must promulgate in their areas of jurisdiction. All of the Municipal Waste Managers were part of the compilation of the by-laws. These draft by-laws address minimisation, recycling, hazardous waste and the call for integrated waste management plans from the responsible entities. After the review and approval of these new by-laws, they will be published and replace old by-laws relating to solid waste.

1.6.10 National Waste Management Strategy

The National Waste Management Strategy (2011) presents Governmentôs strategy for integrated waste management for South Africa and is a legislative requirement of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) The purpose of the Strategy is to achieve the objectives of the Waste Act.
The National Waste Management Strategy presents a long-term plan (up to the year 2016) for addressing key issues, needs and problems experienced with waste management in South Africa. The strategy gives effect to the Bill of Rights, Constitution of South Africa, Act 107 of 1998, on the basis of which the people of South Africa have the right to an environment that is not detrimental to their health. Furthermore, the strategy translates into action Governmentôs policy on waste as set out in the Draft White Paper on Integrated Pollution and Waste Management for South Africa (published in 1998).

The objective of integrated pollution and waste management is to move away from fragmented and uncoordinated waste management to integrated waste management. Such a holistic and integrated management approach extends over the entire waste cycle from cradle to grave, and covers the prevention, minimisation, generation, collection, transportation, treatment and final disposal of waste. Integrated waste management thus represents a paradigm shift in South Africaôs approach to waste management, by moving away from waste management through impact management and remediation and establishing instead a waste management system which focuses on waste prevention and waste minimisation.

The Strategy is built around a framework of eight goals, as listed below, along with specific goals that must be reached by 2016. All listed targets must be reached by 2016:

Goal 1: Promote waste minimisation, reuse, recycling and recovery of waste.
- 25% of recyclables diverted from landfill sites for re-use, recycling or recovery.
- All Metropolitan Municipalities, secondary cities and large towns have initiated separation at source programmes.

Goal 2: Ensure the effective and efficient delivery of waste services.
- 95% of urban households and 75% of rural households have access to adequate levels of waste collection services.
- 80% of waste disposal sites have permits.

Goal 3: Grow the contribution of the waste sector to the green economy.
- 69 000 new jobs created in the waste sector.

Goal 4: Ensure that people are aware of the impact of waste on their health, well-being and the environment.
- 80% of municipalities running local awareness campaigns.
- 80% of schools implementing waste awareness programmes.

Goal 5: Achieve integrated waste management planning.
- All Municipalities have integrated their IWMPs with their IDPs and have met the targets set in the IWMPs.
- All waste management facilities required to report to SAWIS have waste quantification systems that report information to WIS.

Goal 6: Ensure sound budgeting and financial management for waste services.
- All municipalities that provide waste services have conducted full-cost accounting for waste services and have implemented cost reflective tariffs.

Goal 7: Provide measures to remediate contaminated land.
- Assessment complete for 80% of sites reported to the contaminated land register.
- Remediation plans approved for 50% of confirmed contaminated sites.

Goal 8: Establish effective compliance with and enforcement of the Waste Act.
- 50% increase in the number of successful enforcement actions against non-compliant activities.
- 800 EMIs appointed in the three spheres of government to enforce the Waste Act.

The strategy aims to reduce both the generation and the environmental impact of waste. It presents a plan for ensuring that the socio-economic development of South Africa, the health of its people and the quality of its environmental resources are no longer adversely affected by uncontrolled and uncoordinated waste management. It establishes a waste management system that concentrates on avoiding, preventing and minimising waste and makes provision for waste management services for all by extending an acceptable standard of waste collection, as well as transportation, treatment and disposal services to all communities.

While the long-term objective of the strategy is waste prevention and minimisation, a number of remedial actions such as improved waste collection and waste treatment are required in the shorter term due to prevailing inadequate waste management practices.

The Strategy is an institutionally inclusive strategy because its achievement relies on participation by numerous role-players in the public sector, private sector and civil society.

To implement the Waste Act, government must:
- Draft legislation, regulations, standards and Integrated Waste Management Plans.
- Regulate waste management activities through licenses and enforce their conditions.
- Implement the South African Waste Information System (SAWIS)
- Coordinate waste management activities using a system of Waste Management Officers.
- Give effect to multilateral agreements and ensure proper import and export controls.
- Progressively expand access to at least a basic level of waste services and plan for future needs.
- Facilitate the establishment of a national recycling infrastructure.
- Provide the framework for the remediation of contaminated land.
- Work in partnership with the private sector and civil society.

1.6.11 White Paper on Education and Training (1995)

The 1995 *White Paper on Education and Training* states that õenvironmental education, involving an interdisciplinary, integrated and active approach to learning, must be a vital element of **all levels and programmes of the education and training system**, in order to create environmentally literate and active citizens and ensure that all South Africans, present and future, enjoy a decent quality of life through the sustainable use of resourcesò

The White Paper advocates environmental education and training **at all levels**. This would include the local government sphere, particularly when it comes to the environmental education & training of government officials and workers.

The education of the youth is the responsibility of national and provincial government. However, the Constitution does state that where the capacity exists, functions can be delegated to local government, and that the spheres of government, while distinctive, are interdependent and interrelated. Local government should support the other spheres of government (such as the national Department of Education, DoE) in areas of its own focus, such as environmental management and sustainable development.

1.6.12 The Municipal Systems Act (Act 32 of 2000)

This policy outlines the role and responsibilities of local governments as to:

- Provide democratic and **accountable** government for local communities;
- Ensure the provision of services to communities in a **sustainable** manner;
- Promote **social** and economic development;
- Promote a safe and healthy **environment**;
- Encourage the **involvement** of communities and community organisations in the matters of local government, and
- Strive, within its financial and administrative capacity, to achieve the objectives above.

These responsibilities indicate a need for an environmentally educated work force (accountable) as well as an environmentally educated public (involvement). The Municipal Systems Act (32 of 2000) requires municipalities to promote public participation and to build the capacity of residents, councillors and municipal officials to engage in participatory processes. As a means of tracking progress in this area, the executive of a municipality is obliged to report annually on the level of public participation in municipal matters.

Each Municipality must include in its integrated development plan contemplated in Chapter 5 of the Municipal Systems Act, an integrated waste management plan that is consistent with the relevant provincial integrated waste management plan. The annual performance report which must be prepared in terms of section 46 of the Municipal Systems Act must contain information on the implementation of the municipal integrated waste management plan.

1.6.13 The Municipal Structures Act, 1998 (Act No. 117 of 1998)

This Act makes provision for the establishment of municipalities in accordance with the requirements relating to categories and types of municipality. It establishes criteria for determining the category of municipality to be established in an area and defines the types of municipality that may be established within each category.

The Act furthermore provides for an appropriate division of functions and powers between categories of Municipality and regulates the internal systems, structures and office-bearers of the municipalities. It also provides for appropriate electoral systems for matters in connection therewith.

1.6.14 National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) as amended Government Notice 37714 2 June 2014 (“The Waste Act”)

On 1 July 2009 the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (ñthe Waste Actò) came into effect. The Waste Act repealed Section 20 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) (ñECAò) and introduces new provisions regarding the licensing of waste management activities.

Provision has been made in the form of legislative and regulatory tools to facilitate and ensure implementation of the Act by all spheres of government.

The Waste Act was published to reform the law regulating waste management in order to protect the health of the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.

The purpose of this Act is to protect health, well-being and the environment by providing reasonable measures for ï

- the minimisation of the consumption of natural resources;
- the avoidance and minimisation of the generation of waste;
- the recovery, re-use and recycling of waste;
- the treatment and safe disposal of waste as a last resort;
- the prevention of pollution and ecological degradation;
- securing ecologically sustainable development while promoting justifiable economic and social development;
- promoting and ensuring the effective delivery of waste services;
- remediating land where contamination presents, or may present, a significant risk of harm;
- achieving integrated waste management reporting and planning;
- to ensure that people are aware of the impacts of waste on health and the environment;
- to provide for compliance and generally to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to the health and well-being of people.

The interpretation and application of this Act must be guided by the national environmental management principles set out in section 2 of the National Environmental Management Act.

The Waste Act allows for the compilation of a Waste Management Strategy, national, provincial and local standards.

Municipalities must in terms of their by-laws:

- establish service standards and levels of service for the collection of waste;
- may identify requirements in respect of the separation, compacting and storage of waste;
- may identify requirements for the management of waste, including requirements in respect of the avoidance of the generation of waste and the recovery, reuse and recycling of waste;
- the requirements in respect of the directing of waste to specific treatment and disposal facilities.

Each Municipality must include in its integrated development plan contemplated in Chapter 5 of the Municipal Systems Act, an integrated waste management plan that is consistent with the relevant provincial integrated waste management plan.

The annual performance report which must be prepared in terms of section 46 of the Municipal Systems Act must contain information on the implementation of the municipal integrated waste management plan.

Municipalities must also in terms of the Act:

- conduct municipal activities in accordance with the National Waste Management Strategy and any national or provincial norms and standards;
- compile an integrated waste management plan;
- ensure that waste management services are provided within the municipality in a manner which prioritises the recovery, re-use or recycling of waste and provides for the treatment and safe disposal of waste as a last resort;
- designate a waste management officer;
- ensure that provision is made for the management and collection of litter;
- secure compliance with the objects of this Act that are in the domain of the municipality; and
- implement any other measures that are necessary for securing the objects of this Act that are within the domain of the municipality.

Duty to provide collection services - Every municipality has an obligation to progressively ensure that efficient, effective and affordable waste collection services are provided in its area.

A municipality may, by notice, require any person making use of the municipal collection service to separate specified types of waste from the general waste for the purposes of recovery, re-use or recycling.

In terms of Section 19(1) of the Waste Act, the Minister may publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. In terms of Section 20 of the Waste Act no person may commence, undertake or conduct a waste management activity except in accordance with the following:

- the requirements or standards determined in terms of Section 19(3) of the Waste Act for that activity; or
- a waste management license issued in respect of that activity, if a license is required.

On 3 July 2009 a list of waste management activities were published. These activities were published in Government Notice 178 in Government Gazette No. 32368 of 3 July 2009. No person may commence with, undertake or conduct these activities unless a waste management license is issued in respect of the activity.

A person who wishes to commence, undertake or conduct an activity listed under Category A must conduct a Basic Assessment process whilst activities listed under Category B requires a Scoping and EIA process to be undertaken.

In terms of Section 49(2) of the Waste Act a decision to grant a waste management license in respect of a waste disposal facility is subject to the concurrence of the Minister responsible for Water Affairs. The Waste Act further specifies that the issuing of a waste management license for a waste disposal facility is subject of the inclusion in the license of any conditions contained in a Record of Decision issued by the Minister responsible for Water Affairs regarding any measures that the Minister responsible for Water Affairs considers necessary to protect a water resource as defined in the National Water Act, 1998 (Act No. 36 of 1998).

1.6.15 National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) as amended: List of Waste Management Activities that has, or is likely to have a detrimental effect on the environment. Government Notice 32368, 3 July 2009, as amended. Government Notice 332, 2 May 2014

This notice lists the activities that trigger a waste license requirement:

ñGENERAL

No person may commence, undertake or conduct a waste management activity listed in this schedule unless a licence is issued in respect of that activity.

CATEGORY A

A person who wishes to commence, undertake or conduct an activity listed under this Category, must conduct a basic assessment process, as stipulated in the environmental impact assessment regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as part of a waste management licence application.

Storage of waste

(1) The storage, including the temporary storage, of general waste at a facility that has the capacity to store in excess of 100m^3 of general waste at any one time, excluding the storage of waste in lagoons.
(2) The storage including the temporary storage of hazardous waste at a facility that has the capacity to store in excess of 35m^3 of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons.
(3) The storage including the temporary storage of general waste in lagoons.
(4) The storage of waste tyres in a storage area exceeding 500m^2.

Reuse, recycling and recovery

(5) The sorting, shredding, grinding or bailing of general waste at a facility that has the capacity to process in excess of one ton of general waste per day.
(6) The scrapping or recovery of motor vehicles at a facility that has an operational area in excess of 500m^2.
(7) The recycling or re-use of general waste of more than 10 tons per month.

Treatment of waste

(9) The biological, physical or physico-chemical treatment of general waste at a facility that has the capacity to process in excess of 10 tons of general waste per day.
(10) The processing of waste at biogas installations with a capacity to process in excess of five tons per day of bio-degradable waste.
(11) The treatment of effluent, wastewater or sewage with an annual throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres.
(12) The remediation of contaminated land.
(13) The extraction, recovery or flaring of landfill gas.

Disposal of waste

(14) The disposal of inert waste in excess of 25 tons and with a total capacity of 25 000 tons, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by or under other legislation.
(15) The disposal of general waste lo land covering an area of more than 50m^2 but less than 200m^2 and with a total capacity not exceeding 25 000 tons.
(16) The disposal of domestic waste generated on premises in areas not serviced by the municipal service where the waste disposed does not exceed 500kg per month.

Storage, treatment and processing of animal waste

(17) The storage, treatment or processing of animal manure at a facility with a capacity to process in excess of one ton per day.

Construction, expansion or decommissioning of facilities and associated structures and infrastructure

(18) The construction of facilities for activities listed in Category A of this Schedule (not in isolation to associated activity).

(19) The expansion of facilities of or changes to existing facilities for any process or activity, which requires an amendment of an existing permit or license or a new permit or license in terms of legislation governing the release of pollution, effluent or waste.
(20) The decommissioning of activities listed in this Schedule.

CATEGORY B

A person who wishes to commence, undertake or conduct an activity listed under this Category, must conduct an environmental impact assessment process, as stipulated in the environmental impact assessment regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as part of a waste management licence application.

Storage of hazardous waste
(1) The storage including the temporary storage of hazardous waste in lagoons.

Reuse, recycling and recovery of waste
(2) The reuse and recycling of hazardous waste.
(3) The recovery of hazardous waste including the refining, utilisation or co-processing of waste at a facility with a capacity to process more than 500kg of hazardous waste per day excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises or unless the Minister has approved re-use guidelines tor the specific waste stream.

Treatment of waste
(4) The biological, physical or physicochemical treatment of hazardous waste at a facility that has the capacity to receive in excess of 500kg of hazardous waste per day.
(5) The treatment of hazardous waste using any form of treatment regardless of the size or capacity of such a facility to treat such waste.
(6) The treatment of hazardous waste in lagoons.
(7) The treatment of effluent, wastewater or sewage with an annual throughput capacity of 15 000 cubic metres or more.
(8) The incineration of waste regardless of the capacity of such a facility.

Disposal of waste on land
(9) The disposal of any quantity of hazardous waste to land.
(10) The disposal of general waste to land covering an area in excess of 200m^2.

Construction of facilities and associated structures and infrastructure
(11) The construction of facilities tor activities listed in Category B of this Schedule (not in isolation to associated activity).

1.6.16 National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) as amended: National Domestic Waste Collection Standards, Government Notice 33935, 21 January 2011

The purpose of this publication is to redress past imbalances in the provision of waste collection services. The provision of waste collection services improves the quality of life of the entire community and ensures a clean and more acceptable place to live and work in. The lack of or poor quality waste collection services can however result in a number of environmental and human health problems.

It is recognised that South Africa is a developing country and the purpose of the setting of standards is to ensure a service to all while complying with health and safety regulations without unnecessarily changing current creative collection processes as long as they function well and deliver a service of acceptable standard to all households. These National Domestic Waste Collection Standards are therefore applicable to all domestic waste collection services throughout the country.

This notice distinguishes between the levels of service relating to waste collection. It further states that equitable waste collection services must be provided to all households within the jurisdiction of the municipality. In areas where travelling distances and the resulting costs may render regular waste collection services impractical, the municipality, through by-laws, must allow for more feasible alternative ways of waste handling, such as on-site disposal.

From here regulations and guidelines on separation at source, collection of recyclable waste, receptacles, bulk containers, communal collection points, and frequency of collection, drop-off centres and collection vehicles are given.

Existing Occupational Health and Safety legislation must be adhered to and the general health of waste collection workers must be addressed by ensuring they receive:
(i) regular medical check-ups to ensure their health and well-being;
(ii) appropriate personal protective equipment e.g. gloves, masks, overalls and raincoats, gumboots; and
(iii) on-going training on health and safety issues.

The role of the Waste Management Officer regarding waste awareness and the handling of complaints are prescribed. The municipality must create awareness amongst households about the following:
(i) the types of waste collection services provided;
(ii) separation at source - the removal of recyclables and re-usable waste from the general household waste;
(iii) the potential of composting of some of the household waste and the benefit of such to the household;
(iv) the unacceptability of illegal dumping and littering;
(v) measures to be taken against individuals that litter and dump waste illegally;
(vi) the cost of cleaning up illegal dumping and littering, and the implications on household waste collection rates; and
(vii) the advantages of reporting illegal dumping activities.

The municipality must provide clear guidelines to households about the following:
(i) the different types of waste generated in households;
(ij) separation of non-recyclable and non-reusable household waste from compostable waste and recyclable waste;
(iii) appropriate containers for each type of waste;
(iv) removal schedules for each type of waste; and
(v) what to do with waste other than those waste forming part of the regular schedule of waste collection services.

Awareness raising and guideline communications must be done at regular intervals to ensure that all households are well informed about the issues listed above.

The Waste Collection customer service standards for Kerbside collection are described with respect to collection schedule, interruptions, the replacement of bins, collection during holidays and general points.

1.6.17 National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) as amended: National Waste Information Regulations, Government Notice 35583, 13 August 2012

The purpose of the Regulations is to regulate the collection of data and information to fulfil the objectives of the national waste information system set out in section 61 of the Act.

The Regulations apply uniformly to all persons conducting an activity listed in Annexure 1 of the Regulations. A person who conducts an activity in a province that has an established waste information system in terms of section 62 of the Act and collects the minimum information required by the Regulations must submit the information to the provincial waste information system.

Where a province has developed waste information regulations that are compatible with the Regulations, a person who conducts an activity contemplated in Annexure 1 to the Regulations must comply with the provincial waste information regulations.

1.6.18 National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)as amended: Waste Classification and Management Regulations, Government Notice 36784, 23 August 2013

The purpose of the Regulations is to regulate the classification and management of waste in a manner which supports and implements the provisions of the Act; to establish a mechanism and procedure for the listing of waste management activities that do not require a Waste Management License; to prescribe requirements for the disposal of waste to landfill; to prescribe requirements and

timeframes for the management of certain wastes and to prescribe general duties of waste generators, transporters and managers.

Chapter 2 of the Notice covers Waste Classification and Safety Data Sheets. Chapter 3 covers Waste Management in General, Waste Treatment and Waste Disposal to Landfill. Chapter 4 covers Waste Management Activities that do not require a Waste Management License. Chapter 5 covers the Record Keeping and Waste Manifest System. Chapter 6 covers General Matters which includes Implementation and Transitional Provisions and Offences and Penalties.

Chapter 7 contains the following Annexures:
Annexure 1: Wastes that do not require Classification or Assessment
Annexure 2: Waste Manifest System Information Requirements

1.6.19 National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) as amended: National Norms and Standards for the Assessment of Waste for Landfill Disposal, Government Notice 36784, 23 August 2013

The purpose of the Norms and Standards is to prescribe the requirements for the assessment of waste prior to disposal to landfill in terms of Regulation 8(1) (a) of the Regulations.

The Standard Assessment Methodology to assess waste for the purpose of disposal to landfill the following are required:

- Identification of chemical substances present in the waste
- Sampling and analysis to determine the total concentrations (TC) and leachable concentrations (LC) of the elements and chemical substances that have been identified in the waste and that are specified in section 6 of the Norms and Standards.

Within 3 years of the date of commencement of the Regulations, all analyses of the TC and LC must be conducted by labs accredited by SANAS. The TC and LC limits must be compared to the threshold limits specified in section 6 of these Norms and Standards. Based on the TC and LC limits the specific type of waste for disposal to landfill must be determined in terms of section 7.

1.6.20 National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) as amended: National Norms and Standards for Disposal of Waste to Landfill, Government Gazette No 36784, 23 August 2013

The purpose of the Norms and Standards are to determine the requirements for the disposal of waste to landfill as contemplated in regulation 8(1) (b) and (c) of the Regulations.

Chapter 2 describes and illustrates the Landfill Classification and corresponding minimum engineering design requirements for the Containment Barriers. These are for Class A to Class D landfills. The requirements that are to be included in an application for a waste management license are stipulated.

The waste acceptance criteria for disposal to landfill are summarised as follows:

Waste assess in terms of the Norms and Standards for Assessment of Waste for Landfill Disposal set in terms of section 7(1) of the Act must be disposed to a licensed landfill as follows:

Waste Type	Landfill Disposal Requirements
Type 0	Disposal to landfill not allowed
Type 1	Disposed at Class A landfill or H:h/H:H landfill as specified
Type 2	Disposed at Class B landfill or G:L:B+ landfill as specified
Type 3	Disposed at Class C landfill or G:L:B+ landfill as specified
Type 4	Disposed at Class D landfill or G:L:B- landfill as specified

Waste listed in section 2(a) of Annexure 1 to the Regulations must be disposed as follows:

Listed Waste	Landfill Disposal Requirements
Domestic waste. Business waste not containing hazardous	Disposed at Class B landfill or

waste or hazardous chemicals. Non-infectious animal carcasses. Garden waste.	G:L:B+ landfill as specified
Post-consumer packaging. Waste tyres.	Disposed at Class C landfill or G:L:B+ landfill as specified
Building and demolition waste not containing hazardous waste or hazardous chemicals. Excavated earth material not containing hazardous waste or hazardous chemicals.	Disposed at Class D landfill or G:L:B- landfill as specified

Unless assessed in terms of the Norms and Standards for Assessment of Waste for Landfill Disposal set in terms of Section 7(1) of the Act and disposed of in terms of section 4(1) of these Norms and Standards, the following waste included in section 2(b) of Annexure 1 to the Regulations must be disposed as follows:

Listed Waste	Landfill Disposal Requirements
Asbestos waste; Expired, spoilt or unstable hazardous products; PCBs; General waste, excluding domestic waste, which contains hazardous waste or hazardous chemicals; Mixed, hazardous chemical wastes from analytical labs and labs from academic institutions in containers less than 100 litres.	Disposed at Class A landfill or H:h/H:H landfill as specified

Waste that has been classified in terms of the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (2nd Edition, 1998; DWAF) prior to the Regulations coming into operation, may be accepted and disposed of as set out below for a period not exceeding 3 years after the date of coming into operation of the Regulations:

Waste	Landfill Disposal Requirements
Hazardous Waste - Hazard Rating 1 or 2	Disposed at Class A landfill or H:H landfill as specified
Hazardous Waste - Hazard Rating 3 or 4	Disposed at Class A landfill or H:h landfill as specified
Hazardous Waste - Delisted	Disposed at Class B landfill or G:L:B+ landfill as specified
General Waste	Disposed at Class B landfill or G:S/M/L:B-/B+ landfill as specified

The Norms and Standards lists prohibitions and restrictions on the disposal of waste to landfill which comes into effect after the timeframes indicated for each waste and activities from the date of the Regulations coming into operation.

1.6.21 National Policy for the provision of Basic Refuse Removal services to indigent households. Government Notice 34385, 22 June 2011

The main criterion for determining the qualifying recipients of Basic Refuse Removal (BRR) services is registration on a municipality's indigent register as provided for by the indigent policy of the municipality.

The following criteria can be used in the absence of or in addition to the main criterion to determine the qualifying recipients of the BRR services:

- Level of income: Monthly net household income of members of less than or equal to *two old age pensions (including children/individuals who may get state grants)*.
- Residence status: Everybody residing in the municipality provided their indigent status have been verified.
- Special considerations: All child headed households, households headed by pensioners and people with disabilities
- Value of property (need to note that inherited properties might give false income level status).
- Any other criteria as determined by the specific municipality

A municipality may for practical reasons, declare certain areas or clusters as qualifying recipients of BRR. Examples may include low-income areas and high density, urban informal areas.

- Such declarations have added advantages in terms of administrative feasibility (logistics and costs included) especially where rate collection is challenging.

- A municipality may declare certain low density rural areas as areas where on-site disposal is deemed to be an appropriate waste management option.

If the recipient does not fall under a qualifying indigent area, he/she may register as an indigent at his/her municipality. The municipality must set out certain dates/times for these registrations.

1.6.22 White Paper: Policy on Pollution Prevention, Waste Minimisation, Impact Management and Remediation (March 2000)

In line with international trends and our national objectives of efficient and effective management of our nationôs resources, priority is given to prevention of waste. Unlike previous policies that focused predominantly on so called ñend of pipeò treatment, this White Paper underscores the importance of preventing pollution and waste and avoiding environment degradation.

Effective mechanisms to deal with unavoidable waste will remain necessary, but much greater attention must be directed to the introduction of preventative strategies aimed at waste minimisation and pollution prevention. Ever increasing urban and industrial development throughout the world is leading to levels of pollution, which seriously threaten the natural resources upon which humankind depends for its survival.

Although South Africa has extensive environment, pollution and waste management legislation, responsibility for its implementation is scattered over a number of departments and institutions.

The fragmented and uncoordinated way pollution and waste is currently being dealt with, as well as the insufficient resources to implement and monitor existing legislation, contributes largely to the unacceptably high levels of pollution and waste in South Africa.

The White Paper on Integrated Pollution and Waste Management will result in a review of the existing legislation and the preparation of a single piece of legislation dealing with waste and pollution matters.

Pollution and waste management is not the exclusive preserve of government. The private sector and civil society have crucial roles to play. The fostering of partnerships between government and the private sector is a prerequisite for sustainable and effective pollution and waste management to take place. Similarly, the spirit of partnerships and co-operative governance between organs of state is equally important due to the crosscutting nature of pollution and waste management.

Monitoring and collection of information on pollution and waste generation are crucial for the implementation of pollution and waste reduction measures. Moreover, the sharing of such information and creating awareness about the issues will enable all stakeholders, including communities, to gain a better understanding of the relation between pollution, waste management and the quality of life.

The White Paper proposes a number of tools to implement the objectives of the policy it sets out. The most significant of these is a legislative programme that will culminate in new pollution and waste legislation. This proposed legislation, amongst other things, will address current legislative gaps, and clarify and allocate responsibilities within government for pollution and waste management.

The policy presents seven strategic goals, which are as follows:

Goal 1: Effective Institutional Framework and Legislation
Goal 2: Pollution Prevention, Waste Minimisation, Impact Management and Remediation
Goal 3: Holistic and Integrated Planning
Goal 4: Participation and Partnerships Governance in Integrated Pollution and Waste Management
Goal *5:* Empowerment and Education in Integrated Pollution and waste Management
Goal 6: Information Management
Goal 7: International Cooperation

The role of Local Government

Municipalities will be responsible for providing waste management services, and managing waste disposal facilities. Specific functions to be carried out by municipalities will include:

- compiling and implementing general waste management plans, with assistance from provincial government
- implementing public awareness campaigns
- collecting data for the Waste Information System
- providing general waste collection services and managing waste disposal facilities within their areas of jurisdiction
- implementing and enforcing appropriate waste minimisation and recycling initiatives, such as promoting the development of voluntary partnerships with industry, including the introduction of waste minimisation clubs where possible, regional planning, establishment and management of landfill sites, especially for regionally based general waste landfills.

1.6.23 Planning Documents

The Provincial Spatial Development Framework (November 2005)

The PSDF states that there is a concern that a number of waste landfill sites are not properly managed. In addition to the challenges of managing increasing waste volumes and decreasing land available for waste disposal, the Western Cape, along with other Provinces, has to deal with waste management problems caused by inequitable development and inadequate service delivery. Waste issues are often closely associated with poverty, environmental health and social justice issues. The following Policies have particular reference:

RC32 All municipalities shall follow an integrated hierarchical approach to waste management consisting of the following, avoidance/reduce, reuse, recycle, composting, treatment and final disposal. The Waste Management System shall consist of a collection service from the source, (domestic, office or factory) transfer stations and waste disposal sites. (M)

RC33 Waste separation at source shall be mandatory in all domestic households and institutions and businesses including high density and multi-storey buildings from a date to be announced. Initially only organic (vegetable and plant matter) and inorganic (usually dry, cardboard, glass, plastics, paper, buildersôrubble) waste shall be separated. (M)

RC34 Material Recovery Facilities shall be established at all Transfer Stations. (M)

RC35 Engage with the raw material and packaging industries and reach agreement to ensure demand for recycled products. (G)

RC36 Every urban settlement should have a Transfer Station within a maximum of 5kms from the town centre, inside the Urban Edge. These Transfer Stations shall be properly managed according to best practice so as to minimise nuisance to surrounding neighbours. They should also be open after hours and on the weekends and their locations shall be well publicised so as to ensure that the community uses them. Furthermore, charges should not be levied on loads brought to transfer stations. Micro enterprises wanting to process waste and trade second hand materials on site should be encouraged. (G)

RC37 Every municipality shall have a Waste Disposal facility site located and operated according to DWAFôs minimum requirements that will service the Transfer stations in the urban settlements in that municipality. These sites may or may not be located within the Urban Edge of urban settlements. The main criteria for their location will be to meet satisfactory environmental and transport requirements. (M)

It is the intention of the Western Cape Government to make relevant policies contained in the WCPSDF mandatory in terms of legislation and to include these policies in appropriate legislation. These policies are indicated with a 'M' next to the applicable policy in Chapter 8 of this report. The balance of the policies is indicated with a 'G' to indicate that they are guiding principles. The distinction should be understood as follows:

Mandatory (M) measures refer to policies that are regarded as being of sufficient social, economic or environmental importance as to demand that every effort possible should be made to effectively implement that policy.

Guidelines (G) refer to policies that are intended as general developmental goals and whose detailed implementation may vary due to place specific conditions and therefore requiring a certain amount of flexibility in their application.

1.6.24 Draft Legislation

1. Draft Strategy Report and Guideline: National Organic Waste Composting Strategy 2013

Since these are still in draft form at the time of compiling this version of the IWMP, they cannot be included here in full, but should be included in the IWMP in future revisions when they have been published in final form.

1.6.25 International Treaties

This section lists the international agreements to which South Africa has acceded. The following is as described in section 4.10 of the National Waste Management Strategy 2011:

Various international agreements to which South Africa has acceded relate to waste management. A number of non-binding conventions and protocols are also relevant to waste management. This section summarises the main actions in the NWMS related to implementing international agreements.

The Basel Convention

The Basel Convention, adopted in 1989, has the greatest bearing on the Waste Act as it addresses the trans-boundary movement of hazardous wastes and their disposal, setting out the categorization of hazardous waste and the policies between member countries.

DEA is developing MOUs with the International Trade Administration Commission (ITAC) and the South African Revenue Service (SARS) that effectively address the provisions of the Basel Convention.

DEA is considering accession to the amendments to the Basel Convention that ban the import and export of hazardous wastes. DEA is also currently developing a policy on imports and exports of waste that will address this.
DEA and DTI are jointly addressing the import and export control aspects of the Basel Convention, together with the chemical conventions. Control will happen through ITAC permits and SARS tariff codes.

The Montreal Protocol

The Montreal Protocol Treaty, revised in 1999, protects the ozone layer by phasing out the production of several substances that contribute to ozone depletion, with the aim of ozone layer recovery by 2050. This has relevance for waste management in instances where such obsolete products enter the waste stream. DEA will finalise and publish the National Implementation Plan for the Montreal Protocol. The plan will include the development on an Ozone Depletion Substance (ODS) strategy and regulations will provide for the phasing out of specified substances and their safe disposal. These will be gazetted for public comment in 2012.

The Rotterdam Convention

The Rotterdam Convention promotes and enforces transparency in the importation of hazardous chemicals and whilst it explicitly excludes waste, its implementation may lead to bans on listed chemicals. Some of these chemicals may occur in stockpiles of obsolete chemicals such as pesticides that have been identified as a major waste management challenge. Extended producer responsibility schemes will be used to effectively manage obsolete chemicals.

A study to investigate the extent of manufacture, use, import and export of new chemicals listed in the Rotterdam Convention will determine whether South Africa should ratify the newly added chemicals. This document will be finalised in 2012. A process to identify and ban pesticides and industrial chemicals listed in Annex III (that South Africa has not yet banned) has started. Responsible departments will finalise arrangements for banning orders in 2012.

The Stockholm Convention

The Stockholm Convention on Persistent Organic Pollutants (POPs), which entered into force in 2004, requires that member countries phase out POPs and prevent their import or export. Parties to the Convention are also required to undertake the following responsibilities:

- Develop and implement appropriate strategies to identify stockpiles, products and articles in use that contain or are contaminated with POPs.
- Manage stockpiles and wastes in an environmentally sound manner.
- Dispose of waste in a way that destroys or irreversibly transforms POPs content.
- Prohibit recycling, recovery, reclamation, direct re-use or alternative use of POPs.
- Endeavour to develop strategies to identify contaminated sites and perform eventual remediation in an environmentally sound manner.

A National Implementation Plan has been developed and it will be reviewed in light of the Waste Act and finalised in 2012.

Furthermore, a study has been initiated to investigate the extent of manufacture, use, import and export of new POPs listed in this convention. The study will determine if South Africa should ratify the newly added POPs. This document will be finalised in 2012.

1.6.26 Eden District Municipal Spatial Development Framework (SDF)

The Eden District Municipal Spatial Development Framework was compiled in 2003. The updating of the existing 2003 SDF is in progress. Development profiles of the district are not included in the IWMP at this stage as no updated information is available from the Local Municipalities.

2. EXISTING WASTE MANAGEMENT IN EDEN DISTRICT MUNICIPALITY

2.1 EDEN INTEGRATED WASTE MANAGEMENT FORUM

The Eden Integrated Waste Management Forum was established when the Local Municipalities identified it as a Goal/Objective in their Integrated Waste Management Plans and in the Regional Waste Management Plan. The forum was established as a platform in the region for the Local Municipalities to share information and discuss problems encountered in performing their specific duties. The emphasis on a regional approach to waste management is also promoted by the forum. The forum serves as the project committee with the implementation of all the regional waste management projects in the Eden District. The Forum also contributes especially to capacity building in some of the Municipalities. The municipalities in the Eden district municipal area are presented on the forum by the Waste Management Officers and meet on a two monthly basis. The District Municipality chairs the forum meetings. The Eden District Municipalities actively participate on the forum meetings and activities with exception of the Kannaland Municipality. Several attempts were made to assure their participation with no effect. Despite their absence the District Municipality still includes the Kannaland Municipal area in all their regional waste management planning.

2.2 EDEN REGIONAL LANDFILL FACILITY

The proposed waste disposal facility will serve the Municipalities of Bitou, George, Hessequa, Knysna and Mossel Bay and will have a lifetime of approximately 50 years. The site will include a hazardous waste cell. All hazardous waste disposed of at the site will have a low to medium hazard rating. Examples of hazardous waste with low hazard ratings would be solvents and paints generated by the mechanical and metal industries in the area, as well as waste from the port and fishing industry such as ballast. Sewage sludge from the sewage works may also be disposed of at the site. Provision has been made for a future materials recovery facility, a composting area and an area for the processing of construction and demolition waste (buildersô rubble). Other infrastructure that will be part of the facility includes roads, stormwater pipelines, a leachate storage dam, a contaminated stormwater dam, offices, a laboratory, and a weighbridge and security infrastructure.

The footprint of the waste site will cover an approximate area of 200ha and the landfill site itself will reach a maximum height of 12m. Individual cells will be excavated and filled sequentially. Each cell will be designed to last approximately 5 years, depending on the success rate of waste reduction. After about 2-3 years the construction of the following cell will commence. The site will be excavated to a depth of 6m below natural ground level and the landfill will reach a height of 12m above natural ground level. The site will be fenced to prohibit unauthorized entry and to control windblown litter. Unpolluted stormwater will be diverted away from the site through a stormwater cutoff trench.

The Environmental Impact Study has been finalized in the beginning of 2013 with the submission of the final Environmental Impact Report to the Department of Environmental Affairs and Development Planning. The Department of Environmental Affairs and Development Planning has already issued Eden District Municipality with an Environmental Authorization and the Department of Water Affairs has issued a Record of Decision and a Waste License was received from the Department of Environmental Affairs on 05 February 2014, license number 12/9/11/l1395/9.

The Eden District Municipal Council has taken the decision to investigate the possibility to secure a Public, Private Partnership (PPP) to build and operate the facility over a ten (10) year contract period. The Municipal Councils of Bitou, Knysna, George and Mossel Bay have all approved their commitment in a ten (10) year contract with Eden District Municipality. As prescribed by the Municipal Systems Act, Act 32 of 2000, Section 78, an assessment of the service delivery by internal and external mechanism as well as a PPP feasibility study has been concluded. The Eden District Municipality is now commencing with the procurement process to appoint a private partner as prescribed in the Local Government: Municipal Finance Management Act, Act 56 of 2003.

2.3 AWARENESS AND EDUCATION

The lack of public awareness of the gravity of the problem of sustainable waste management has a significant impact on the effectiveness of the management of waste.

Our poor history of waste management in South Africa means that we pay little attention to our lifestyle insofar as how it affects the environment. However, when an environmental problem is noted and the public are made aware of the need for action, there is no stronger lobby. This was evident in the outcry over CFC containing aerosols in the late eighties. Once the problem was discovered and the people informed, a combination of international action and public pressure resulted in almost an immediate ban of these ozone-depleting substances. Creating awareness of the issue of sustainable waste management may have a similar outcome.

The successful implementation of the Eden District IWMP will require that all persons within the Municipal boundaries are aware of waste issues as an integral part of the creation of a healthy environment. They should be empowered to play their specific role in the development and implementation of the waste management initiatives.

Public participation is closely linked with education and public awareness. The significant difference between awareness programmes and public participation is that public awareness focuses on disseminating information, whereas public participation aims at obtaining participation, comment, input and feedback from the public.

2.3.1 Public Awareness and Education in the Eden District Municipality

Eden District Municipality in conjunction with the seven local municipalities in the region launched a waste management road show throughout the district as part of the draft Strategic Waste Minimization Plan.

The aim of the road show is to create awareness throughout the district of waste management, minimization and how each household can manage its own waste. - http://www.edendm.co.za This Road Show will be an annual event.

The Eden District Municipality in collaboration with the local Eden Municipalities also conduct the Wise Up On Waste education and awareness programme which was launched in 2006. Schools and crèches are included in this awareness campaign in terms of waste management and minimisation. This programme is on-going.

The Eden District Municipality, in partnership with private service providers, launched a project to educate schools regarding hazardous waste (e.g. redundant chemicals) as well as e-waste. In partnership with the Rose Foundation, 29 drop-off points for used oil and filters, etc. are established and workers are educated regarding these types of waste.

Electronic waste disposal containers were established in Mossel Bay and Knysna and other e-waste disposal facilities were established in George and Plettenberg Bay in partnership with two private businessmen from the Eden District Municipal area. E-waste facilities will also be introduced in the future in Oudtshoorn, Ladismith and Riversdale. The same is being planned for household hazardous waste.

By means of this public awareness and education campaign, the Municipalities in the Eden District ensure that the public is educated about the impacts of waste on their health and the environment. This endeavour should receive continual support.

2.4 WASTE QUANTITIES AND TYPES

2.4.1 Methodology for General Waste Survey

For the purpose of determining the waste quantities in the Eden District Municipality, the population statistics from census (refer Paragraph 1.4) were used to calculate the total tonnage of municipal solid waste (MSW), using typical waste generation figures per person of each sector of the community. These figures are reflected in each Municipality's IWMP.

2.4.2 Volumes of General Waste generated

Table 2-1: Waste Volumes calculated for the Eden District Municipality

Municipality	Population (2013)	Waste Gen in Ton/year (2013)	Population (2014)	Waste Gen in Ton/year (2014)	Population (2015)	Waste Gen in Ton/year (2015)	Population (2016)	Waste Gen in Ton/year (2016)	Population (2017)	Waste Gen in Ton/year (2017)	Average Waste Gen Factor for Area in kg/p/d
Bitou	48940	17454	51495	18365	54183	19323	57012	20332	59988	21393	0.98
George	181472	78616	186172	80653	190994	82741	195941	84884	201016	87083	1.19
Hessequa	42705	18240	43460	18563	44230	18892	45013	19226	45809	19567	1.17
Kannaland	24931	8365	25013	8393	25096	8421	25178	8448	25261	8476	0.92
Knysna	68050	27939	69935	28713	71872	29508	73863	30326	75909	31166	1.12
Mossel Bay	89050	32944	91045	33682	93084	34436	95170	35208	97301	35996	1.01
Oudtshoorn	80193	29967	81195	30342	82210	30721	83238	31105	84278	31494	1.02
EDM	**535341**	**213526**	**548316**	**218710**	**561669**	**224043**	**575414**	**229530**	**589563**	**235175**	**1.09**

The above totals include waste that is generated by holidaymakers over the festive season. Also included is commercial waste and industrial office waste as these are collected by the municipality. What is not included is rural waste and the industrial waste which is generated and managed by the industries themselves.

Weighbridge readings

Weighbridge data is not available from all the Eden Municipalities. There is a weighbridge at the George transfer station and Hessequa Municipality makes use of the Sentraal Suid Co-operation weighbridge from time to time. Mossel Bay Municipality provided the PetroSA disposal site weighbridge readings.

2.4.3 Recoverable Material Volumes

The Department of Environmental Affairs and Development Planning (DEA&DP) commissioned a study in 2007 to determine the characterisation of the disposed waste at various landfills in the Eden District. From that study, although a relatively small once-off sample was analysed, the anticipated average waste composition of the Eden District can be derived to include the following recyclable materials (by mass):

Paper and Card board:	18%
Plastics:	13%
Glass:	11%
Metal:	5%

The D:EA&DP has subsequently commented that the minimum sample size that should have been used in this study must be calculated. The report indicates that a total of 12.75tonnes of waste were analysed which equals approximately 0.01% of the total waste stream of that year.

The Sustainable Cities Institute (United States) and California Department of Resources Recycling and Recovery recommend that the ASTM standards are followed when collecting samples for waste characterisation to be statistically representative. Their proposed method was developed to obtain characterisation from the disposed waste stream. For Disposal Facility type sampling, which was the case in the above study, a minimum total of 30 samples of 90kg each for the residential sector or 40 samples of 90kg each for the non-residential sector should be used. Another requirement is that the samples to be taken are spread over at least two seasons.

To align a new waste characterisation study for each Municipality with the above guidelines, the following is recommended:

- 30 samples of 90kg each are to be sampled randomly at a disposal facility spread over the year.
- The following schedule is proposed to obtain representative samples from the waste stream: One sample per day, Monday to Saturday, for one week of every second month, starting in January as the first month and November as the last. This will amount to a total of 36 samples spread over all four seasons and every day of the week.
- The requirement for this exercise per disposal facility will then be 5 workers to take samples and categorise waste, employed for a total of 36 days throughout the year. They can be employed as part of the Extended Public Works Programme. Working with an average of R120 per person per day, this totals R21,600.00. The team can be led by the Municipality's waste manager and also be trained by him or someone delegated by him. A total of R5,000.00 is estimated if a consultant then reworks the data and reports on the gathered data.

The 2007 characterisation report is still the best available representation of the Eden waste stream. To conduct a waste characterisation study that meets the above statistical requirements will require data collected over an entire year. Until such a study is commissioned and completed, the existing report is used for the purposes of this IWMP.

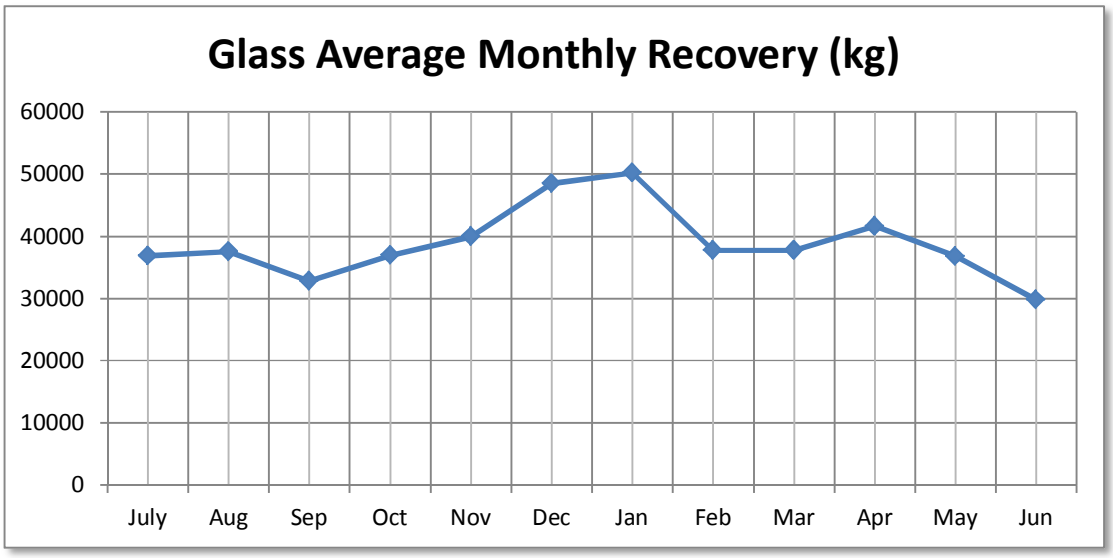
From the waste composition as reflected in the 2007 report, it can be calculated that the total volume of recoverable materials that are theoretically available in the waste stream will be as indicated in Table 2-2. These characterisation percentages were applied to the waste stream of the permanent population.

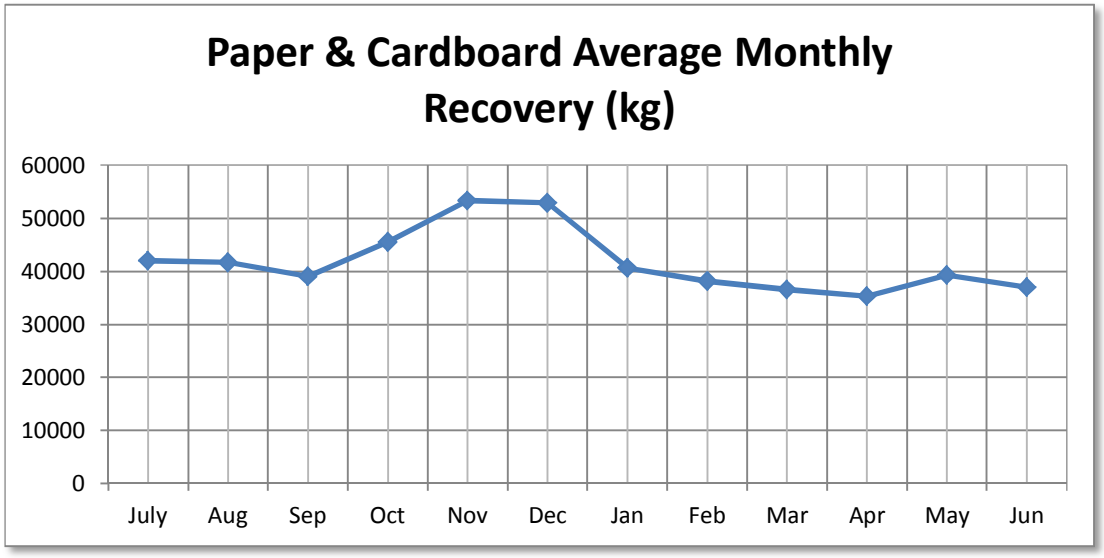
Seasonal increase

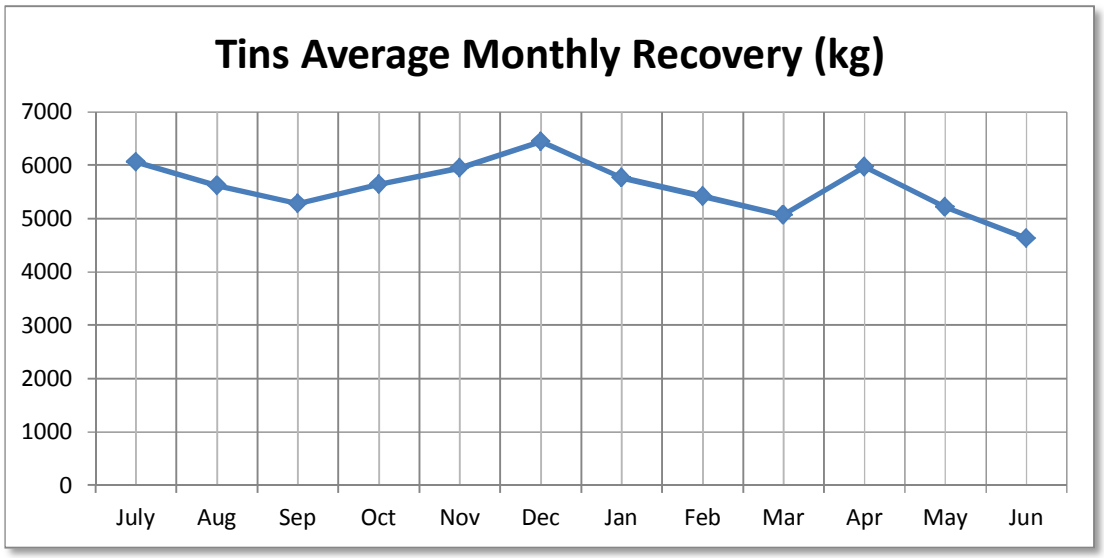
From accurate waste data that have been recorded over the past three years in the Overstrand Municipality, it was possible to quantify the seasonal increase that holidaymakers have on recoverable materials in the waste stream. The average recycled monthly quantities outside the holiday season were calculated along with the averages of the holiday season so that the total percentage increase over this period could be obtained.

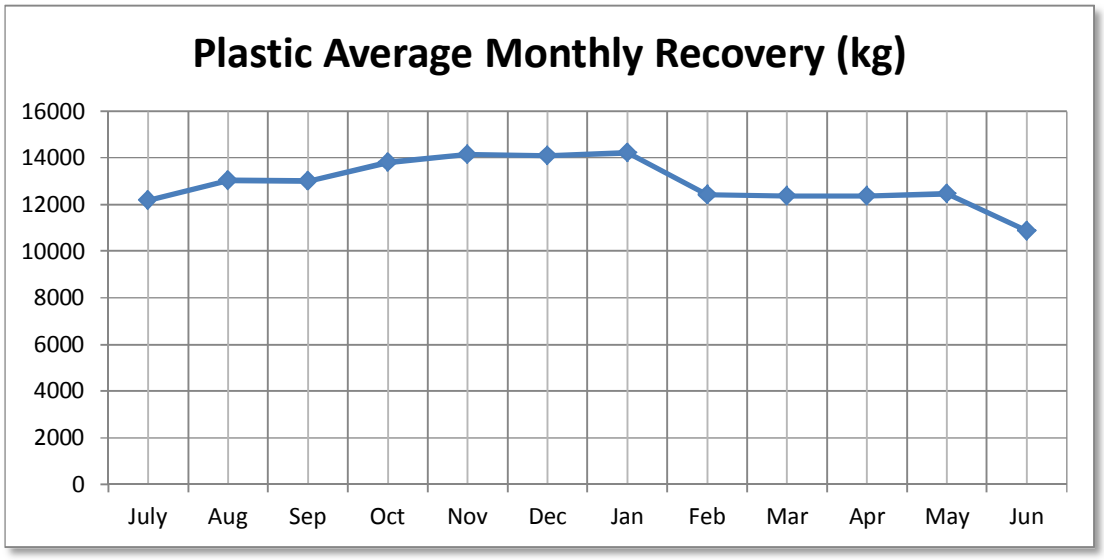
These percentages can be applied to similar municipalities like Bitou, Hessequa, Knysna, George and Mossel Bay, which are coastal and experience an influx of holidaymakers during season. The increases will not be exactly the same, but will be applicable when the percentages are applied to the permanent waste stream of each Municipality as these percentages are indicative of the behaviour of holidaymakers. This means that the same percentage increases can be expected in similar municipalities.

The graphs below illustrate the seasonal increase for glass, paper & cardboard, tins and plastics.









From the data the following percentage increases over season were obtained:

Glass: 48% increase
Paper & Cardboard: 35% increase
Tins: 17% increase
Plastics: 13% increase

Table 2-2: Volumes of Available Recoverable Materials

Municipality	Paper/Card (t/a)	Plastics (t/a)	Glass (t/a)	Metal (t/a)
Bitou	2989	2110	1851	815
George	13678	9655	8471	3729
Hessequa	3170	2238	1963	864
Kannaland	1506	1087	920	418
Knysna	4841	3417	2998	1320
Mossel Bay	5713	4033	3538	1558
Oudtshoorn	4983	3599	3045	1384
EDM	**36880**	**26138**	**22786**	**10088**

The above theoretical figures give a total of approximately 95 893 tonnes per annum, which is 45% of the generated waste stream. It should be noted that this reflects the recyclable portion of the waste stream only as the mathematical representation. The full 45% cannot be seen as recoverable in the practical sense.

Due to the methods of collection, i.e. the collection of mixed un-separated household waste, a large amount of deterioration and contamination of potentially recoverable material takes place. Post-collection recovery (as is currently the norm in South Africa) implies that only a part of the above tonnages are available for recovery and recycling, due to contamination. For that reason separation at source is considered to be the preferred methodology to increase the volumes and value of recovered materials. Even with source separation some contamination still takes place, but less than mixed bag waste.

Although experience has shown that participation by the public is largely economy driven, the current trend is that separation at source, which implies that recoverable materials are separated by the home owner and õgivenò to the municipality (or Service Provider) for free, is mainly supported by the middle and higher income groups, whereas the low and very low income groups support buy-back centres or swop-shops where recoverable materials are bought/traded from the residents.

However, recently acquired data (measured quantities in Drakenstein Municipality over 5years, Overstrand Municipality over 3 years and Swartland Municipality over 10 years) illustrates that the implementation of source separation only leads to a 1% increase in over-all recovered material volume. This small increase may be attributed to the fact that source separation was only implemented in a certain group of neighbourhoods and not throughout the whole of the area where the data was received. If one looks at the statistics per neighbourhood, the increase in material recovery is reportedly 15%. With these relatively small gains in recovery, the Municipality should evaluate the economic feasibility of implementing a source separation system. It is still the preferred collection method, but expensive to implement and would probably receive lower priority as opposed to alternative strategies and action plans that need to be executed by the Eden Municipalities in the upcoming years.

Statistics obtained from the various ñseparate bagò collections as are currently practised on a private contract base in the City of Cape Town, indicate that separation at source participation rates of up to 85% are achievable in the higher income groups. More recent statistics obtained from the Drakenstein Municipality show that participation rates are significantly lower. The Middle income group participation rates vary between 12-25% and the High income group participation vary between 35-40%. The degree of contamination in the ñseparate bagò is significantly lower and the average ñtailingsò percentage achieved is approximately 10%. *(Source: WastePlan)*

With the assumed strategy of source separation and ñcleanò Material Recovery Facilities where the source separated materials are sorted into its various groups and sub-groups, and assuming that only middle and higher income group communities will be participating in source separation, it can be calculated that the current (2013) recovery volumes will be as indicated in Table 2-3.

Table 2-3: Calculated Volumes of Recovery of Source Separated Materials

Municipality	Participating Waste (t/a)	Paper/Card (t/a)	Plastics (t/a)	Glass (t/a)	Metal (t/a)
Bitou	7952.8	300.6	62.0	384.9	39.8
George	44607.9	1686.2	347.9	2159.0	223.0
Hessequa	10453.3	395.1	81.5	505.9	52.3
Kannaland	4388.2	165.9	34.2	212.4	21.9
Knysna	15003.3	567.1	117.0	726.2	75.0
Mossel Bay	18706.3	707.1	145.9	905.4	93.5
Oudtshoorn	16915.7	639.4	131.9	818.7	84.6
EDM	**118027.6**	**4461.4**	**920.6**	**5712.5**	**590.1**

Assumptions for Source Separation: *80% participation*
(Based on actual data from WastePlan) *21% recovery of available Paper and Cardboard*
6% recovery of available Plastics
44% recovery of available Glass
10% recovery of available Metals

The above ñrealisticò volumes can be increased when additional facilities such as buy-back centres are commissioned in low and very low income group communities.

The table below reflects the actual recycling tonnages as provided by the various recyclers in the Eden District:

Table 2-4: Total volumes of recycled materials in the Eden District

Municipality	Paper/Card (t/a)	Plastics (t/a)	Glass (t/a)	Metal/Tin (t/a)	Total (municipality)
Bitou	159	59	75	27	**320**
George	4492	855	1173	9	**6529**
Hessequa	681	144	277	14	**1116**
Knysna	519	370	223	-	**1112**
Mossel Bay	1713	336	369	101	**2519**
Oudtshoorn	1295	249	51	-	**1595**
Kannaland	0	0	0	0	**0**
Eden DM	**8859**	**2013**	**2168**	**151**	**13191**

The above figures are not easily compared to the figures in Table 2-3. Table 2-3 illustrates the calculated volumes of recyclables which are likely to be recovered with only a clean material recovery facility and a certain portion of the community participating. Table 2-4 shows the current actual volumes that the various recyclers are achieving, which is with a combination of source separation and other sources of recyclable materials. In some cases they are achieving higher numbers than the calculated volumes and other cases lower. One reason is the material type. For example, Eden recyclers would likely not focus on the recovery of glass as its transport costs make it not as profitable as other materials.

2.4.3.1 Paper and Cardboard

Paper and Cardboard form the foundation for any recovery venture, due to the relative stable demand and numerous recycled products made from recovered paper.

Waste paper is transformed from one type to another during the recycling process. The supply and demand for waste paper, although stable, is cyclical in nature, and therefore marketing patterns have to be adapted accordingly.

Some of the factors that contribute to this cyclical demand for recovered paper are:

- difficulty for mills to carry large stock
- periodic mill shut-downs result in fluctuations in demand
- paper stock is considered perishable and thus hazardous to store
- space for storage of stock is limited and costly

Some materials produced with recycled paper pulp include: newspapers, packaging, bags, tissue and towels, corrugated boxes, shoe boxes and files, egg cartons and fruit packing layers.

If paper and cardboard products are clean and separated into different types, significantly higher prices are fetched for the recovered materials.

2.4.3.2 Glass

Glass recovery for recycling has had a very erratic history, due to only one recycler having a monopoly in the market. When the capacity of the kilns is full, the price used to drop dramatically due to an over-supply and no demand. Fortunately this situation has stabilized and a constant market for recovered glass is currently prevailing.

The separation of glass is very successful in separation at source activities since it is easy to identify by the home owners. Recent experience in the City of Cape Town has shown that most home owners whom participate in separation at source also wash their glass products before putting it in the recyclables bag.

2.4.3.3 Plastic

Several types of plastics are typically recycled, i.e. PET (transparent plastic bottles e.g. 2 litre cool drink bottles), HDPE (milk containers), LDPE and mixed plastics. Recycled PET is used in the manufacture of small moulded products, such as handles, sporting goods and furniture. Recycled HDPE is used for producing flowerpots, dustbins and a variety of other containers. Mixed plastics are normally used for the manufacture of outdoor furniture, pallets, and plastic timber.

The recent introduction of a levy on shopping bags has caused the amounts arriving at the landfill to reduce dramatically. Less plastic bags are disposed of, as they are recovered and are now manufactured of better quality and thicker plastic.

In order to recycle plastics using current traditional methodology, it has to be sorted into the various categories, and washed if contaminated by the other wastes. Alternative technologies are currently being evaluated (also in South Africa) that could eliminate the need for sorting of plastics.

2.4.3.4 Metal

Metals are the single most recoverable item in the waste stream. Very little degradation takes place during collection. It follows that a relatively small amount ends up in the waste stream, as all types of metal are removed for re-sale at various stages of the waste handling process.

One of the major components of ferrous wastes is the steel can (95% of all cans in the Metropolitan Areas). Non-ferrous metals such as Aluminium and Copper are very scarce in our waste streams, due to its extremely high salvaging value. These are usually removed at source.

2.4.3.5 Economic Sustainability of Waste Recovery

Although the recovery of materials of value from the waste stream for recycling or re-use is one of the basic operations in future integrated waste management, the question regarding its financial and economical sustainability should always be asked and answered.

Local experience over the last decade has shown that the South African recycling market, or rather the recycled product market, is very small and very susceptible to unforeseen activities, e.g. if one paper mill burns down, the effect on the waste paper market, and the prices, is significant. The South African ñmarketòis simply too small to absorb these types of set-backs.

For this reason it is commendable that D:EA&DP had a study conducted into sustaining the local recycling industry.

But one must consider the economical sustainability and not only the financial sustainability. Economic sustainability considers the whole life-cycle cost and not only the rands and cents of a specific financial year and taking into consideration the avoided costs of airspace saving and also the cost on the environment for the resultant smaller utilisation of virgin resources. An interesting stipulation in the Waste Act, Section 17 (1) (a), is that one may not recover materials from waste if it costs more environmental resources to recover, than it would to dispose of that material ï a good example of the total or life-cycle costing principle.

Prices for recovered materials vary greatly from city to city and province to province, from baled to unbaled, from dirty to clean and from material type. External factors also play a significant role such as the oil price, e.g. due to a previous low crude oil price of approximately US$43 per barrel had caused new plastic to be cheaper than recycled plastic ï cheaper, not necessarily more economical. The result was that recyclers at that moment (January 2009) could not even give their LDPE plastic away where only a month before it was sold for R1500/tonne.

The above does not imply or insinuate that recovery should not be supported, but that both recovery AND the establishment of a recycled goods market should be supported. This is an aspect that cannot be addressed on a local authority level, but must be addressed on a Provincial and/or National level to optimise economy of scale.

Benefits must also be shared. For example, if a municipality saves airspace and transport cost due to recovery, a portion of that saving (avoided costs) should be passed on to the recovery effort to ensure that it is sustainable. If not, as was proven in SA previously, the recovery effort closes down and the municipality loses its avoided cost saving.

The January 2014 prices for recovered materials delivered in Cape Town are displayed in Table 2-4.

Table 2-5: January 2014 Prices of Recovered Materials in Waste Stream

MATERIAL	PRICE IN RAND/TON FOR BALED MATERIAL
Card board	800
White Paper	1200
Newsprint	650
Glossy Paper	450
Mixed Paper	580
Metals (Mainly cans)	1300
Glass (All colours, Crushed)	400
Plastic (PET, No 1, White, Blue, Green)	3600
Plastic (PET, No 1, Brown)	1000
Plastic (HDPE, No 2)	2500
Plastic (LDPE, No 4)	1800
Plastic (Polypropylene, No 5)	2500

Plastic (Polystyrene, No 6)	1300

The following prices for delivered material are achieved by Eden District recyclers. Some materials must be transported great distances from Eden, affecting profits significantly.

Table 2-6: January 2014 Prices of Recovered Materials delivered from Eden

MATERIAL	PRICE IN RAND/TON FOR BALED MATERIAL	DELIVERED TO
Card board	700	Empangeni
White Paper	1200	Cape Town
Newsprint	550	Durban
Glossy Paper	400	Durban
Mixed Paper	320	Springs
Metals (Mainly cans)	1100	Eden
Glass (All colours, Crushed)	400	Excluding delivery
Plastic (PET, No 1, White, Blue, Green)	1800	Cape Town
Plastic (PET, No 1, Brown)	1800	Cape Town
Plastic (HDPE, No 2)	2200	Cape Town
Plastic (LDPE, No 4)	2200	George
Plastic (Polypropylene, No 5)	2800	Cape Town
Plastic (Polystyrene, No 6)	450	East London
Tetrapak	460	Johannesburg

2.4.3.6 Priority Waste Streams

2.4.3.6.1 Tyres

The Recycling and Economic Development Initiative of South Africa (REDISA) has appointed a contractor, Mossel Bay Waste Tyre Recycling Depot, to accommodate used tyres in the Eden District Municipal area under the Waste Tyre Regulations R149 of 13 February 2009. With the development of the recycling depot in the Eden District it has resolved the enormous problem that municipalities had with the disposal and storage of tyres. Not only did it take up valuable landfill space, but also posed an indirect environmental and health hazard.

The initial month that the depot was operational the following waste tyre quantities were recorded:

Type	Truck	4x4	Passenger	Motorcycle
Quantity	1312	1802	5824	157

2.4.4 Hazardous and Health Care Risk Waste

Identified problems:

Where household hazardous waste is not addressed directly in the District it is disposed together with the general waste. It is important to provide a proper disposal service, either by the local authorities or the private sector.

Electronic waste disposal facilities were introduced at Mossel Bay, George, Knysna and Plettenberg Bay where residents can take their electronic waste from where it is disposed of in a proper manner. Facilities must still be introduced at Oudtshoorn, Riversdale and Ladismith.

Eden DM in collaboration with two private companies, arranged for E-waste facilities to be made available for the public to dispose of their E-waste. Two containers were sponsored by Valley Containers to accommodate e-waste at transfer stations and landfills as a pilot project. If the pilot project proves to be viable, additional containers will be sponsored by Valley Containers. The containers were placed at Mossel Bay Municipal transfer station in Hartenbos and the other at the Knysna transfer station. Mabone Waste Management has agreed to remove the e-waste and recycle applicable parts and dispose of the rest at a hazardous landfill facility with no cost to the municipality. The Mabone depot in George will serve as a drop-off point in George. Bitou municipality has made an old gatehouse available at the Robberg landfill site as a drop-off point until more containers are

made available. To date 3.5 tonnes of E-waste have been removed from the drop-off points that would have otherwise landed up on the landfill sites. E-waste facilities will also be introduced in the future in Oudtshoorn, Ladismith and Riversdale. The same is being planned for household hazardous waste.

Pesticides from farms are not monitored and are either disposed or stored which may cause long-term problems. Pesticides and chemicals from schools are not always correctly handled, stored or removed. No effective policies and service providers are in place at this stage to remove these expired or hazardous substances.

Health Care Risk Waste is largely removed and disposed by legally compliant service providers. The small portion where this is not done will be identified by the Eden Waste Information System and addressed.

Industrial hazardous waste is still a big concern in the Eden District as there appears to be very little control over the disposal thereof. This will also be addressed by the Waste Information System and Industry Waste Management Plans, but will require more time because of limited staff availability in most municipalities as well as the district municipality.

Eden District Municipality, in collaboration with the municipalities and the Rose Foundation has implemented a used oil recycling program and oil recycling facilities were placed at controlled points in Hessequa, Mossel Bay, George, Knysna, Bitou and Oudtshoorn municipalities. To date 1800 litres of motor oil was collected by OSS Sales and Services from the oil recycling facilities.

The dangers:

Household hazardous waste includes products that contain ingredients that are either toxic, flammable, corrosive or reactive. These can for example be paint, oils and pesticides (from farms as well). If not properly disposed, for example pouring down the drain or disposal at the wrong site, these substances are harmful to the environment and human health and can have long-term impacts.

Electronic waste such as computers and televisions contain many hazardous substances and heavy metals. Acidic conditions when these wastes are landfilled can cause the heavy metals to leak out. If this happens on a landfill which is not properly lined, the environment and groundwater may become contaminated.

Eden has developed a Waste Information System where the generators of hazardous waste in the Eden district must register. At this stage registrations are done by hand, but the District Municipality will provide a web-based registration system in the near future. The Information System will then also be linked to the Provincial System as well as the local Municipal Systems within the Eden District. 80% of the medical risk waste generators are already registered on the system.

2.4.5 Organic Waste

Accurate data on the organic waste quantities are not readily available and further investigation into the different organic waste streams is required. Obtaining quantities and identifying the generators of these wastes will enable the Municipalities to ensure that it is correctly handled and disposed without becoming a threat to human health or the environment.

The main organic waste streams in the Eden District are the following:

- Abattoir waste: Apart from contaminated water from abattoirs, the solid waste generated mainly consists of animal parts which cannot be used for human consumption or other purposes like gelatine recovery from hooves. Abattoir waste must be properly handled and disposed of at approved licensed landfill sites. The landfill staff must be trained to ensure that abattoir waste is disposed correctly. For example, the waste must be pre-treated with lime, trenched and immediately covered. The disposal of infectious animal carcasses and waste is not allowed to be landfilled at general waste sites. Non-infectious animal waste and carcasses are allowed to be disposed at licensed landfill sites as per the National Norms and Standards of Waste Disposal to Landfill, August 2013. The management of abattoir waste must be included in the alternative waste technology investigation.

- Sewage sludge: If the classification of the sludge from a wastewater treatment plant is not known, it must be determined. The classification (which indicates the microbiological, stability and pollutant class) will allow the different management options to be identified for that particular sludge. In the Eden District, it is not likely that the sludge from the various wastewater treatment plants would contain high amounts of heavy metals. This must be verified in each case, but if the classification then allows, the sludge can be managed for beneficial use such as composting or anaerobic digestion. It must be ensured that a license is acquired for this purpose. With the planned implementation of alternative waste technology facilities, it would be possible to centralise the composting of sewage sludge in the Eden District.

- Wet waste from hotels, restaurants, etc. (dailies) and industry: The regulation of waste coming from industry can be monitored as soon as the Industry Waste Management Plans have been implemented. The dailies are collected as part of the municipal waste collection rounds and as such, separate volumes are not recorded or available. Further investigation is required.

- Timber waste: The wood industry produces sawdust and wood chips. Some industries make use of incinerators or dispose on-site in open areas. The opportunity exists to apply the wood waste for beneficial use. For example, the wood chips are ideal for use as a bulking agent in making compost.

- Green waste is discussed under section 2.7.2 of this report.

- Industry waste: Fish, milk and other food waste that originates from the different production processes ends up at the landfill sites or in the sewage systems of the municipalities. Food products that are no longer acceptable for human consumption due to expiry dates or food that has gone bad also ends up on the landfill sites. The inclusion of these type of wastes must also be included in the alternative waste technology study.

2.5 INDUSTRY

Bitou Municipality:

According to the municipality there are no industrial waste generators within the municipal area that have a major impact on the waste quantities. The municipality only collects domestic waste from the industrial area. Although Bitou has a significant number of industries, there is no record of the type of industries and the waste generated within the area. ï (Eden District draft strategic waste minimisation plan 2013)

George Municipality:

George has a relatively large industrial area. The main waste generators within the area are the wood industries and fruit and vegetable processors. They are responsible for the disposal of their own industrial waste. The waste is disposed of at the George landfill site. Disposal of saw dust is a problem. The municipality does not keep record of the type of industries operating in the area and the type of waste they generate.

The lack of a proper hazardous waste disposal facility in close proximity to the municipal area poses a risk. The municipality does not have proper records regarding the classification of industries within the municipal area and the type of hazardous material used and generated. The municipality have by-laws addressing the liability, generation, storage and disposal of industrial waste. ï (Eden District draft strategic waste minimisation plan 2013)

Hessequa Municipality:

According to the municipal officials there are no major industrial waste generators within the Hessequa Municipal Area that have a significant impact on the quantity or type of waste disposed at any of the Hessequa Municipal landfill sites.

The disposal of fish waste, tinned and spoilt food is a major concern within the municipal area as there is no hazardous waste disposal site in close proximity that accepts this type of waste. The Nestle factory sometimes has large quantities of milk that are not usable due to their high antibiotic

content. The milk is rejected and needs to be disposed of but there is no appropriate waste disposal site in close proximity that accepts this type of waste.

The disposal of tyres and empty toxic containers is also a concern. ï (Eden District draft strategic waste minimisation plan 2013)

Kannaland Municipality:

The major industrial waste generators within the area, are the two cheese factories, wine cellar and the Co-operation in Ladismith and the wine cellar and Co-operation in Calitzdorp. These industries are responsible for the disposal of their own waste at the local landfill site. The municipality has no records regarding these industries operating in the municipal area. The disposal of tyres and empty toxic containers is a concern as there is no control over it and no suitable facilities for the disposal of these materials. ï (Eden District draft strategic waste minimisation plan 2013)

Knysna Municipality:

Knysna has a few industries, with the main being the wood industry which produces large amounts of sawdust. The industries in the area are responsible for the disposal of their own waste and do not dispose of the waste at any municipal disposal sites. Some industries have incinerators or open spaces where the waste is disposed of. The municipality has no by-law addressing liabilities, storage and disposal of industrial refuse. ï (Eden District draft strategic waste minimisation plan 2013)

Mossel Bay Municipality:

There are various industries operating within the Mossel Bay Municipal area. Waste generated by Mosstrich, Scott and Rein Tanning is a major concern as all their waste is not accepted at PetroSA. Mosstrich is an ostrich abattoir and Scott and Rein Tanning are both leather tanneries. Ace Waste disposes kraal-manure from Mosstrich at PetroSA. Mosstrich disposes wet waste at PetroSA as well. Waste from Scott and Rein Tanning is also disposed of at the PetroSA landfill site, however PetroSA have difficulty accepting Scottøs waste.

Waste from the fisheries are transported to Cape Town and disposed of at the Vissershok landfill site.

PetroSA does not accept sludge from boats. There are no appropriate hazardous waste disposal facilities within the municipal area and the lack of control over hazardous waste disposal poses a great risk to the surrounding environment. The Municipality is concerned about the disposal of empty toxic containers as there is no control over the disposal of these items. ï (Eden District draft strategic waste minimisation plan 2013)

Oudtshoorn Municipality:

There are limited industrial waste generators within the Oudtshoorn Municipal Area that have a significant impact on the quantity or type of waste disposed at any of the Oudtshoorn municipal landfill sites. Seed production used to be a problem as large quantities were burned in the past. Seeds are now buried on the Grootkop landfill site. Industries identified that will generate possible hazardous materials include a winery, the tannery and a shoe factory.

People mainly farm with lucern, grapes and ostriches in this area where chemicals (hazardous waste) are utilised. There is no proper recordkeeping of the industries and the type of hazardous and industrial waste generated within the municipal area. Future extension of the industrial area is planned which necessitates proper control over disposal of industrial waste. The municipality is concerned about the disposal of empty toxic containers as there is no control over the disposal of these items and no suitable facilities for the disposal of these materials. ï (Eden District draft strategic waste minimisation plan 2013)

It should be noted that the Eden District has developed a Waste Information System where the generators of Industrial waste in the Eden district must register. At this stage registrations are done by hand, but the District Municipality will provide a web-based registration system in the near future. The Information System will then also be linked to the Provincial System as well as the local Municipal Systems within the Eden District.

2.6 WASTE AVOIDANCE

2.6.1 Waste Avoidance Background

The following diagram illustrates a simplified version of the well-known waste hierarchy with Avoidance being the most favourable and Disposal the least favourable:

Waste avoidance refers to a pro-active approach by industrial as well as domestic waste producers to minimize the volume of waste, by not creating the waste in the first place.

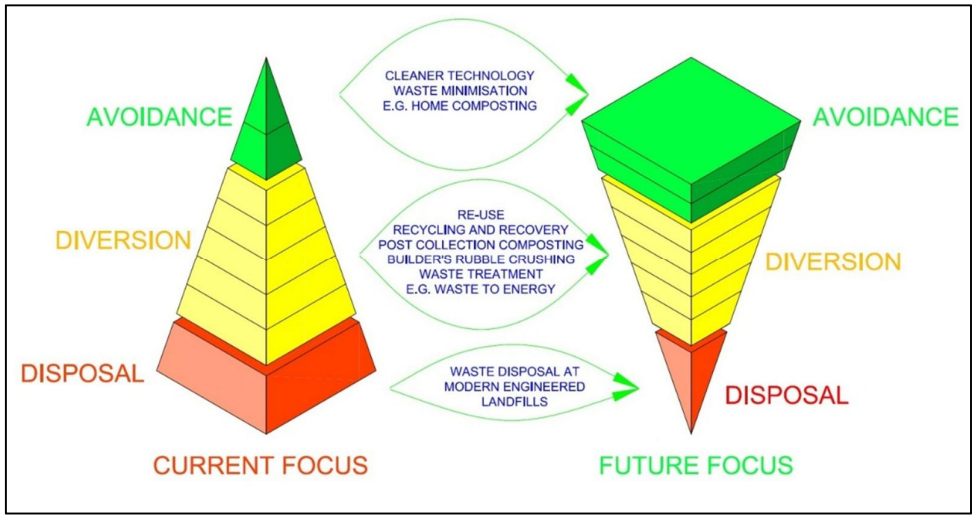


Figure 2-1: Waste Hierarchy

Waste avoidance is a ñbeginning of the pipeò action that can only work when people understand the full process depicted above.

At the moment waste minimisation through recovery (second tier) is considered a priority in South Africa. Once that can be successfully implemented and the people are educated in the importance of waste reduction, recovery at source (third tier) can be implemented with a reasonable chance of success.

It therefore follows that waste avoidance will be the ultimate and final step in this education process.

On a governmental / legislative level, the introduction of a levy on plastic shopping bags has spurred the production of alternative types of bags, which are re-useable and therefore avoiding the cheap and nasty waste bag that ends up littering our surroundings.

In the home, waste avoidance can be practiced by similar efforts where items are used for different purposes that the original intent, possibly suggesting that one purchases alternative products to the norm. Home composting is also considered waste avoidance, as the waste material is converted into a useful gardening resource whilst avoiding the raw product entering the waste stream.

Presently the avoidance of waste in industry has a financial detrimental implication in most cases (e.g. alternative raw products), and only large companies are able to take the leading role through their international experience in this field. Regulatory controls will only be effective if fines result in legal compliance being cheaper than non-compliance. In South Africa, resource and disposal costs are low, providing no financial incentive to reduce consumption or waste in industry. It follows that regulatory instruments are required for implementation on a Municipal level to govern the avoidance of industrial waste in the District. This will follow the approval and implementation of Industry Waste Management Plans which will enable the Municipalities to monitor the targets as set in the various Plans.

Regular audits should be conducted by an independent entity on the avoidance practices, to form a basis for applying incentives / penalties.

An important tool for monitoring purposes is a proper Waste Information System (WIS). Eden has developed a Waste Information System where the generators of Industrial waste in the Eden district must register. At this stage registrations are done by hand, but the District Municipality will provide a web-based registration system in the near future. The Information System will then also be linked to the Provincial System as well as the local Municipal Systems within the Eden District.

Without a doubt, waste avoidance will become a real and enforced issue in South Africa in the near future, and must be addressed in any Municipal Waste Strategy.

2.6.2 Existing Waste Avoidance in the Eden District

The best place to start implementing waste avoidance would be at the well-established industries on a voluntary basis. A joint venture effort between such industries and the Municipality may be mutually beneficial.

The industry will receive positive advertising of these ñgreenò initiatives through the media, whilst the Municipality will be taking a leading role in South Africa through pro-actively spawning waste avoidance to the benefit of the community and the environment.

The Municipalities can promote waste avoidance by leading by example. Many opportunities exist where small changes can result in waste avoidance. One example is the option to have paperless meetings. If officials have access to laptops or tablets they need not receive the agenda on paper and can keep track and make notes digitally. Wherever it is not necessary to print and use paper, it can be avoided.

Successful waste avoidance will result in further lowering of the demand on the waste management infrastructure and the functions of collection, recovery and disposal will be done more efficiently.

2.7 COLLECTION SYSTEMS

2.7.1 Municipal Waste Collection Systems

The municipalities within the District are all providing door-to-door collection services to all formal housing stands in the urban areas. The farming communities do not receive such a service and the population in informal dwellings are receiving communal collections services. Although providing a waste collection service to remote farming communities is likely to prove financially unsustainable, the Municipalities must still make waste services to these communities as accessible as possible. For example, each Municipality can charge farmers reduced monthly fees and whenever the farmer is in town, he is allowed to bring his waste to the nearest drop-off facility.

All the municipalities have some vehicles in the waste fleet that are likely operating beyond their economic lifetimes. These vehicles are recommended to be assessed and replaced wherever it is necessary. The ñrule-of-thumbò is that collection vehicles should ideally not be operated beyond 7 to 8 years in age since the maintenance costs increase dramatically with age as well as down-time which also has cost-implications.

The collection fleet of each municipality is summarised below and the approximate replacement cost per type of vehicle is given at the end of this section.

Bitou Municipality:

The fleet of collection vehicles in Bitou consists of the following:

Type	Model/Make	Manufactured date	Vehicle Condition			Comments
			POOR	FAIR	GOOD	
CX 12559	Nissan UD 90 12m³	1998		x		Body needs attention
CX 13804	Nissan UD 80 15m³	2002		x		Engine needs repair. Using oil
CX 33824	F 5000 D	1995			x	
CX 6826	Toyota Hino 12m³	1990	x			
CX 4661 (Lease)	Nissan Hardbody NP300	2010			x	
CX 33958	Nissan Hardbody NP300	2005			x	

Municipality in process of procuring 2 x new compactors

(1) 19m³ with bin lifting equipment

(2) 15m³ with bin lifting equipment

On the Landfill Site the Municipality went out on tender for the lease of a D6 dozer for the period of 6 months to assist with the covering of waste daily.

All vehicles being serviced in-house

George Municipality:

Street Cleansing Vehicles

Reg. no.	Make	Model	Type	Manufactured	Age (2013)	Current Value
CAW 20620	Bell	315 S	TLB	2007	6	R 345 750.00
CAW 63037	Nissan	UD 40	Tipper	2008	5	R 230 500.00
CAW 75151	Nissan	UD 40	Tipper	2008	5	R 230 500.00
CAW 26491	Nissan	UD 40	Tipper	2008	5	R 230 500.00
CAW 35934	Nissan	UD 40	Tipper	2008	5	R 230 500.00
CAW 38414	Nissan	UD 40	Tipper	2008	5	R 230 500.00
CAW 12930	Opel	Corsa Utility 1.4i	1/2t LDV	2008	5	R 76 500.00

Refuse Removal Vehicles

Reg. no.	Make	Model	Type	Manufactured	Age (2013)	Current Value
CAW 35109	Nissan	CM 12	Compactor	1993	20	R 135 300.00
CAW 15401	Nissan	CM 12	Compactor	1997	16	R 160 000.00
CAW 64021	Isuzu	F8000	Compactor	1991	22	R 326 800.00
CAW 3526	Isuzu	F8000	Compactor	1989	24	R 126 200.00
CAW 6220	Nissan	CM 12	Compactor	1988	25	R 119 600.00
CAW 6240	Nissan	CM 12	Compactor	1988	25	R 119 600.00
CAW 30842	Nissan	UD 80	Compactor	2001	12	R 252 500.00
CAW 46531	Nissan	UD 90	Compactor	2002	11	R 270 500.00
CAW 57894	Nissan	UD 90	Compactor	2003	10	R 360 600.00
CAW 22960	Nissan	UD 90	Compactor	2005	8	R 467 100.00
CAW 16171	Nissan	UD 90	Compactor	2005	8	R 467 100.00

Reg. no.	Make	Model	Type	Manufactured	Age (2013)	Current Value
CAW 10184	Nissan	UD 90A	Compactor	1999	14	R 324 000.00
CAW 26252	Nissan	UD 90A	Compactor	2007	6	R 572 400.00
CAW 14989	Nissan	UD 90A	Compactor	2008	5	R 661 500.00
CAW 56192	Nissan	UD 95A	Compactor	2009	4	R 746 200.00
CAW 30920	Isuzu	KB 250D	1t LDV	2005	8	R 75 900.00
CAW 20143	Nissan	UD 40	D/side 4t	2009	4	R 201 700.00

On Landfill:

Reg. no.	Make	Model	Type	Manufactured	Age (2013)	Current Value
CAW 26774	Caterpillar	D6	Bulldozer	2008	5	R 984 150.00

Hessequa Municipality:

The fleet of collection vehicles in Hessequa Municipality consists of the following:

Albertinia & Gourits

Reg. no.	Make	Model	Type	Manufactured	Age (2013)
CES130	John Deere	-	Tractor	1997	16
CES1468	-	-	Trailer	2000	13
CCC8788	Nissan	NP300	LDV	2012	1
CCC1227	Mercedes-Benz	-	Tipper	1988	25
CCC9456	Hidromek	HMK102B	Digger Loader	2012	1
CCC1788	Nissan	CM series	Tipper	1996	17

Heidelberg

Reg. no.	Make	Model	Type	Manufactured	Age (2013)
CEG 2631	Nissan	UD MKB210F	Compactor	2000	13
CEG 1957	Welfit Oddy	-	Trailer	1984	29
CCC 9878	Landini	Powerfarm	Tractor	2012	1
CCC 15205	Case	580Super	Digger Loader	2010	3
-	Caterpillar	D4	Bulldozer	UNKNOWN	UNKNOWN

Riversdale

Reg. no.	Make	Model	Type	Manufactured	Age (2013)
CCC 4321	Isuzu	-	Compactor	1998	15
CCC 14672	Isuzu	-	Compactor	UNKNOWN	UNKNOWN
-	Caterpillar	D5	Bulldozer	UNKNOWN	UNKNOWN

Slangrivier

Reg. no.	Make	Model	Type	Manufactured	Age (2013)
CEG 623	Case	-	Tractor	1988	25
CEG 2602	-	-	Trailer	1985	28

Stilbaai

Reg. no.	Make	Model	Type	Manufactured	Age (2013)
CCC1787	Nissan	CM series	Compactor	1994	19
CCC9119	Nissan	G300	Compactor	2010	3
CCC8953	Mazda	1800	LDV	1994	19
-	Caterpillar	D6D	Bulldozer	1990	23
CCC9456	Hidromek	HMK102B	Digger Loader	2012	1
CCC1788	Nissan	CM series	Tipper	1996	17

Witsand

Reg. no.	Make	Model	Type	Manufactured	Age (2013)
CCC5239	Nissan	Hardbody	LDV	2010	3
CCC3364	De La Rosa	Kokerbak	Trailer	2011	2

Knysna Municipality:

The fleet of collection vehicles in Knysna Municipality consists of the following:

Reg. No	Make	Model	Type	Manu-factured	Age (2013)	Capacity (m^3)	Function
Collection Vehicles							
CX 3803	Toyota	Hino	Compactor	1996	17	15	Refuse Removal
CX 4491	Nissan	UD80	Tipper Truck	2008	5	31	Refuse Removal
CX 10222	Isuzu	FTR 800 T	Compactor	1998	15	15	Refuse Removal
CX 10320	Nissan	-	LDV	2007	6	1 ton	Brenton toilets& streets
Collection Vehicles							
CX 17319	Nissan	UD80	Truck	2001	12	29	Refuse Removal
CX 22773	Nissan	Cabstar	Tipper Truck	2001	12	18	Refuse Removal
CX 22775	Nissan	Cabstar	Tipper Truck	2001	12	18	Refuse Removal
CX 26963	Nissan	Hardbody	LDV	2002	11	1 ton	CBD Meetings/ Monitor
CX 28385	Nissan	UD85	Compactor	2003	10	15	Refuse Removal
CX 30994	Nissan	UD90	Compactor	2009	4	15.3	Refuse Removal
CX 31857	Nissan	Cabstar	Truck	2008	5	3 ton	Refuse Removal
CX 32347	Mercedes	1114	Cage Truck	1994	19	26	Refuse Removal
CX 34028	Nissan	UD80	Cage Truck	2003	10	29	Refuse Removal
CX 39105	Case	621D	Front End Loader	2008	5	-	Operating on garden sites
CX 41117	Nissan	2.7D	LDV	2004	9	1 ton	Staff transport / Street litter
CX 41457	Nissan	UD90	Compactor	2009	4	15.3	Refuse Removal
CX 42392	Toyota	Hilux	LDV	2008	5	1 ton	Refuse Removal / Staff transport
CX 44032	Nissan	UD80	Compactor	2005	8	15	Refuse Removal
CX 44033	Nissan	UD80	Compactor	2005	8	15	Refuse Removal
CX 44154	Nissan	UD85	Compactor	2009	4	15.3	Refuse Removal
CX 15219	Nissan	UD60	Tipper Truck	1999	14	3 ton	Cleaning of illegal dumping

Reg. No	Make	Model	Type	Manu-factured	Age (2013)	Capacity (m^3)	Function
Trailers, Chippers and Sweepers							
CX 3788	-	-	Trailer	1996	17	13.8	Recycling
CX 13995	-	-	Trailer	2001	12	Not in use	Recycling
CX 15923	-	-	Trailer	2001	12	Not in use	Recycling
CX 27301	-	-	Trailer	1985	28	12	Recycling
CX 45422	-	-	Trailer	2005	8	26.9	Recycling
CX 45426	-	-	Trailer	2005	8	Not in use	Recycling
CX 8830	Mobark	-	Chipper	1997	16	-	Garden Waste Chipping
CX 30569	-	-	Chipper	2002	11	-	Garden Waste Chipping
CY 1155	Bandit	-	Chipper	2012	1	-	Garden Waste Chipping
No CX	Madwac	-	Street Sweeper	2009	4	-	Taxi rank sweeping

Mossel Bay Municipality:

The fleet of collection vehicles in Mossel Bay Municipality consists of the following:

Reg. no.	Make	Type	Manufactured	Age (2013)
CBS 32903	ISUZU	Backup vehicle	1994	19
CBS 11917	NISSAN	Compactor	1998	15
CBS 22725	ISUZU	Compactor	2002	11
CBS 18891	ISUZU	Backup vehicle	2001	12
CBS 19449	ISUZU	Compactor	2005	8
CBS 42584	ISUZU	Compactor	2005	8
CBS 35194	ISUZU	Backup vehicle	1995	18
CBS 8127	ISUZU	Backup vehicle	1990	23
CBS 27393	ISUZU	Backup vehicle	1992	21
CBS 25106	FORD	Backup vehicle	1992	21
CBS 36899	NISSAN	Backup vehicle	1998	15
CBS 36656	ISUZU	Skip Loader	2005	8
CBS 32787	ISUZU	Skip Loader	1994	19
CBS 1160	FIAT	Tractor	1989	24
CBS 6126	JOHN DEERE	Tractor	1997	16
CBS 6128	-	Trailer	1997	16
CBS 1780	-	Trailer	1989	24
CBS 13972	Ford	Tractor	1971	42
CBS 42584	ISUZU	Compactor	2008	5
CBS 34518	-	Trailer	Backup	-
CBS 37265	ISUZU		2008	5
CBS 35088	NISSAN - ½ ton	LDV	2009	4
CBS 41241	ISUZU	F Series	2011	2
CBS 2954	NISSAN	Skip Loader	2010	3

Oudtshoorn Municipality:

The fleet of collection vehicles in Oudtshoorn consists of the following:

TYPE	YEAR MODEL	APPLICATION	AGE (2013)
Trailer, Telecon slops	2002	Refuse Collection/Waste	11
Trailer, Telecon slops	2002	Refuse Collection/Waste	11
Trailer, Telecon slops	2002	Refuse Collection/Waste	11
Trailer, Telecon slops	1991	Refuse Collection/Waste	22
Trailer, Telecon slops	1998	Refuse Collection/Waste	15
Trailer, Telecon Tipper	2009	Refuse Collection/Waste	4
Trailer, Telecon slops	2011	Refuse Collection/Waste	2
Tractor, John Deere 1615 58KW	2008	Refuse Collection/Waste	5
Tractor, New Holland CT75	2008	Refuse Collection/Waste	5
Tractor, New Holland CT75	2008	Refuse Collection/Waste	5
Tractor, New Holland CT75	2008	Refuse Collection/Waste	5
Tractor Turbo, John Deere	2011	Refuse Collection/Waste	2
Truck, Nissan UD80, Heil F4000 Compactor	2006	Refuse Collection	7
Truck, Nissan UD80, Heil F4000 Compactor	2006	Refuse collection	7
Truck, 5T Refuse Compactor, Isuzu F8000	1997	Refuse collection	16
Truck, 5T Refuse Compactor, Isuzu FTR 800	1998	Refuse collection	15
Truck, 5T Refuse Compactor, Nissan CM14	1993	Refuse collection	20
Truck, Nissan UB 401	2009	Refuse collection/Waste	4

Kannaland Municipality

The fleet of collection vehicles in Kannaland consists of the following:

TYPE	YEAR MODEL	APPLICATION	AGE (2013)
GWM Pick up	2009	Street Cleansing	5
Hino Heavy Load	2009	Street Cleansing	5
Landini Tractor	1994	Refuse Collection	20
Isuzu N series	2008	Refuse Collection	6
Isuzu N series	2008	Refuse Collection	6

All vehicles aged above 8 years should be assessed and replaced if not effectively operating any longer.

Vehicle replacement

Type of vehicle	Waste Compactor. Approx. replacement cost below based on $15m^3$ compactor + cab + chassis	Tractor. Approx. replacement cost based on Landini Power farm	Tipper. Approx. replacement cost based on Tata 10m3 tipper	Light Delivery Vehicle. Approx. cost based on Nissan NP300 S/cab
Approximate replacement cost per vehicle	R 1 500 000.00	R 500 000.00	R 840 000.00	R 220 000.00

The vehicles listed in this section and aged 8 years and up should be evaluated to determine the priorities of replacement and if replacement is needed. The above approximate replacement costs can be used as guideline to add to the budget, depending on the outcome of the Municipality's decision of which vehicles to replace and in which financial year.

2.7.2 Public Cleansing

Public Cleansing involves the cleansing of streets (kerbs and gutters), public open spaces (other than parks and storm water ditches) and areas of illegal dumping.

Bitou Municipality:

As reported by the municipality, illegal dumping and/or littering is one of the most common problems in the municipal area. Offenders tend to dump illegally despite the fact that a weekly collection service is provided.

Costs related to illegal dumping: R 411 127.00

George Municipality:

Illegal dumping that is reported by the public is handled and recorded like a complaint and the street cleansing department is notified. This department organises the cleaning and removal of the illegally dumped waste. If the details of the guilty person/persons are known, the case is reported to Law Enforcement for the possibility of fining those responsible. Mainly general household waste is illegally dumped.

The following system is in place to address the issue of illegal dumping and littering:

1. A digger-loader and 3 tipper trucks work full time to clean illegally dumped waste in the neighbourhoods and transport the waste to the landfill.
2. 17 full-time community contractors, each with 4 workers, pick up litter in the streets, parks, open grounds and on sidewalks. For this activity the whole town (including Uniondale) is divided into 17 areas. This differs from the political ward divisions.
3. 11 full-time street sweepers with a supervisor and tipper truck service the CBD.
4. A team of 6 temporary street sweepers (EPWP) use 240 litre wheelie bins for the sweeping of leaves and storm water washed dirt from the CBD.

The estimated cost of street cleansing and removal of illegally dumped waste are as follows:

Community contractors	R 3 944 200.00 per annum
EPWP project	R 190 000.00 per annum
Permanent street sweepers, loader and tipper team	R 5 051 600.00 per annum

Hessequa Municipality:

It is reported that the general instances of illegal dumping in the Riversdale area are mainly garden waste dumped in the road reserve. The clean-up action takes approximately 2 weeks and is done 8 times per year on average. The cost involved is approximately R 1 575 936.00 per annum.

In Albertinia and Gouritsmond the illegally dumped waste is photographed and the correspondence and complaints are sent to the Manager: Technical Services who forwards the complaint to the Legal Department. Law enforcement officers investigate and issue fines if necessary. The cleansing of the illegally dumped waste costs approximately R 343 400.00 per annum.

In Heidelberg the illegally dumped waste is cleared with the Nissan Tipper and Digger Loader. It is estimated that the costs related to illegal dumping is approximately R 586 368.00 per annum.

In Slangrivier notices and warning signs are erected in places where illegal dumping occurs. The Municipality cleans the illegally dumped waste and transports it to the disposal site. The cost to deal with illegally dumped waste is approximately R 294 336.00 per annum.

In Stilbaai, Jongensfontein and Melkhoutfontein, the instances of illegal dumping are forwarded to the law enforcement department who prosecutes the identified guilty parties. The technical department cleans the illegally dumped waste and transports it to the landfill sites. The cost involved is approximately R 223 048.00 per annum.

Witsands illegally dumped waste is collected and stored. The waste is then removed by the compactor from Heidelberg which removes it during the weekly collection round on Mondays and transports it to the Droëkloof disposal site.

The total estimated cost for dealing with illegal dumping in the Hessequa municipal area is approximately R3 023 088.00 per annum.

Knysna Municipality:

Instances of illegal dumping are reported to the Knysna Municipality and the contact person is Dorothy Potts. She forwards the details to the Law Enforcement Department for their action. If no guilty persons are identified, the Knysna Solid Waste department removes the illegally dumped waste.

Costs related to illegal dumping: R 1 803 530.00

Mossel Bay Municipality:

It is reported that no formal cost analysis has been done for the cleaning of open spaces but Mossel Bay Municipality have appointed contractors in their street cleaning project who do daily work on illegal dumping sites. They are paid a salary as well as petrol and tools allowances.

Heavy machinery:
Hired @ R 275 p/hour x 40 hours x twice a year = R 22 000. This practice is done on average twice a year, but can be done thrice if necessary due to excessive dumping activities in the Asla and Kwanonqaba areas.

Contactor Expenses:
Salaries: R 43 200 p/year
Worker Salaries: R 302 400 p/year
Petrol and tools allowances: R 139 200 p/year
Total: R 484 800

Oudtshoorn Municipality:

The Oudtshoorn Municipality has a dedicated team responsible for the cleansing of open spaces and areas of illegal dumping. There are known ñhot spotsòwhere illegal dumping occurs which they clean.

The estimated costs to deal with illegal dumping is approximately R 950 000.00 per annum.

Kannaland Municipality

No information available.

2.7.3 Public Complaints

The Eden District Environmental Health Section forward all received complaints via the Municipal Electronic Management System (Collaborator system) to the Waste Management Officer who records the complaints and complaint types for planning purposes. All complaints and compliance issues received are then reported to the municipal waste management officers at the Eden Integrated Waste Management Forum. The local Municipalities in the District record and deal with received complaints as explained below:

Bitou Municipality:

The Bitou Municipality makes use of a Customer Care Unit which operates 24hours per day. The number is (044) 501 3174/5 or cell 086 124 8686.

George Municipality:

The George Municipality makes use of a formal complaints register. The general number to call for logging complaints is (044) 802 2900. The public phones and the ladies at reception record the complaints in the complaints register after which they give the complaint telephonically to the relevant department. The responsible person for dealing with the given complaint must sign off the complaint on the following day or when it has been dealt with as proof that the problem was addressed.

The persons who log the complaints are Ms K Stoffels and Ms A Matolla and can be reached at the above number.

Hessequa Municipality:

Public complaints received through e-mail, letters, telephonically or walk-in complaints are logged on the collaborator system and forwarded to the responsible department or person to take action and follow up.

Complaints can be reported at the head office: (028) 713 8000.

Knysna Municipality:

Public complaints are logged by Ms D Potts. She can be reached at (044) 302 6405 (Tel.), 086 506 7947 (Fax) or dpotts@knysna.gov.za (email). The complaints are recorded in a spreadsheet database where all the information and progress regarding the complaints are tracked.

Mossel Bay Municipality:

The Municipal Electronic Management System (Collaborator system) is used to register all the complaints, both written and telephonic complaints. The complaints are then channelled to the Manager: Pollution and Waste that has the delegation function. All feedback is submitted on the system.

Oudtshoorn Municipality:

The Oudtshoorn Municipality makes use of a formal complaints register. The general number to call for logging complaints is (044) 203 3900. Ms N. Barnard records the complaint in a register after which the complaint is communicated to the relevant Department. Mr H. LeKay oversees and communicates with the foremen in the solid waste department to ensure that the complaints are addressed.

Kannaland Municipality

The Kannaland Municipality makes use of a formal complaints register. The general number to call for logging complaints is (028) 551 1023. The complaint is recorded in a register after which the complaint is communicated to the relevant section.

2.8 WASTE REDUCTION

The Polokwane Declaration was formulated in 2001 by members of Government, whereby a commitment to waste reduction, re-use and recycling was made towards achieving the following goals:

- 50% reduction in waste generation and 25% reduction in waste disposal by 2012
- A plan for Zero waste by 2022

In the January 2011 draft Provincial IWMP for the Western Cape it is stated:

ñConsequently, since they have the power to adapt the targets in the Western Cape IWMP, DEA&DP has adjusted the unrealistic ñ25% of waste diverted from landfill sites by 2012ò, to a more realistic ñ15% of waste by 2015òò

It is therefore recommended that each Municipality in the Eden District strives to achieve 15% of waste diversion by 2015.

Waste reduction can be divided into three main categories, i.e.

1) Separation at source
2) Recovery for recycling from post-collected waste, and
3) Composting of post collected garden waste.

The efficiency of waste minimisation can only be determined through the implementation of a proper WIS as mentioned in Paragraph 2.6.1 above. This is necessary to in turn populate the Provincial IPWIS.

This WIS should provide information on an on-going basis regarding the following:

- The quantity, type, quality and sources of materials recovered
- The quantity and quality of compost produced and garden waste processed
- Industrial waste types and volumes, and possible opportunities for waste exchange
- Public education initiatives and data on available literature at public facilities (e.g. libraries, waste minimisation clubs and projects)
- Household awareness campaigns on recycling opportunities
- Waste education (schools level) and training programmes available for the general public, waste workers and officials

2.8.1 Recovery for Recycling

The average volumes of recoverable materials available for recycling in the municipal solid waste stream is shown in Table 2-2 and the realistic volumes that can be recovered from that stream through source separation and a "clean" material recovery facility is shown in Table 2-3.

From these two tables it is clear that, given the current state of public awareness and education, only 12.2% of the available recoverable materials can realistically be recovered by source separation for recycling. That represents only 6.4% of the total waste stream, excluding Green Waste and Builder's Rubble.

Should public awareness and education be raised to the level where residents 100% identify potentially recoverable material and separate it at source to cause no contamination, then the 6.4% could theoretically be increased to 38%, but that is theoretically.

2.8.1.1 Waste Recovery in the Eden District

The District Municipality in co-operation with the Waste Management Officers of the municipalities are in the process to compile an Eden Region Strategic Waste Minimisation and Education Plan to implement a uniform system and to promote minimisation over the whole of the district. The mentioned plan will indicate the implementation process, time frame and means of implementations. The implementation of an e-waste recovery system forms part of the strategy, which will help to address the concerns listed in section 2.2.4 of this document.

Bitou Municipality

Plett Recycling currently process an average of approximately 30 tonnes of cardboard, 30 tonnes of glass,15 tonnes of tins and 20 tonnes of paper per month. This equates to approximately 1140 tonnes of waste recycled per annum and approximately 6.5% of the total generated annual waste stream.

George Municipality

There are a number of waste recovery initiatives in the George Municipality. The majority of waste recovery is done by the private sector.

Borchards Recycling was appointed via a municipal tender for the "Blue Bag" project which is the source separation of household waste but their services was discontinued due to not complying with the contract specification. Interwaste was appointed on a month to month basis until the municipality has appointed a contractor through their procurement process.

Green Scrap Recycling is a private recycler and collects approximately 6 200tonnes of recyclables per annum from businesses in and around George. They are located at number 10 Extension Way, Pacaltsdorp.

Gavin Blaauw is a private recycler and recycles approximately 360 tonnes of recyclables at the Municipal Transfer Station per annum.

Henque Waste is a private recycler based in Riversdale, but collects approximately 2 600 tonnes of recyclables per annum at Businesses in the George municipal area. They have a facility located in George as well.

There are also a number of informal recyclers who target public waste bins and also the ñtrolley brigadeò who collect recyclables in the residential areas. No information on the volumes of waste they recycle is available.

Hessequa Municipality

Henque Waste is a private recycling company that operates in the Hessequa Municipal area. They collect recyclables in the towns where source separation is practised. Henque Waste recovers glass, HDPE, paper, cardboard, LDPE, newsprint, magazines and tins.

According to their records they sell approximately 2000 tonnes of recyclables per annum. That equates to 11.07% of the estimated total waste stream generated in Hessequa Municipality that is currently being diverted from landfill.

Hessequa Municipality has in the meantime discontinued their agreement with Henque Waste that has resulted in a drop of ±40% of the recovery of recycled waste material.

Knysna Municipality

The private recyclers operating in the Knysna Municipality are Interwaste (H. Steenkamp), Khulani (M Julyan) and CX Recycling. Interwaste collects recyclables at some businesses in Knysna. There is a recycling depot in Knysna (Green Scrap Recycling) next to the Transfer Station and a Recycling Centre in Sedgefield. The Knysna recycling facility commenced in 1990 and the Sedgefield facility in 1995 and neither requires a license.

The 7 Passes Swop Shop opened its doors in September 2011 at the Rheenendal Primary School. In its first 6 months, over 300 children have passed through the shop bringing in large amounts of recyclable waste.

The children have the opportunity to go into the shop and choose for themselves from the items available in the swop shop. Items range from teddy bears, stationery, shoes, etc.

The shop currently operates every second Wednesday and has until thus far been entirely stocked and supported by private donations. The Knysna Municipality provided support by donating the container from which the shop operates and they continue to supply recycling bags. Khulani Recycling also supports the shop by collecting the recyclables and the Tin House Cafe offers a free coffee for every donation made to the swop shop.

The Swop Shop is linked to an organisation called Seven Keys, which applied for its Section 21 number and registration as an NPO in February 2012. The organisation is focused on the social upliftment of the rural and forest communities of the greater Knysna area.

The Sinethemba Swop Shop is based at the Youth Centre in Khayalethu. The shop was launched in 2008. This shop also relies on donations to operate. This shop is run by Edge of Africa and Khulani Recycling also collects the recyclables. Currently donations trolleys are kindly being made by the Rotary Club of Knysna which will be placed outside of Pick n Pay and Spar where members of the public can donate toiletries, stationery, clothing, blankets, dog food and non-perishable food.

Both shops are based on the original Swop Shop that was set up in Hermanus.

Biowise is a non-profit organisation, with their primary purpose being biomimicry education and implementation. They are partnered with Edge of Africa and 7 Keys. They head the Naturally Knysna and Biomimicry Discovery Park initiatives. ï www.biowise.org.za

Mossel Bay Municipality

Mossel Bay Recycling is a private recycling company operating in the Mossel Bay Municipality. Their recycling volumes are 2000 tonnes per annum. In other words, they divert approximately 6.1% of the generated waste stream from landfill per annum. Mossel Bay Recycling does the collection of the source separated recyclables in blue bags.

Oudtshoorn Municipality

Retain Recycle Re-use is a private waste recycling company based in the town of Oudtshoorn. They collect recyclables themselves from residents and disposal sites. From the records provided by them, they divert approximately 2700 tonnes of waste per annum from landfill in the Oudtshoorn Municipal area. (Waste from Prince Albert excluded)

2.8.2 Composting

Composting of garden waste at a centralised composting facility requires approximately 350 tonnes of garden waste per month in order to achieve economical sustainability.

Organic material that is disposed by landfill and not composted decomposes in the absence of oxygen, that is, anaerobically, and produces methane gas and carbon dioxide while decomposing. These gases are greenhouse gases and must be minimised. Methane is 23 times as effective (bad) as carbon dioxide as a greenhouse gas and all attempts must be made to prevent its generation. During the composting process the decomposition takes place in the presence of oxygen (aerobic) resulting in no methane gas being generated. If the garden waste is simply chipped and used as mulch, it is preferable above disposal by landfill.

Eden District Municipality in cooperation with the local Municipalities, placed a funding tender for the composting of green waste in the district. A service provider has been appointed to source funds for the implementation of composting plants. Funding has been sourced and a business plan has been submitted, but is awaiting approval from the various councils.

Two composting sites, one in George and the other in Plettenberg Bay, will be constructed and several chipping sites placed in the municipal areas of Mossel Bay and Knysna. Chipping will be transported by using the returning empty waste containers from the regional landfill facility to the composting sites.

2.8.2.1 Home Composting

Home composting in South Africa has traditionally been practiced for the purpose of having an inexpensive and reliable source of compost for the garden. More recently, the realization that composting is a means of conserving resources, saving landfill airspace and the recycling of organic matter, has become the driving force for composting under individuals as well as clubs / associations.

It has been shown that home composting can reduce the waste stream by 20% to 30% if carried out properly. This is a prime example of ñreduction at sourceò or waste avoidance.

This represents probably the only feasible means of composting kitchen waste, as large-scale post-collection composting has proven ineffective on many occasions in South Africa.

Due to a lack of general information conveyed to the private composter in the past, many perceptions of home composting has become that of a stinking pile somewhere in the corner of the garden.

This (and a change in lifestyles) has led to compost becoming a shopping list item to be bought at the supermarket.

Leaflets or other methods of information should be made available to inform the general public of the advantages and ñrecipeòfor making good quality home compost. This should include:

- Bins / container design
- Raw products
- C:N ratio
- Minimum volume
- Preparation
- Moisture content
- Aeration
- Monitoring
- Trouble-shooting

Home composting bins can be bought at selected nurseries throughout the Western Cape. These are normally one of two types. The first type is a moulded plastic bin which comes in two sizes as follows:

- Small ï volume approximately 500 litres
- Medium ï volume approximately 1000 litres

The second type is one made from chicken wire around a plastic framework. This one is also of approximately 1000 litre capacity. The disadvantage to the chicken wire model is the possibility of leaching, flies and foul odours.

However, it does allow for good aeration, whereas the plastic model may tend to result in anaerobic conditions (rotting) if not manually aerated by turning.

Vermicomposting

Vermicomposting refers to the deliberate introduction of earthworms (typically) during early stages of the composting process. These would appear naturally at an advanced stage of natural composting, which would be after stabilization, where macrofauna use some of the microflora as a substrate.

The earthworms have the following beneficial effects on the composting process:

- Reduction of particle size
- Removal of old bacteria, stimulating the growth of new bacteria
- Enriching the compost by excretions high in Nitrogen
- Promotes penetration of oxygen into the compost
- Increases pathogen control
- Produces worm castings, a good soil amendment

Vermicomposting lends itself well to household-sized ventures, as it requires very careful control, but produces very high quality compost in a relative short period of time.

It is a very clean process which does not attract flies.

This type of composting is typically done inside special bins designed for the purpose.

Most kitchen-type wastes can be composted in this manner, although onions, citrus & other acidic foods should be avoided as they can be toxic to the worms.

The worms are also quite sensitive to extreme temperatures, humidity and rain.

Therefore this process does not lend itself to large-scale industrial composting.

Also the ratio of worms: substrate is approximately 1:4; therefore very large amounts of worms are required for the process. The worm mass doubles in approximately 12 weeks.

2.9 WASTE DISPOSAL

The disposal facilities in the Eden District are discussed below:

2.9.1 Operating Landfills

2.9.1.1 Bitou Municipality

The Plettenberg Bay landfill (34° 5'11.40"S, 23°21'6.41"E) site is located approximately 3.8km from the town of Plettenberg Bay, off Robberg road. This site is operational and has an operating license (License number 16/2/7/K600/D3/21/P375).

Figure 2-2: Google Earth Image of the Plettenberg Bay Waste Disposal Facility

The landfill is classified as G:S:B^{+}. The site is reasonably well managed and achieved an overall score of 72.7% in the September 2012 external audit by Hill and Associates. The main concerns raised in the external audit report were the lack of sufficient landfill machinery, insufficient daily covering of waste and the necessity to provide monitoring boreholes.

The site receives general household waste, general commercial waste, garden waste and builderôs rubble. There is no weighbridge at the site. Some informal salvagers were on site on the day JPCE conducted the site visit.

Figure 2-3: Plettenberg Bay Waste Disposal Facility

The following recommendations were listed in the external audit report:

- The ground water quality upstream and downstream from the landfill needs to be investigated, thus boreholes must be implemented or assessed as per standard license requirements.
- The storm water dam lining must be repaired as soon as possible to prevent any damage to the groundwater in a storm event.
- The ñcleanò and ñdirtyò water systems must be assessed and repaired to allow storm water to move free on and off the site as needed.
- The exposed waste on the closed embankments must be covered or covered with a thicker layer so that no waste is visible on the embankment.
- The changes required to assist the operations of the site should be implemented a.s.a.p. to curtail future closure constraints on the permitted operation of the site.

The recommendations are as follows:
- Control of water on the site must be implemented to prevent ponding anywhere on the site.
- The embankments of the site must be shaped to 1:3 (h) and capped as per the permit requirements of a continuous rehabilitation plan.
- The working face completed and covered prior to moving to the next working face must be sloped at 1:10 (h) to facilitate ease of runoff to the evaporation area.
- The perimeter fence must be maintained at 1,8m above the ground and access controlled.
- The reclaimers must be micro managed to control reclamation and authorisation.
- Internal auditing practice must be prepared and implemented to facilitate control over operations to final closure with minimum CAPEX requirements to shape the site after closure.

Plettenberg Bay Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes, ECA Section 20 Permit
License/Permit Number	16/2/7/K600/D3/21/P375
Date of issue	13 April 2000
Classification	$G:S:B^{+}$
Estimated Remaining Lifetime	Insufficient remaining lifetime. Should be closed and rehabilitated as soon as possible.
Access Control?	Site is fenced with access control, but informal salvagers active on site.
Externally audited?	Yes. Previous audit date September 2012.
Waste Types Received	General household waste, garden waste, builder's rubble
Requirements	The site must be closed and rehabilitated according to the Minimum Requirements as soon as the new transfer station is operational. A closure license must be applied for. Alterations as per the external audit recommendations must be implemented.

2.9.1.2 George Municipality

The Uniondale landfill site is located just North-West of the town of Uniondale, off the N9 roadway. This site is operational, but unlicensed. The George Municipality plan to operate a transfer station at the site from which waste will be transported to George transfer station.

Figure 2-4: Google Earth Image of the Uniondale Waste Disposal Facility

Reportedly the current site has reached capacity. The site receives general household waste, general commercial waste, garden waste and builderôs rubble. There is no weighbridge at the site and the estimated waste volumes were provided by the Municipality. The site receives the following estimated average volumes of waste:

Household and commercial general waste: 2 100 tonnes per annum.
Garden waste: 300 tonnes per annum.
Builderôs rubble: 105 tonnes per annum.

Figure 2-5: Uniondale Waste Disposal Facility

As there is currently no operating permit for this site, there is no official protocol to measure the operation against. Large quantities of uncovered general waste were prevalent on site (February 2013). This poses the risk to attract nuisance vectors such as flies, encourage informal salvaging and increase wind-blown litter in the area. The site is fenced with a security fence, but no buildings or other facilities are on site.

The site will have to be rehabilitated according to Minimum Requirements and a closure license obtained when operation is ceased.

Uniondale Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	No
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	To be closed and rehabilitated when the new transfer station is commissioned.
Access Control?	Site is fenced, but no access control
Externally audited?	No
Waste Types Received	General household waste, garden waste, builder's rubble
Requirements	The site must be closed and rehabilitated according to Minimum Requirements as soon as the new transfer station is operational. A closure license must be applied for. Operations must follow best practise until the site is closed.

2.9.1.3 Hessequa Municipality

2.9.1.3.1 Droëkloof

The Droëkloof disposal facility (34° 05'40.96"S, 20° 56'37.27"E) is located to the south-west of Heidelberg, accessed via a gravel road from the town. This site is operational and has a permit.

Figure 2-6: Google Earth Image of the Droëkloof (Heidelberg) Disposal Facility

The site receives general waste, garden waste and builderôs rubble. It receives one load (compactor approx. 75% full) of general waste per week from Witsand. From Heidelberg it receives approximately 5 compactor loads and 15 tractor & trailer loads of general waste, garden waste and builderôs rubble per week. The total compactor loads account for approximately 31.6tonnes per week (one full load measured at Sentraal Suid Koöperasie and assumed all loads are full, except Witsand load) and the tractor loads account for approximately 17 tonnes per week (one full load measured at Sentraal Suid Koöperasie and assumed all loads are full). This equates to 9.7 tonnes per day (5 day week).

The site is classified as G:S:B-, which permits a maximum rate of deposition between 25 and 150 tonnes per day. The estimated 9.7 tonnes per day is significantly below that, indicating that the site is operating within its limits.

Figure 2-7: Droëkloof Waste Disposal Facility

Operation on site appears good. The site is fenced with a security fence and there is access control. There is sufficient plant available to conduct operations on site. No informal salvagers were observed on site.

Droëkloof Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes, ECA Section 20 permit
License/Permit Number	16/2/7/H800/D74/ZI/P237
Date of issue	9 February 1996
Classification	G:S:B-
Estimated Remaining Lifetime	The Municipality indicated a remaining lifetime of more than 5 years.
Access Control?	The site is fenced and has access control.
Externally audited?	No
Waste Types Received	General waste, garden waste & builderôs rubble
Requirements	Determine remaining lifetime along with externals audits. Closure license to be acquired before closure and rehabilitation.

2.9.1.3.2 Melkhoutfontein

The Melkhoutfontein disposal facility (34° 19'17.39"S, 21° 26'15.48"E) is located to the east of Melkhoutfontein, reached via a gravel road from the town. This site is operational and unlicensed.

Figure 2-8: Google Earth Image of the Melkhoutfontein Disposal Facility

Stilbaai, Jongensfontein and Melkhoutfonteinôs general household waste is transported to the Steynskloof (Riversdale) disposal site. The Melkhoutfontein disposal facility receives only garden waste and builderôs rubble. It is estimated that the site receives approximately 150m^3 of garden waste and 300m^3 of builderôs rubble per week. These volumes are estimated from the number of loads received per week and the corresponding vehicle capacity. No remaining estimated lifetime was indicated.

Figure 2-9: Melkhoutfontein Disposal Facility

As there is currently no operating permit for this site, there is no official protocol to measure the operation against. It was indicated that the site should only receive garden waste and builderõs rubble, but large volumes of uncovered general waste were observed during the site visit. (February 2013 and May 2014). There is no effective access control at the site. Although no informal salvagers were observed on site during the visit, the lack of access control and large volumes of uncovered waste increase the likelihood of informal salvaging taking place significantly.

The site will have to be rehabilitated according to Minimum Requirements and a closure license obtained when operation is ceased. Operations must be brought in line with best practice.

Melkhoutfontein Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	No
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	Unknown
Access Control?	The site is fenced, but no access control
Externally audited?	No
Waste Types Received	Only garden waste and builderõs rubble, but large volumes of general waste present on site
Requirements	Operations to be brought in line with best practise. Requires effective access control. Illegally dumped household waste must be removed. Determine remaining lifetime and obtain closure license before closure and rehabilitation.

2.9.1.3.3 Slangrivier

The Slangrivier disposal facility (34° 09'28.95"S, 20° 51'54.97"E) is located to the south-east of Slangrivier, accessed via a gravel road from Slangrivier. This site is operational and licenced.

Figure 2-10: Google Earth Image of the Slangrivier Disposal Facility

Slangrivierøs general waste, garden waste and builderøs rubble is disposed at the site. It is estimated that the site receives approximately 75m^3 of general waste per week and 107m^3 of garden waste per week. These volumes are estimated from the number of loads received per week and the corresponding vehicle capacity. (Trailer volume of 10.7m^3, towed by tractor). No remaining lifetime estimate was indicated.

Figure 2-11: Slangrivier Waste Disposal Facility

Waste is disposed via trenching. No plant is full time on site for daily operations. Waste is not covered or compacted daily. The site is fenced, but with no access control. Uncovered waste was observed during the site visit as well as livestock grazing within the fenced site area. It also appears that the burning of waste takes place on site. No informal salvagers were observed during the visit, but remain a possibility with the lack of access control and the presence of uncovered waste.

Slangrivier Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes, ECA Section 20 permit
License/Permit Number	B33/2/130/7/S/P212
Date of issue	9 January 1996
Classification	G:S:B$^-$
Estimated Remaining Lifetime	Unknown
Access Control?	The site is fenced, but no access control
Externally audited?	No
Waste Types Received	General, garden and builderøs rubble
Requirements	Sufficient access control is lacking. Livestock need to be removed and prevented from entering the site and being exposed to the uncovered waste. Uncovered waste needs to be compacted and covered. The burning of waste on site needs to be discontinued. External audits are required. Closure license must be acquired before closure and rehabilitation.

2.9.1.3.4 Steynskloof

The Steynskloof disposal facility (34° 06'29.41"S, 21° 16'16.37"E) is located to the south-east of Riversdale, accessed via a gravel road from town. This site is operational and licensed.

Figure 2-12: Google Earth Image of the Steynskloof (Riversdale) Disposal Facility

There is no weighbridge at the site and no accurate disposal volumes are available. The total number of loads received at the site is counted to estimate disposed volumes. From Albertinia and Riversdale 14 loads are delivered per week by the compactors. From Stilbaai, Jongensfontein and Melkhoutfontein, 8 loads are received per week.

From the *D:EA&DP Survey to Determine the Available Airspace of Selected Municipal Waste Disposal Facilities within the Western Cape* draft report 2012 it was indicated that the Steynskloof site has remaining airspace until 2015 with intensive compaction of waste received. However, the Municipality indicated an estimated remaining lifetime of more than 10 years.

Figure 2-13: Steynskloof Waste Disposal Facility

Operations on site appear good. The site is fenced and has good access control. There is sufficient plant available for the daily operations. No informal salvagers were observed on site and they are not allowed access to the site.

The site will have to be rehabilitated according to Minimum Requirements and a closure license obtained when operation is ceased.

Steynskloof Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes, ECA Section 20 permit
License/Permit Number	B33/2/800/13/S/P153
Date of issue	21 February 1995
Classification	G:S:B-
Estimated Remaining Lifetime	Estimated 10 years + by Municipality
Access Control?	The site is fenced and has access control.
Externally audited?	No
Waste Types Received	General, garden and builderôs rubble
Requirements	Site must be externally audited. Closure license required before closure and rehabilitation

2.9.1.3.7 Witsand

The Witsand disposal facility (34° 22'42.18"S, 20° 49'26.23"E) is located to the north-west of Witsand, off the R322. This site is operational, but unlicensed.

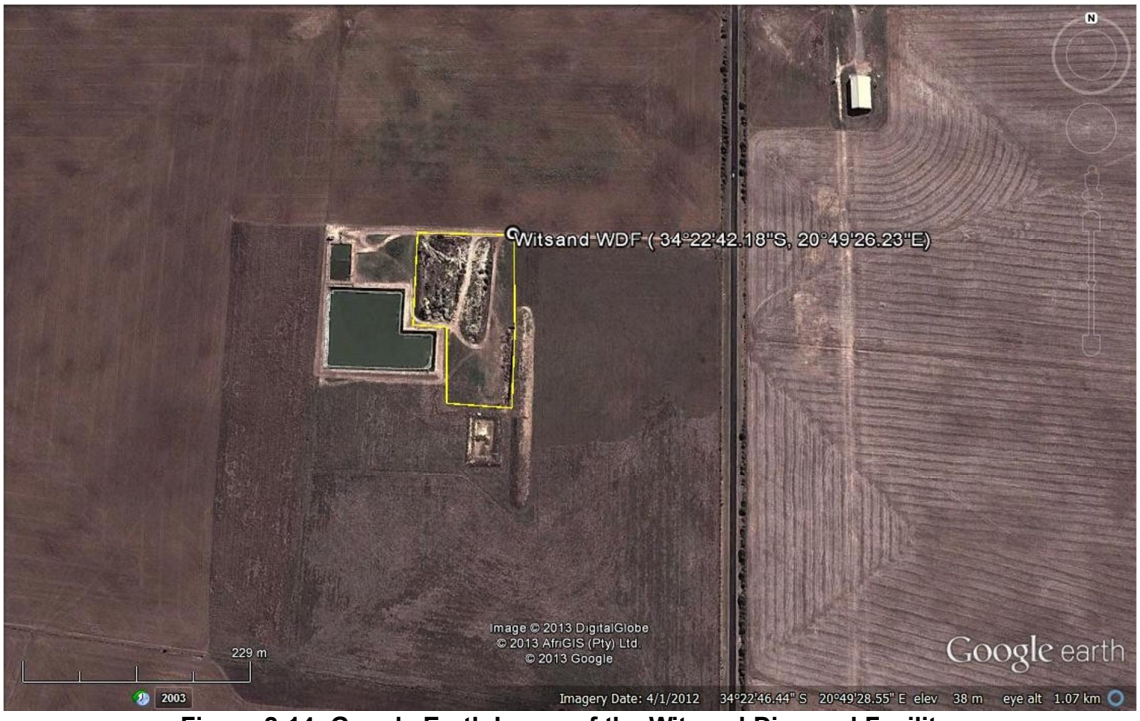


Figure 2-14: Google Earth Image of the Witsand Disposal Facility

The site is reported to receive only garden waste and builderôs rubble, with Witsandôs general waste being transported to and disposed at the Droëkloof (Heidelberg) waste disposal facility. No estimated volumes of garden waste and builderôs rubble received at the site were indicated. However, general waste was evident on site during the visit. (February 2013) Asbestos products was also observed during a site visit on May 2014. No remaining lifetime estimate was provided.

Figure 2-15: Witsand Waste Disposal Facility

As there is currently no operating permit for this site, there is no official protocol to measure the operation against. Waste is disposed in trenches, but no plant is on site for daily operations. It is also evident that waste is burned on site. The site is fenced, but with no access control. No informal salvagers were observed on site.

Witsand Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	No
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	Unknown
Access Control?	The site is fenced, but no access control.
Externally audited?	No
Waste Types Received	Only garden waste and builderõs rubble, but general waste and hazardous waste observed on site
Requirements	Proper access control is lacking. Burning of waste must be discontinued. Exposed waste must be covered. Obtain closure license before closure and rehabilitation.

2.9.1.4 Oudtshoorn Municipality

2.9.1.4.7 Grootkop

The Grootkop landfill site is located to the east of Oudtshoorn, off the N12 roadway (33°34õ59.99ö S, 22°14õ35.66ö E). This site is operational and permitted in terms of Section 20 of the Environment Conservation Act, 1989 (Act 73 of 1989).

Figure 2-16: Google Earth Image of the Grootkop Waste Disposal Facility

The above image shows the current footprint of the waste body. The Grootkop permit encloses a larger area than the current footprint. The estimated lifespan of the site is approximately 42 years (from 2013) based on the regional site selection study for the Eden District. The site receives general household waste, general commercial waste, garden waste and builderôs rubble. Abattoir waste is also received and handled as prescribed in the permit. There is no weighbridge at the site and the volume of waste received is estimated according to number of loads received and vehicle capacity.

Figure 2-17: Grootkop Waste Disposal Facility

No illegal, medical or pharmaceutical wastes were observed on the Grootkop landfill. Large quantities of uncovered general waste were prevalent on site (February 2013), but mainly due to the high number of informal salvagers on site. The permit states that recycling may be done on site as long as it does not interfere with the daily operations. It is therefore proposed that a material recovery facility should be established at the Grootkop landfill to formalise waste recovery as the activity is allowed by the permit.

There is some gate control at the site, with a guard hut and attendant at the entrance whom records incoming waste loads. It was reported however, that large sections of the security fence has been stolen and that unrestricted access was possible on foot.

The site will have to be expanded within its permitted area to provide disposal airspace for the upcoming years.

Grootkop Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes, ECA Section 20 Permit
License/Permit Number	B33/2/900/3/S/P167
Date of issue	10 March 1995
Classification	G:M:B
Estimated Remaining Lifetime	Approximately 42 years
Access Control?	Site has access control, but lacks security
Externally audited?	Yes, previous audit October 2011
Waste Types Received	General household waste, garden waste, builder's rubble
Requirements	The site must be audited externally and internally regularly. Requires further development within the permitted footprint. It is proposed to establish a material recovery facility on site as recycling is permitted and to formalise recycling.

2.9.1.4.8 Dysselsdorp

The Dysselsdorp landfill site is located to the south-west of Dysselsdorp, reached via a gravel road (33°36'11.29"S, 22°24'28.17"E). This site is operational and unlicensed.

Figure 2-18: Google Earth Image of the Dysselsdorp Waste Disposal Facility

The site receives general household waste, general commercial waste, garden waste and builders rubble. There is no weighbridge at the site and the volume of waste received is unknown. It appears that waste is burned on site.

Figure 2-19: Dysselsdorp Waste Disposal Facility

Large quantities of uncovered general waste were prevalent on site (February 2013), and there are no daily operations taking place or dedicated plant/staff. The site is partly fenced, but allows unrestricted access.

The Dysselsdorp waste disposal site is situated on Eden District Municipal property. Eden DM has given notice to Oudtshoorn Municipality to terminate any further disposal of any waste on their property. Oudtshoorn Municipality must seek alternatives to accommodate their waste originating from Dysselsdorp.

It is recommended that this site is closed and rehabilitated.

Dysselsdorp Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	No
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	Unknown
Access Control?	No
Externally audited?	No
Waste Types Received	General household waste, garden waste, builder's rubble
Requirements	It is recommended that a closure license should be obtained and the site must be rehabilitated.

2.9.1.4.9 De Rust

The De Rust landfill site is located to the south-west of De Rust, reached via a gravel road off the N12 (30°30'10.36"S, 22°31'09.67"E). This site is operational and unlicensed.

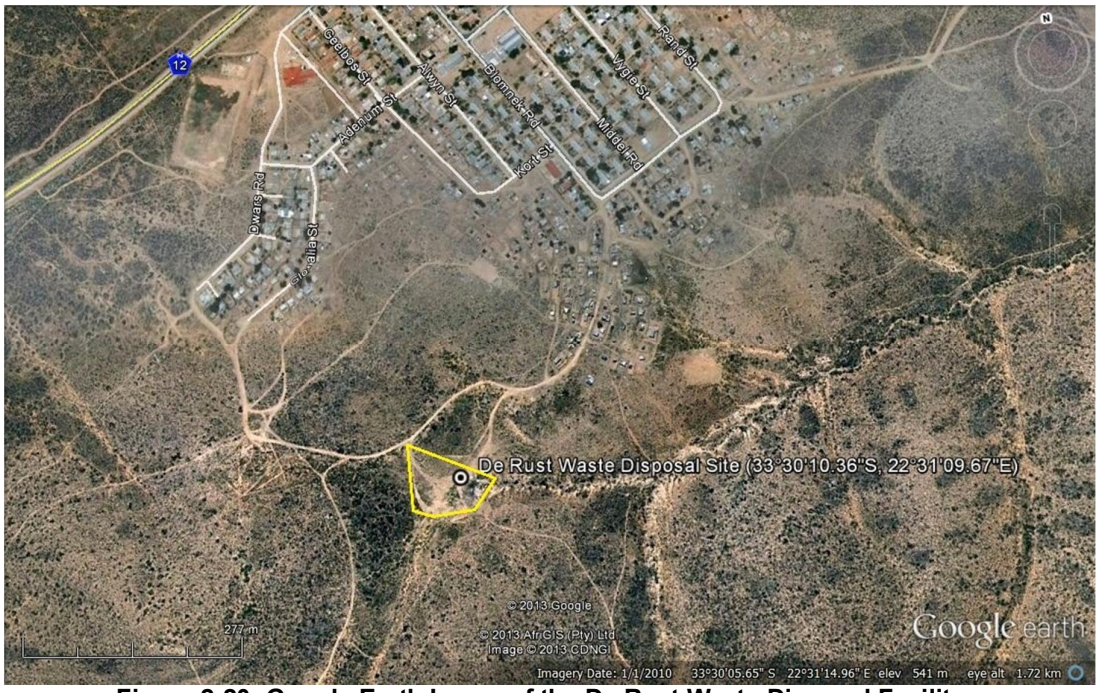


Figure 2-20: Google Earth Image of the De Rust Waste Disposal Facility

The site receives general household waste, general commercial waste, garden waste and builder's rubble. There is no weighbridge at the site and the volume of waste received is unknown. It appears that waste is burned on site.

Figure 2-21: De Rust Waste Disposal Facility

Large quantities of uncovered general waste were prevalent on site (February 2013), and there are no daily operations taking place or dedicated plant/staff. The site is not fenced and allows unrestricted access. Animals were observed scavenging in the waste and wind-blown litter is a problem.

It is recommended that this site is closed and rehabilitated.

De Rust Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	No
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	-
Access Control?	No control
Externally audited?	No
Waste Types Received	General household waste, garden waste, builder's rubble
Requirements	It is recommended that a closure license should be obtained and the site must be rehabilitated.

2.9.1.5 Kannaland Municipality

2.9.1.5.7 Ladismith Landfill

This facility is located south-east of town and adjacent (southeast) of the sewage works. Access is off the R62 using the same entrance as the sewage works. (S33 30 43.5; E 21 17 42.7) This site is operational and has a permit. Permit number B33/2/900/9/P62.

Figure 2-22: Ladismith Waste Disposal Facility

Waste is not covered and compacted, the fence is broken and no works are constructed to accommodate runoff and leachate. The burning of waste occurs and wind-blown litter is problematic. Residential dwellings were found on the neighbouring farm, which are within the 800m buffer zone. No drainage channels have been constructed to drain and divert runoff water from adjacent sites. No drainage channels have been constructed to drain and divert runoff water from the working face.

Ladismith Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	B33/2/900/9/P62
Date of issue	23 April 1993
Classification	G.S.Bī
Estimated Remaining Lifetime	-
Access Control?	Some Control
Externally audited?	No
Waste Types Received	General household waste, garden waste, builder's rubble
Requirements	Operations to be brought in line with best practise. Requires effective access control. Determine remaining lifetime and obtain closure license before closure and rehabilitation..

2.9.1.5.2 Zoar Landfill

This facility is located north-west of Zoar town. Access is off the R62. (S33 46 94.0 E 21 47 70.7) This site is operational and has a permit. Permit number 16/2/7/J200/D25/Z1/P252.

Figure 2-23: Zoar Waste Disposal Facility

Zoar Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/J200/D25/Z1/P252
Date of issue	8 January 1997
Classification	G.S.Bī
Estimated Remaining Lifetime	-
Access Control?	Control
Externally audited?	No
Waste Types Received	General household waste, garden waste, builder's rubble
Requirements	Waste is not covered and compacted at the Site; The access road is not well maintained; No notice board was erected at the entrance of the Site

2.9.2 Closed Landfills

2.9.2.1 George Municipality

The Gwaing old waste disposal facility is no longer operational. Its permit number is B33/2/1000/10/P107, issued on 3 March 1994 and an amendment on 2 November 2000. It requires a closure license. The site has been closed since 2004. The site has been well capped and rehabilitated. Attention should be given to the leachate flow paths to the lined leachate pond.

The George (Much Asphalt) waste disposal facility is also no longer operational and has a permit with number B/33/2/1000/10/P53 issued on 28 January 1993. It requires a closure license and rehabilitation according to Minimum Requirements. The site has been closed since 1995.

2.9.2.2 Hessequa Municipality

The Jongensfontein waste disposal facility is no longer operational. The site has an operating permit (16/2/7/C222/D3/Z6/P385, issued 18 October 2000), but requires a closure license and rehabilitation.

2.9.2.3 Knysna Municipality

The Knysna waste disposal facility is no longer operational. The site ceased operations in 1994 and a closure report was sent to the then DWA.

The Sedgefield garden waste facility has been closed. The site only received garden waste. An S24G application for rehabilitation and closure is in progress.

2.9.2.4 Mossel Bay Municipality

There are three closed waste disposal facilities in the Mossel Bay Municipality. They are the Friemersheim general waste disposal site (Closed 2010), the Herbertsdale general waste disposal site (Closed 2010) and the Buysplaas general waste disposal site (Closed 2005). PD Naidoo and Associates have been appointed by the Mossel Bay Municipality to apply for closure licenses for all three sites.

2.9.2.5 Oudtshoorn Municipality

There is a closed landfill near Dysselsdorp (33°58ö68.3öS, 22°43ö70.3öE). The site has been closed for many years and well covered. No significant drainage measures have been established and some old waste have been uncovered by erosion.

The De Rust old landfill site has also been closed for many years and has been covered.

2.9.3 Garden Waste & Builder's Rubble Sites

2.9.3.1 George Municipality

George Municipality also operates a garden waste and builderõs rubble site which is located to the West of George off the R102. (S33 59 34, E22 25 17). A Record of Decision (ROD) was issued by the D:EA&DP on 29 November 2005 regarding the application: ñThe disposal of waste as defined in section 20 of the Environment Conservation Act, on erf 464, George: George Building Rubble & Green Waste Siteò. The ROD granted authorisation with conditions for this activity in terms of section 22 of the Environment Conservation Act, 1989. However, the site is unlicensed at this stage.

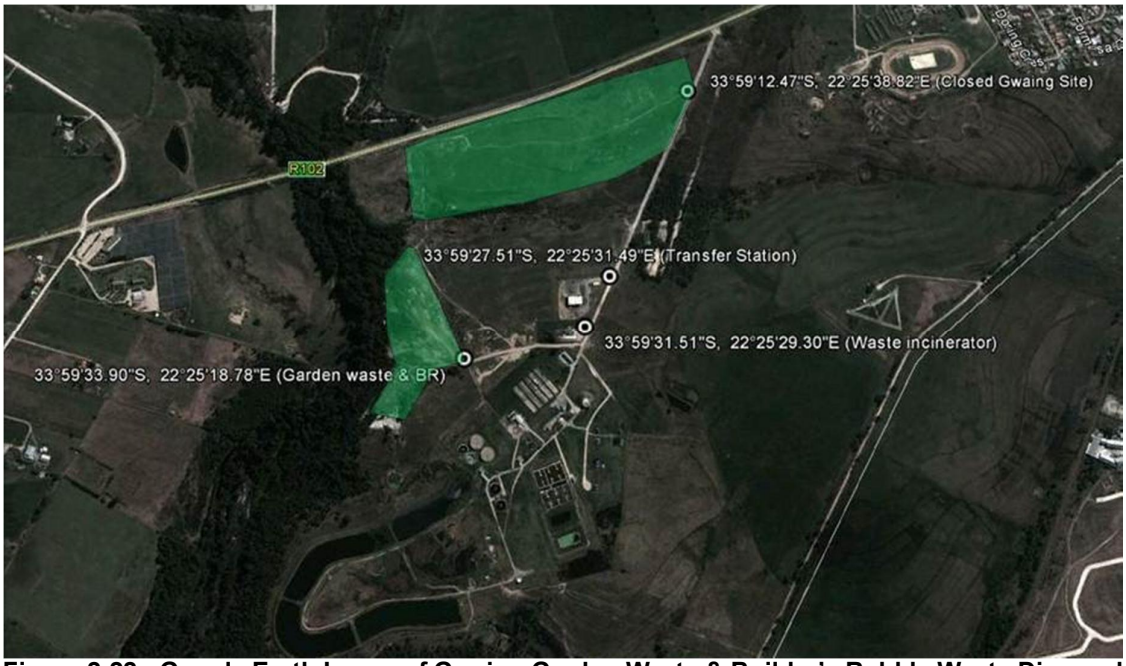


Figure 2-22: Google Earth Image of Gwaing Garden Waste & Builder's Rubble Waste Disposal Facility, Gwaing Transfer Station, Optimum Waste Incinerator and Closed Gwaing Site

The Gwaing Garden Waste & Builderôs Rubble site has reportedly also reached capacity, but is still in use as there is not an alternative site yet. The site receives garden waste, builderôs rubble and mixed illegally dumped waste.

This site receives the following estimated average waste volumes:
Garden Waste: 15 000 tonnes per annum.
Builderôs Rubble: 8 000 tonnes per annum.

Figure 2-23: Gwaing Garden Waste & Builder's Rubble Waste Disposal Facility

The site is fenced with a security fence and the gates are manned with gate control personnel. There is an entrance control building near the gate. The operation appears good, but the lack of sufficient airspace is evident and some side slopes of the waste body are too steep to remain stable. There are some indications of general waste mixed with garden waste and illegally dumped general waste on site.

Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	No, has ROD
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	To be closed and rehabilitated when the new site is commissioned
Access Control?	Site is fenced and has good access control
Externally audited?	No
Waste Types Received	Garden waste and builder's rubble
Requirements	The site must be closed and rehabilitated according to Minimum Requirements as soon as the new site is operational. A closure license must be applied for. The dumping of general waste on site must be prevented. Steep side slopes need to be stabilised.

2.9.3.2 Hessequa Municipality

2.9.3.2.1 Albertinia

The Albertinia disposal facility (34° 11'50.27"S, 21° 35'12.77"E) is located to the north of Albertinia, accessed via a gravel road on the outskirts of the town. This site is operational, but has no license.

Figure 2-24: Google Earth Image of the Albertinia Disposal Facility

The accurate volumes received at the site are unknown as there is no weighbridge. The site receives only garden waste and builderôs rubble. It is estimated by the Municipality that 300m^3 of garden waste per week and 62m^3 of builderôs rubble per week is disposed at this site. There is a drop-off point for general waste at the entrance from where it is transported to the Steynskloof (Riversdale) waste disposal facility. No estimated remaining lifetime was indicated.

Figure 2-25: Albertinia Waste Disposal Facility

As there is currently no operating permit for this site, there is no official protocol to measure the operation against. Large quantities of uncovered garden and general household waste were prevalent on site (February 2013 and May 2014). This poses some risk for fires on site. There is also a large waste tyre stockpile. It was reported that the availability of plant to shape, cover and move waste on site was limited. No informal salvagers were observed on site.

The site requires an operational license. The site will have to be rehabilitated according to Minimum Requirements and a closure license obtained when operation is ceased.

Albertinia Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	No
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	Unknown
Access Control?	Yes, site is fenced and access controlled
Externally audited?	No
Waste Types Received	Only garden waste and builderôs rubble. Waste tyre stockpile present. Drop-off point at the entrance for general waste.
Requirements	The site must be closed and rehabilitated according to Minimum Requirements as soon as operations cease. A closure license must be applied for. Operations must follow best practise until the site is closed.

2.9.3.2.2 Gouritsmond

The Gouritsmond disposal facility (34° 20'22.24"S, 21° 52'13.95"E) is located to the north-west of Gouritsmond, accessed via a gravel road from the R324. This site is operational, but not licensed.

Figure 2-26: Google Earth Image of the Gouritsmond Disposal Facility

Gouritsmondôs general household waste is transported to the PetroSA site outside Mossel Bay. The Gouritsmond disposal facility receives only garden waste and builderôs rubble. It is estimated that the site receives approximately 140m^3 of garden waste and 35m^3 of builderôs rubble per week. These volumes are estimated from the number of loads received per week and the corresponding vehicle capacity.

Figure 2-27: Gouritsmond Waste Disposal Facility

As there is currently no operating permit for this site, there is no official protocol to measure the operation against. Large quantities of uncovered garden waste were prevalent on site (February 2013). This poses some risk for fires on site. No informal salvagers were observed on site.
The site will have to be rehabilitated according to Minimum Requirements and a closure license obtained when operation is ceased.

Gouritsmond Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	No
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	Unknown
Access Control?	The site is fenced and has access control.
Externally audited?	No
Waste Types Received	Only garden waste and builderôs rubble
Requirements	Obtain closure license and rehabilitation.

2.9.3.3 Knysna Municipality

2.9.3.3.1 Old Place

The Old Place Garden Waste facility (34° 02'17.94"S, 23° 05'26.28"E) is located to the east of Knysna, accessed via a gravel road off the N2 highway. This site is operational, commenced in 1999 and requires a closure license.

Figure 2-28: Google Earth Image of the Old Place Disposal Facility

The site has approximately 1 year of available airspace left as reported by the Municipality and will be closed as soon as an alternative site has been established. The site receives only garden waste and the builderôs rubble observed on site is used as cover material. There is no weighbridge at the site and no estimated disposal volumes were provided.

Figure 2-29: Old Place Waste Disposal Facility

As there is currently no operating permit for this site, there is no official protocol to measure the operation against. Large quantities of uncovered garden waste were prevalent on site (February 2013). This poses some risk for fires on site.

The site will have to be rehabilitated according to Minimum Requirements and a closure license obtained when operation is ceased.

Old Place Waste Disposal Facility
Summary Table

Type of facility	Garden Waste
Licensed/Permitted?	Requires closure license
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	One year. To be closed and rehabilitated when the new site is commissioned.
Access Control?	No fence or access control.
Externally audited?	No
Waste Types Received	Only garden waste, builderôs rubble used as cover material
Requirements	The site must be closed and rehabilitated according to Minimum Requirements as soon as the new site is operational. A closure license must be applied for. Operations must follow best practise until the site is closed.

2.9.3.3.2 Brenton-on-sea

The Brenton-on-Sea Garden Waste facility (34° 04'16.81"S, 23° 01'50.50"E) is located to the north of Brenton-on-Sea, accessed via CR Swart road off the N2 highway. This site is operational and an ROD was issued for the chipping of green waste and composting. It requires an operating license.

Figure 2-30: Google Earth Image of the Brenton-on-Sea Disposal Facility

No estimated remaining lifetime was indicated, but it is planned to establish the chipping and composting of green waste at this site. The site receives only garden waste, but some scattered general waste was observed on site. There is no weighbridge at the site and no estimated disposal volumes were provided.

Figure 2-31: Brenton-on-Sea Waste Disposal Facility

As there is currently no operating permit for this site, there is no official protocol to measure the operation against. Large quantities of uncovered garden waste were prevalent on site (February 2013). This poses some risk for fires on site.

The site will have to be rehabilitated according to Minimum Requirements and a closure license obtained when operation is ceased.

Brenton-on-Sea Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	ROD issued in 2008, Requires operating and closure license
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	Unknown
Access Control?	The site is fenced and has access control.
Externally audited?	No
Waste Types Received	Only garden waste
Requirements	Operational license must be acquired. Operations to be according to the license conditions.

2.9.3.4 Mossel Bay Municipality

2.9.3.4.1 Great Brak

The Great Brak disposal facility (34° 02'23.06"S, 22°11'10.67"E) is located to the west of Great Brak and accessed via a gravel road from the N2. This site is operational, but has no license.

Figure 2-32: Google Earth Image of the Great Brak Disposal Facility

The accurate volumes received at the site are unknown as there is no weighbridge. The site receives only garden waste and builderôs rubble. No estimated volumes received or remaining lifetime were indicated.

Figure 2-33: Great Brak Waste Disposal Facility

As there is currently no operating permit for this site, there is no official protocol to measure the operation against. The operation appears good and no informal salvagers were observed on site. The site is fenced and has access control.

The site requires an operational license and it was indicated that PD Naidoo and Associates were appointed by the Municipality to apply for an operating license.

Great Brak Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	No
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	Unknown
Access Control?	Yes, site is fenced and access controlled
Externally audited?	No
Waste Types Received	Only garden waste and builderôs rubble.
Requirements	License application already in progress.

2.9.3.4.2 Louis Fourie (Mossel Bay)

The Louis Fourie disposal facility (34°10'56.82"S, 22°40'32.39"E) is located off the Louis Fourie road, west of Mossel Bay and south of Kwanonqaba. This site is operational and unlicensed.

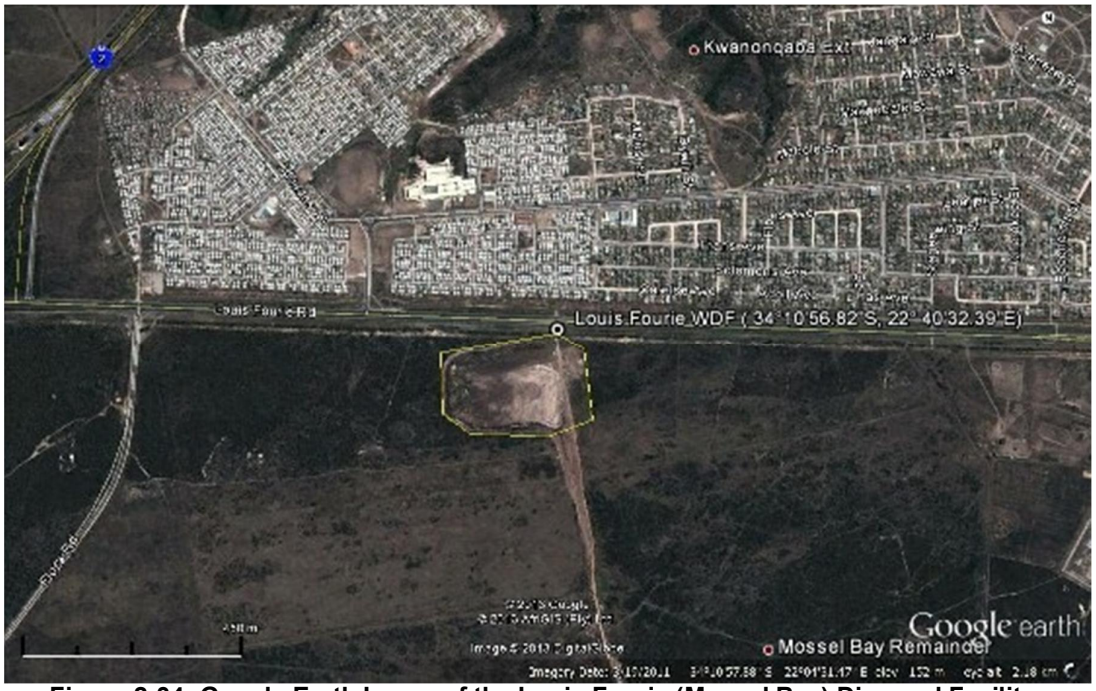


Figure 2-34: Google Earth Image of the Louis Fourie (Mossel Bay) Disposal Facility

The site receives garden waste and builderôs rubble. No received volumes were indicated and there is no weighbridge to record received volumes. It is reported by the Municipality that it is planned that to close this site with the opening of the new regional site.

Figure 2-35: Louis Fourie Waste Disposal Facility

Operation on site appears good. The site is fenced with a security fence and there is access control. There is sufficient plant available to conduct operations on site. However, it was indicated that informal salvagers as well as vandals can become problematic at times.

Louis Fourie (Mossel Bay) Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	No
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	To be closed when the regional site is operational
Access Control?	The site is fenced and has access control.
Externally audited?	No
Waste Types Received	Garden waste & builderôs rubble
Requirements	To acquire a closure license and be rehabilitated.

2.9.3.5 Kannaland Municipality

2.9.3.5.1 Calitzdorp Waste Disposal Facility

This facility is located north-west of Zoar town. Access is off the R62. (S33 52 46.0 E 21 66 56.6)

Figure 2-36: Calitzdorp Waste Disposal Facility

Calitzdorp Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	No
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	-
Access Control?	The site is fenced and has no access control.
Externally audited?	No
Waste Types Received	Garden waste & builderôs rubble
Requirements	To acquire a license. Operations to be brought in line with best practise. Requires effective access control. Determine remaining lifetime and obtain closure license before closure and rehabilitation.

2.9.3.5.2 Van Wyksdorp Waste Disposal Facility

This facility is located south-west of Van Wyksdorp town adjacent to the town sport facilities. S 33 44 26.12 E 21 27 45.15.

Figure 2-37: Van Wyksdorp Waste Disposal Facility

Van Wyksdorp Waste Disposal Facility
Summary Table

Type of facility	Waste Disposal Facility
Licensed/Permitted?	No
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	
Access Control?	The site is not fenced and has no access control.
Externally audited?	No
Waste Types Received	Garden waste & builderøs rubble
Requirements	To acquire a license. Operations to be brought in line with best practise. Requires effective access control. Determine remaining lifetime and obtain closure license before closure and rehabilitation.

2.9.4 Waste Transfer Stations

2.9.4.1 Bitou Municipality

Bitou Municipality operates one Solid Waste Transfer Station (S 33 59 27, E 22 25 31) located in Natureøs Valley. The facility was constructed prior to 2009 and no license is required. The waste collected at the transfer station is transported to the Plettenberg Bay landfill.

Figure 2-36: Nature's Valley Solid Waste Transfer Station

2.9.4.2 George Municipality

George Municipality operates one Solid Waste Transfer Station (S 33 59 27, E 22 25 31). The facility was issued with a Direction and does not require a license. The facility receives general household and commercial waste. The waste is offloaded on the apron from where it is compacted into containers. The containerised waste is then transported to the PetroSA waste disposal facility outside Mossel Bay.

There is a weighbridge at the site entrance which measures all incoming loads. The transfer station receives an average total of 37 000 tonnes of general waste per annum. The facility is fenced with a security fence and the entrance gate is controlled by security personnel.

The facility has an estimated remaining lifetime of 15 years, but this can be extended with maintenance and upkeep as there is no airspace being consumed at a transfer station. George Municipality plans to extend the current building with approximately 10meters to allow for more work-space.

Figure 2-37: George Solid Waste Transfer Station

George Transfer Station
Summary Table

Type of facility	Transfer Station
Licensed/Permitted?	None required, has ROD
License/Permit Number	-
Date of issue	-
Classification	-
Estimated Remaining Lifetime	15 years, can be extended indefinitely
Access Control?	Site is fenced and has good access control
Externally audited?	No
Waste Types Received	General waste
Requirements	-

2.9.4.3 Knysna Municipality

Knysna Municipality operates one Solid Waste Transfer Station (34°02'28.41"S, 23°03'0.41"E). The facility has a permit in terms of Section 20 of ECA. The facility is located to the south of Knysna Central and reached via Auction Mart Avenue.

Figure 2-38: Google Earth Image of the Knysna Transfer Station and Recycling Centre

The facility receives only general waste. The source separated recyclables are transported directly to the private recyclers and garden waste is transported to the garden waste sites. The general waste is transported from the transfer station to the PetroSA landfill site.

Figure 2-39: Knysna Solid Waste Transfer Station

Knysna Transfer Station
Summary Table

Type of facility	Transfer Station
Licensed/Permitted?	Yes
License/Permit Number	16/2/7/H300/D41/Z1/P330
Date of issue	17 January 1999
Classification	-
Estimated Remaining Lifetime	-
Access Control?	Yes
Externally audited?	No
Waste Types Received	General waste
Requirements	-

2.9.4.4 Mossel Bay Municipality

There are two solid waste transfer stations in Mossel Bay Municipality, namely the Kwanonqaba and Sonskynvallei transfer stations.

2.9.4.4.1 Kwanonqaba

The Kwanonqaba Transfer Station (34°10'32.54"S, 22° 05'40.17"E) is located in Kwanonqaba and accessed via Mayixhale Street from Louis Fourie road and a short gravel access road from Mayixhale Street.

Figure 2-40: Google Earth Image of the Kwanonqaba Transfer Station

This facility is licensed in terms of Section 20(b) of the Waste Act (Act 59 of 2008). Waste is offloaded here into skips, from where it is hauled to the nearby PetroSA waste disposal facility. The site is fenced and has good access control. The operation appears well managed as the site is clean, waste is contained in the skips and no informal salvagers were observed.

Figure 2-41: Kwanonqaba Transfer Station

Kwanonqaba Refuse Transfer Station
Summary Table

Type of facility	Refuse Transfer Station
Licensed/Permitted?	Yes, Section 20(b) Waste Act Licence
License/Permit Number	EG13/2/10/1-D6/25-DWLT001/09
Date of issue	12 January 2010
Classification	G:C:B$^-$
Estimated Remaining Lifetime	N/a
Access Control?	The site is fenced and has access control.
Externally audited?	No
Waste Types Received	General Waste
Requirements	Continued operation according to the licence

2.9.4.4.2 Sonskynvallei

The Sonskynvallei Transfer Station (34° 06'58.46"S, 22° 05'26.98"E) is located to the north-west of Hartenbos just off the R328.

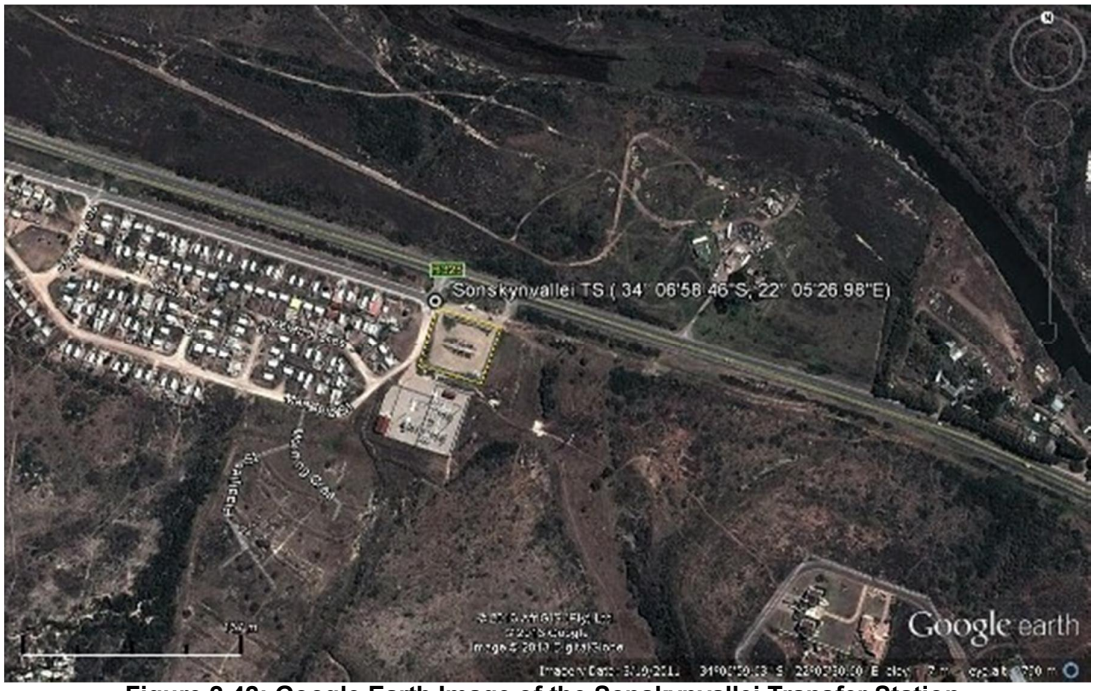


Figure 2-42: Google Earth Image of the Sonskynvallei Transfer Station

This facility is licensed in terms of Section 20(b) of the Waste Act (Act 59 of 2008). Waste is offloaded here into skips, from where it is hauled to the PetroSA waste disposal facility. The site is fenced and has good access control. The operation appears well managed as the site is clean, waste is contained in the skips and no informal salvagers were observed.

Figure 2-43: Sonskynvallei Transfer Station

Sonskynvallei Transfer Station
Summary Table

Type of facility	Refuse Transfer Station
Licensed/Permitted?	Yes, Section 20(b) Waste Act Licence
License/Permit Number	EG13/2/10/1-D6/17-DWLT002/09
Date of issue	12 January 2010
Classification	G:C:B-
Estimated Remaining Lifetime	N/a
Access Control?	The site is fenced and has access control.
Externally audited?	No
Waste Types Received	General Waste
Requirements	Continued operation according to the licence

2.9.4.4.3 Hessequa Municipality

There is one solid waste transfer station in the Gouritsmond coastal town.

Gouritsmond Transfer Station

The Gouritsmond Transfer Station (34° 06'58.46"S, 22° 05'26.98"E) is located to the north-west of the town inside the municipal maintenance and vehicle storage facility just off the R328. The transfer station is not licenced in terms of the Waste Act.

Figure 2-44: Gouritsmond Transfer Station

2.10 COST ESTIMATES RELATED TO DISPOSAL FACILITIES

2.10.1 Bitou Municipality

Landfill	Action	Description	Cost Estimate	Year to start	Estimated Duration	Allocation
Plettenberg Bay	Obtain Closure License	Conduct the application process to acquire a closure license. This will require a Basic Assessment conducted by an Environmental Assessment Practitioner with technical backup from Engineers. Specialist studies may be required and requested from D:EA&DP, depending on site conditions. The cost estimate includes all of the above.	R200 000.00	2014/2015	12 months	CAPEX
	Rehabilitation of existing footprint	The site must be rehabilitated according to Minimum Requirements and the closure license as part of the closure process. The cost estimate is based on the site footprint and expected rehabilitation requirements.	R8 945 271.06	2016/2017	5 months	CAPEX

Transfer Station	Action	Description	Cost Estimate	Year to start	Estimated Duration	Allocation
Plettenberg Bay	Construct a new Transfer station	A new transfer station will be required to allow for the closure of the Plettenberg Bay disposal facility. The cost estimate includes the license application and construction.	R7 200 000.00	2015/2016	4 months	CAPEX

2.10.2 George Municipality

Landfill	Action	Description	Cost Estimate	Year to start	Estimated Duration	Allocation
Uniondale	Install a weighbridge	Weighbridge required for accurate waste data compilation. Cost estimate includes installation of the weighbridge as well as a monitoring hut.	R500 000.00	2015/2016	1 month	CAPEX
	Waste Characterisation study	As per section 2.1.3 of this IWMP and the recommendation by D:EA&DP, a waste characterisation study is to be undertaken to be able to more accurately determine the composition of the waste stream. This is required at each landfill where general waste is received and has a weighbridge installed.	R30 200.00	2015/2016	12 months	OPEX
	Conduct External Audits	Annual external audits must be conducted to ensure the site is operated as required and to identify issues that need to be corrected. The estimate includes the appointment of an external auditor, water monitoring and a topo survey per audit	R40 000.00	2014	Annual	OPEX
	Obtain Closure License	This process will be conducted and funded by the D:EA.	-	TBD	12 months	-
	Rehabilitation of existing footprint	The site must be rehabilitated according to Minimum Requirements and the closure license as part of the closure process. The cost estimate is based on the site footprint and expected rehabilitation requirements.	R3 581 081.00	2015/2016	4 months	CAPEX
	Develop new transfer station	The new Uniondale disposal site will be constructed adjacent to the existing site after the licensing process is finalised.	R5 500 000.00	2015/2016		CAPEX

Disposal Facility	Action	Description	Cost Estimate	Year to start	Estimated Duration	Allocation
Gwaing GW&BR	Obtain Closure License	This process will be conducted and funded by the D:EA.	-	TBD	12 months	-
	Rehabilitation phase 1	The site must be rehabilitated according to Minimum Requirements and the closure license as part of the closure process. The cost estimate is based on the site footprint and expected rehabilitation requirements.	R5 450 000.00	2015/2016	4 months	CAPEX
	Rehabilitation phase 2		R5 450 000.00	2016/2017	4 months	CAPEX
New Gwaing Composting and Builder's Rubble Crushing Facility	Design, Construct & Operate	The new facility will replace the existing Gwaing garden waste and builder's rubble site. Planned to go out on tender during the second half of 2014.	R8 000 000.00	2014/2015	On-going	CAPEX

Transfer Station	Action	Description	Cost Estimate	Year to start	Estimated Duration	Allocation
George	Expansion of existing facility		R1 500 000.00	2015/2016	12 months	CAPEX
George	Waste Characterisation study	As per section 2.1.3 of this IWMP and the recommendation by D:EA&DP, a waste characterisation study is to be undertaken to be able to more accurately determine the composition of the waste stream. This is required at each landfill where general waste is received and has a weighbridge installed.	R26 200.00	2015/2016	12 months	CAPEX

2.11 HESSEQUA MUNICIPALITY

Landfill	Action	Description	Cost Estimate	Year to start	Estimated Duration	Allocation
Albertinia	Obtain Operating License	A license to operate the site as a garden waste and builderôs rubble disposal site must be obtained. D:EA is currently conducting this process.	Funded by D:EA	Currently under way.	TBC	-
	Obtain Closure License	Conduct the application process to acquire a closure license. This will require a Basic Assessment conducted by an Environmental Assessment Practitioner with technical backup from Engineers. Specialist studies may be required and requested from D:EA&DP, depending on site conditions. The cost estimate includes all of the above.	R200 000.00	The Municipality indicated an expected remaining lifetime beyond 2018. (5 years +) Estimated 2020/2021	12 months	OPEX
	Rehabilitation	The site must be rehabilitated according to Minimum Requirements and the closure license as part of the closure process. The cost estimate is based on the site footprint and expected rehabilitation requirements.	R1 637 000.00	2022/2023	3 months	CAPEX
Droëkloof	Conduct External Audits	Annual external audits must be conducted to ensure the site is operated as required and to identify issues that need to be corrected. The estimate includes the appointment of an external auditor, water monitoring and a topographical survey per audit	R40 000.00	2014/2015	Annual	OPEX
	Obtain Closure License	Conduct the application process to acquire a closure license. This will require a Basic Assessment conducted by an Environmental Assessment Practitioner with technical backup from Engineers. Specialist studies may be required and requested from D:EA&DP, depending on site conditions. The cost estimate includes all of the above.	R200 000.00	The Municipality indicated an expected remaining lifetime beyond 2018. (5 years +) Estimated 2019/2020	12 months	CAPEX
	Rehabilitation	The site must be rehabilitated according to Minimum Requirements and the closure license as part of the closure process. The cost estimate is based on the site footprint and expected rehabilitation requirements.	R1 732 600.00	To follow closure license application. Estimated 2020/2021	3 months	CAPEX

Landfill	Action	Description	Cost Estimate	Year to start	Estimated Duration	Allocation
Gouritsmond	Obtain Operating License	A license to operate the site as a garden waste and builderõs rubble disposal site must be obtained. D:EA is currently conducting this process.	Funded by D:EA	Currently under way.	TBC	-
	Obtain Closure License	Conduct the application process to acquire a closure license. This will require a Basic Assessment conducted by an Environmental Assessment Practitioner with technical backup from Engineers. Specialist studies may be required and requested from D:EA&DP, depending on site conditions. The cost estimate includes all of the above.	R200 000.00	The Municipality indicated an expected remaining lifetime beyond 2018. (5 years +) Estimated 2021/2022	12 months	CAPEX
	Rehabilitation	The site must be rehabilitated according to Minimum Requirements and the closure license as part of the closure process. The cost estimate is based on the site footprint and expected rehabilitation requirements.	R1 065 800.00	2023/2024	3 months	CAPEX
Melkhoutfontein	Obtain Operating License	A license to operate the site as a garden waste and builderõs rubble disposal site must be obtained. D:EA is currently conducting this process.	Funded by D:EA	Currently under way.	TBC	-
	Obtain Closure License	Conduct the application process to acquire a closure license. This will require a Basic Assessment conducted by an Environmental Assessment Practitioner with technical backup from Engineers. Specialist studies may be required and requested from D:EA&DP, depending on site conditions. The cost estimate includes all of the above.	R200 000.00	The Municipality indicated an expected remaining lifetime beyond 2018. (5 years +) Estimated 2021/2022	12 months	CAPEX
	Rehabilitation	The site must be rehabilitated according to Minimum Requirements and the closure license as part of the closure process. The cost estimate is based on the site footprint and expected rehabilitation requirements.	R2 298 800.00	2023/2024	4 months	CAPEX
Slangrivier	Conduct External Audits	Annual external audits must be conducted to ensure the site is operated as required and to identify issues that need to be corrected.	R40 000.00	2014	Annual	OPEX

Landfill	Action	Description	Cost Estimate	Year to start	Estimated Duration	Allocation
		The estimate includes the appointment of an external auditor, water monitoring and a topographical survey per audit				
	Obtain Closure License	Conduct the application process to acquire a closure license. This will require a Basic Assessment conducted by an Environmental Assessment Practitioner with technical backup from Engineers. Specialist studies may be required and requested from D:EA&DP, depending on site conditions. The cost estimate includes all of the above.	R200 000.00	The Municipality indicated an expected remaining lifetime beyond 2018. (5 years +) Estimated 2023/2024	12 months	CAPEX
	Rehabilitation	The site must be rehabilitated according to Minimum Requirements and the closure license as part of the closure process. The cost estimate is based on the site footprint and expected rehabilitation requirements.	R1 083 500.00	2025/2026	3 months	CAPEX
Steynskloof	Conduct External Audits	Annual external audits must be conducted to ensure the site is operated as required and to identify issues that need to be corrected. The estimate includes the appointment of an external auditor, water monitoring and a topographical survey per audit	R40 000.00	2014	Annual	OPEX
	Waste Characterisation study	As per section 2.1.3 of this IWMP and the recommendation by D:EA&DP, a waste characterisation study is to be undertaken to be able to more accurately determine the composition of the waste stream. This is recommended at Steynskloof as the use of the private weighbridge can be increased to determine accurate quantities characterised.	R30 200.00	2015/2016	12 months	CAPEX
	Obtain Closure License	Conduct the application process to acquire a closure license. This will require a Basic Assessment conducted by an Environmental Assessment Practitioner with technical backup from Engineers. Specialist studies may be required and requested from D:EA&DP, depending on site conditions. The cost estimate includes all of the above.	R200 000.00	The Municipality indicated an expected remaining lifetime beyond 2023. (10 years +)	12 months	CAPEX

Landfill	Action	Description	Cost Estimate	Year to start	Estimated Duration	Allocation
	Rehabilitation	The site must be rehabilitated according to Minimum Requirements and the closure license as part of the closure process. The cost estimate is based on the site footprint and expected rehabilitation requirements.	R3 455 090.00	Estimated 2024/2025	4 months	CAPEX
Witsand	Obtain Closure License	Conduct the application process to acquire a closure license. This will require a Basic Assessment conducted by an Environmental Assessment Practitioner with technical backup from Engineers. Specialist studies may be required and requested from D:EA&DP, depending on site conditions. The cost estimate includes all of the above.	R200 000.00	The Municipality indicated an expected remaining lifetime beyond 2018. (5 years +) Estimated 2020/2021	12 months	CAPEX
	Rehabilitation	The site must be rehabilitated according to Minimum Requirements and the closure license as part of the closure process. The cost estimate is based on the site footprint and expected rehabilitation requirements.	R1 484 800.00	2022/2023	3 months	CAPEX
Jongensfontein	Rehabilitation	The site must be rehabilitated according to Minimum Requirements and the closure license as part of the closure process. The cost estimate is based on the site footprint and expected rehabilitation requirements. The Municipality is investigating the option to re-open this site as a garden waste site.	R738 900.00	2023/2024	2 months	CAPEX

2.12 KNYSNA MUNICIPALITY

Landfill	Action	Description	Cost Estimate	Year to start	Estimated Duration	Allocation
Brenton-on-Sea	Conduct External Audits	Annual external audits must be conducted to ensure the site is operated as required and to identify issues that need to be corrected. The estimate includes the appointment of an external auditor, water monitoring and a topo survey per audit	R40 000.00	2014	Annual	OPEX
Old Place	Obtain Closure License	This process will be conducted and funded by the D:EA.	-	TBD	12 months	-

	Rehabilitation	The site must be rehabilitated according to Minimum Requirements and the closure license as part of the closure process. The cost estimate is based on the site footprint and expected rehabilitation requirements.	R1 706 900.00	2016/2017	3 months	CAPEX
	Conduct External Audits	Annual external audits must be conducted to ensure the site is operated as required and to identify issues that need to be corrected. The estimate includes the appointment of an external auditor, water monitoring and a topo survey per audit	R40 000.00	2014	Annual	OPEX
Sedgefield	Rehabilitation	The site must be rehabilitated according to Minimum Requirements and the closure license as part of the closure process. The cost estimate is based on the site footprint and expected rehabilitation requirements.	R1 866 400.00	2014/2015	3 months	CAPEX
Knysna Transfer Station	Install a weighbridge	Weighbridge required for accurate waste data compilation. Cost estimate includes installation of the weighbridge as well as a monitoring hut.	R500 000.00	2014	1 month	CAPEX
	Waste Characterisation study	As per section 2.1.3 of this IWMP and the recommendation by D:EA&DP, a waste characterisation study is to be undertaken to be able to more accurately determine the composition of the waste stream. This is required at this facility where general waste is received and has a weighbridge installed.	R26 600.00	2015/2016	12 months	OPEX

2.13 MOSSEL BAY MUNICIPALITY

Landfill	Action	Description	Cost Estimate	Year to start	Estimated Duration	Allocation
Great Brak	Install a weighbridge	Weighbridge required for accurate waste data compilation. Cost estimate includes installation of the weighbridge as well as a monitoring hut.	R500 000.00	2015/2016	1 month	CAPEX
	Conduct External Audits	Annual external audits must be conducted to ensure the site is operated as required and to identify issues that need to be corrected. The estimate includes the appointment of an external auditor, water monitoring and a topo	R40 000.00	2014	Annual	OPEX

		survey per audit				
Louis Fourie	Obtain Closure License and Rehabilitate the facility	D:EA will fund and conduct the closure license application.	To be determined 2014	2015/2016	TBD	CAPEX
PetroSA	Waste Characterisation study	As per section 2.1.3 of this IWMP and the recommendation by D:EA&DP, a waste characterisation study is to be undertaken to be able to more accurately determine the composition of the waste stream.	R26 600.00	2015/2016	12 months	OPEX

2.14 OUDTSHOORN MUNICIPALITY

Landfill	Action	Description	Cost Estimate	Year to start	Estimated Duration	Allocation
Grootkop	Install a weighbridge	Weighbridge required for accurate waste data compilation. Cost estimate includes installation of the weighbridge as well as a monitoring hut.	R500 000.00	2014/2015	1 month	CAPEX
	Conduct External Audits	Annual external audits must be conducted to ensure the site is operated as required and to identify issues that need to be corrected. The estimate includes the appointment of an external auditor, water monitoring and a topo survey per audit.	R40 000.00	2014	Annual	OPEX
	Construct Material Recovery Facility	The Grootkop permit allows waste recovery. The construction of a material recovery facility will formalise material recovery on site and improve on the saved disposal airspace.	R7 000 000.00	2016/2017	To be determined	CAPEX
	Develop new landfill cell	The current footprint needs to be further developed in line with the permit conditions and new regulations to provide disposal airspace. The cost estimate is for a landfill cell which provides approximately 5 years landfill airspace and is based on new liner regulations (Class B) and includes professional fees, contingencies and fulltime	R12 060 000.00	2015/2016	6 months	CAPEX

		construction quality assurance.				
Dysselsdorp	Rehabilitation phase	The site must be rehabilitated according to Minimum Requirements. The cost estimate is based on the site footprint and expected rehabilitation requirements. The D:EA will fund and conduct the license application.	R3 784 899.09	2015/2016	16 months	CAPEX
De Rust	Rehabilitation phase	The site must be rehabilitated according to Minimum Requirements. The cost estimate is based on the site footprint and expected rehabilitation requirements. The D:EA will fund and conduct the license application.	R1 541 110.91	2016/2017	14 months	CAPEX

2.14.1 Private Waste Management Facilities and Recycling Centres

2.14.1.1 Bitou Municipality

2.14.1.1.1 Plett Recycling

Plett Recycling (34°02.905ôS, 23°21.196ôE) are in an agreement with Bitou Municipality to handle municipal recycling. They are in the process of acquiring the necessary license in terms of the Waste Act.

Figure 2-44: Plett Recycling

2.14.1.2 George Municipality

2.14.1.2.1 Optimum Waste Incinerator

The Optimum Waste Incinerator which is located in close proximity to the Gwaing Garden Refuse & Builderôs Rubble site. (S 33 59 31, E 22 25 29). This facility is licensed, Number 12/9/11/L304/9, issued on 19 October 2009.

Figure 2-45: Optimum Waste Incinerator

2.14.1.2.2 Solid Waste Technologies

The Solid Waste Technologies Health Care Risk Waste storage facility is licensed, Number 12/9/11/L248/9, issued on 23 March 2010.

2.14.1.2.3 Henque Waste

Henque Waste (33ę58ĉ40čS, 22ę27ĉ81čE; not licensed in terms of the waste act)

2.14.1.2.4 Green Scrap Recycling

Green Scrap Recycling (33ę59ĉ33čS, 22ę26ĉ22čE; Licensed to recycle and store domestic and household hazardous waste, License number 12/9/11/L1116/9)

2.14.1.2.5 Borchards Recycling

Borchards Recycling (33ę58ĉ27čS, 22ę28ĉ26čE); was in an agreement with George Municipality to handle municipal recycling but George Municipality has terminate the agreement due to non-compliance. The municipality is in the process to appoint a new recycling company.

2.14.1.3 Hessequa Municipality

2.14.1.3.1 Henque Waste

Henque Waste is a private recycling company that operates in the Hessequa Municipal area and have a facility in Riversdal (34ę05ĉ52čS, 21ę14ĉ48čE) they are not licensed in terms of the Waste Act. Hessequa Municipality has terminated their agreement with Henque Waste due to lack of funding. Waste recycling percentages has declined with ± 40% since the termination. Henque Waste will proceed with recycling in the Hessequa Municipal area as far possible.

Figure 2-46: Henque Waste Riversdal

2.14.1.4 Knysna Municipality

2.14.1.4.1 Green Scrap Recycling

The Green Scrap Knysna recycling facility (34°02.436ʹS, 23°03.013ʹE) is not licensed in terms of the Waste Act.

Figure 2-47: Green Scrap Knysna

2.14.1.4.2 CX Recycling

The CX Recycling facility (34°02.824'S, 23°04.709'E) is not licensed in terms of the Waste Act.

Figure 2-48: CX Recycling

2.14.1.5 Mossel Bay Municipality

2.14.1.5.1 PetroSA

The PetroSA waste disposal facility is located west of Mossel Bay, off the N2 highway (34°10'12.79"S, 21°58'27.41"E) and privately owned by PetroSA. The site is licensed. (Permit No. EG13/2/10/1-D6/17-DWLT002/09 issued 13 January 1992).

Mossel Bay Municipality transports its general waste to dispose at this site. The Municipality is invoiced by PetroSA according to the weighbridge readings.

Figure 2-49: PetroSA Waste Disposal Facility

2.14.1.5.2 Mossel Bay Recycling

Mossel Bay Recycling (34°08'36"S, 22°06'58"E) is in an agreement with the Mossel Bay Municipality to handle municipal recycling. They are licensed for recycling and storage of household and hazardous waste. License number 12/9/11/L1116/9.

2.14.1.6 Oudtshoorn Municipality

2.14.1.6.1 Retain Recycle Re-use

Retain Recycle Re-use (33°26.1846'S, 21°53.3556'E) is not licensed in terms of the Waste Act.

Figure 2-50: Retain Recycle Re-use

2.14.2 Disposal Facilities used outside the Eden District Municipality Boundaries

The hazardous waste generated in the District will be transported to the Vissershok Waste Management Facility. It has a H:H operating permit from DWAF. The site is situated some 800m west of the N7 at Vissershok and is operated and audited in terms of its permit conditions. The other option is to transport the hazardous waste to the Aloes Waste Management Facility in Port Elizabeth.

The Eden District Municipality has received their license to construct the Eden regional waste disposal facility. The proposed site is located next to PetroSA outside Mossel Bay. This site will include a hazardous waste cell. The local municipalities and industry will dispose hazardous waste at this facility when it is operational.

The establishment of a regional landfill ensures the benefit of economies of scale for all the Municipalities in the Eden District. When the regional site is operational, the actual cost of disposal, including the capital cost of site establishment, is shared by the local Eden Municipalities. This is then a divided, lower cost to dispose for each Municipality.

2.15 FINANCES

2.15.1.1 Income

The Eden District Municipality at this stage has no income source except the equitable fund received from the National Government which is not efficient to fund all official mandates given by legislation to the District Municipality. Grant funding is also not available to the District Municipality to fund infrastructure urgently needed in the area. The District Municipality is also not in a position to assist municipalities as is legally expected from them. Government, National and Provincial must urgently investigate the income base of District Municipalities to allow them to implement their legal mandate.

District Municipalities, given the necessary resources, can assist National, Provincial and local municipalities to enhance waste services on such a scale that healthy and environmentally sound waste management services are in place for the different district municipal areas. Implementing certain waste management services on a district level not only ensures uniformity of services in the area, but is definitely more practically implementable and cost effective. The current available resources limits the District in exercising its functions in terms of solid waste management.

2.15.1.2 Budget

Table 2-5: Eden DM Budget

	2012/2013	2013/2014	2014/2015
Employee related costs	1069238	1127905	1188812
Depreciation	337287	356175	375408
Repairs & Maintenance	2000	2112	2226
Article 78 Investigation Phase 2&3		686800	
Special Studies		357000	
Integrated Waste Management Plan		50000	
Property Valuation		2500	
Land Use Zoning		50000	
Water Use Licence Application		10000	
General Expenses	56033	59171	62366

2.15.2 Staff Compliment

The Chief of Waste Management for the Eden District is Mr M Hubbe. He is supported by the District Waste Management Officer. Mr J Gie has been appointed to fill this position. The implementation of the objectives set out in the implementation plan will be the responsibility of the mentioned staff in collaboration with the Waste Management Officers of the B-Municipalities where applicable.

Waste Management Officer:

Chapter 3 of the Waste Act states that:

10.(3) Each municipality authorised to carry out waste management services by the Municipal Structures Act, 1998 (Act No. 117 of 1998), must designate in writing a waste management officer from its administration to be responsible for co-ordinating matter pertaining to waste management in that municipality.

(4) A power delegated or a duty assigned to a waste management officer by virtue of subsection (3) may be sub-delegated of further assigned by that officer to another official in the service of the same administration, subject to such limitations or conditions as may be determined by the municipality.

(5) Waste management officers must co-ordinate their activities with other waste management activities in the manner set out in the national waste management strategy established in terms of section 6 or determined by the Minister by notice in the Gazette.

The Council of Eden District Municipality made the resolution that the Chief: District Waste Management is designated as the Waste Management Officer under the National Environmental Management: Waste Act (Act 59 of 2008)). This person is Mr M. E. Hubbe.

Provision must be made for the continuous training and education of the Eden waste management employees. Waste management information sharing/capacity-building events such as the Departmental Waste Forum, Waste Khoro and Waste Con should be attended by waste management employees determined by the Municipality.

2.16 CURRENT WASTE MANAGEMENT IDENTIFIED GAPS

Waste management in the local Municipalities appear to be well managed with respect to General Waste. The lack of available information and awareness on all waste types contributes towards certain shortcomings of the management systems.

In order to achieve a sustainable integrated waste management system, the municipalities in the Eden District must address the gaps identified in their Integrated Waste Management Plans urgently and effectively.

The main waste management concerns in the various Municipalities in the Eden District are as follows;

- Providing recycling infrastructure and implementing minimisation programmes or appoint service providers to assist in a recycling program in the municipal areas.

- The lack of comprehensive public awareness regarding sustainable waste management.

  The majority of the general public (households, businesses and industry) are not aware of proper waste management practices, detrimental environmental and health effects of waste or waste minimisation practices that can be implemented.

  With lack of public awareness and education, the understanding of a sustainable waste management system will be lacking and public littering will increase. With no realisation of the actual impact of waste on the environment, there would be no reason to be environmentally responsible. The environment will be poisoned by uncontrolled waste which will affect the public at large. An uninformed public will also not participate in waste avoidance and recycling efforts, causing pressure on landfill airspace requirements, hence more landfills need to be constructed to the detriment of the environment.

- Lack of knowledge and experience regarding alternative technologies

  The public sector requires experience and knowledge regarding alternative technologies in order to evaluate and implement where appropriate and feasible as alternatives to landfilling to save on landfill management and transport cost.

- Lack of information regarding waste generation types and volumes.

  The lack of waste generation information and statistics must be addressed in order to allow proper planning in terms of collection, handling and disposal of the generated waste. Minimisation statistics are also required. This applies to the private and public sectors.

  The municipalities have little data on the generators of special wastes within the municipal boundaries or on the destination or disposal method of these wastes.

  With lack of information regarding waste generation types and volumes, no control can be exercised over the generators of these wastes and where it is disposed, possibly illegally.

- Collection Fleet ï Age, Condition, Aesthetics, Type.

  Collection vehicles in the Eden municipalities, as is the case in almost all South African municipalities, are kept in service long after the end of their economic lives. Collection vehicles help in creating the publicôs perception of waste management and need to be aesthetically pleasing.

  Some vehicles are likely operating beyond their effective lifetimes. These vehicles need to be evaluated to ensure that they are still cost effective and efficient. If not, they need to be replaced.

- Lack of monitoring of facilities.

  Waste management facilities must be regularly monitored and audited to comply with permit requirements or to ensure that they are operated in line with best practice up until permits have been acquired where needed.

If waste management sites are not monitored, the possibility of the environment being contaminated increases significantly. The greatest threat is water being polluted.

- Lack of disposal airspace.

  Some of the disposal sites in the Eden District are nearing capacity. The District is in the process of establishing a regional landfill facility which will serve the local municipalities of Bitou, Knysna, George and Mossel Bay. Disposal airspace will become an urgent requirement for Mossel Bay, George, Knysna and Bitou Municipalities from the 2015/2016 financial year onwards.

  Inaccurate calculation of figures regarding remaining airspace results in improper planning for alternatives to dispose of waste in the future.

- Lack of household hazardous storage

  There is a lack of facilities for the acceptance and storage of household hazardous waste.

- Waste Management By-Laws.

  The Eden Integrated Waste Management Forum compiled generic integrated waste management by-laws that must be incorporated into the local municipal by-laws. These new by-laws will address facets of waste management which were not addressed in previous by-laws.

  The Eden District Municipality must compile by-laws for the management of the regional landfill facility.

- Tariffs.

  In most (if not all) municipalities, the tariff structure for the use of waste disposal services is unclear and only escalated annually.

  If tariffs arenôt determined based on sound scientific principles and calculations then it is not economically sustainable or publicly acceptable.

- Rural areas and farms.

  Remote areas in the Municipalities should have access to waste disposal. Where collection in these areas are not feasible for the Municipality, an agreement can be made with e.g. the farm owners to be able to dispose their waste at the Municipal sites at lowered fees. Illegal sites (if any) must be closed.

- Inconsistent participation in the Eden Integrated Waste Management Forum meetings and projects by Kannaland and Hessequa Municipalities.

- Finalisation of the implementation of the Regional Landfill Facility and Alternative Waste Management Technology

- Increased cost associated with clean-up of illegal dumping.

- Operation of waste facilities without a waste license.

- Insufficient source of income.

  The Eden District Municipality at this stage has no income source except the equitable fund received from the National Government which is not efficient to fund all official mandates given by legislation to the District Municipality. Grant funding is also not available to the District Municipality to fund infrastructure urgently needed in the area. The District Municipality is also not in a position to assist municipalities financially as is legally expected from them. Government, National and Provincial must urgently investigate the income base of District Municipalities to allow them to implement their legal mandate.

District Municipalities, given the necessary resources, can assist National, Provincial and local municipalities to enhance waste services on such a scale that healthy and environmentally sound waste management services are in place for the different district municipal areas. Implementing certain waste management services on a district level not only ensures uniformity of services in the area, but is definitely more practically implementable and cost effective. The current available resources limits the District in exercising its functions in terms of solid waste management.

- Waste Minimisation economy

2.17 ROLE OF THE EDEN DISTRICT MUNICIPALITY

The role of the District authority in waste management is not easily defined as the collection and disposal of municipal solid waste is a function of the local municipalities. It is only when waste crosses a local municipal boundary that the receiving waste disposal site or transfer facility becomes a District function.

The plans formulated by the District Municipality are specific to the area and its resources. They reflect the availability of suitable waste management facilities in the region, as well as local market demand for recovered materials. Special care must be taken to cater for the volatility of markets for recovered materials by ensuring that there are other suitable options to fall back on, if required. It is, therefore, highly desirable to be able to switch between waste management methods - further emphasising the hazards of relying too heavily on a single policy option instead of a combination of policies

Eden District Municipality is committed to a system of waste management that will see the least possible amount of waste going to modern engineered landfills. This will be achieved through the use of education, law enforcement and material recovery facilities. New and emerging technologies, where practically applicable and affordable, will also play a part in overall waste management.

With the Status Quo of waste management as listed in the previous chapters and the current problems that are experienced by waste management, the way forward is to state the strategic objectives of the District Municipality and then to develop action plans or implementation instruments how to achieve the strategic objectives.

2.18 WASTE MANAGEMENT STRATEGIC OBJECTIVES

The implementation instruments or action plans defined in the following section are laid out in a manner which reflects the waste management hierarchy, putting the emphasis on waste avoidance and minimisation, with specific waste streams looked at in detail.

3. EDEN DISTRICT MUNICIPALITY'S IMPLEMENTATION INSTRUMENTS AND SCHEDULE

From the above gaps and needs the District has identified the actions listed in the implementation programme below:

Implementation Program: Eden District Municipality								
OBJECTIVES	**TARGET**	**ACTIONS**						
		2014/2015	**2015/2016**	**2016/2017**	**2017/2018**	**2018/2019**	**5 - 10 YEARS**	**10 – 15 YEARS**
EDEN INTEGRATED WASTE INFORMATION SYSTEM (EIWIS) ADVANCEMENT (WCIWMP Goal 2: Improve waste information management) (WCIWMP Goal 4: Mainstream Integrated Waste Management planning in municipalities and industry) (WCIWMP Goal 7: Ensure the safe and integrated management of hazardous waste management)	Registration of Health Care and Hazardous waste generators	Registration of existing generators and new generators into EIWIS.			On-going registration of new generators			
	Registration of Waste Management and Recycling facilities	Registration of existing generators and new generators into EIWIS.			On-going registration of new generators			
	Incorporation of Eden Integrated Waste Information System into the Integrated Pollutant and waste Information System of D:EA&DP	Synchronisation of systems by Information Technology Personnel of Eden DM and D:EA&DP		On-going transfer of EIWIS updated information to IPWIS				
	Access of the municipalities within Eden region to the information available in EIWIS.		Access control system implemented by IT personnel of Eden DM					
WASTE MINIMISATION (WCIWMP Goal 1: Educate, strengthen capacity and raise awareness in Integrated Waste Management)	Implementation of the Eden Region Strategic Waste Minimisation Plan	Lack of accurate data regarding the quantity of waste being generated, landfilled and minimised	Installation of weighbridges at all waste landfill and transfer facilities with operating personnel					
		Lack of an auditing system to determine effectiveness of the awareness	Compile and implement an effective auditing system		Implement the auditing system			

Implementation Program: Eden District Municipality								
OBJECTIVES	**TARGET**	**ACTIONS**						
		2014/2015	**2015/2016**	**2016/2017**	**2017/2018**	**2018/2019**	**5 - 10 YEARS**	**10 – 15 YEARS**
		and education programmes.						
		Registering of all recyclers on the Eden Waste Information System	Registration of existing recyclers	On-going registration of new recyclers				
		Establish a Waste Minimisation Sub-Committee, Eden Integrated Waste Management Forum	Negotiate with the recyclers industry to establish and attend a minimisation sub-committee	Quarterly meeting Waste Minimisation Sub-Committee				
		Finalisation and Implementation of the Eden Region Waste Minimisation Public Awareness Campaign	Utilisation of the Media, Radio, Social media, Websites, newsletters and educational booklets to convey the minimisation message to the residents of the Eden District					
			Utilisation of visual medium to convey minimisation message to the residents of Eden District (Notice Boards, Street Banners, Teardrop- and Internal Banners)					
			Continuation of the Annual Waste Minimisation Road Show and Wise Up On Waste Program					
	Eden District Municipality Office Recycling Program	Revive Recycling Committee in-house and replace broken infrastructure	Appoint recyclers to remove recyclables. Monthly monitoring of recycling program.					
DISPOSAL INFRASTRUCTURE DEVELOPMENT (WCIWMP Goal 3: Promote sound, adequate and equitable waste management	Regional Landfill Facility	Finalisation and Construction of Regional Landfill Facility	Management of Public, Private Partnership contract conditions and Regional landfill Facility management supervision.					
			Establish Regional Landfill Facility Monitoring Committee	Quarterly Meetings Regional Landfill Facility Monitoring Committee				
							Planning for	

Implementation Program: Eden District Municipality								
OBJECTIVES	**TARGET**	**ACTIONS**						
		2014/2015	**2015/2016**	**2016/2017**	**2017/2018**	**2018/2019**	**5 - 10 YEARS**	**10 – 15 YEARS**
practices)							future management system for the continuation of the Regional Landfill Facility	
	Implementation of Alternative Waste Management Technologies	Finalisation of the implementation of Alternative Waste Management Technologies	Implementation of Alternative Waste Management Technologies					
							Planning for future management system for the continuation of the Alternative Waste Management Technology	
	Eden District Municipal Waste Management By-Laws	Compile By-Laws for promulgation in Eden District	Enforcement of promulgated Waste Management By-Laws					

Implementation Program: Eden District Municipality								
OBJECTIVES	**TARGET**	**ACTIONS**						
		2014/2015	**2015/2016**	**2016/2017**	**2017/2018**	**2018/2019**	**5 - 10 YEARS**	**10 – 15 YEARS**
COOPERATIVE GOVERNANCE: REGIONAL WASTE MANAGEMENT APPROACHED (WCIWMP GOAL 4: Mainstream Integrated Waste Management planning in municipalities and industry)	Continuation of the Eden Integrated Waste Management Forum Meetings on a Quarterly Basis	Quarterly Meetings Eden Integrated Waste Management Forum						
	Motivation of all Municipalities to take part in Forum meetings and project	Meeting with Management of Kannaland and Hessequa Municipality to attend Forum meetings on a regular Basis	Municipalities attend quarterly meetings Eden Integrated Waste Management Forum					
	Incorporating Representative of Department of Environmental Affairs and Development Planning on a permanent basis	Attend Eden Integrated Waste Management Forum meetings	DEADP attend quarterly meetings Eden Integrated Waste Management Forum					

Implementation Program: Eden District Municipality								
OBJECTIVES	**TARGET**	**ACTIONS**						
		2014/2015	**2015/2016**	**2016/2017**	**2017/2018**	**2018/2019**	**5 - 10 YEARS**	**10 – 15 YEARS**
INSUFFICIENT FUNDS FOR DISTRICT WASTE MANAGEMENT FUNCTION (WCIWMP Goal 5: Mainstream sustainable waste management practices) (WCIWMP Goal 8: Facilitate access to funds to implement Integrated Waste Management in the province)	Source Funding for Regional waste Management Functions	Liaise with National and Provincial Departments to Source Funding to ensure the implementation of sufficient Regional waste Management Functions						
WASTE RECYCLING ECONOMY	Creation of a more stable recycling market	Liaise with Provincial Department of Environmental Affairs and Development Planning to enter into discussions with private sector producers to establish targets for the purchasing and usage of recycled materials from recyclers.						

4. COST ESTIMATES

The following tables indicate the estimated financial requirements related to the implementation items recommended in the Eden IWMPôs. The main items that require funding for the District are the public awareness campaigns and the development of the regional site phase 1.

<table>
<tr><th colspan="9">Cost Analysis: Eden District Municipality</th></tr>
<tr><th rowspan="2">OBJECTIVES</th><th rowspan="2">TARGET</th><th colspan="7">ACTIONS</th></tr>
<tr><th>2014/2015</th><th>2015/2016</th><th>2016/2017</th><th>2017/2018</th><th>2018/2019</th><th>5 - 10 YEARS</th><th>10 – 15 YEARS</th></tr>
<tr><td rowspan="8">EDEN INTEGRATED WASTE INFORMATION SYSTEM (EIWIS) ADVANCEMENT

(WCIWMP Goal 2: Improve waste information management)

(WCIWMP Goal 4: Mainstream Integrated Waste Management planning in municipalities and industry)

(WCIWMP Goal 7: Ensure the safe and integrated management of hazardous waste management)</td><td rowspan="2">Registration of Health Care and Hazardous waste generators</td><td colspan="3">Registration of existing generators and new generators into EIWIS.</td><td colspan="4">On-going registration of new generators</td></tr>
<tr><td colspan="3">No cost involved</td><td colspan="4">No cost involved</td></tr>
<tr><td rowspan="2">Registration of Waste Management and Recycling facilities</td><td colspan="3">Registration of existing generators and new generators into EIWIS.</td><td colspan="4">On-going registration of new generators</td></tr>
<tr><td colspan="3">No cost involved</td><td colspan="4">No cost involved</td></tr>
<tr><td rowspan="2">Incorporation of Eden Integrated Waste Information System into the Integrated Pollutant and and waste Information System of DEADP</td><td colspan="2">Synchronisation of systems by Information Technology Personnel of Eden DM and D:EA&DP</td><td colspan="5">On-going transfer of EIWIS updated information to IPWIS</td></tr>
<tr><td colspan="2">R 50 000.00</td><td colspan="5">No cost Involved</td></tr>
<tr><td rowspan="2">Access of the municipalities within Eden region to the information available in EIWIS.</td><td></td><td>Access control system implemented by IT personnel of Eden DM</td><td colspan="5" rowspan="2"></td></tr>
<tr><td></td><td>No cost</td></tr>
</table>

<table>
<tr><th colspan="8">Cost Analysis: Eden District Municipality</th></tr>
<tr><th rowspan="2">OBJECTIVES</th><th rowspan="2">TARGET</th><th colspan="6">ACTIONS</th></tr>
<tr><th>2014/2015</th><th>2015/2016</th><th>2016/2017</th><th>2017/2018</th><th>2018/2019</th><th>5 - 10 YEARS</th><th>10 – 15 YEARS</th></tr>
<tr><td rowspan="15">WASTE MINIMISATION

(WCIWMP Goal 1: Educate, strengthen capacity and raise awareness in Integrated Waste Management)</td><td rowspan="15">Implementation of the Eden Region Strategic Waste Minimisation Plan</td><td>Lack of accurate data regarding the quantity of waste being generated, landfilled and minimised</td><td colspan="6">Installation of weighbridges at all waste landfill and transfer facilities with operating personnel</td></tr>
<tr><td colspan="7">No cost to Municipalities (Youth in Waste Jobs DEA funding)</td></tr>
<tr><td>Lack of an auditing system to determine effectiveness of the awareness and education programmes.</td><td colspan="2">Compile and implement an effective auditing system</td><td colspan="4">Implement the auditing system</td></tr>
<tr><td colspan="7">No cost</td></tr>
<tr><td>Registering of all recyclers on the Eden Waste Information System</td><td>Registration of existing recyclers</td><td colspan="5">On-going registration of new recyclers</td></tr>
<tr><td colspan="7">No cost</td></tr>
<tr><td rowspan="2">Establish a Waste Minimisation Sub-Committee, Eden Integrated Waste Management Forum</td><td>Negotiate with the recyclers industry to establish and attend a minimisation sub-committee</td><td colspan="5">Quarterly meeting Waste Minimisation Sub-Committee</td></tr>
<tr><td colspan="6">No cost</td></tr>
<tr><td rowspan="5">Finalisation and Implementation of the Eden Region Waste Minimisation Public Awareness</td><td colspan="6">Utilisation of the Media, Radio, Social media, Websites, newsletters and educational booklets to convey the minimisation message to the residents of the Eden District</td></tr>
<tr><td colspan="6">R 238 500.00</td></tr>
<tr><td colspan="6">Utilisation of visual medium to convey minimisation message to the residents of Eden District (Notice Boards, Street Banners, Teardrop- and Internal Banners)</td></tr>
<tr><td colspan="6">R 77 762.00</td></tr>
<tr><td colspan="6">Continuation of the Annual Waste Minimisation Road Show and Wise Up On Waste Program</td></tr>
</table>

Cost Analysis: Eden District Municipality								
OBJECTIVES	**TARGET**	**ACTIONS**						
		2014/2015	**2015/2016**	**2016/2017**	**2017/2018**	**2018/2019**	**5 - 10 YEARS**	**10 – 15 YEARS**
		Campaign	R 10 000.00 per annum					
	Eden District Municipality Office Recycling Program	Revive Recycling Committee in-house and replace broken infrastructure	Appoint recyclers to remove recyclables. Monthly monitoring of recycling program.					
		R 6000.00	No Cost					
DISPOSAL INFRASTRUCTURE DEVELOPMENT (WCIWMP Goal 3: Promote sound, adequate and equitable waste management practices)	Regional Landfill Facility	Finalisation and Construction of Regional Landfill Facility	Management of Public, Private Partnership contract conditions and Regional landfill Facility management supervision.					
		R 8 000 000.00	R 19 300 995.00	R 20 459 055.00	**R 21 686 598.00**	**R 22 987 794.00**		
			Establish Regional Landfill Facility Monitoring Committee	Quarterly Meetings Regional Landfill Facility Monitoring Committee				
			No cost	**No Cost**				
							Planning for future management system for the continuation of the Regional Landfill Facility	
	Implementation of Alternative Waste Management Technologies	Finalisation of the implementation of Alternative Waste Management Technologies	Implementation of Alternative Waste Management Technologies					
		R 1 800 000.00						
							Planning for future management	

<table>
<tr><th colspan="8">Cost Analysis: Eden District Municipality</th></tr>
<tr><th rowspan="2">OBJECTIVES</th><th rowspan="2">TARGET</th><th colspan="6">ACTIONS</th></tr>
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<tr><td></td><td></td><td colspan="5"></td><td>system for the continuation of the Alternative Waste Management Technology</td><td></td></tr>
<tr><td rowspan="2"></td><td rowspan="2">Eden District Municipal Waste Management By-Laws</td><td rowspan="2">Compile By-Laws for promulgation in Eden District</td><td colspan="6">Enforcement of promulgated Waste Management By-Laws</td></tr>
<tr><td colspan="6">R 700 000.00</td></tr>
<tr><td rowspan="4">COOPERATIVE GOVERNANCE: REGIONAL WASTE MANAGEMENT APPROACHED

(WCIWMP Goal 4: Mainstream Integrated Waste Management planning in municipalities industry)</td><td rowspan="2">Continuation of the Eden Integrated Waste Management Forum Meetings on a Quarterly Basis</td><td colspan="7">Quarterly Meetings Eden Integrated Waste Management Forum</td></tr>
<tr><td colspan="7">No cost</td></tr>
<tr><td rowspan="2">Motivation of all Municipalities to take part in Forum meetings and project</td><td>Meeting with Management of Kannaland and Hessequa Municipality to attend Forum meetings on a regular Basis</td><td colspan="6">Municipalities attend quarterly meetings Eden Integrated Waste Management Forum</td></tr>
<tr><td colspan="7">No Cost</td></tr>
</table>

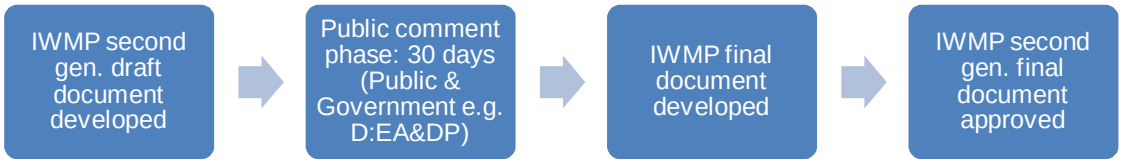
Cost Analysis: Eden District Municipality								
OBJECTIVES	**TARGET**	**ACTIONS**						
		2014/2015	**2015/2016**	**2016/2017**	**2017/2018**	**2018/2019**	**5 - 10 YEARS**	**10 – 15 YEARS**
	Incorporating Representative of Department of Environmental Affairs and Development Planning on a permanent basis	Attend Eden Integrated Waste Management Forum meetings	DEADP attend quarterly meetings Eden Integrated Waste Management Forum					
		No cost						
INSUFFICIENT FUNDS FOR DISTRICT WASTE MANAGEMENT FUNCTION (WCIWMP Goal 5: Mainstream sustainable waste management practices) (WCIWMP Goal 8: Facilitate access to funds to implement Integrated Waste Management in the province)	Source Funding for Regional waste Management Functions	Liaise with National and Provincial Departments to Source Funding to ensure the implementation of sufficient Regional waste Management Functions						
		No cost						
WASTE RECYCLING ECONOMY	Creation of a more stable recycling market	Liaise with Provincial Department of Environmental Affairs and Development Planning to enter into discussions with private sector producers to establish targets for the purchasing and usage of recycled materials from recyclers.						
		No Cost						

5. IWMP MONITORING AND REVIEW

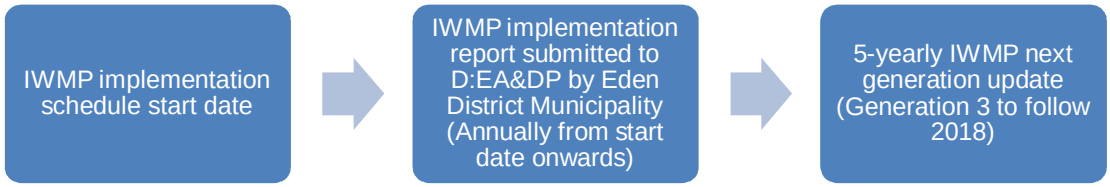
For the IWMP to be an effective and relevant tool and guide for integrated waste management in the Eden District Municipality, it will need to be monitored and reviewed. Monitoring relates to the goals and targets set out in the IWMP and whether they are being achieved or pursued. Reviewing relates to the document and the projects themselves which will require regular updates to stay up-to-date, specifically the implementation schedule. The proposed implementation schedule as well as allocated budget may change at any time and these changes, if any, need to be reflected in the reviewed IWMP to avoid confusion.

The development of the second generation IWMPs for the municipalities in the Eden District is an initiative of the District Municipality.

The following diagram illustrates the initial review cycle when a new IWMP is developed:



The date on which the final IWMP second generation document is approved, must be recorded and will serve as the base date on which further monitoring and review dates are based. This is also the start date of the approved implementation schedule. The following diagram illustrates the review steps that must be followed after the final IWMP is published.



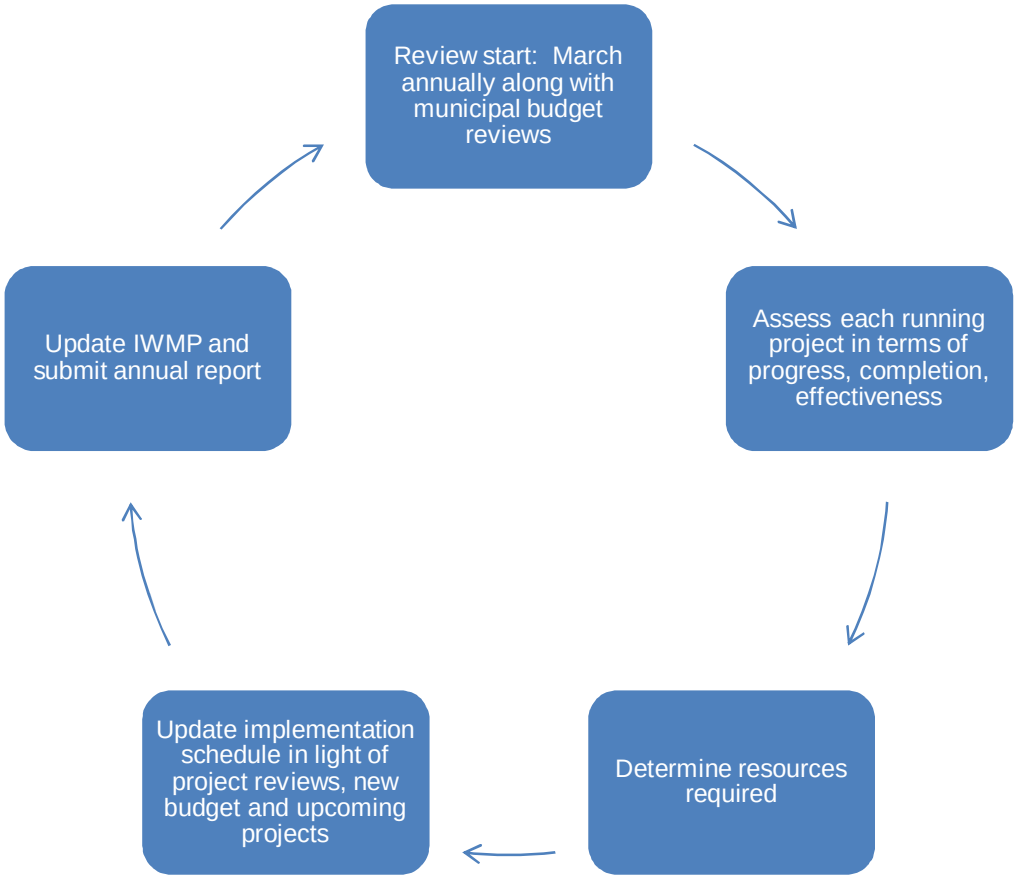
The annual implementation reports will be submitted by the District Municipality and will be compiled by the Chief: Solid Waste Management, Mr Hubbe, or to whom the task is delegated by him. The annual report must contain the approved implementation schedule of the IWMP and the progress thereof of the past year. Based on the progress and possible new budget allocations, the implementation schedule of the IWMP must be updated and included in the annual report. This new implementation schedule must provide for 3 upcoming years from the report date.

The progress of each task on the implementation schedule, if under way according to the schedule for that year, must be summarised and the estimated completion date must be updated. The reasons for the lack of progress or practical difficulties must be stated along with a summarised action plan to adhere to the schedule as close as possible.

The report must further discuss the effectiveness of completed projects. For example, when a new weighbridge has been commissioned, the collected data must be reported on and added to the IPWIS. Also the participation rates of source separation can be monitored along with the public awareness and education campaign. See **Annexure 3** for an example of a project review form which can be used to track the success and effectiveness of the waste management projects and added to the annual report.

Wherever issues are reported or identified in the projects, these issues must also be evaluated in terms of the relevant legislation and by-laws. It must be stated if there is relevant legislation applicable to the issue and if so, was it the lack of enforcement, for example, that caused the issue. If no relevant legislation exists, it must be noted to adapt the by-laws accordingly in future revisions.

Below is the proposed review cycle of the IWMP and its projects:



6. CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

The Project Team, with the assistance of Municipal Officials, has undertaken an analysis of the current municipal solid waste management activities within the Eden District Municipality.

The analysis has shown that the local Eden Municipalities have through the years committed themselves to the delivery of a collection and disposal service for all its residents. In recent years the more sustainable approach with regard to waste minimisation and reduction has been adopted and is to be expanded in the upcoming years.

The chapters of this Integrated Waste Management Plan report describe the way in which the municipalities are currently conducting solid waste management and how to strategically move towards a sustainable waste management system whereby the focus will shift to the avoidance and reduction of waste rather than to the disposal thereof. It also lists the strategies of the municipality in terms of waste avoidance, waste reduction and waste disposal.

During the process of the implementation of the municipalityøs IWMP, and arising from the public consultation process that is forthcoming, further input and/or corrections to the report may come to light that will then be added as a revision to the report.

The analysis of the current waste management system has shown the following:

- all formal residential erven are receiving a weekly door-to-door waste collection service
- all collected municipal waste are transported to local landfill sites or the PetroSA landfill site
- all green waste and builderøs rubble are disposed at local garden waste and builderøs rubble sites
- most healthcare risk wastes are managed by private contractors
- good waste recovery is being done
- no significant waste avoidance is being done

With the current waste management system focussing on getting the waste into the waste stream and disposing of it in an acceptable manner, and with the future integrated waste management system focussing on waste avoidance and waste reduction, the municipality requires a set of strategic objectives on how to transform from the current management system to the future management system.

The strategic objectives for integrated waste management in the Eden District Municipality can be summarised as follows:

- To ensure that Waste Management in the Eden Municipal Area complies with South African and International environmental standards so that it is beneficial to industrial and agricultural growth and the public's right to a clean and healthy environment.
- To minimise the entrance of material of value into the waste stream.
- To reduce all waste so that nothing of value nor anything that can decompose, gets disposed.
- To store, dispose or treat all waste that cannot be avoided nor reduced at licensed facilities with regular operational and environmental monitoring and in accordance with regulatory requirements.

For these strategic objectives to be met, a series of implementation instruments (action plans) will need to be implemented. These implementation instruments as well as time framework within which it should be addressed are described in this report but need to be fully detailed at a later stage. The instruments are the following:

- Public Awareness and Education
- Quantifying Prevention
- Post Collection Recovery
- Post Collection Composting
- Engineered Waste Disposal Facilities
- Monitoring of Waste Disposal
- Formalising Salvaging
- Collection Service Review
- Data Compilation
- Cleansing

The above instruments, through implementation via their action plans, will ensure that waste management in the Eden District focuses on avoidance and reduction rather than collection and disposal, but simultaneously maintaining the practical balance between the various waste management functions.

Since the highest priority for transforming the current management system is undoubtedly depending on public acceptance and ownership, the Public Awareness and Education instrument will receive preference in the implementing framework.

6.2 RECOMMENDATIONS

A comprehensive analysis and assessment of solid waste management in the Eden District has been done and key strategies have been determined to aim the municipality towards sustainable and integrated waste management.

It is therefore recommended that the next stage of the process of implementing the Integrated Waste Management Plan be proceeded with, that entails the consultation process with the public.

Public Awareness

The first step in educating the public about waste is to make them aware of any new waste management procedures and facilities available to them.

Another reason to focus on educating the public will cause a greater awareness of waste minimisation. This will reduce waste generation rates which will in turn reduce transport volumes and costs. It is important to also provide feedback to the public of the success of their efforts, for example publishing month to month volumes of waste diverted from being landfilled.

By-laws

The generic draft integrated waste management by-laws should be implemented throughout the District.

Waste reduction

The District composting tender should be rolled out and implemented to reduce greens being landfilled.

Waste Disposal

It must be ensured that all waste management facilities are regularly audited as stipulated in each waste permit. Regular audits will ensure that these facilities are operated correctly and efficiently. Ensuring the correct operations will maximise the results of efforts of waste reduction and recovery and therefore the benefits thereof.

A top priority should be to establish the new regional landfill site.

The following items must be included in the Eden District Municipality IDP:

- Public awareness and education campaigns
- The establishment of the new regional landfill site
- Implementation of Alternative Waste Management Technologies
- Infrastructure replacement

ANNEXURE 1
Project Meeting Minutes

Jan Palm Consulting Engineers cc

JPCE

CONTRACT ADMINISTRATION

CLIENT: **EDEN DISTRICT MUNICIPALITY**	Ref. A186

MINUTES OF MEETING **NO. 1**

MEETING VENUE:	MAIN SUBJECT:	DATE:
MOSSEL BAY, EDEN DISTRICT MUNICIPALITY OFFICES	• **MEETING NO. 1**	**29/01/2013**

ITEM	SUBJECT	ACTION	
		BY	TARGET DATE
1.1	**ATTENDANCE**		
1.1.1	**PRESENT** (REF. CODE) Johan Compion JC Dean Gilbert DG Giel Goosen GG August Hoon AH Morton Hubbe MH John Jaftha JJ William Meyers WM Jerome Moses JM Jan Palm JP Etienne Thuizen ET		
1.1.2	**OPENING** Morton Hubbe opened the meeting and welcomed everyone present.		
1.1.3	**APOLOGIES** Randall Bouer RB Lanese Hesselman LH		
1.1.4	**MEETING AGENDA** The meeting agenda was accepted without amendments. MH explained that the purpose of the meeting is to discuss the Revision of the Integrated Waste Management Plan (IWMP) of each Municipality and the road ahead regarding the project.		
1.2	**PROJECT PLANNING** MH requested that the full amount as read by him in the meeting be paid from each Municipality for the project, with the exclusion of Kannaland Municipality who will not form part of the project. He explained an additional amount was to be paid for advertising costs and an invoice was sent from Eden District Municipality. JC asked whose responsibility the costs of the public participation process would be regarding advertising and meeting venues.		

	JP and MH explained that no meetings would be held as meetings in the past were poorly attended and little to no reaction from the public was received. JP accepts that the placing and costs of advertisements would be the responsibility of JPCE. AH requests that if public meetings are not to be scheduled that adequate notice will be given to the public and reasonable time periods be given to allow interaction and response from the public. MH to discuss further with JP the involvement of Kannaland Municipality who gave notice that no funds were available for them to be part of the project.		
1.2.1	**PROJECT SCOPE, SCHEDULE AND OUTCOME** JP explained that the status quo information must be updated and expanded in the IWMP revisions. To obtain this information WM will send out a questionnaire to each waste manager to inform them of what is required. This is to give each manager time to prepare and gather the information after which WM will schedule a meeting at each office to collect the information. This data will be critical for each IWMP. JP proposed that the steps would be to arrange a follow-up project meeting after all the data has been collected by WM and following that meeting, the draft IWMP reports will be compiled. The draft reports will be presented at a project meeting for comment and necessary changes will be made before it is presented to each council before the drafts go out for public comment. Following the comment phase, any necessary changes will be made to update the draft documents to the final documents. JP explained that the main difference between the first and second generation IWMPõs is that the first generation were general strategic frameworks for waste management and the second generation must be action plans which are measurable against performance for the following 3 years. The consensus in the meeting was that the revised IWMPõs should provide plans for the next 5 years and not 3. This was accepted by JPCE. The project is scheduled to be completed by the end of June 2013.	WM	15/02/2013
1.3	**GENERAL** JJ explained the situation of using the two-bag system and the type of collection vehicles used and whether to go ahead with using wheelie bins. JP stated that there is no proof that using wheelie bins instead of plastic bags result in cost savings. The choice of collection methods and appropriate vehicles will be addressed in the IWMP.		
	JM mentioned that the responsibilities of the solid waste department, Oudtshoorn Municipality, are split between Community Services and the Technical Department. JP clarified that when the required information and answers to the questionnaire are given and if there is uncertainty as to whether the available information is 100% correct, the manager must still provide		

	the information, as this will be the best current answer. AH mentioned that there is a waste calculator developed that Oudtshoorn Municipality can use. He furthermore states that all sites must be equipped with weighbridges within the next 5 years. DG requested that a copy of the questionnaire will also be sent to him. JP requested that MH be copied in, in all e-mail correspondence regarding this project. ET requested that enough time will be given to allow for the preparation of the information after the questionnaire is sent out. WM to schedule the meeting with ET last. JC asked in what detail the IWMP will provide financial models. JP replied that the IWMP will only state what needs to be done and what the cost of each action will be. MH highlighted the following problem areas which must be addressed in the revised plans: - Abattoir waste and handling - Rural areas and waste collection - Remaining airspace and lifetimes of the various landfills in order to address provision - WM to meet with MH to discuss the Eden Waste Information System which must be addressed in the plans - Waste minimisation and strategies - Waste transport, especially with the District site in mind - Alternative technologies - Spoornet and the issue of transporting waste via railway - Education and awareness. It is requested that the questionnaires are sent out in English and Afrikaans.		
1.4	**The next meeting date will be determined.**		

ANNEXURE 2
Solid Waste Questionnaire

SOLID WASTE QUESTIONNAIRE FOR EDEN DISTRICT / VASTE AFVAL VRAELYS VIR DIE EDEN DISTRIK

1. Waste fleet details / Vaste afval voertuie details

   Please provide the following details for each vehicle used in the solid waste department / Verskaf asseblief die volgende inligting met betrekking tot die voertuie in diens van die vaste afval departement:

   - Vehicle make, model, manufactured date, capacity and function. / Elke voertuig se fabrikaat, model, vervaardigingsdatum, kapasiteit en funksie.

   - Collection vehicles collection schedule and loads per day. / Kollekteringsvoertuie se kollekterings skedule en aantal vragte per dag.

2. Public Awareness / Publieke bewusmaking

   Please provide all information regarding any existing or planned public awareness initiatives for solid waste, waste minimisation, etc. with proof of advertisments. / Verskaf asseblief alle inligting rakende bestaande of beplande publieke bewusmaking inisiatiewe vir vaste afval, afval vermindering, ens. met bewys van advertensies.

3. Solid Waste Data / Vaste Afval Data

   Please provide the following data / Voorsien asb. die volgende data:

   - All known or estimated waste volumes generated for each town or received at the respective disposal sites. Indicate whether the amounts are in m^3 or tonnes and how it was measured. / Alle bekende of beraamde vaste afval volumes wat gegenereer word vir elke dorp of wat ontvang word by elke afsonderlike stortingsterrein. Dui aan of dit in m^3 of ton is en hoe dit gemeet is.

   - All known recyclers, recycling initiatives by the Municipality and volumes of waste recycled. Contact details of the recyclers. / Alle bekende herwinnaars, herwinnings inisiatiewe deur die Munisipaliteit asook die volumes van afval wat herwin word. Kontak besonderhede van die herwinnaars.

   - Collection system details which describes the areas and number of residences in each town that receives a collection service and which do not receive collection. Indicate whether black bags or wheelie bins are used and if source separation is done and if so, how is the source separated waste collected. / Kollekteringsisteem details wat beskryf watter areas en aantal wonings in elke dorp óf kollekteringsdiens ontvang en watter geen diens ontvang nie. Dui aan of swartsakke of wheelie bins gebruik word en of daar ñsource separationòis en indien wel, hoe dit gekollekteer word.

4. Complaints Register / Klagtesregister

   Please provide the details of how all incoming complaints to the solid waste department are recorded and dealt with, with the names and numbers of the appropriate contact persons. /

Verskaf asb. die details van hoe alle klagtes na die vaste afval departement aangeteken en aangespreek word met die betrokke persone se name en kontakbesonderhede.

5. Illegal Dumping / Onwettige Storting

   Please provide the procedures that are followed to deal with illegally dumped waste. What is the estimated annual cost of dealing with illegally dumped waste? What are the probable causes of illegal dumping? / Verskaf asb. die prosedure wat gevolg word om onwettig gestorte afval te hanteer. Wat is die beraamde jaarlikse kostes verbonde aan die hantering van onwettig gestorte afval? Wat is die moontlike oorsake van onwettige storting?

6. Solid Waste Sites / Vaste Afval Terreine

   - Please provide the location in GPS co-ordinates (if available) of all operational or closed solid waste sites within the Municipal border, whether they are licensed or not. / Verskaf asb. die ligging in GPS koordinate van elke operasionele en geslote vaste afval terrein binne die Munisipaliteit se grense, indien hulle gelisensieerd is of nie.

   - Copies of all waste licenses / Kopieë van all vaste afval lisensies.

   - Estimated remaining lifetimes and topographical surveys (if available) of operational sites. / Beraamde leeftyd en topografiese opmetings (as dit beskibaar is) van elke operasionele terrein.

   - List all waste types received at each site (Garden, General, Builderôs rubble, etc.) / Dui aan watter tipes afval ontvang word by die onderskeie terreine (Tuin, Algemeen, Bourommel, ens.)

7. Budget / Begroting

   The 3 year budget which details the capital budget as well as the operational budget. (Only for solid waste) / Die 3 jaar begroting wat die kapitaal begroting asook die operasionele begroting detailleer. (Slegs vir vaste afval)

8. Staff / Personeel

   The staff organogram of the solid waste department, with the names and responsibilities of each person in a managing position and also the number of staff for all tasks as well as vacant posts. / Die personeel organogram van die vaste afval departement met die name en verantwoordelikhede van elke persoon in ón bestuursposisie en ook die aantal personeellede vir elke taak asook alle oop poste.

9. By-laws / Verordeninge

   The latest solid waste by-laws / Die nuutste vaste afval verordeninge.

10. Population / Bevolking

    Please provide the urban population of each town in as much detail as possible. / Verskaf asb. die stedelike bevolking van elke dorp in soveel detail as moontlik.

ANNEXURE 3
Waste Management Project Review Form

EDEN MUNICIPALITY IWMP IMPLEMENTATION PROJECT REVIEW FORM

PROJECT NAME AND DESCRIPTION: ……

……

……

PROJECT COMMENCEMENT DATE: ……

PROJECT COMPLETION DATE: ……

RATE PROJECT OVERALL SUCCESS IN TERMS OF INTENDED PURPOSE: 1 2 3 4 5

REASON(S) FOR SCORE: ……

……

……

IF SCORE = 1-3, LIST THE ACTIONS THAT ARE TO BE TAKEN ALONG WITH TARGET DATES TO IMPROVE SCORE: ……

……

……

……

LIST ALL PUBLIC COMMENTS/COMPLAINTS RECEIVED RE THIS PARTICULAR PROJECT: ……

……

……

HAVE THESE BEEN ADDRESSED: ……

……

ANNEXURE 4
Terms of Reference

INFORMATION TO CONSULTANTS

1. INTRODUCTION

1.1 The Eden District Municipality ("EDM") invites consultants to submit a **Tender** for consulting services required for the review of Integrated Waste Management Plans for the seven (7) B-Municipalities including Eden District Municipality described in the Terms of Reference included below. The Tender will be the basis for a contract with the selected firm.

1.2 The review of Integrated Waste Management Plans shall begin no later than fifteen (15) days after an appointment letter was delivered to the selected firm.

1.3 Tenderers must familiarise themselves with local conditions, contents of the existing plans, assessments of the Department of Environmental Affairs and Development Planning and take them into account in preparing their Tender.

1.4 Please note that (i) the cost of preparing the Tender and of finalising the contract are not reimbursable as a direct cost of the development of the Integrated Waste Management Plans; (ii) EDM is not bound to accept any of the Tenders submitted; (iii) The Eden District Municipality's procurement policy shall apply for awarding the tender and tenderers should acquaint themselves with this policy.

2. CLARIFICATION OF THE REQUEST FOR TENDERS

2.1 Consultants may request a clarification of any of the REQUEST FOR TENDERS documents up to twelve (12) noon on the previous day as the closure date for tender submissions. Any request for clarification must be sent in writing by mail, facsimile, or electronic mail to EDM, at the addresses set forth below under 4.1. EDM will respond by facsimile or electronic mail to such request and will send copies of all responses to all consultants who registered to obtain copies of this REQUEST FOR TENDERS.

2.2 At any time before the submission of Tenders, EDM may, for any reason, whether at its own initiative or in response to a clarification requested by an invited firm, modify the REQUEST FOR TENDERS documents by amendment. The amendment will be sent in writing by facsimile or electronic mail to all registered consultants and will be binding on them. EDM may at its discretion extend the deadline of the submission of Tenders.

3. PREPARATION OF TENDER

3.1 In preparing the Tender, consultants are expected to examine the documents comprising this REQUEST FOR TENDERS in detail, particularly Section: The Terms of Reference. Material deficiencies in providing the information requested may result in rejection of a Tender.

3.2 While preparing the Tender, consultants must give particular attention to the following:

(i) If a firm considers that it does not have all the expertise for the development of Integrated Waste Management Plans, it may obtain a full range of expertise by

associating with individual consultant(s) and / or other firms or entities in a consortium, joint venture relationship, or sub-consultancy, as appropriate.

3.3 Tender should provide the following:

(i) A description of the firmôs proposed approach to performing the task set forth in the Terms of Reference, including a proposed work plan and a staffing plan showing the approximate time that each consultant will spend on the project.

(ii) A brief description of the firmôs organisation (company profile) and an outline of recent experience on assignments of a similar nature. For each assignment, the outline should indicate *inter alias*, the profiles and names of the staff provided, duration of the assignment, contract amount, and firmôs involvement.

(iii) Any comments or suggestions on the Terms of Reference and on the data, services and facilities to be provided by EDM (Refer to 5.2 below). The tenderer should enquire which data, services and facilities can be provided by EDM which could have an influence on the tender price.

(iv) CVôs of the proposed professional staff and the authorised representative submitting the Tender. Key information should include number of years working for the firm / entity, and degree of responsibility held in various assignments the last ten (10) years.

3.4 The Tender should list all cost associated with development of Integrated Waste Management Plans, including (a) remuneration of staff; and (b) reimbursable such as subsistence (*per diem*, housing), services and equipment (vehicles, office equipment, furniture and supplies), office rent, insurance, printing of documents, etc. The Tender shall exclude all taxes.

3.5 Tenders must remain valid for sixty (60) days after the closing date for submissions. During this period, you are expected to keep available the professional staff proposed for the development of Integrated Environmental Plans. EDM will make its best effort to complete negotiations within this period. If the Tender validity period is extended, the consultants have the right not to maintain their Tenders.

4. TENDER EVALUATION

4.1 Consultants shall not contact EDM on any matter relating to their Tender from the time of the opening of the Tender to the time the contract is awarded. If a firm wishes to bring additional information to the notice of EDM, it should do so in writing at the address indicated below, under point number 7. Any effort by the firm to influence EDM in the Tender evaluation, Tender comparison or contract award decisions may result in the rejection of the consultantôs Tender.

4.2 The evaluation of Tenders will also be on the basis of their responsiveness to the Terms of Reference, applying the Procurement Policy of the Eden District Municipality. A Tender considered to be unsuitable shall be rejected at this stage if it does not respond to important aspects of the Terms of Reference or if it fails to achieve the minimum criteria of the Procurement Policy of the Eden District Municipality.

5. FINALISATION OF THE CONTRACT

5.1 Discussions need to reach agreement on all points and sign a contract at the following address:

Eden District Municipality
54 York Street
George

5.2 Discussions will include the contents of the Tender, the proposed work plan, budget, staffing and any suggestions made by the firm to improve the Terms of Reference. EDM and the firm will then work out an agreed final Terms of Reference and staffing. The agreed work plan and final Terms of Reference will then be incorporated into the ñDescription of Servicesòand form part of the contract.

5.3 Discussions of finances will be confined to accommodate any agreed technical modifications and their impact on the cost of the services. Unless there are exceptional reasons, discussions will involve neither the remuneration rates for staff (no breakdown of fees) nor other proposed unit rates. **In no event will the final cost of services exceed the original budget.**

5.4 Having selected the firm on the basis of, among other things, an evaluation of proposed key professional staff, EDM expects to conclude a contract on the basis that the experts named in the Tender will actually provide the services. In their Tender firms should provide assurances that the experts named will be available. EDM will not consider substitute situations during contract finalisation. If it is established that key staff were offered in the Tender without confirming their availability, the firm may be disqualified.

5.5 The discussions will conclude with a review of the draft form of the contract. EDM and the firm should then initial the agreed contract. If the parties fail to reach an agreement, EDM will invite the firm that received the second highest score to enter into discussions.

6. AWARD OF CONTRACT

The contract will be awarded following the above discussions with the successful firm.

7. CONTACT INFORMATION

For any enquiries related to the Terms of Reverence please contact;
Mr Morton Hubbe
Telephone: 044-6930006
Fax: 044-6933159
E-Mail: morton@edendm.co.za

TERMS OF REFERENCE FOR THE DEVELOPMENT OF
INTEGRATED WASTE MANAGEMENT PLANS

1. PURPOSE

The purpose of this section is to set out the Terms of Reference for the review of the 1st Generation Integrated Waste Management Plans in all the Municipalities in the Eden District Municipalities jurisdiction area.

2. INTRODUCTION

The new system of local government, ushered in by the 05 December 201 local government elections, puts honours on local government ï which is, developmental local government. The central responsibility of municipalities is to work together with local communities to find sustainable ways to meet their needs and improve the quality of their lives.

The constitution on the other hand commits government to take reasonable measures within its available resources to ensure that all South Africans have access to adequate housing, health care, education, food water and social security and adequate engineering services, including Waste Management Services.

Several legal requirements have been put in place to ensure that proper planning is done to promote the implementation of reliable, sustainable and cost-effective services. The various sector plans again feeds into the Integrated Development Plan (IDP) to ensure proper alignment and coordination of the planned services. One such legal requirement is the compilation of Integrated Waste Management Plans, as required in terms of the National Environmental Management Waste Act 59 of 2008 Section 11 (4) (a)(i).

National Environmental Management Waste Act 59 of 2008 subscribes in Section 12 what the contents of such a Integrated Waste Management Plan must at least contain and stipulate the following;

(1) An Integrated Waste Management Plan must at least -:

(a) Contain a situation analysis that includes:

(i) a description of the population and development profiles of the area to which the plans relates;

(ii) an assessment of the quantities and types of waste that are generated in the area;

(iii) a description of the services that are provided, or that are available, for the collection, minimisation, re-use, recycling and recovery, treatment and disposal of waste; and

(iv) the number of persons in the area who are not receiving waste collection services;

(b) within the domain of the Department, Provincial Department or Municipality, set out how that Department, Provincial Department or Municipality intends:

(i) to give effect, in respect of Waste Management, to Chapter 3 of the National Environmental Management Act;

(ii) to give effect to the objects of this Act;

(iii) to identify and address the negative impact of poor waste management practices on health and environment;

(iv) to provide for the implementation of waste management, re-use, recycling and recovery targets and initiatives;

(v) in the ease of a Municipal Integrated Waste Management Plan, to address the delivery of Waste Management Services to residential premises.

(vi) to implement the Republicôs obligations in respect of any relevant international agreements;

(vii) to give effect to best environmental practice in respect of waste management;

(c) within the domain of the Department of Provincial Department, set out how the Department or Provincial Department intends to identify the measures that are required and that are to be implemented to support municipalities to give effect to the objects of this Act.

(d) set out the priorities and objectives of the Department, Provincial Department or Municipality in respect of waste management.

(e) establish targets for the collection, minimisation, re-use and recycling of waste;

(f) set out the approach of the Department, Provincial Department or Municipality to the planning of any new facilities for disposal and decommissioning of existing waste disposal facilities;

(g) indicate the financial resources that are required to give effect to the plan;

(h) describe how the Department, Provincial Department or Municipality intends to give effect to its Integrated Waste Management Plan; and

(i) comply with the requirements prescribed by the Minister.

The review of the 1st Generation Integrated Waste Management Plans for Eden District Municipality and its Local Municipalities, i.e. Hessequa, Mossel Bay, George, Knysna, Bitou, Oudtshoorn and Kannaland that will assist Local Government to fulfil its described responsibilities in terms of Waste Management.

3. PROGRAMME OBJECTIVES

Updating of the existing eight (8) first generation Integrated Waste Management Plans in 2012 as requested by the Department of Environmental Affairs and Development Planning of the Western Cape.

The Integrated Waste Management Plan needs to be coordinated and integrated with the Local and District Integrated Development Plans and should take into consideration the priority areas.

4. ASPECTS OF TENDER

Key requirements for this review would be to reflect on the relevant requirements as stipulated in the National Environmental Management: Waste Act (Act No. 59 of 2008), the current draft National Waste Management Strategy and on the recommendations made by the Department of Environmental Affairs and Development Planning during the assessment of the 1st generation Integrated Waste Management Plans. Following are a brief summary of the outcome of the reviewed requirements of the Department however the tenderer must still familiarise them with the individual review of each Municipality.

4.1 IWMP Planning Phase

4.1.1 Public participation

Minutes of the public participation meeting have not been documented. It is important to record minutes of meetings, decisions taken and concerns raised in order to ensure transparency and that all issues and concerns are addressed. Insufficient information is given on the target areas and the approach taken in informing them about these meetings and updates on the development of the plan. The public participation process therefore needs to be reviewed, as the current approach has not been very successful.

4.1.2 Political support

Minutes of a meeting with the municipal manager, councillors, and officials have been documented therefore the councillors are being made aware of the plan however the IWMP has not been signed off by the councillors as yet.

4.1.3 Waste streams addressed/considered

There is limited information on the waste streams to be included in the plan. By conducting a waste characterization analysis the various components of waste types can be determined for planning purposes such as determining if another waste processing facility is needed or not. Waste streams that have however been mentioned are listed below:

- **Garden refuse**
- **Builders rubble**
- **Household refuse**
- **Medical waste**
- **Industrial waste such as saw dust from the wood industries**

- **Sewage sludge**

4.2 Status Quo

4.2.1. Legislative framework governing waste management

The plan contained summaries of various environmental legislation pertaining to waste management. The D:EA&DP however recommends that the implications with respect to the following legislative provisions and guidelines be considered and addressed by the IWMP.

- The National Environmental Management Air Quality Act 39 of 2004,
- Minimum requirements for the handling, classification and disposal of hazardous waste, 1998,
- Western Cape Health Care Waste Management.

A detailed assessment of the existing by-laws is not presented and the names of the by-laws have also not been provided. The plan indicates that existing by-laws in place do not address solid waste management issues. Insufficient information is also provided on whether existing legislative provisions are being enforced and complied with.

A detailed assessment of the existing by-laws that address the disposal of domestic waste and refuse tariffs was not provided. The existing by-laws in place also do not adequately reflect the current legislation, policy and the municipalityôs goals with regards to waste management. Insufficient information is also provided on whether existing legislative provisions are being enforced.

A detailed assessment of the existing by-laws in place is not represented however clauses from these by-laws have been included in the IWMP but not the name/s of the by-law/s from where it is quoted. A detailed assessment of the by-law addressing the liability, generation, storage and disposal of industrial refuse is also not provided.

The exiting by-laws in place also do not adequately reflect the current legislation and policy, and the municipalityôs goals with regards to waste management. Plans to review these by-laws are lacking and would need to be addressed. Insufficient information is also provided on whether existing legislative provisions are being enforced and complied with.

4.2.2 Demographic profile

Population socio-economic categories have been specified however it has been left open to interpretation. The current socio-economic category and income levels needs to be determined for future planning purposes and it would be important to forecast how these are expected to change over time. The IWMP needs to make reference to these statistics when planning or to illustrate if it did influence planning in anyway.

4.2.3 Organizational structure

A list of the type of personnel and amount employed on a permanent basis has been provided together with where the personnel are employed in the organization however a thorough breakdown of jobs is not provided. A list indicating which departments are responsible for collection, recycling and disposal of waste and who are responsible for enforcement, regulation, contractual agreements, strategy formulation etc. needs to be provided as well.

1. 4.2.4 Service points

The IWMP states that there is a lack of waste removal services in the rural areas. The current methods used to manage waste while these services are lacking and the problems being experienced are not indicated. All the service points of the municipal area including areas not receiving waste removal services and illegal dumping should be illustrated on a map and included in the plan.

4.2.5 Permit and compliance status of waste disposal facilities

This type of information is important for planning purposes and the effective management of waste.

Information with regards to the compliance and permit conditions for the waste disposal facility and transfer station is lacking. The landfill must be operated in accordance with the permit conditions as any infringement of the permit conditions may lead to the permit holder being prosecuted. The extent to which these two facilities are permitted in terms of Section 20 of the Environment Conservation Act is also not mentioned.

4.2.6 Illegal dumping

The assessment of illegally dumped waste is also lacking. Illegally dumped waste may consist of general or hazardous waste types and would require different management techniques with regards to cleanups; treatment and disposal costs therefore a distinction should be made between the two. The activities to control illegal dumping consist of the appointment of contractors with equipment and personnel to remove illegal dumping in the area. It has not been indicated if these activities are working to control the situation or if an action plan has been developed for the elimination of illegal dumping. Costs associated with the clean-ups for illegal dumping is not budgeted for in the IWMP.

4.2.7 Waste generation

A brief summary of the waste generated in the Municipal areas has been included in the plan. The problems surrounding these waste types generated include no or limited access to proper facilities for disposal or treatment, lack of service and no record keeping of waste loads generated or disposed and no control over the disposal of these waste types. The plan should provide solutions to these problems for planning purposes, to operate a more effective waste management system and to have the health of the public and the environment protected.

- **Builder's rubble**
- **Garden refuse** ï accessible alternative facilities are limited for the disposal of garden refuse and residents also responsible for the disposal of garden refuse not placed in black bags.
- **Household refuse –** certain areas do not receive waste removal services.
- **Medical waste –** municipality does not keep record of generators, quantities of medical waste disposed and does not have proper control over disposal of medical waste.
- **Industrial waste**

- **Sewage sludge Tyres –** no suitable facility available for the disposal of tyres.

4.2.7 Property allocated to waste department

The plan failed to provide details of all buildings and land, which are owned and or operated by the waste management section/department of Municipality. It is important to assess all the resources that are available to the waste management section in order to recognise shortcomings as well as to do proper planning pertaining to future projects. The IWMP also does not present an assessment of fixed assets and the depreciation values of buildings, land and equipment.

4.2.8 Complaints register

No indication has been given that a complaints register exists within the municipality. Information with regard to complaints received with respect to waste management, the number of complaints received together with the type of corrective actions administered has not been provided. This type of information will provide details on the level of service being provided to the public and where improvements can be made to provide effective waste management services.

4.2.9 Public acceptability of waste management systems

The public acceptability of the existing waste management system i.e. effectiveness, usability, access etc. has not been assessed in the IWMP. The costs involved in operating the existing system needs to be acceptable to the public.

4.3 IWMP Objectives and Activities

Informal waste minimization initiatives exist with regards to the municipal collection of blue bags placed on the sidewalk and the salvaging of waste at the waste disposal facility. Businesses also participate in the recycling process by collecting recyclables on their premises however the plan does not mention if this is a formal (skips are provided) or informal initiative. There is insufficient information with regards to the types and amounts for each type of waste collected in the blue bags, the types and amounts recovered for each type of waste at the waste disposal facility and the types and amounts for each type of waste collected at these businesses. The IWMP has failed to address the activities to be carried out in order to formalize, control or eliminate informal salvaging taking place at the waste disposal facility.

Insufficient information is provided with regards to the owners of recycling, the depot used for temporary disposal and sorting purposes and further operational information regarding the facility.

There is insufficient information presented with regards to the generators of medical and industrial waste and estimates on the amount of waste generated, collected, treated, transported and disposed. Collection of the above mentioned information contributes to the effective management of not only industrial waste but medical waste as well.

The hazardous waste generators operating in the municipal area needs to be identified as well as the management and/or mismanagement of hazardous waste. The department is in the process of completing the development of the provincial Hazardous Waste Management Plan (HWMP) and the information on hazardous waste from the IWMP will need to address the provincial plan as well.

Training will be given to all staff including contract staff. Training or more awareness should also be given on the IWMP and the goals of the municipality towards the development of the plan.

The IWMP has also failed to address registration with the D:EA&DP with regards to the Integrated Pollutant and Waste Information System (IPWIS). It is important that information be included to indicate that all waste management facilities from generators, recyclers, handlers and transporters, treaters and disposers will need to register with the department and that registration can be completed via the internet and via hard copy data request forms which can be obtained from the Department.

The relationship between the IWMP and the IDP has not been fully identified. The IWMP forms an integral part of the IDP and must be integrated with the municipal IDP and the associated IDP programme. The plan identifies limited information regarding the new developments to be included in the IDP and their future need for waste removal services in relation to the IWMP.

4.4 IWMP Implementation

The following matters were not considered in the implementation plan:

- The responsible person/s for the organization, planning and implementation of the IWMP.
- The integration between the IWMP and the IDP has not been fully identified. The IWMP forms an integral part of the IDP and must be integrated with the municipal IDP and the associated IDP programme. The plan identifies the new developments to be included in the IDP and their future need for waste removal services in relation to the IWMP.
- The fostering of partnerships to assist the municipality.
- The public participation programme.
- The financing of the various projects within the IWMP and funding mechanisms.
- A monitoring and review programme for the IWMP.

Measurable indicators must be included in the IWMP in order for the municipality to be able to measure the success, progress of all the projects identified in the implementation plan.

4.5 Monitoring and Review

Monitoring systems needs to be in place in order to monitor the implementation of the approved IWMP to see that the projects are being carried out as per agreed schedule. Performance indicators and feedback mechanisms are required so that the effectiveness of waste management projects can be assessed and corrective action may be taken if performances do not meet expectations. Information needs to be obtained for reporting purposes to the D:EA&DP and data and information to be obtained for review and refining the IWMP at regular intervals. A monitoring and review plan needs to be included in the IWMP for these purposes.

5.6 Recommendations

- Private companies, who collects and transports the medical waste, could be sourced for information regarding the medical waste generators and the amounts of waste generated, collected and disposed of.
- A register should be kept of the location of illegal dumping sites together with the types of waste disposed of.
- The law reform process was promulgated in 2000 and there is no indication as to what has been achieved in the last 6 years with respect to updating by-laws and the integration of by-laws with the current legislation.
- Seasonal influxes and migrations also need to be addressed and an action plan as to how the municipality will deal with the increased waste loads during this time.
- Any development pressures need to be indicated and these developments need to be aligned with the Spatial Development Framework of the municipality.
- An action plan must be included to indicate how compliance with the permit conditions of the waste disposal facility will be carried out.
- The approach taken to address the review checklist needs to be addressed in the plan.

The consultantôs tender should also include the following aspects that must be addressed in the Integrated Waste Management Plan:

- Status Quo Report.
- Waste generation, collection systems, waste disposal and advice in rural areas.
- Evaluation of landfill sites including scavengers on site and transfer stations.
- Waste Stream Analysis of all types of waste produced in the Eden District Municipal area.
- Situation on hazardous, medical, mine waste including water treatment sludge.
- Viability of recycling, re-use, minimization and composting.
- Technical and management systems required to provide all infrastructure services within the Municipality in accordance to Integrated Development Plans.
- A schedule indicating the time frame and methods in which the project will be concluded must be attached to the tender (indication of outputs).
- Coordination and integration of the Integrated Waste Management Plans will adjacent Local Municipality Integrated Waste Management Plans.

The tenderer must take note that a separate review was compiled for each of the Municipalities and the District Municipality. This must be kept in mind when the tender is compiled.

The Integrated Waste Management Plan should follow the guidelines compiled by the Department Environmental Affairs and Development Planning to the Integrated Waste Management Plans. A summary of the three major phases stipulated in the Guidelines are as follows:

A. STATUS QUO

Status Quo / baseline study is required in order to collect and assess all relevant information pertaining to Waste Management in the jurisdictional areas. Status Quo information should include, inter alias, the following:

1. Scope of the Plan

The scope of plan must comprise a description of the geographic, environmental and social-economic scope as well as the planning time horizon.

2. Policies and Legislation

The relevant Government Policies and legislation should be identified and the specific requirements established. Analysing existing by-laws of Municipalities pertaining to Waste Management.

3. Demographics

- Appropriate demographic data should be collected (various existing documents as listed above may contain the required socio-economic information required for this section):
  - Base population
  - Existing population distribution
  - Population growth estimates
  - Future population distribution
- The above data should be aligned and compared with existing data as available through documents such as:
  - Integrated Development Plans
  - Census Data

4. Waste Quantities and Characteristics

- Establish current quantities of waste generated, collected, recycled, treated and disposed.
- Determine waste category and characteristics, including information about hazardous, mine, green waste, water treatment sludge and medical waste.
- Mapping of information as far as possible.
- Estimate future waste generation rates, quantities and characteristics.

5. Existing Waste Management Strategies, Systems and Practices

- Establish and describe what waste management strategies, practices and systems are currently in place for which the plan is being developed.
- Describe the waste prevention strategies, systems and practices in place.
- Describe waste minimization strategies, systems and practices.
- Describe the collection and transportation method for each type of waste.
- Establish the quantity, type and quality of materials being recycled and describe the operating recycling facilities.
- Describe the treatment systems currently in use.
- Describe systems currently in use for disposal of waste.

6. Economics and Financing of Waste Management

- Determine the economic and financing situation of Waste Management.
- Establish the current costs for each of the existing Waste Management Systems.

- Establish waste charges currently being levied.
- Rationalization of Waste Management.

7. Organizational Structure

Describe the organizational structure that will implement and manage the Integrated Waste Management Plan.

8. Key Stakeholders

A Project Steering Committee, consisting of all relevant stakeholders and a public participation program need to be established and need to be consulted at various stages throughout the duration of the Integrated Waste Management Plan compilation process.

9. Identification and Prioritisation of Needs

- Utilizing the base data and information collected in section 4.1 to 4.8, the needs of the organization / institution should be identified and prioritised.
- Waste prevention and minimization.
- Waste collection and transportation systems.
- Waste recycling and re-use.
- Waste treatment facilities.
- Waste disposal facilities.

10. Summary Situation Analysis

Prepare a summary situation analysis is based on the collected background information.

B. STRATEGIC OBJECTIVES

Once the baseline study information is available for the historical and present Waste Management situation, the waste systems need to be analysed and planning on future management, service delivery improvements and extension of services of areas currently not serviced (including the setting of priorities, objectives and strategies) is required. Recommendations regarding service delivery improvements must be provided. The System Analysis and Recommendations should focus on aspects such as:

- Waste Prevention Minimisation, Re-use and Recycling.
- Collection and Transport.
- Waste Treatment.
- Waste Disposal, including hazardous, mine, medical waste and water treatment sludge.
- General Strategic Objectives.

C. IMPLEMENTATION PLAN

The Implementation Plan is a Master Plan for Waste Management within the jurisdictional area for a 10 ï 15 year period. Policy instruments, partnerships, legislative instruments, economic instruments and a Financial Plan should be established in consultation with the stakeholders.

1. Policy Instruments

The policy environment appropriate to the Integrated Waste Management Plan being developed should be identified and assessed.
Where necessary, this should be adapted and amended to support the attainment of the strategic objectives.

2. Partnerships

The development of partnerships as a mechanism for providing the services and facilities required for Integrated Waste Management should be considered.

3. Legislative Instruments and requirements

The introduction of legislative instruments in order to achieve the strategic objectives set for the Integrated Waste Management Plan should be considered and the necessary legal requirements should be adhere to including permits for the different Waste Management sites.

4. Economic Instruments

Appropriate economic instruments should be evaluated and implemented, including:

- Funding mechanisms for Integrated Waste Management Plans.
- Funding mechanisms for Waste Prevention, Minimisation, Re-use and Recycling.
- Funding mechanisms for Waste Collection and Transportation.
- Funding mechanisms for Waste Treatment and Disposal.
- Comparative Economic Analysis.

5. Financial Management

A Financial Plan should be developed for the implementation of the Integrated Waste Management Plan.

6. PLAN OF WORK

All information must be presented in such a way that each of the seven (7) Local Municipalities, i.e. **Hessequa, Mossel Bay, George, Knysna, Bitou, Oudtshoorn, Kannaland and Eden District Municipality** is able to identify itself with the information. It must be presented per Municipality. After this a separate presentation / document for the District must be developed to indicate a district perspective on Waste Management.

Costing must be shown separately in the proposed tender document for the review of each of the eight municipalities as indicated in this Terms of Reverence.

In all the review of the Integrated Waste Management Plan for each Municipality should not take longer than **eight (8) months.** However, a ñgraceò period (to the discretion of the Eden District Municipality) of not more than a month can be allowed for contingencies, comments to the reports and internal logistical processes by various constituencies.

The District Municipality reserve the right to accept the review of only one (1) or two (2) or three (3) or four (4) or five (5) or six (6) or seven (7) or all eight of the Municipalities as cost in the proposed tender.

7. DELIVERABLES

In the entire process of the development of Integrated Waste Management Programmes for each Municipality, two (2) sets of reports per Municipality. Nine (8) Municipalities need to be produced in both English and Afrikaans. (this can be amended subject to the different Municipalities requirements and to the discretion of the Eden District Municipality.

Two (2) presentations at each Municipality.

All the mentioned reports must be presented as follows:

1) Two (2) copies of each Municipalityôs reports, i.e. nineteen (19) copies in total (including a combined report with a district perspective).

2) All the information must also be provided in digital format, in the following ways:
   - ñJpegò - format, and
   - MS-Word.

8. REQUIRED EXPERTIZE

The appointed consulting/s firm must preferably be registered with the South African Institute for Consulting Engineers or the South African Council for Town and Regional Planners or the South African Council for Waste Management.
The consultants appointed should have a clear understanding of the national and provincial policies / legislations that impact on Waste Management that have a bearing on the Municipalities. A brief description of the firmôs organization and an outline of recent experience in the compilation of Integrated Waste Management Plans for Local Government should be included.

9. REPORTING

The Eden District Municipality will manage the overall project through a Project Steering Committee. Reporting will be made to the Project Steering Committee. However, each Municipality can request a maximum of two (2) presentations when it is deemed necessary from the Service Provider. That is a total of nineteen (19) possible presentations.

9.1 Project Steering Committee

A Project Steering Committee comprising of the Municipalities in the Eden District Municipality, and affected Provincial or National Departments and any other prospective stakeholders who could provide meaningful input would be formed so as to provide necessary support. The Eden District Municipality will assist in this process.

9.2 Public Participation Programmes

A public participation program needs to be established through which all households and commercial sector is kept informed throughout the duration of the Integrated Waste Management Plan compilation process. The Municipality will assist in this progress.

10. CONFIDENTIALITY

The contents and the finding of the project / programme are to be treated as the property of the Municipalities of the Eden District Municipality. Information generated in the course of the project will not be made available to any third party without prior permission of the participating stakeholders.