Draft Scoping Report in support of a Waste Management Licence for the Operation of the existing Barkly East Landfill, Senqu Local Municipality, Eastern Cape

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TITLE	*Draft Scoping Report in support of a Waste Management Licence for the Operation of the Barkly East Landfill.*
Applicant	*Senqu Local Municipality*
AECOM Project No	*60437185*
Status of Report	*Draft Scoping Report*
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For AECOM SA (Pty) Ltd / SE Solutions (Pty) Ltd

		Initials & Surname	Signature	Date
Compiled by	:	S Jones		30 November 2015
Reviewed by	:	Johan Hayes		30 November 2015
Approved by	:	Victoria Napier		02 December 2015

Executive Summary

BACKGROUND TO THE PROJECT

The Department of Environmental Affairs (DEA) commissioned a study in 2007, completed in 2009, that aimed at identifying and determining the number of waste disposal facilities in South Africa that are not licenced. Of a total of 581 sites that were identified, 431 needed to be licensed. It was evident from the study that Local Municipalities (LMs) did not have adequate training or funding for lodging applications to licence their unlicensed waste disposal facilities or the management thereof. The Minister undertook to begin the process of licencing these sites, with a target that all would be licenced by 2013/2014. Subsequently, the DEA has identified an additional 57 municipal waste disposal facilities which must be licensed during the 2014/15 financial year. The licensing of the Barkly East landfill falls within the scope of this process.

Sustainable Environmental Solutions (Pty) Ltd (SE Solutions), in association with AECOM SA (Pty) Ltd (AECOM), was appointed by the DEA to conduct the required environmental legislative process to apply for a Waste Management Licence (WML) for the operation of the existing Barkly East Landfill (the Project), on behalf of the Senqu LM.

PROJECT AREA

The existing Barkly East Landfill is located approximately 1 km south of Barkly East, in the Senqu LM, Eastern Cape Province. The landfill is situated on Farm Sterkspruit 82 Portion 20, and is accessed via a gravel road from the R58 (Surveyor-General 21-digit Cadastral Code: C06000100000161800000). An old dumping area is located to the south of the site. A proposed cemetery is to be located to the north of the site. Vacant land makes up the remainder of the surrounding areas.

PROJECT DESCRIPTION

The existing unlicensed Barkly East Landfill is operated by the Senqu LM, the Applicant for the proposed WML. The facility is currently used for the disposal of general waste, garden waste and garden rubble sourced from residents and businesses in Barkly East and surrounding areas. It is estimated in the Senqu LM Integrated Development Plan (IDP) (2014) that 4.5 tonnes per day (t/day) of household waste is disposed of at the Barkly East landfill.

The operation of the Landfill will involve the following major functions, which will be undertaken in accordance with the Minimum Requirements for Waste Disposal by Landfill, 1998, as well as the Environmental Management Programme.

- Maintenance of access roads to the Landfill
- Access control
- Maintenance of Site roads and controlling of traffic within the Site
- Control of nuisances
- Construction and maintenance of Site drainage, including storm water-, contaminated runoff- and leachate control
- Record keeping

The following is proposed for the once-off rehabilitation of the landfill:

- Repair and maintain fencing
- Repair and maintain infrastructure
- Rehabilitation of site
    - Relocate the entrance for weighbridge;
    - Dig test pits to determine the waste volumes;

  - Identify a temporary storage area on site during rehabilitation;
  - Possibly move of waste before the final capping.
  - Cap all the areas filled with waste with a GSB+ liner (300mm compacted clay and topsoil).
  - The capping layer should include a gas venting system if the waste is more than 2m deep;
  - Install leachate cut-off trench downstream of the capped areas
  - Construct a stormwater diversion berm upstream of the cell to divert any stormwater away from the waste mass;
  - Provide groundwater monitoring boreholes for water quality monitoring;
  - A new engineered cell has to be constructed for future disposal.
  - Compile site operational and management manuals before construction of the new waste cell.
- Litter picking
- Maintain signage

The following Engineering and operational Works will be required:

- Leachate collection system
- Installation of monitoring boreholes downstream of the landfill site and adherence to the monitoring protocol
- Implement waste classification at gate
- Daily compaction of waste
- Daily cover application
- Adhere to cell system specified by engineer
- Surface water management
- Erosion control works

APPLICATION PROCESS

The Project is considered a waste management activity that may have a detrimental effect on the environment and for which authorisation in the form of a WML is required from the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (EC DEDEAT) in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA).

Due to the current disposal activities at the landfill and the landfill's footprint area, a full Scoping and Environmental Impact Reporting (S&EIR) application process is required in order to obtain the WML.

Scoping Phase:

The EIA process is currently in the Scoping Phase and this report documents the outcomes of the Scoping Phase and the Plan of Study for EIA. The draft version of the Scoping Report is presented to the public and registered Interested and Affected Parties (I&APs) for a 30-day review and comment period. The Draft Scoping Report (DSR) with comment sheets has been distributed to the following public venues in the project area from **04 December 2015 to 25 January 2016:**

Venue	Address	Telephone
Barkly East Public Library	White Street, Barkly East	053 474 0143
Senqu Local Municipality Offices	De Villiers Street, Barkly East	051 603 0019

The DSR can also be viewed and/or downloaded from the project's website: www.deawaste2015.co.za.

Ms Bongi Shinga from AECOM can be contacted on bongi@deawaste2015.co.za or Tel. 012 421 3500 during office hours for any queries and/or to submit comments on the DSR.

EIA Phase:

The landfill will be assessed in terms of the current impact on the environment and the nature of the status of the landfill (application for operations). The impacts assessed will cover operations, closure and decommissioning, as the site already exists. The following specialist studies have been commissioned:

- Wetland Assessment; and,
- Groundwater Assessment.

Decision-making Phase

Once all issues have been addressed by the EAP and presented in an EIA report, the report will be submitted to the EC DEDEAT for decision-making after all registered I&APs have had the opportunity to review and comment on the EIA report. Once the WML (positive or negative) has been issued, all registered I&APs will be notified of the decision and have the opportunity to appeal the decision should they not agree with the authorisation issued or any conditions of authorisation.

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List of Abbreviations

°C	Degrees Celsius
CA	Competent Authority
BID	Background Information Document
CBD	Central Business District
CRR	Comment and Response Report
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DSR	Draft Scoping Report
DWS	Department of Water & Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act, 1989 (Act No. 73 of 1989)
EC DEDEAT	Eastern Cape Department of Economic Development, Environmental Affairs & Tourism
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EPWP	Extended Public Works Programme
GIS	Geographical Information System
GN R	Government Notice Regulation
Ha	Hectares
HIA	Heritage Impact Assessment
I&AP(s)	Interested and Affected Party (-ies)
IDP	Integrated Development Plan
km	kilometre
m	metre
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PPP	Public Participation Process
RDL	Red Data Listed
SABAP	South African Bird Atlas Project
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SAWS	South African Weather Services

SIA	Social Impact Assessment
WCMR	Waste Classification Management Regulations
WML	Waste Management Licence
WUL	Water Use Licence

1. INTRODUCTION

1.1 Background

The Department of Environmental Affairs (DEA) commissioned a study in 2007, completed in 2009, that aimed at identifying and determining the number of waste disposal facilities in South Africa that are not licensed. Of a total of 581 sites that were identified, 431 needed to be licensed. It was evident from the study that Local Municipalities (LMs) did not have adequate training or funding for lodging applications to licence their unlicensed waste disposal facilities or the management thereof. The Minister undertook to begin the process of licensing these sites, with a target that all would be licensed by 2013/2014. Subsequently, the DEA has identified an additional 57 municipal waste disposal facilities which must be licensed during the 2014/15 financial year. The licensing of the Barkly East landfill falls within the scope of this process.

1.2 The Proposed Project

Sustainable Environmental Solutions (Pty) Ltd (SE Solutions), in association with AECOM SA (Pty) Ltd (AECOM), was appointed by the DEA to conduct the required environmental legislative process to apply for a Waste Management Licence (WML) for the operation of the existing Barkly East Landfill (the Project), on behalf of the Senqu LM.

It is estimated in the Senqu Local Municipality Integrated Development Plan (IDP) (2014) that 4.5 tonnes per day (t/day) of household waste is disposed of at the Barkly East landfill. The operation of the Landfill will involve the following major functions, which will be undertaken in accordance with the Minimum Requirements for Waste Disposal by Landfill, 1998, as well as the Environmental Management Programme.

- Maintenance of access roads to the Landfill
- Access control
- Maintenance of Site roads and controlling of traffic within the Site
- Control of nuisances
- Construction and maintenance of Site drainage, including storm water-, contaminated runoff- and leachate control
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The following is proposed for the once-off rehabilitation of the landfill:

- Repair and maintain fencing
- Repair and maintain infrastructure
- Rehabilitation of site
    - Relocate the entrance for weighbridge;
    - Dig test pits to determine the waste volumes;
    - Identify a temporary storage area on site during rehabilitation;
    - Possibly move of waste before the final capping;
    - Cap all the areas filled with waste with a GSB+ liner (300mm compacted clay and topsoil);
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    - Construct a stormwater diversion berm upstream of the cell to divert any stormwater away from the waste mass;
    - Provide groundwater monitoring boreholes for water quality monitoring;
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The following Engineering and operational Works will be required:

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- Daily cover application
- Adhere to cell system specified by engineer
- Surface water management
- Erosion control works

1.3 The Environmental Impact Assessment Process

The Project is considered a waste management activity that may have a detrimental effect on the environment and for which authorisation in the form of a WML is required from the Eastern Cape Eastern Cape Department of Economic Development, Environmental Affairs & Tourism (EC DEDEAT) in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA). The Project does not comprise activities listed in the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). Due to the nature of the proposed development and the site footprint, and the requirement to apply for a WML, a Scoping and Environmental Impact Reporting (S&EIR) application process is required.

The landfill was established in 2002, and while waste licence applications for Barkly East and Lady Grey landfills were submitted to the DWS, only Lady Grey was permitted. The Barkly East Landfill has an environmental authorisation in terms of the Environmental Conservation Act, 1989 (Act No. 73 of 1989) (ECA) (Permit Number: EC142-021-2003) dated 4 April 2005. The reason the process was not finalised was that there is no permit from the then, Department of Water Affairs, the Competent Authority (CA) at the time. The EC DEDEAT has requested that a new application be made for the site.

This EIA process assists the EC DEDEAT to make an informed decision on whether the proposed license to operate the existing landfill should be issued or not, and under what conditions an authorisation could be granted. In the EIA process, all potentially significant negative and positive impacts (social, economic and biophysical environments) of the activity are identified and assessed. An S&EIR entails the following main phases:

- Scoping Phase
- Environmental Impact Assessment Phase
- Decision-Making Phase.

1.3.1 Scoping Phase

The WML application process is currently in the Scoping Phase, and its main purpose is to identify and investigate issues related to the proposed development and list potentially significant impacts. Issues and impacts are identified by the project team using theoretical knowledge, experience on similar projects, and consultation with I&APs and other key stakeholders (such as national, regional and local government departments). The Scoping Phase also identifies the most appropriate means by which the potential impacts will be assessed (Section 9.3).

To date, public participation was conducted to identify potential I&APs, inviting I&APs to register as well as to notify I&APs of the S&EIR application process to obtain a WML for the existing landfill site. This Draft Scoping Report is available for public comment over a period of 30 days (excluding public holidays and the period from 15 December to 05 January), from 04 December 2015 to 25 January 2016. The objective of the public comment period is for I&APs to raise issues about the information presented in the report and for them to raise any other issues related to the proposed Project. All comments received will be captured in a Comment and Response Report to be attached to the Final Scoping Report.

1.3.2 Environmental Impact Assessment Phase

All potential significant environmental issues (social, economic and biophysical) associated with the proposed Project will be investigated. Included in the EIA process is the identification of mitigation measures and how these will be addressed, which informs the Environmental Management Programme (EMPr).

This Draft Environmental Impact Report will be made available for public comment over a period of 30 days (excluding public holidays). The Comment and Response Report will be updated with all comments received during this period.

1.3.3 Decision-Making Phase

The decision-making phase will commence once all of the issues have been addressed by the EAP and presented in an EIA Report that will be submitted to the EC DEDEAT. The report is reviewed by officials and a WML is drafted with conditions that the Senqu LM must adhere to during the operation and decommissioning of the landfill. Should I&APs or Senqu LM disagree with the decision taken, they may enter into an appeal process.

1.4 Objectives of the Draft Scoping Report

The purpose of this Scoping Report is to document the outcomes of the Scoping Phase, for submission to the EC DEDEAT for approval as input into the EIA Phase that will follow. In addition, the Scoping Report provides the following information:

- Description of the property on which the activity is to be undertaken and the location of the property;
- Methodology applied to conduct the Scoping investigations;
- Details of the EAP and her expertise to carry out the Scoping procedures;
- Key legislation and guidelines that have been considered in the preparation of the Scoping Report;
- Details of the current state of the environment;
- Identifies and describes the anticipated environmental and social impacts, including cumulative impacts in respect of the listed activities;
- Need and desirability of the proposed activity, including advantages, disadvantages and alternatives;
- Reasonable land use alternatives, alternative means of carrying out the operations and the consequence of not proceeding with the proposed operation; and,
- Process of engagement with identified I&APs.

Prior to submission of the Final Scoping Report to the EC DEDEAT, I&APs are given an opportunity to review the Draft Scoping Report (DBAR) and comment on the proposed Project.

1.5 Structure of the Report

This report contains the following, in accordance with Appendix 2 of the EIA Regulations (2014):

Chapter	Description
Chapter 1	Introduction
Chapter 2	Project team details
Chapter 0	Overview of the project
Chapter 4	Description of the project alternatives
Chapter 5	Description of the affected environment
Chapter 6	Legislation and guidelines that pertain to the project
Chapter 7	Public Participation Process

Chapter	Description
Chapter 8	Description of environmental issues and potential impacts
Chapter 10	Conclusion and Recommendations
Chapter 11	References

1.6 Assumptions and Limitations

The following assumptions, limitations and constraints, associated with this Project, have been identified for this EIA process:

- The EIA process is multi-disciplinary, which is informed by the project team. It is thus necessary to assume that the information provided by the project team is accurate and true, at the time.
- Data shown in the maps were supplied by various sources and was used as received. The data was not verified.
- A preliminary site investigation was undertaken by the EAP's project team in consultation with representatives of the Applicant and Eastern Cape Department of Economic Development, Environmental Affairs & Tourism (DEDEAT) on 27 August 2015 to identify activities triggered and studies required to be conducted.
- Public Participation Process: every effort was made to inform all possible stakeholders within the Project area. Information presented by the stakeholders is presumed to be accurate and has been presented timeously in the study.

2. PROJECT TEAM

2.1 The Applicant

The Senqu LM is applying for a WML for the operation of the existing unlicensed Barkly East Landfill. Details of the Applicant are provided in Table 2-1.

Table 2-1: Details of the Applicant and Landowner

Applicant	**Senqu Local Municipality**
Contact Person	Mxolisi M Yawa
Postal Address	Private Bag X03, Lady Grey, 9755
Telephone	(051) 603 1300
Fax	(051) 603 0445
E-mail Address	yawam@senqu.gov.za
Applicant's Representatives	
Rob Crozier	Manager Waste Services crozierr@senqu.gov.za
Jabu Nokhonongo	Supervisor technical services nokhonongoj@senqu.gov.za
Mxolisi Salmani	Manager Waste Management salmanim@senqu.gov.za

2.2 Environmental Assessment Practitioner

SE Solutions, in association with AECOM, were appointed to conduct the required application process for the proposed Project. Details of the Environmental Assessment Practitioner (EAP) are contained in Table 2-2, while her CV can be found in Appendix E1.

Table 2-2: Details of the EAP

Environmental Consultant	**Sustainable Environmental Solutions (Pty) Ltd**
Environmental Assessment Practitioner	Ms Victoria Napier
Postal Address	Suite 51, Private Bag X108, Centurion, 0046
Telephone	078 278 2898
Fax	086 664 6885
E-mail Address	vici@sesolutions.co.za

Vici Napier has more than 7 years' experience as an EAP Project Manager, with over 9 years as an EAP. She is highly experienced in managing large multi-disciplinary project teams for various types of environmental assessments and authorisations, and has often been described by colleagues and clients as having specialist Project Management skills. In addition, she has experience in training and skills transfer within the Environmental Management field. Vici is a Registered Professional Natural Scientist with SACNASP (400215/09) and a member of the South African Chapter of the International Association of Impact Assessment (IAIA).

2.3 The EIA Project Team

Details of the Project Team assisting the EAP in conducting the EIA study in support of a WML for the Barkly East Landfill are indicated Table 2-3 below, while CVs are attached in Appendix E2.

Table 2-3: EIA Project Team

Name	Role on Team	Company
Mike Howard	Environmental Executive	AECOM
Johan Hayes	Project Manager	AECOM
Soleil Jones	Environmental Management Practitioner	AECOM
Bongi Shinga	Public Participation Practitioner	AECOM
Mamokete Maimane	Public Participation Practitioner	AECOM

3. OVERVIEW OF THE PROJECT

3.1 Project Area

The existing Barkly East Landfill is located approximately 1 km south of Barkly East, in the Senqu LM, Eastern Cape Province. The landfill is situated on Farm Sterkspruit 82 Portion 20, and is accessed via a gravel road to R58 (Surveyor-General 21-digit Cadastral Code: C06000100000161800000). An old dumping area is located to the south of the site (Figure 5-1). A proposed cemetery is to be located to the north of the site. Vacant land makes up the remainder of the surrounding areas. The Detailed Locality in Figure 3-2 provides an overview of the landfill in relation to the town of Barkly East.

3.2 Description of Existing Barkly East Landfill

The entire landfill footprint area of approximately 19 259 m^2 is fenced and fitted with a gate (Figure 3-1). However, the fence has been compromised by informal waste pickers re-mining the landfill for recyclables. A weighbridge has recently been installed at the gate (Figure 3-1), but it is in the wrong position and also not operating due to a lack of electricity.

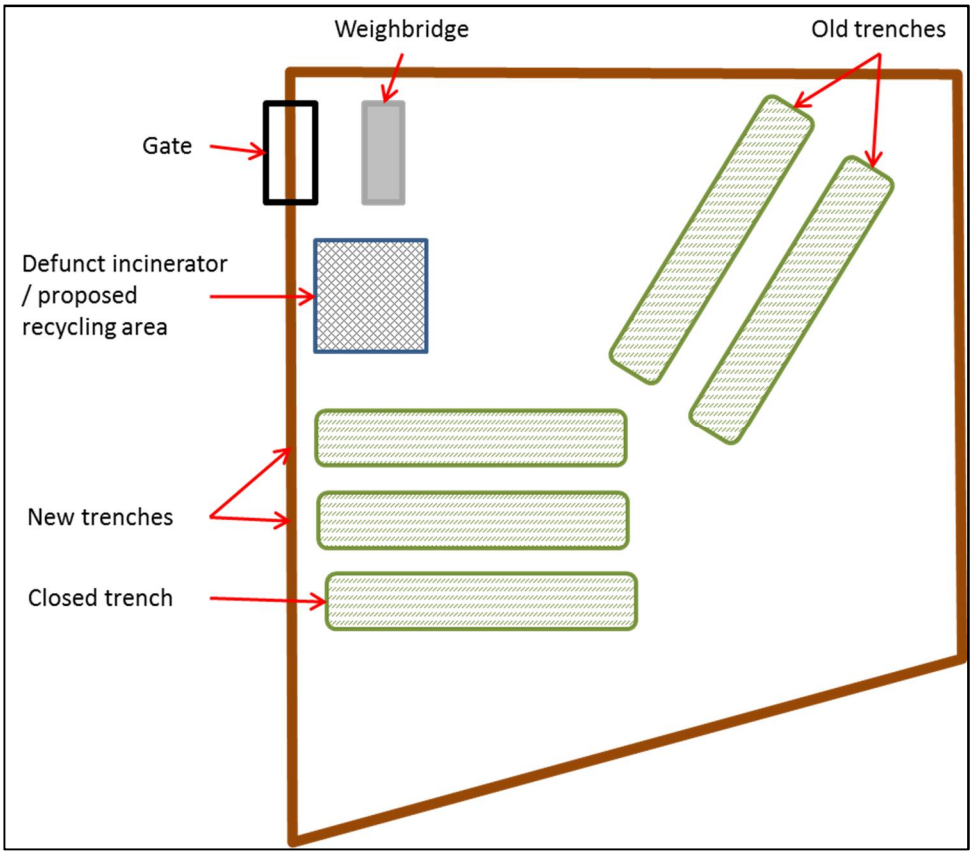


Figure 3-1: Barkly East Landfill Site layout

There is an old caged area south of the gate (Figure 3-1), where historically waste was incinerated in a fire place. This practice has stopped now and in the future the municipality intends to utilise the area for recycling. The waste disposal process on site consists of trenching with no liners. When the trench is full, it is covered with excavated material and a new trench dug underneath where the soil was previously placed.

On the southern side, a new trench has been dug to accept waste. Adjacent to this is a recently closed and capped trench which is approximately 4 metres high. Illegal mining of this area means repairing of the capping is ongoing. When there is a shortage of material for capping, it is imported from residential developments in the area. Capping is a 200mm topsoil cover. Vegetation is allowed to recover itself.

The facility is currently used for the disposal of general waste, garden waste and garden rubble sourced from residents and businesses in Barkly East and surrounding areas. It is estimated in the IDP 2014, that 4.5 t/day of household waste is disposed of in the Barkly East Landfill.

There are no storm water management controls in place and potentially contaminated runoff is discharged from the property on the south east corner, where it has the potential to enter a stream some 300m away.

3.3 Waste Classification of the Landfill Site

The landfill will be assessed in terms of the current impact on the environment and the current operational status of the landfill compared to the minimum requirements (Application for Operation). The impacts assessed will cover operation and decommissioning, as the site already exists and operates.

The WCMR state that all general domestic waste landfills need to, as a minimum, adhere to the lining requirements for a Class B landfill as described in Regulation 636 of the WCMR. If the landfill accepts wastes that are deemed hazardous as per the information in the Annexure to the WCMR, the landfill cell that accepts this waste needs to be lined in accordance with that of a Class A landfill. For closure and capping design purposes the disposal site will be assessed using the principles contained in the 1998 DWS' (then Department of Water Affairs and Forestry) Minimum Requirements for Waste Disposal by Landfill document.

3.4 Waste Management of the Licensed Landfill

3.4.1 Design Solution

When all the necessary information has been gathered, the preliminary design requirements for the landfill will be addressed. The preliminary design will be characterised by some of the following activities, where applicable:

- Determine the landfill footprint and the waste volume contained within;
- Liner Design – depending on the waste characteristics a suitable liner for the site will be designed either for the capping of the cells or barrier systems at the bottom of the cells or both;
- Preliminary design of stormwater and leachate management system; and,
- Recommendation for site operation procedures.

3.4.2 Costing of the Proposed Solution

The construction cost for addressing the design requirements will be estimated. This cost estimate can be used by the EC DEDEAT and the LM to plan and budget for the implementation of the requirements of the WML.

3.5 Need and Desirability

Service delivery is an issue of national concern / importance. Thus, the licensing of the illegal Williston landfill is considered part of this programme. This licensing process undertaken in terms of the NEMWA is in accordance with an initiative driven by the DEA to ensure the legal compliance of all municipal landfills, which in turn ensures appropriate and effective environmental management of these sites. In addition, the licensing process is aligned with the Senqu LM Integrated Development Plan (IDP), indicating the requirement to license the existing landfill.

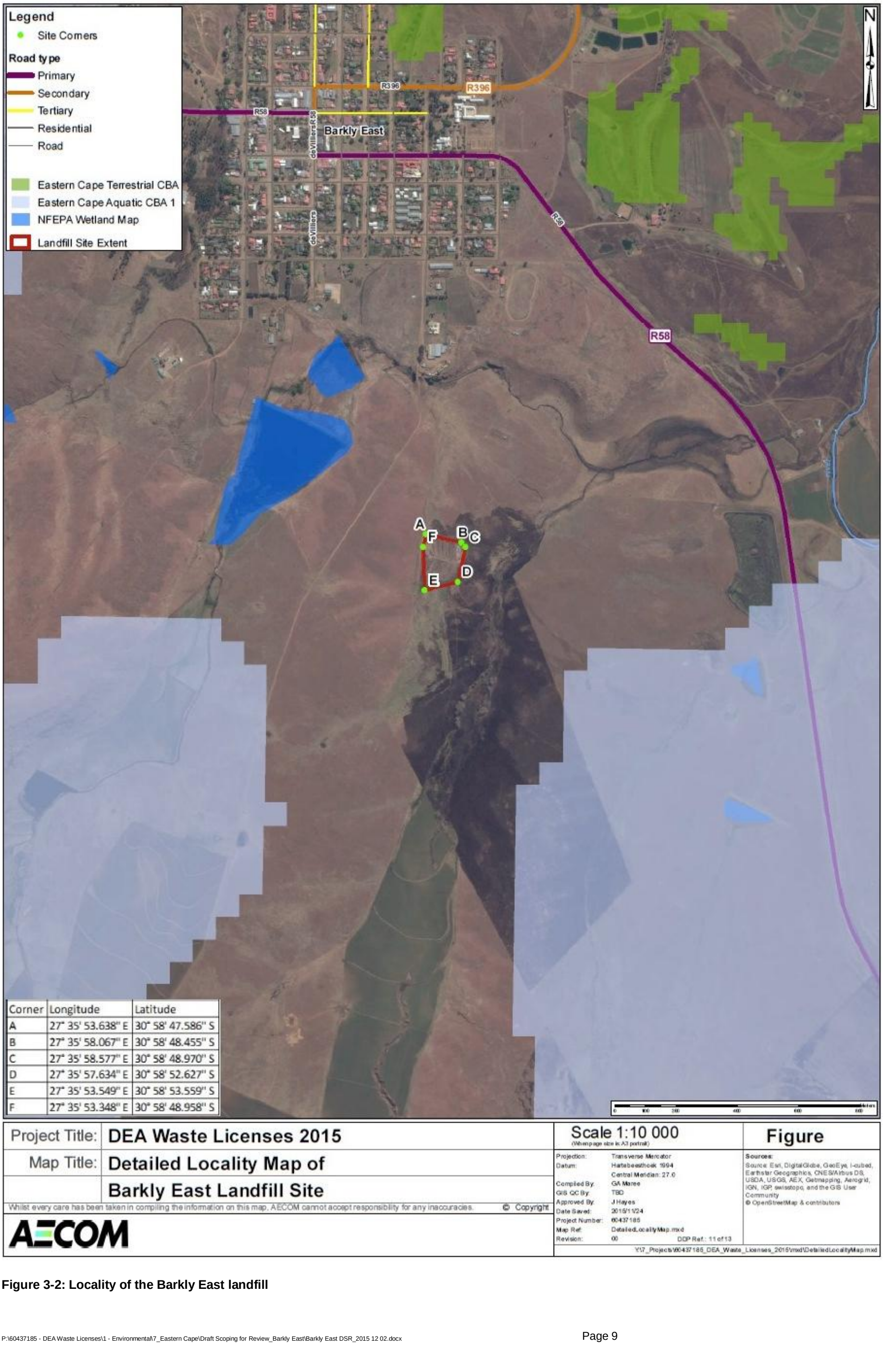


Figure 3-2: Locality of the Barkly East landfill

4. DESCRIPTION OF ALTERNATIVES

"Alternatives are different means of meeting the general purpose and need of a proposed activity. The identification, description, evaluation and comparison of alternatives are important for ensuring the objectivity of the assessment process. In cases where there is no objective and thorough assessment of alternatives, the EIA process usually only confirms a chosen activity and the value of the assessment as an input to decision-making may be compromised" (DEAT Guideline 4, 2006).

4.1 Alternatives Considered

The identification of alternatives is an important component of the EIA process. However, as the Project entails the licensing of an existing landfill, project location / site alternatives are not currently considered in the EIA process.

During the EIA Phase, various design alternatives will be considered to ensure that existing and future waste management activities are aligned to all applicable environmental and waste management legislation.

4.1.1 Do Nothing Alternative

The DEA stresses that the "Do-Nothing" approach should be considered in all cases.

The "Do-Nothing" approach entails that the existing Barkly East Landfill is not licensed. Should such licensing not take place, poor waste management at this landfill will continue. Furthermore, negative environmental and social impacts associated with the current lack of waste management practices will not be rectified and/or mitigated.

The "Do-Nothing" scenario will be the basis against which the acceptability of the identified environmental issues, and, technically and economically feasible alternatives, will be assessed during a comparative alternatives assessment in the EIA Phase.

5. DESCRIPTION OF AFFECTED ENVIRONMENT

5.1 Study Area Context

Barkly East is located in the foothills of the Southern Drakensberg mountains between the Eastern Cape villages of Lady Grey and Elliot. Access to the town is either from the R396 from the north and west or the R58 which enters the town from the south east. It is on the historic 157km Eastern Cape, Aliwal North, Eastern Cape, Lady Grey and Barkly East railway line. Elevated at 1790 meters above sea level (masl), it is known as the 'Switzerland of South Africa', because of the snow that covers its mountains in winter. Refer to the Locality Map in Figure 3-2 above and the Site Plan in Figure 5-1 below.

5.2 Physical Environment

5.2.1 Climate and Atmospheric Conditions

Rainfall within the Senqu LM varies between 1000mm and 1400mm a year to about 600mm in the lower lying areas. The average annual rainfall is approximately 646mm. Peak rainfall in Barkly East occurs during February, at just over 90mm, while the winter rainfall low occurs in July between 15 and 20mm

The average annual temperature in Barkly East is 12.4°C while the highest summer temperatures in Barkly East occur during December and January, with an average maximum of 25.6°C in the month of December. June experiences the lowest temperatures with an average of 5.5°C. (www.Climate-data.org, 2015).

5.2.2 Topography

The topography of the study area is relatively flat, although the site itself slopes slightly towards the east, towards the watercourse nearby. The notable topographic features occur west and due south of the site where hills of approximately 1870m are observed. The elevation on site is approximately 1780 masl.

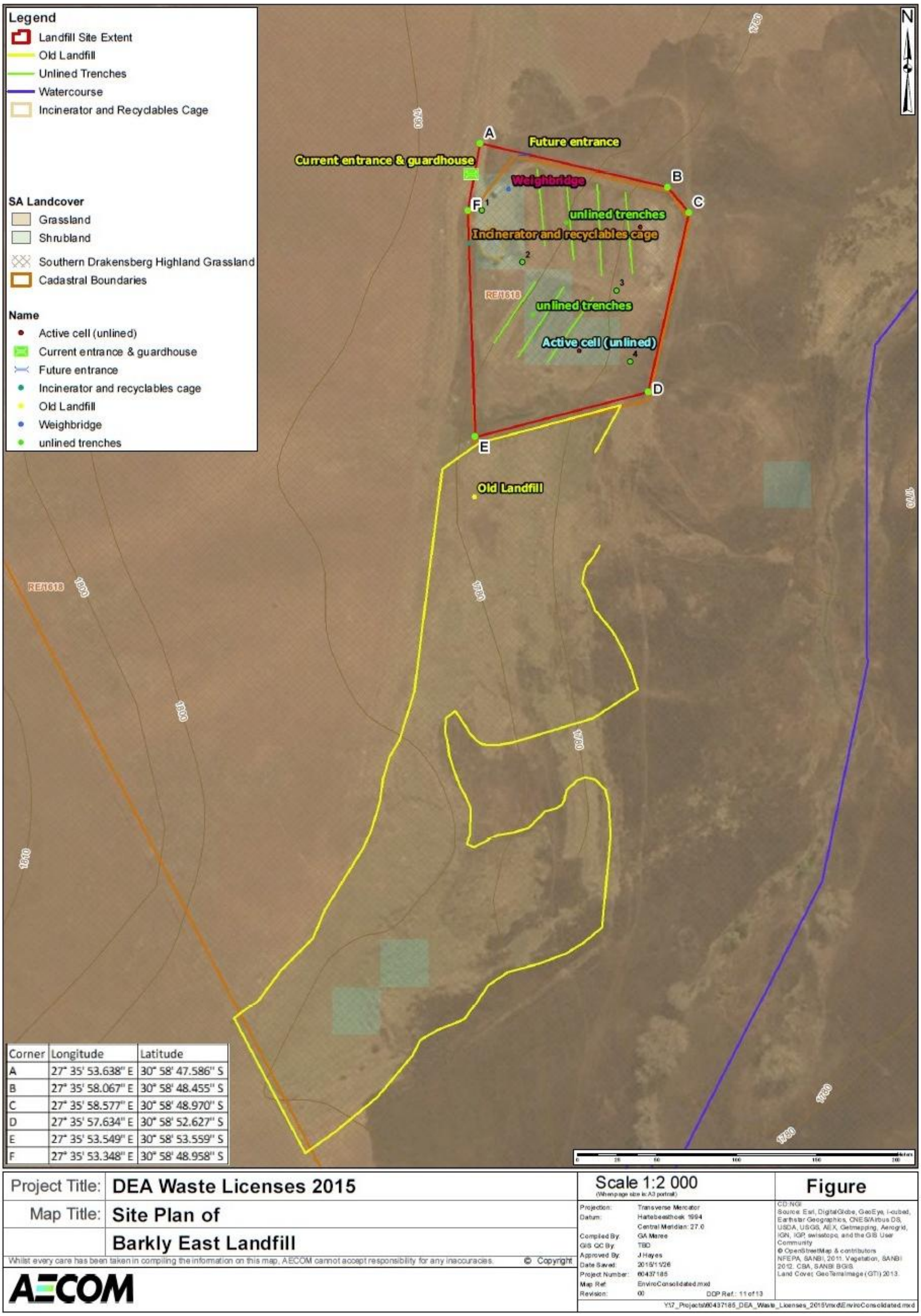
5.2.3 Geology

The investigated area falls within the 3026 Aliwal North 1:250 000 geology series maps and is situated approximately 100 km east south east of Aliwal North, Eastern Cape. The landfill site falls within the Drakensberg Formation of the Karoo Supergroup with areas of Quaternary sediments. The Drakensberg Formation consists of basaltic lava, tuff, agglomerate and sandstone. These igneous rocks form part of the Mesozoic Karoo Igneous Province and are the result of extensive continental flood basalts. A number of Jurassic dolerite intrusions are also present in the area. These intrusions may be in the form of dykes or sills. Refer to Appendix D for the Geological Map.

5.2.4 Soils

The study area is located within the Upper Orange Water Management Area. The soils in the Caledon and upper Orange River catchment area are categorised into four soil types, the clay enriched by illuviation duplex soils, an iron oxide enriched in middle to lower slope in warm, sub-humid climate with a distinct dry season, cumulic soils having recently formed in unconsolidated sediments such as colluviums, alluvium and aeolian sands and, lastly, youthful plinthic soils resulting from either limited rock weathering or rejuvenation through natural erosion on steeper, convex slopes (Maake, 2012).

Soils in the LM have been degraded due to communal grazing lands not being well maintained or protected under the previous dispensation. The primary cause is the overstocking of livestock and inappropriate grazing methods (Draft IDP, 2014)



Corner	Longitude	Latitude
A	27° 35' 53.638" E	30° 58' 47.586" S
B	27° 35' 58.067" E	30° 58' 48.455" S
C	27° 35' 58.577" E	30° 58' 48.970" S
D	27° 35' 57.634" E	30° 58' 52.627" S
E	27° 35' 53.549" E	30° 58' 53.559" S
F	27° 35' 53.348" E	30° 58' 48.958" S

Project Title:	DEA Waste Licenses 2015	Scale 1:2 000 (When page size is A3 portrait)	Figure
Map Title:	Site Plan of Barkly East Landfill	Projection: Transverse Mercator Datum: Hartebeesthoek 1994 Central Meridian: 27.0 Compiled By: GA Maree GIS QC By: TBD Approved By: J Hayes Date Saved: 2015/11/26 Project Number: 60437185 Map Ref: EnviroConsolidated.mxd Revision: 00 DOP Ref.: 11 of 13	CD:NGI Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community © OpenStreetMap & contributors NFEPA, SANBI, 2011. Vegetation, SANBI 2012. CBA, SANBI BGIS. Land Cover: GeoTerraImage (GTI) 2013.
Whilst every care has been taken in compiling the information on this map, AECOM cannot accept responsibility for any inaccuracies. © Copyright		Y:\7_Projects\60437185_DEA_Waste_Licenses_2015\mxd\EnviroConsolidated.mxd	

Figure 5-1: Site Plan of the Barkly East Landfill

5.2.5 Existing Land Use and Land Cover

Within the LM the total cultivated area of arable land is approximately 47 319 ha. In general there is limited land available that can sustain intensive agricultural practices. The Project area is located on, and surrounded by grassland and water bodies located within a 1km radius of the landfill and the urban area of Barkly East town directly to the north (Refer to Figure 5-1).

5.2.6 Surface and Groundwater

The site is situated in the Kraai sub area of the Upper Orange Water Management Area (WMA), in quaternary catchment D13D. The site is located within a floodplain of the un-named tributary of the Langkloof River. Locally around Barkly East, the groundwater rests at between 3.45m and 48 m below surface. Currently the municipality pumps out of 2 boreholes to supplement water to the town. This has had an impact on the water levels in these 2 boreholes. A hydrocensus conducted in 2015 indicates that the rest water level of groundwater should be 8m below the landfill.

5.3 Biophysical Environment

5.3.1 Flora

The Barkly East landfill is located within the Gd 4 Southern Drakensberg Highland Grassland vegetation type. The distribution of this vegetation unit spans the Eastern Cape and KwaZulu-Natal Provinces. It forms an intricate system of patches and corridors across the highest mountains and ridges of the Stormberg, from Molteno to the surrounds of Dordrecht, also including the elevated broad valley of the Kraairivier (near Barkly East) and its tributaries. This vegetation type occurs at an altitude of 1 420–2 080 m, mainly between 1 720–1 840 m. Prominent vegetation and landscape features include steeply sloping mountainous areas on and below the summit of the Great Escarpment supporting dense tussock grassland on slopes sometimes with a dwarf-shrubby component and dwarf shrubland on exposed rocky areas. The tussock grassland is dominated by various species of Festuca and other grasses such as *Themeda triandra, Heteropogon contortus, Eragrostis racemosa, Eragrostis chloromelas, E. curvula, Elionurus muticus, Trachypogon spicatus, Andropogon appendiculatus, Harpochloa falx* and *Tristachya leucothrix* (Mucina and Rutherford, 2006)

On site, there is little to no indigenous vegetation remaining, and the surrounding land shows signs of overgrazing and disturbance. Alien vegetation poses many challenges in the municipal area. As such the municipality struggles with crack willow which grows along the Kraai River, responsible for depleting water supplies. There has been an increase of alien and undesirable species like Slangbos and blue bush near Lady Grey. Unfortunately there is currently limited protection for environmentally sensitive areas within Senqu LM. Refer to the site photographs in Appendix C.

5.3.2 Fauna

Of the 40 bird species endemic to South Africa, 21 are found in the grassland biome, and 12 of these are endemic to this biome; for example. Rudd's lark. Of the 93 species of threatened reptiles and amphibians in South Africa, 13 occur in the grassland biome of which 19 frogs (e.g. plaintive rain frog, Amatola toad) are endemic to the biome. Characteristic mammals are black wildebeest, blesbok, oribi and grey rhebuck (Enviro-Facts, 1999). No species of concern are expected to inhabit the site as it is an existing landfill and there is little potential habitat within the site boundary.

5.4 Social Environment

5.4.1 Population

The local population of the Senqu LM in 2001 was estimated to be 135,141 and decreased to 134,150 in the 2011 census (Stats SA, Census 2011). This population decrease can be attributed to out migration as people move to seek jobs and schooling. Household numbers on the other hand are increasing from 33 904 (2001) to 38 046 (2011). This is due to the effects of urbanisation and participation in a world economy which signifies the ever increasing cost of large families and households. This is reflected in the statistics which show that the average household size has decreased from 4 in 2001 to 3.5 in 2011 (Senqu LM Draft IDP, 2014).

Barkly East has a population of 9.986 and corresponding density of 590 persons per square kilometre. Black Africans make up 90.4% of Barkly East town and 74.6% of the population speak Xhosa as their first language. (Stats SA, Census 2011).

5.4.2 Employment

Data from the 2011 Community Survey indicates that the average unemployment rate of the Senqu Municipality is 35.5 %. This only includes people that are actively searching for work. Including those not actively seeking work, unemployment in Senqu is as high as 65% compared to 54% and 48% for the district municipality and Eastern Cape province, respectively.

5.4.3 Education

In general skills levels are low, with the majority of residents reliant on government or community services for employment or primary economic activities such as agriculture. Only 5.4% of the population aged 20 and above have achieved higher education. 14.5% of the population that are aged 20 and above have no schooling (StatsSA, Census 2011). There is an urgent need for secondary and tertiary education in the region as currently there are only tertiary opportunities offered outside the region (Senqu LM Draft IDP, 2014).

5.4.4 Service Delivery

5.4.4.1 Health Services

Senqu Health Sub-District consists of 4 hospitals (Cloete Joubert in Barkly East, Lady Grey Hospital, Mlamli and Empilisweni in Sterkspruit), 20 fixed clinics, 1 Satellite clinic, 8 Mobile clinics, 5 health posts and 2 community based services in Sterkspruit and 1 in Barkly East serving all the farms at Senqu. A large number of people in Senqu remain without access to healthcare.

5.4.4.2 Electricity

Although most of the Senqu community have access to electricity, there are some communities that still need to be electrified either in the form of electricity installation or in upgrading of their existing lines, as most of the lines particularly in Sterkspruit and surrounding villages are very weak. Major electricity backlogs are noted in rural areas where 11 498 households do not have access to basic electricity services (Stats SA, 2011).

5.4.4.3 Waste Management and recycling

Within the LM, waste management remains a problem with insufficient staff and old vehicles which constantly break down. In addition, landfills are poorly maintained and recycling initiatives are limited due to the limited budget available. The LM has waste sites in Lady Grey, Barkly East, Sterkspruit, Rhodes and Rossouw. The Lady Grey WDF has a licence, while the Barkly East, Sterkspruit, Rossouw, and Rhodes sites are unlicensed. All sites are operational. Refuse removal is only operated on a weekly basis in Barkly East, Sterkspruit, Rhodes and Lady Grey. Only 11.2 % of households were served in 2007 and the percentage of unserviced households increased from 17.2% in 2001 to 22.6 % in 2007 (Stats SA, 2007).

5.4.4.4 Water and Sanitation

The 2011 census reveals that approximately 20% of the Senqu LM does not have access to water (Stats SA, 2011). Whilst most of the population does receive water, sanitation provision is still a challenge with 45% being unserved. Apart from the backlog, the Senqu LM is experiencing problems with decaying and poorly designed water and sanitation systems that were not designed to cope with the additional demands placed upon them and which have come to the end of their lifespan (Senqu LM Draft IDP, 2014).

5.4.5 Economy

Despite experiencing positive economic growth between 2000 and 2010, Senqu's economy has been unable to create meaningful benefits for the poor. The poverty rate is 62.93% - much higher than the provincial average of 53.61%. With about 50.25% of the households earning no income at all and 21.39% earning between R1 and R1600 per month, almost two thirds of Senqu households are impoverished (Senqu LM Draft IDP, 2014).

6. LEGISLATIVE FRAMEWORK

6.1 Introduction

The overarching legal framework pertinent to the licensing of the Barkly East landfill site is NEMA and the associated Specific Environmental Management Acts (SEMAs). This section provides an overview of the policy and legislative context including the identification of all legislation, policies, plans, guidelines, spatial tools, municipal development frameworks and instruments applicable to the activity and which are to be considered in the EIA process.

6.2 Relevant National Legislation

6.2.1 The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)

6.2.1.1 Overview

NEMWA regulates waste management in order to protect human health and the environment, by providing reasonable measures for the prevention of pollution and ecological degradation, and for securing ecologically sustainable development. It also provides for national norms and standards for regulating the management of waste by all spheres of government, providing for specific waste management measures for licensing and the control of waste management and remediation activities associated with contaminated land.

6.2.1.2 National Standards for Disposal of Waste to Landfill

The DEA promulgated Regulations and Standards under NEMWA to regulate various aspects of waste management, including the design and classification of landfills. In addition to the existing Minimum Requirements, the following Regulations will also be applicable:

- Government Notice R.634 – Waste Classification and Management Regulations;
- Government Notice R.635 – National norms and standards for the assessment of waste for landfill disposal; and
- Government Notice R.636 – National norms and standards for disposal of waste to landfill.

As a result of the above, the design and classification of the Barkly East Landfill will take these new Regulations on Norms and Standards into account.

6.2.1.3 Activities applicable to NEMWA

The operation of the Barkly East Landfill includes activities listed in Categories A of Government Notice (GN) 37083 of November 2013, published in terms of Section 19(1) of NEMWA, as waste management activities that may have a detrimental effect on the environment and for which authorisation is required in the form of a Waste Management Licence. The relevant listed activities are provided in Table 6-1, for which authorisation by means of a S&EIR application process must be obtained.

Table 6-1: Listed Activities in Terms of Category A and B of GN 37083 of November 2013

No. and Date of the Relevant Notice	Category A or B	Activity Number	Description of the Listed Activity
GNR 37083 of 29 November 2013 in terms of Section 19(1) of NEMWA	A	2	The sorting, shredding, grinding, crushing, screening or bailing of general waste at a facility that has an operational area in excess of 1000m^2.
GNR 37083 of 29 November 2013 in terms of Section 19(1) of NEMWA	B	8	The disposal of general waste to land covering an area in excess of 200m² and with a total capacity exceeding 25 000 tons.
		10	The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).

6.2.2 National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended

NEMA provides a framework for cooperative environmental governance between the various spheres of government, by establishing principles for decision-making on matters relating to the environment. Furthermore, NEMA promotes Integrated Environmental Management (IEM) to ensure sustainable resource utilisation and development and requires that the DEA be the lead agent in ensuring effective custodianship of the environment. It also provides that sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where subjected to significant human resource usage and development pressure. The NEMA principles, contained in Section 2, clearly emphasize the need to protect threatened ecosystems and are binding on all organs of state including the local authorities. Furthermore, the principles essentially guide the interpretation, administration and implementation of the Act and any other law concerned with the protection of the environment. An overarching emphasis is the principle that development must be environmentally, socially and economically sustainable.

Section 23 of NEMA further determines that IEM should be employed when any policies, programmes, plans or projects are drawn up to minimise the impact on the environment. The duty of officials to prevent pollution and ecological degradation, to promote conservation and secure ecologically sustainable development and use of natural resources, originates from the Constitution and NEMA.

For a range of listed activities and depending on the scope of the activity, the responsibility to ensure compliance with NEMA and its suite of SEMAs has been devolved to the nine provincial departments.

Sections 24 and 44 of NEMA make provision for the promulgation of regulations that identify activities which may not commence without an Environmental Authorisation (EA). Thus, the EA application process and activities were detailed within the 2014 Environmental Impact Assessment (EIA) Regulations listed in Government Gazette No. 10328 of 4 December 2014 (GN 982, 983, 984 and 985). All activities listed in the abovementioned regulations shall be subject to an EIA process (i.e. Basic Assessment (BA) or Scoping and Environmental Impact Reporting (S&EIR) application processes) and will require EA from the relevant Competent Authority (CA). Section 24F of the NEMA prohibits the undertaking of identified listed activities except by virtue of being undertaken under the control of an EA from the relevant CA.

At this stage, no applicable NEMA activities have been identified as having been triggered by the application. The scope of this project is to license the operation of the existing landfill.

6.2.3 National Water Act, 2008 (Act No. 36 of 2008)

The National Water Act, 1998 (Act No. 36 of 1998) (NWA) provides a framework to protect, develop, conserve and manage the nation's water resources. Water use is defined broadly in terms of NWA, and includes taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering a watercourse, removing water found underground for certain purposes, and recreation. In general a water use must be licensed (in terms of Section

21) unless it is listed in Schedule 1, is an existing lawful use, is permissible under a general authorisation, or if a responsible authority waives the need for a licence. Section 21 of the NWA lists the water uses for which authorisation under the Act is required.

In terms of Section 19 of the NWA "An owner of land, a person in control of land or a person who occupies or uses the land on which … any activity or process is or was performed or undertaken; or … any other situation exists, which causes, has caused or is likely to cause pollution of a water resource must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring". These measures may include, but are not limited to:

- Measures to cease, modify, or control any act or process causing the pollution.
- Compliance with any prescribed waste standard or management practice.
- Containment or prevention of the movement of pollutants.
- Remediation of the effects of the pollution.
- Remediation of the effects of any disturbance to the bed and banks of a watercourse.

The NWA also provides for pollution prevention measures, with particular emphasis on water resource pollution. In accordance, the licensee shall ensure that activities impacting upon water resources and effluent releases are monitored for compliance with the applicable regulations. Emergency incidents involving water resources are included in the Act, requiring the polluter to remediate and mitigate the impacts of such an emergency incident.

The DWS will provide a Record of Recommendation in terms of the NWA and any other associated policies, plans, programmes, guidelines and regulations to the CA as part of the WML application process.

6.3 Additional Applicable Legislation

Additional legislation applicable to the Project is listed in Table 6-2.

Table 6-2: Summary of Applicable Legislation

Relevant Legislation	Sections	Applicability to the Project
Constitution of South Africa, 1996 (Act No. 108 of 1996)	Chapter 2	Bill of Rights.
	Section 24	Environmental rights.
	Section 25	Rights in property.
	Section 32	Administrative justice.
	Section 33	Access to information.
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	Sections 56 and 57	Protection of threatened or protected species.
	Sections 65 -73	The control of alien species, invasive species and genetically modified organisms.
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and regulations	Section 5, 6	Implementation of control measures for alien and invasive plant species, especially in urban areas.
National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)	Section 32	Control of dust.
	Section 34	Control of noise.
	Section 35	Control of offensive odours.
Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and regulations	General Administration Regulations GN R929 of June 2003	Material Safety Data Sheets must be made available at the request of any Interested and Affected Party (I&AP).
	Section 8	General duties of employers to their employees.
	Section 9	General duties of employers and self-employed

Relevant Legislation	Sections	Applicability to the Project
		persons to persons other than their employees.
Hazardous Substances Act, 1973 (Act No. 15 of 1973) and regulations	As Type 2, 3 and 4 waste may be disposed of at the existing Landfill, the controls of the Hazardous Substances Act must thus be complied with.	
Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947) and regulations	Sections 3 to 10	Control of the use of registered pesticides, herbicides (weed killers) and fertilisers. Special precautions must be taken to prevent workers from being exposed to chemical substances during alien vegetation control programmes.
National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998)	Chapter 4, 5	Fire prevention, management and control measures to be implemented.
National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977)	Section 4	Local Authority approval of plans to erect buildings like weighbridges, admin buildings, etc.

6.4 Local Legislation and Policy Framework

The EIA process must consider the planning policies that govern the study area to ensure that the scale, density and nature of activities/developments are harmonious and in keeping with the sense of place and character of the area. The proposed environmental and infrastructure modifications must be viewed in the context of the planning policies from the following documents:

6.4.1 Senqu LM IWMP, 2013

The Integrated Waste Management Plan (IWMP) was prepared in 2013. The reviewed IWMP reflects on previous status quo and objectives set, as well as current conditions, limitation and challenges currently experienced by the local municipalities.

The purpose of the IWMP is to optimize waste management in order to maximize efficiency and minimize the associated environmental impacts of waste generation and financial costs of waste disposal and to improve the quality of life of inhabitants of the Municipality.

The Barkly East Landfill has an environmental authorisation issued under ECA but not a permit from the Department of Water and Sanitation. Currently the IWMP is not used to manage waste and deliver waste services. It has been identified as an intervention in the 2014 IDP.

6.4.2 Senqu LM Spatial Development Framework (SDF), 2006

A municipal Spatial Development Framework (SDF) is the outcome of a Spatial Development Planning process undertaken by a municipal council (i.e. either a Metropolitan, District or Local Municipal Council) in accordance with the planning powers accorded to it in terms of the Municipal Structures Act, 1998 (Act No. 117 of 1998).

As part of the development strategies relating to the provision of adequate and reliable basic services within the Senqu LM, it is indicated that the Barkly East landfill is to be licensed.

6.4.3 Senqu LM Integrated Development Plan (IDP), 2014

The 2014 Senqu LM IDP was compiled to be aligned with a range of National and Provincial policy documents. In terms of the Service Delivery Agreement (Outcome 9), the first priority relates to ensuring that “municipalities meet the basic service needs of communities”. Currently only 14% of the Senqu community receives regular waste services.

Challenges relating to waste management currently faced by the Senqu LM include:

- Lack of equipment;

- Illegal dumping on open spaces in both towns and in townships;
- No recycling initiatives;
- Insufficient legislation; and,
- Insufficient budget.

According to the 2014 IDP, waste management is not one of the LMs priority areas, but it is recognised that some form of intervention is required to obtain the necessary equipment and to develop an implementation plan from the IWMP.

7. PUBLIC PARTICIPATION PROCESS (PPP)

The Public Participation Process (PPP) is an integral part of the EIA process. The objectives of PPP in an environmental process are to provide sufficient and accessible information to stakeholders in an objective manner to assist them to:

- Raise issues of concern and suggestions for enhanced benefits;
- Verify that their issues have been recorded and considered in the environmental investigations;
- Assist in commenting on feasible alternatives;
- Contribute relevant local information and knowledge to the environmental assessment; and,
- Comment on the findings of the environmental assessment.

The approach towards any PPP is dependent on the details of the project. Each project has a particular geographic and technical nature, and hence the PPP should be structured accordingly. Where possible, and within the required statutory frameworks, it is also desirable to structure such a process to address the process needs of I&APs.

7.1 Identification and Registration of I&APs

At the time of compiling this report, the database contained 50 stakeholders across a range of sectors and spheres of government, including:

- National Government;
- Provincial Government;
- Local Government;
- Landowners;
- Agriculture;
- Business and Industry (mining and commercial); and
- Environmental groups.

AECOM made an effort to ensure that individuals and/or organisations were identified from an institutional as well as a geographical point of view. Refer to **Appendix A** for the I&AP Register.

7.2 Announcement of the Proposed Project

Various mechanisms were used to create public awareness of the proposed WML application for the existing Barkly East landfill. An opportunity to participate in the EIA process and to register as an I&AP was announced as indicated below:

7.2.1 Media

Newspaper advertisements notifying the public about the environmental application and opportunities to participate in the EIA process for the proposed WML application for the existing Barkly East landfill were placed in the following newspapers:

Table 7-1: Project Announcement Newspaper advertisements

Newspaper	Distribution	Language	Date
The Reporter	Local	English	11 September 2015
Daily Dispatch	Regional	English	11 September 2015

Copies of the Newspaper Advertisements are included in **Appendix A**.

7.2.2 Notification Letter

A notification letter, including an invitation to participate, has been distributed via email to identified I&APs announcing the project and the opportunities for participation, as well as the availability of the DSR for review by the public. A copy of the notification letter is provided in **Appendix A**. Proof of notification will be provided with the FSR.

7.2.3 On-site Notices

Three (3) A2-sized site notices (in English) were erected at various public places in the project area on the 27th August 2015.

Table 7-2: Site Notice Locations

Site Notice No.	Location
1	Barkly East WDF Fence
2	Senqu Local Municipality Reception, Barkly East
3	Caltex, Cnr Graham St & Cole St

Copies and photographs of the site notices are provided in **Appendix A**.

7.3 Dissemination of Information

Information was disseminated to registered I&APs primarily by means of a Background Information Document (BID) and Notification letters. Issues raised and comments received from I&APs were integrated into the DBAR.

7.3.1 Background Information Document

The BID has been useful in providing background information to the public on the proposed waste licence application for the existing Barkly East landfill. Furthermore, it provided information on the processes that have been followed and the contact details of the PPP Consultant. The BID was distributed to all registered I&APs. A copy of the BID is provided in **Appendix A**.

7.3.2 Draft Scoping Report Review Period

The DSR will be available for a thirty (30) calendar day review period to registered I&APs from 04 December 2015 to 25 January 2016 (excluding public holidays and the period from 15 December to 05 January). The DSR will be available at the following venues:

Table 7-3: Venues for Draft Scoping Report

Venue	Address	Telephone
Barkley East Public Library	White Street, Barkley East, Senqu	053 474 0143
Senqu Local Municipality Offices	De Villiers Street, Barkly East	051 603 0019

Electronic copies of the DSR can be downloaded from www.deawaste2015.co.za.

7.4 Comment and Response Report

All issues and concerns raised by I&APs during the EIA process, will be recorded and responded too in the Comments and Responses Report (CRR) which will form part of the FSR. No comments have been received to date.

7.5 Final Scoping Report

Once the review period on the DSR has concluded, the report will be updated to a FSR together with the CRR. The FSR will then be submitted to the EC DEDEAT for their approval.

8. DESCRIPTION OF POTENTIAL ENVIRONMENTAL IMPACTS

8.1 General

The purpose of this section is to provide a description of the environmental issues and anticipated impacts as required by Appendix 2 of the EIA Regulations (2014). This enables the EIA Report to be clearly focused. It also provides a framework for the impact assessment that the landfill will have during operation. The following environmental impacts have been identified and will be investigated during the EIA phase of the process.

8.1.1 Planning, Design and Construction Phase

As this application is for the operation of the existing illegal Barkly East landfill site no impacts are associated with the planning, design and construction phase.

8.1.2 Operational Phase

The impacts anticipated during the operation of the existing Barkly East Landfill are indicated in Table 8-1.

Table 8-1: Anticipated impacts during operation

Potential Negative Impacts	Potential Positive Impact
• Increased traffic • Increased emissions from vehicles • Increased noise on site • Health and safety risks on site • Night-time and / or weekend fly tipping • Landfill gas generation	• Increase in long term employment opportunities • Increase in local business - direct i.e. contractors • Increase in local businesses - indirect i.e. vehicle repairs • Increased local supplier income from materials and services required once the landfill is licensed. • Decrease in wind-blown litter • Decrease in soil and water contamination due to liner and stormwater management implementation. • Decrease in nuisance impacts (dust, odour)

8.1.3 Decommissioning and Closure Phase

The capacity of the landfill (within the existing fenced area) will be determined during the EIA Phase. This represents the spatial limit of the landfill. Within the boundaries of the site, any area that requires closure (such as a consolidated waste stockpile), will be assessed during the EIA Phase.

Should the municipality consider expanding the existing footprint, then the municipality will need to conduct a separate feasibility study to determine future disposal needs of the municipality and the suitability of the site for expansion or whether the better option will be to close the site and establish a new facility at a new site.

9. PLAN OF STUDY FOR EIA

9.1 Introduction to the EIA Phase

A Plan of Study for the EIA has been prepared according to the process described the EIA Regulations (2014) promulgated in terms of Section 24(5) of the NEMA, to provide the CA with adequate information to obtain authorisation, and proceed with the proposed activity.

The Plan of Study for EIA includes a description of the environmental issues that have been identified during the Scoping phase and which will require further investigation and assessment.

9.2 EIA Phase

During the EIA phase, the site will be classified according to the Waste Classification and Management Regulations promulgated in August 2013, as well as the DWS Minimum Requirements for Waste Disposal by Landfill. This will determine the level of detail required in the lining or capping designs of the various facilities, either during operations or for closure.

The landfill will be assessed in terms of the current impact on the environment and the nature of the status of the landfill (application for operations). The impacts assessed will cover operations, closure and decommissioning, as the site already exists. At present, it is not anticipated that specialist studies are required to be conducted in support of the EIA Process. The main reasons being that:

- The project entails the licensing of an existing operational landfill site;
- The licensing process would not entail extending the existing landfill beyond its existing footprint;
- The location of the existing landfill in relation to the nearest human settlement / town;
- The location of the landfill within a non-endangered environment; and,
- The semi-arid to arid conditions of the geographical location of the existing landfill.

During the EIA phase, a Draft EIA report will be compiled, containing the following information:

- A description of the EAP that prepared the report;
- A detailed description of the proposed activity;
- A description of the need and desirability of the project and details of the alternatives that were investigated;
- A description of the environment that may be affected;
- A description of the PPP that was undertaken;
- Findings, recommendations and copies of specialist studies, if applicable;
- An indication of the method used to identify impact significance;
- An assessment of specific information required by the competent authority;
- A comparative assessment of all alternatives, where applicable;
- An assessment of each potentially significant impact;
- A description of any assumptions, uncertainties and gaps in knowledge;
- An opinion on whether the activity should be authorised or not and, if it should be authorised, under what conditions;
- An Environmental Impact Statement; and,
- A draft Environmental Management Programme (EMPr) for the full lifecycle of the Project.

9.3 Impact Assessment Methodology

The impacts identified and described in Chapter 8, will be assessed using the methodology described below.

9.3.1 Impact Assessment Criteria

The criteria used for the assessment of potential impacts are described in **Table 9-1.**

Table 9-1: Impact Assessment Criteria

Criteria	Description
Nature	Includes a description of what causes the effect, what will be affected and how it will be affected.
Extent	Physical and spatial scale of the impact.
Duration	Lifetime of the impact is measured in relation to the lifetime of the landfill.
Intensity	Examining whether the impact is destructive or benign, whether it destroys the impacted environment, alters its functioning, or slightly alters the environment.
Probability	This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the lifecycle of the activity, and not at any given time.
Status	Description of the impact as positive, negative or neutral, and direct or indirect.
Significance	Synthesis of the characteristics described above and assessed as low, medium or high. Distinction will be made for the significance rating without the implementation of mitigation measures and with the implementation of mitigation measures.

Extent

The physical and spatial scale of the impact is classified below.

Table 9-2: Description of Extent Criteria

Description	Explanation	Scoring
Footprint	Impacted area extends only as far as the activity, such as footprint occurring within the total site area.	1
Site	Impact could affect the whole, or a significant portion of the site.	2
Regional	Impact could affect the area around the site including neighbouring farms, transport routes and adjoining towns.	3
National	Impact could have an effect that expands throughout the country (South Africa).	4
International	Impact has international ramifications that go beyond the boundaries of South Africa	5

Duration

The lifetime of the impact is measured in relation to the lifetime of the proposed operation of the existing Barkly East landfill.

Table 9-3: Description of Duration Criteria

Description	Explanation	Scoring
Short term	Impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than any of the development phases.	1
Short to medium term	Impact will be relevant through to the end of the construction phase.	2
Medium term	Impact will last up to the end of the development phases, where after it will be entirely negated.	3
Long term	Impact will continue or last for the entire lifetime of the development, but will be mitigated by direct human action or by natural processes thereafter.	4
Permanent	The only impact class that is non-transitory. Mitigation by man or natural process will not occur in such a way or time span that the impact can be considered transient.	5

Intensity

The assessment of the intensity of the impact will be measured using the criteria listed in the following table.

Table 9-4: Description of Intensity Criteria

Description	Explanation	Scoring
Low	Impact alters the affected environment in such a way that the natural processes or functions are not affected.	2
Low-Medium	Impact alters the affected environment in such a way that the natural processes or functions are slightly affected.	4
Medium	Affected environment is altered, but functions and processes continue, albeit in a modified way.	6
Medium-High	Affected environment is altered, and the functions and processes are modified immensely.	8
High	Function or process of the affected environment is disturbed to the extent where the function or process temporarily or permanently ceases.	10

Probability

Probability describes the likelihood of the impact(s) occurring for any length of time during the lifecycle of the activity, and not at any given time. The following table shows the classes.

Table 9-5: Description of Probability Criteria

Description	Explanation	Scoring
Improbable	Possibility of the impact occurring is none, due either to the circumstances, design or experience. The chance of this impact occurring is thus zero (0%).	1
Possible	Possibility of the impact occurring is very low, either due to the circumstances, design or experience. The chances of this impact occurring is defined as 25%.	2
Likely	There is a possibility that the impact will occur to the extent that provisions must therefore be made. The chances of this impact occurring is defined as 50%.	3
Highly likely	It is most likely that the impacts will occur at some stage of the Development. Plans must be drawn up before carrying out the activity. The chances of this impact occurring is defined as 75%.	4
Definite	Impact will take place regardless of any prevention plans, and only mitigation actions or contingency plans to contain the effect can be relied upon. The chance of this impact occurring is defined as 100%.	5

Confidence

The level of knowledge or information that the EAP or a specialist had in their judgement is rated as shown in the following table. Note that this criterion is not given a numerical value.

Table 9-6: Description of Confidence Criteria

Description	Explanation
Low	Judgement is based on intuition and not on knowledge or information.
Medium	Judgement is based on common sense and general knowledge.
High	Judgement is based on scientific and/or proven information.

Reversibility

Reversibility is the ability of the affected environment to recover from the impact, with or without mitigation. Note that this criterion is not given a numerical value.

Table 9-7: Description of Reversibility Criteria

Description	Explanation
Yes	The affected environment will be able to recover from the impact.
No	The affected environment will be unable to recover from the impact that is permanently modified.

Replaceability

Replaceability is an indication of the scarcity of the specific set of parameters that make up the affected environment. That is, if lost can the affected environment be (a) recreated, or (b) is it a common set of characteristics and thus if lost is not considered a significant loss. Note that this criterion is not given a numerical value.

Table 9-8: Description of Replaceability Criteria

Description	Explanation
Yes	Affected environment is replaceable, that is, an irreplaceable resource is not damaged, or the resource is not irreplaceable (not scarce).
No	Affected environment is irreplaceable.

Level of Significance

Based on the above criteria, the significance of issues will be determined using the following formula:

Significance = (Extent + Duration + Intensity) × Probability

This is the importance of the impact in terms of physical extent and time scale, and is rated as follows:

Table 9-9: Impact Assessment Significant Rating

Significance	Description	Scoring
No Impact	There is no impact	0 – 10
Low	Impacts are less important. Some mitigation is required to reduce the negative impacts.	11 – 30
Medium	Impacts are important and require attention. Mitigation is required to reduce the negative impacts.	31 – 60
High	Impacts are of high importance. Mitigation is essential to reduce the negative impacts.	61 – 89
Fatal Flaw	Impacts present a fatal flaw, and alternatives must be considered	90 – 100

9.4 Environmental Management Programme

A Draft EMPr will be included as part of the draft EIA report which will be made available for public review; after which, it will be finalised and submitted as part of the final EIA Report to the EC DEDEAT. The EMPr outlines the impacts and mitigation measures for the operation and maintenance; and decommissioning phases of the Project. The EMPr will comprise:

- Summary of Impacts: The predicted negative environmental impacts for which mitigation is required, and positive impacts requiring enhancement.
- Description of mitigation measures: The EMPr identifies feasible and cost-effective mitigation measures to reduce significant negative environmental impacts to acceptable and legal levels. Mitigation measures are described in detail and will be accompanied by designs, equipment descriptions, and operating

procedures, where appropriate, as well as descriptions of technical aspects of implementing the mitigation measures.

- Description of monitoring programme: The monitoring programme indicates the linkages between impacts, indicators to be measured, measurement methods and definition of thresholds that will signal the need for corrective actions.
- Emergency Action Plan: The identification of possible accidents during the construction and operation phase of the project, with measures on how they will be prevented and/or managed.
- Institutional arrangements depict and define the responsibilities for mitigation and monitoring actions.
- Legal enforceability: The key legal considerations with respect to the EMPr are:
    - Legal framework for environmental protection.
    - Legal basis for mitigation.
- Implementation schedule and reporting procedures that specify the timing, frequency and duration of the mitigation measures.
- Description of requirements for record keeping, reporting, review, auditing and updating the EMPr.
- Description of the on-going PPP process to be undertaken during the operation of the Barkly East landfill by means of a Landfill Monitoring Committee.

9.5 Draft EIR Availability and Public Review

Subsequent to the approval of the FSR, a notification letter will be distributed to all registered I&APs informing them of the approval of the FSR and the availability of the draft EIR. The draft EIR and EMPr will be made available to the public for comment. All registered I&APs will be notified of the availability of the report for review and comment for a period of 30 days (as per 2014 EIA regulations).

The draft EIR will be made available at the same public venues used during the Scoping Phase. Electronic copies can be downloaded from www.deawaste2015.co.za.

9.6 Final Environmental Impact Report

Following the review period, the draft EIR will be updated with comments received from the public to produce a final EIR. The final EIR will be submitted to the EC DEDEAT for consideration and decision-making.

9.7 Decision-making Phase

Once the WML (positive or negative) has been issued, all I&APs will be notified of the decision and have the opportunity to appeal the decision should they not agree with the authorisation issued or any conditions of authorisation.

10. CONCLUSION

The licensing of the unlicensed Barkly East landfill is in accordance with an initiative driven by the DEA to ensure the legal compliance of all municipal landfills, which in turn ensures appropriate and effective environmental management of these sites. The S&EIR application process is currently in the Scoping Phase, and its main purpose is to identify and investigate issues related to the proposed Project and list potentially significant impacts that require further assessment in the EIA Phase.

This DSR contains issues and impacts identified by the project team and during consultation with I&APs and other key stakeholders. The plan of study for the remainder of the EIA process is also indicated in this DSR. This DSR is currently available for public comment over a period of 30 days to provide I&APs with an opportunity to raise issues about the information presented in the report and for them to raise any other issues related to the proposed Project.

Comments received during the public review period will be incorporated into a Final Scoping Report, to be submitted to the EC DEDEAT for their approval, after which the EIA Phase of the S&EIR will commence.

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