

Draft Basic Assessment Report in support of a Waste Management Licence for the Operation (Expansion) of the existing Nondweni Landfill, Nquthu Local Municipality, KwaZulu-Natal



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The logo for AECOM, featuring the word "AECOM" in a bold, black, sans-serif font. The letter "E" is stylized with a horizontal bar that is green on the left and blue on the right.

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 licenced. 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 licenced during the 2014/15 financial year. The licencing of the Nondweni 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 License (WML) for the operation of the existing Nondweni Landfill (the Project), on behalf of the Nquthu LM.

PROJECT AREA

The existing Nondweni landfill is located in a rural area scattered with human settlements. The landfill is located 1.5 km south of Msebe Street, also known as the R15. This road intersects with the R68 in Nquthu, 13 km to the west. It is located on a plain in an area where there is mainly grassland. The site serves the town of Nquthu, the village of Nondweni, and the surrounding rural settlements. Nondweni is located in the uMzinyathi District Municipality in KwaZulu-Natal.

The landfill is located on Portion 0 of the Farm Nondweni 17144 (SG21 Digit code: NOGT00000001714400000), and is accessed via an unnamed track that branches off Road 54 Rd in Nondweni.

PROJECT DESCRIPTION

The existing unlicensed Nondweni landfill is both owned and operated by the Nquthu LM, the Applicant for the proposed WML. Although no record keeping of the influx of waste is being done, the LM estimates that the site receives 3 m³ of plastic waste, which is sold to a private recycling company, 3 m³ of paper/cardboard waste (which is also recycled), and 5 m³ of general waste per day. The sources of waste are private households, local businesses, and the hospital in Nquthu. During the site visit, medical pharmaceutical waste (hazardous waste) was observed on site, specifically, numerous used phials of oxytocin.

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 (EMPr). Detailed design for the rehabilitation activities as laid out in the EMPr must commence immediately upon receipt of the WML.

- 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; and,
- The eventual decommissioning and rehabilitation activities will comply with the Minimum Requirements for Waste Disposal by Landfill (Second Edition, 1998).

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 KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (KZN EDTEA) in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA).

The site already has a permit to operate in terms of the Environmental Conservation Act, 1989 (Act No. 73 of 1989) ('ECA'). The permit was issued in 1995 (Ref: B33/2/2122/14/P165). For this reason, it was agreed with EDTEA that a Basic Assessment (BA) application process for expansion be undertaken in order to obtain the WML.

Basic Assessment:

This report documents the outcomes of the BA Process. The draft version of the Basic Assessment Report is presented to registered Interested and Affected Parties (I&APs) for a 30-day review and comment period. The Draft Basic Assessment Report (DBAR) is distributed to the following public venues in the project area from 04 December 2015 – 25 January 2016:

Venue	Address
Nquthu Local Municipality Offices	Ghs Mdlalose Road, Nquthu (between Isandlwana Rd and Ntshangase St)
Nondweni Public Library	Road 54, Nondweni

Ms Bongzi Shinga from AECOM can be contacted on bongzi@deawaste2015.co.za or Tel. 012 421 3500 during office hours for any queries and/or to submit comment on the DBAR. The DBAR can also be downloaded from the following website: www.deawaste2015.co.za.

Once all comments on the DBAR have been incorporated and addressed, the Final Basic Assessment Report (FBAR) will be submitted to the KZN EDTEA for decision-making. Once a WML (positive or negative) has been issued, all I&APs will be notified of the decision and appeal provisions.

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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
DBAR	Draft Basic Assessment Report
DWS	Department of Water & Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act, 1989 (Act No. 73 of 1989)
EIA	Environmental Impact Assessment
EMPr	Environmental Management 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
KZN EDTEA	KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs
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
WMA	Water Management Agency
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 licenced. Of a total of 581 sites that were identified, 431 needed to be licenced. 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 licenced during the 2014/15 financial year. The licencing of the Nondweni 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 License (WML) for the operation of the existing Nondweni landfill (the Project), on behalf of the Nquthu Local Municipality (LM).

The existing unlicensed Nondweni landfill is both owned and operated by the Nquthu LM, the Applicant for the proposed WML. Although no record keeping of the influx of waste is being done, the LM estimates that the site receives 3 m³ of plastic waste, which is sold to a private recycling company, 3 m³ of paper/cardboard waste (which is also recycled), and 5 m³ of general waste per day. The sources of waste are private households, local businesses, and the hospital in Nquthu. During the site visit, medical pharmaceutical waste was observed on site, specifically, numerous used phials of oxytocin, a substance typically used to induce labour.

The expanded 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 (EMPr). Detailed design for the rehabilitation activities as laid out in the EMPr must commence immediately upon receipt of the WML, including.

- 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;
- Construction and maintenance of capping and liners; and
- 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
 - Dig test pits to determine the waste volumes and locations;
 - Identify a temporary storage area on site during rehabilitation;
 - Possible moving of waste before the final capping.
 - Consolidate waste on site.
 - Spread the waste material into the trench in 300mm layers and compact the waste.

- Cover the waste with 150mm of clean excavated soil or builder's rubble for every 1m of waste and compact. Continue with this process until all the waste on site is in the pit or the pit is filled up to an acceptable height above ground level (normally between 3m and 10m depending on the size of the pit). The last waste layer in the cell should have at least 300mm ground cover with slopes of 1:3 down to natural ground level;
- Cap the trench with 300mm compacted clay and 200mm topsoil;
- The capping layer should include a gas venting system if the waste is more than 2m deep;
- Install leachate cut-off trench and conservancy tank downstream of the capped areas
- Construct a stormwater diversion berm upstream of the capped cell (north, east and west) to divert any stormwater from the waste mass;
- Provide boreholes for groundwater quality monitoring;
- Control the encroaching soil erosion;
- The capping design must be designed by and signed off by a Professional Engineer.
- A new engineered cell has to be constructed for future disposal. The size of the new cell will depend on the disposal rate. Design the cell to have capacity for at least 5 years, with a maximum depth of 2 to 3m below natural ground, a maximum height of 5m and a cover to waste ratio of 1:4.
- Geotechnical and geohydrological studies must be performed;
- Compile site operational and management manuals before construction of the new 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

1.3 The Environmental Impact Assessment Process

The proposed 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 KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (KZN EDTEA) in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA). The site already has a permit to operate in terms of the Environmental Conservation Act, 1989 (Act No. 73 of 1989) ('ECA'). The permit was issued in 1995 (Ref: B33/2/2122/14/P165). For this reason, it was agreed with EDTEA that a Basic Assessment (BA) application process for expansion be undertaken in order to obtain the WML.

This Environmental Impact Assessment (EIA) process assists the KZN EDTEA, to make an informed decision on whether the proposed licence 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 EIA by way of a BA application process entails the following main phases:

- Draft Basic Assessment Report (DBAR) Phase;
- Final Basic Assessment Report (FBAR) Phase; and,
- Decision-Making Phase.

1.3.1 Draft Basic Assessment Report Phase

The BA application process is currently in the DBAR Phase, and its main purpose is to identify and investigate issues related to the proposed Project and assess all 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).

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 BA application process to obtain a WML for the existing landfill site (refer to Section 7 for more information on the public participation process).

This DBAR is available for public comment over a period of 30 days (excluding public holidays and the period 15 December to 05 January), from 04 December 2015 to 25 January 2016. The objective of the review and comment period is for I&APs to raise concerns about the Project and to comment on the information contained within the DBAR.

1.3.2 Final Basic Assessment Report Phase

Once the comment and review period on the DBAR has concluded, the report will be updated to a FBAR and submitted to the KZN EDTEA for decision-making. All comments received on the DBAR will be captured in a Comment and Response Report (CRR) attached to the FBAR.

1.3.3 Decision-Making Phase

The FBAR will be reviewed by the KZN EDTEA and a WML will be drafted with conditions that the Nquthu LM must adhere to. Once the WML is issued, all I&APs will be notified of the decision and appeal provision should they disagree with the decision or any conditions contained therein.

1.4 Structure of the Report

This Basic Assessment report contains the following, in accordance with Appendix 1 of the EIA Regulations (2014):

Chapter	Description
Chapter 1	Introduction
Chapter 2	Project team details
Chapter 3	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 8	Environmental Impact Assessment
Chapter 9	Conclusion and Recommendations
Chapter 10	References

1.5 Assumptions and Limitations

The following assumptions, limitations and constraints, associated with this project as described above, have been identified for this BA process:

- The BA 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 on 31 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 Nquthu LM is applying for a WML for the operation of the existing unlicensed Nondweni landfill. The LM owns the land on which the landfill is located. Details of the Applicant are provided in Table 2-1.

Table 2-1: Details of the Applicant and Landowner

Applicant and Landowner	Nquthu Municipality
Contact Person	Mr Bonginkosi Paul Gumbi
Postal Address	Private Bag X 5521, Nquthu, 3135
Telephone	034 271 6100
Fax	034 271 6111
E-mail Address	bongig@nquthu.gov.za
Applicant's Representatives	
Ms Thokozile Hlophe	Waste Management Officer (Nquthu LM) thoko.hlophe@gmail.com
Mr Skhumbuzo Mngomezulu	Waste Management Supervisor (Nquthu LM) skhumemela@yahoo.com

A copy of the WML Application Form can be found in Appendix B.

2.2 The Environmental Assessment Practitioner

Details of the Environmental Assessment Practitioner (EAP) are contained in Table 2-2.

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). The full CV of Ms Napier is presented in Appendix G.

2.3 The EIA Project Team

Details of the Project Team assisting the EAP in conducting the BA application process in support of a WML for the operation of the Nondweni landfill are provided in Table 2-4 below.

Table 2-3: EIA Project Team

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

CVs of the EIA project team are presented in Appendix G.

3. OVERVIEW OF THE PROJECT

3.1 Project Area

The existing Nondweni landfill is located 1.5 km south of Msebe Street, also known as the R15. This road intersects with the R68 in Nquthu, 13 km to the west. It is located on a plain in an area where there is mainly grassland. The site serves the town of Nquthu, the village of Nondweni, and the surrounding rural settlements. Nondweni is located in the uMzinyathi District Municipality in KwaZulu-Natal.

The landfill is located on Portion 0 of the Farm Nondweni 17144, and is accessed via an unnamed track that branches off Road 54 in Nondweni (refer to Figure 3-1 and Figure 5-2).

3.2 Description of the Existing Nondweni Landfill

The existing unlicensed Nondweni landfill is both owned and operated by the Nquthu LM. No record keeping of the influx of waste is conducted. According to the Nquthu LM, the site receives 3 m³ of plastic waste, which is sold to a private recycling company, and 3 m³ of paper/cardboard waste, which is also recycled, and 5 m³ of general waste per day. The sources of waste are private households, local businesses, and the hospital in Nquthu. During the site visit, it was observed that there were a few labourers sorting waste, although there was no evidence of stockpiling recyclables or any recycling activity.

The waste has been disposed of in a haphazard manner. It was originally being dumped in the north-west corner (as observed in satellite imagery), but a lot of it has been moved and the working face is now on the eastern side of the site. No stormwater management is in place. The municipality indicated that the waste is covered weekly due to availability of equipment. This irregular waste covering has led unpleasant odour problems and a proliferation of flies. There is extensive evidence of waste burning on the site. During the site visit, the LM's TLB was operating on site to cover the burning waste with sand.

During the site visit, medical pharmaceutical waste was observed on site, specifically, numerous used phials of oxytocin, a substance typically used to induce labour. Any hazardous pharmaceutical or blood/tissue waste must be dealt with properly and cannot be sent to the Nondweni Landfill (the hospital must appoint a suitably qualified waste management company to properly remove the waste to a licensed hazardous waste disposal facility). Some members of the community are opposed to the operation of the site, presumably due to the flies, odour and fires.

3.3 Waste Classification of the Landfill Site

The landfill is assessed in terms of the current impact on the environment and the nature of the status of the landfill (Application for Operation). The impacts assessed will cover operation and decommissioning, as the site already exists.

The site receives general waste, business waste and garden waste, which requires no classification or assessment as per the Waste Classification and Management Regulations (WCMR) promulgated on 23 August 2013 (Government Gazette No. 36784). The WCMR also state that all 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. For rehabilitation and operation of the disposal site will be assessed using the principles contained in the 1998 Department of Water & Sanitation's (then Department of Water Affairs and Forestry) Minimum Requirements for Waste Disposal by Landfill document.



Figure 3-1: Detailed Locality of the Nondweni landfill

3.4 Waste Management (Operation) of the Landfill

3.4.1 Design Solution

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 (EMPr). Detailed design for the rehabilitation activities as laid out in the EMPr must commence immediately upon receipt of the WML.

- 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;
- Construction and maintenance of capping and liners; and,
- Record keeping.

3.4.2 Costing of the Proposed Solution

The costs for the works that need to be undertaken upon the issuing of the WML have been estimated as follows in Table 3-1. Note that these costs are approximate and have been calculated according to certain assumptions and the footprint of the site and the landfill.

Table 3-1: Cost calculation for the operations activities of Nondweni landfill

Operations	
Capping	R 1 755 000.00
Liner	R 5 526 000.00
TLB (new)	R 700 000.00
Tipper (rental)	R 54 000.00
Picking up Litter	R 15 000.00
Contractor's Preliminary & General costs (P&G's)	R 364 050.00
Conservancy tank (x2)	R 10 000.00
Repair fence and gate	R 511 333.33
Admin building	R 150 000.00
Stormwater and leachate collection	R 50 000.00
Total	R 8 414 050.00

3.5 Need and Desirability

Service delivery is an issue of national concern and importance. Thus, the licensing of the illegal Nondweni 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 National Department of Environmental Affairs (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 concerns noted in the Nquthu LM Draft IDP (2013) regarding the lack of waste management infrastructure within the municipal area. According to the Nquthu LM Draft IDP (2013/2014), the Municipality does not have its own landfill. In 2013 Nquthu LM was sending the town's waste to the Glencoe landfill. The LM has since started using the Nondweni landfill, which is closer to Nquthu (29 km drive) than Glencoe (93 km drive).

The Nquthu LM Draft IDP (2013/2014) notes that apart from the Nondweni landfill site, there is an alarming shortage of formal waste management infrastructure in the municipal area, thus it is important that this site be formalised.

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 BA process. However, as the Project entails the licensing of an existing landfill, project location / site alternatives are not considered as part of the BA process.

4.1.1 Closure Alternative

The Closure alternative entails the undertaking of a formal closure licensing process for the Nondweni site. Should such an approach be taken, the Nondweni / Nquthu area would be left with no formal waste management facility, and would see an increase in litter and illegal dumping and the associated negative environmental impacts, such as water pollution, health and safety concerns, etc. The nearest alternative landfill site (Glencoe) is 93 km away from Nquthu Municipality. The probability that another illegal landfill site is created within the Nondweni area is high as the current illegal landfill site was created for the precise reason that the Glencoe landfill site was too far away.

4.1.2 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 Nondweni 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.

5. DESCRIPTION OF AFFECTED ENVIRONMENT

5.1 Regional Context

The Nquthu Local Municipality (NLM) falls within the uMzinyathi District Municipality (DM). The 3 other LMs falling within uMzinyathi DM are Endumeni LM to the north-west, Msinga LM to the south-west, and uMvoti LM to the south (refer to Figure 5-1 below), uMzinyathi DM occupies an area of 8079 km² and has extensive grasslands in the north supporting the primary agricultural sector based on cattle ranching for beef, small scale sheep and mixed farming and maize cultivation. In the southern areas substantial forestry is prevalent. Sugar cane and smaller scale fruit farming, such as avocado and kiwi fruit cultivation, also occur (uMzinyathi DM IDP Review, 2015/2016).

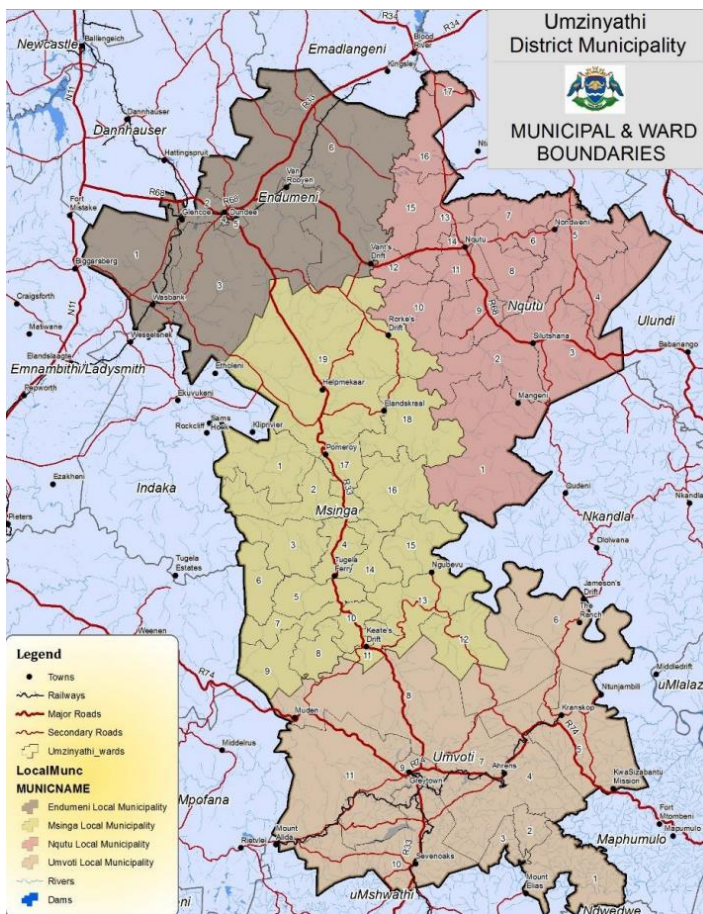


Figure 5-1: uMzinyathi Municipal and Ward Boundaries

Source: Umzinyathi DM GIS Unit – 2014 (uMzinyathi DM IDP Review, 2015/2016).

Nquthu is composed of nine Traditional Council areas namely, Sizamile, Jama, Khiphinkunzi, Emandleni, Mbokodebomvu, Vulindlela, Mangwe-Buthanani, Molefe and KwaZondi. The area is divided into 17 municipal wards with 34 Councillors (Nquthu LM IDP, 2013).

Nquthu town is strongly linked to the surrounding towns of Dundee, Melmoth, Vryheid and Newcastle. Nquthu serves as a provincial administrative centre, with offices of the Departments of Education, Agriculture and Environmental Affairs, Works, Health, Justice and Welfare, Department of Transport, Safety and Security (SAPS), Post Office, as well as a variety of social infrastructure. Nquthu is located at the intersection of two provincial roads, a strategic position for the LM to be developed as a Service Support Hub (Nquthu LM IDP, 2013).

5.2 Local Context

The NLM is typically rural and largely falls under tribal authority. The majority of the population is characterised as previously disadvantaged. Human settlements are scattered and service provision is often at basic levels. Nquthu the main town within the LM and subsistence agriculture is the main economic activity in the area. In addition to the subsistence economy, there are some cultural heritage areas that attract some tourists but need to be substantially developed before the potential of these assets can be realised. The provision of formal waste removal services in the NLM is limited and 75.5% of households make use of their own informal dumps (uMzinyathi DM IDP Review, 2015/2016). Refer to the Locality map in Figure 3-1.

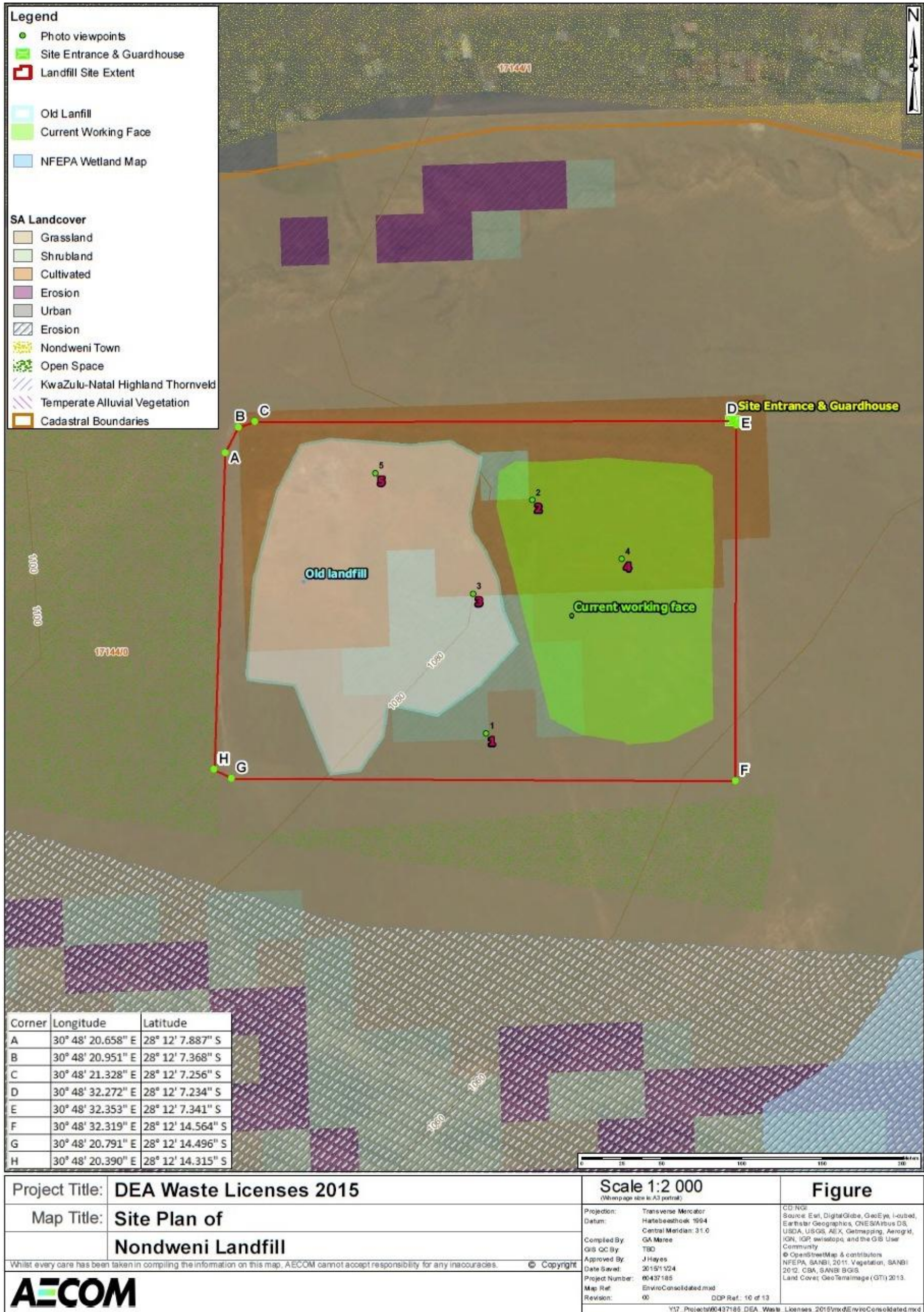


Figure 5-2: Site Plan of Nondweni Landfill

5.3 Physical Environment

5.3.1 Climate and Atmospheric Conditions

Nquthu's climate is classified as warm and temperate. This location is classified as Cfb (oceanic climate, but includes subtropical highland zones) under the Köppen Climate Classification System. The average annual temperature in Nquthu is 16.2 °C. The annual maximum and minimum temperatures are 25.7 °C (January) and 3.7 °C (June) respectively. The rainfall averages 820 mm, with the wettest months being from October to March (www.Climate-data.org, 2015). Nquthu is a town with significant rainfall. Even in the driest month there is a substantial amount of rain.

5.3.2 Topography

The topography of the study area is relatively flat. The elevation on site is approximately 1080 metres above sea level (masl).

5.3.3 Geology and Soils

The underlying geology consists primarily of greenstone, amphibolite, granulite, potassic granite, granodioritesel (refer to Geology Map in Appendix D). According to the (uMzinyathi DM IDP Review, 2015/2016), Nondweni falls within an area where the soil potential is characterised as unsuitable for arable agriculture, but suitable for forestry or grazing, where the climate permits (uMzinyathi DM IDP Review, 2015/2016).

5.3.4 Existing Land Use and Land Cover

The project area is characterised as grassland, with scattered rural human settlements and in some areas extensive soil erosion resulting from cattle grazing and water action. Refer to the Site Plan in Figure 5-2.

5.3.5 Hydrology

The study area is located within the Usuthu To Mhlathuze Water Management Area (WMA) and falls within Quaternary Catchment W21E, which has a Moderate conservation status and is in a Largely Natural condition (Class B) Present Ecological State (PES). There are multiple non-perennial drainage lines within the 500 m study area buffer which flow from west to east, before they drain into the Nondweni River (perennial) (refer to the Watercourse Assessment in Appendix E). The specialist report includes the following findings:

- The study area does not overlap with wetland habitat indicated on the NFEPa wetland spatial dataset, but a portion of the 500 m buffer, located southeast of the site, does overlap with a channelled valley bottom wetland.
- There are no drainage lines overlapping with the site, but there are extensive drainage lines within the 500 m buffer.
- A Topographical Wetness Index model was created to illustrate potential areas with increase soil moisture conditions within the site and its surroundings (Figure 2). This map was used to help target surveys during the site visit. Areas with expected increased wetness and therefore possible wetland conditions do not overlap with the study area, but are associated with the drainage lines from the topographical map in the 500 m study area buffer.
- The site survey confirmed the absence of wetland habitat within the site as no hydromorphic features were identified, nor were any obligate hydrophytes recorded in the study area.
- Seep wetland and channelled valley bottom wetland habitat were identified within the 500 m study area boundary, but not within close proximity to the landfill site.
- Gully or donga watercourses that represent deeply incised and entrenched channels with bare to poorly vegetated channel banks were identified north and south of the site. Portions of

gully watercourses previously existed as wetland habitat which have become eroded over time. Wetland soil features were noticeable on exposed banks in some areas, while other portions contained none. The latter represent areas where the gully eroded into terrestrial habitat.

- Drainage lines that represent areas where waterflow is concentrated have also been delineated, but are only located outside of the landfill site.

5.3.6 Groundwater

A specialist groundwater assessment was undertaken by GeoPollution Technologies Pty Ltd for the site in October 2015. Refer to Appendix E for the full Specialist Report. The main findings are as follows:

- The underlying aquifer(s) can be regarded as a Minor Aquifer System.
- The aquifer vulnerability can be regarded as Medium.
- The aquifer protection classification is Medium to Low.

The sources, pathways and receptors identified can be described as follows:

- Sources – Landfill Site – Unlined and a potential source of leachate. No berms or trenches to capture leachate.
- Pathways – Possible exposure through surface water runoff. No berms or trenches to capture or route runoff. No lining to capture leachate to groundwater.
- Receptors – Potential surface water users in the local village.

Based on the site visit, the groundwater pathway is currently not complete, as no boreholes were encountered, which can be used for groundwater abstraction. However, should contaminants from the landfill (source) travel through the vadose zone to the aquifer (pathway) it is likely that groundwater may be affected, as the uppermost geology on site is highly permeable. Additionally, the surface water body (receptor) to the southwest of the site is likely to be affected. Therefore, storm water trenches and leachate collection systems should be considered.

5.4 Biophysical Environment

5.4.1 Flora

The study area falls within the Gs 6 KwaZulu-Natal Highland Thornveld vegetation type. This vegetation unit's distribution extends to a series of patches in the central-northern regions of the KZN province, where it occurs in both dry valleys and moist uplands. The most extensive area is found in the region from Ladysmith, Winterton, Estcourt and Colenso, between Mooi River and Greytown, between Pomeroy and Babanango, and further north in a triangle between Vryheid, Paulpietersburg and Louwsburg as well as a large patch around Newcastle. This vegetation unit occurs at an altitude of between 920 and 1 440 masl. The predominant vegetation and landscape features are hilly, undulating landscapes and broad valleys supporting tall tussock grassland usually dominated by *Hyparrhenia hirta*, with occasional savannoid woodlands with scattered *Acacia sieberiana var woodii* and in small pockets with *A. karroo* and *A. nilotica* (Mucina and Rutherford, 2006).

Kyllinga Consulting conducted a site visit on the 27th October 2015, and confirmed that the site falls within the KwaZulu-Natal Highland Thornveld vegetation type. A portion of the site located in the north-eastern corner of the site, where dumping has stopped is covered with a wide variety of indigenous species. The vegetation in this portion of the site has a good cover and several species are established. Rehabilitation in this area has been very successful and the same methods are expected to be successful again. Within the active dumping area, the vegetation is dominated by weedy species. The dominant weedy species is *Argemone ochroleuca*, a Category 1b invasive species. Very few indigenous species are present in this area. Numerous invasive plant species were

recorded on site and control of these species will be necessary. Only two species of conservation importance have been recorded in the greater surrounding area, namely *Thunbergia venosa* and *Aloe gerstneri*. These species are unlikely to be present on site, but marginally suitable habitat is present in the surrounding areas for *Thunbergia venosa*. Refer to Appendix E for the full Ecological Assessment and the site photographs in Appendix C.

5.4.2 Fauna

As the site consists of an existing landfill, it is not anticipated that significant faunal communities exist. The ecologist's findings are detailed in the Ecological Assessment Report (Appendix E) and are briefly summarised here:

5.4.2.1 Mammals

No indigenous mammal species were observed on site during the site visit, but small mammals are expected to be present. The only mammal species of conservation importance that has been recorded in the area in the past is the Blue Duiker (*Philantomba monticola*). No habitat is present for the species on site and the species is unlikely to be present on site or adjacent to the site.

5.4.2.2 Avifauna

A number of bird species of conservation importance may occur on the site, such as: Blue Crane (Near Threatened), Tawny Eagle (Endangered), Southern Ground-Hornbill (Endangered), Wattled Crane (Critically Endangered); Blanck Stork (Vulnerable), African Marsh-harrier (Endangered), White-bellied Korhaan (Vulnerable), Lanner Falcon (Vulnerable), Southern Bald Ibis (Vulnerable), White-backed Vulture (Endangered), Cape Vulture (Endangered), Black-bellied Bustard (Near threatened), Denham's Bustard (Vulnerable), Martial eagle (Endangered), Secretary Bird (Vulnerable).

The following bird species were observed on site during the site visit: Black-headed Heron, Cattle Egret, Spotted Thick-knee, Pied Crow and Cape Crow.

5.4.2.3 Reptiles

A few reptile species have been recorded in the project area; however none of these species are of conservation importance.

5.4.2.4 Herpetofauna

Several reptile and frog species have been recorded in the greater area; none of which are of conservation importance.

5.4.2.5 Invertebrates

Several butterfly species have been recorded in the greater area, none of which are threatened. Other species included in the KZN Conservation Plan (C-Plan) that have been noted in the project area: the millipede species *Doratogonus falcatus* (IUCN Least Concern, the mollusca species *Cochlitoma simplex* (Not evaluated), and the grasshopper species *Whitea alticeps* (Data-deficient).

5.5 Social Environment

Nquthu Municipality is characterised by a number of key development challenges, including (Nquthu LM Draft IDP, 2013/2014):

- High unemployment.
- Service backlogs, particularly water and sanitation.
- Poverty which occurs in the form of income, relative and absolute poverty.
- Lack of economic investment and associated infrastructure.

- Unplanned settlements with some occurring in land unsuitable for human settlement.
- Congestion in Nquthu Town.
- Poor access to public facilities such schools, clinics, and other government services.
- An economy dependent largely on grant funding as the area has a small ratepayers base.
- Inability to attract and retain skilled and experienced staff.

5.5.1 Population

The local population of the Nquthu LM was estimated at 165 307 in the 2011 census. The population growth rate is negative at -0.25% (Stats SA, Census 2011); likely attributable to the impact of HIV/Aids. The number of households is 31 612 (Stats SA, Census 2011). There is no population data specifically for Nondweni.

5.5.2 Employment

Nquthu Town, and Nondweni to a limited extent, are the only notable urban centres within the municipality. The official unemployment rate in Nquthu LM is 44.4%. A significant characteristic of the Nquthu population is the youth unemployment rate, which stands at 53.3% (Stats SA, Census 2011).

5.5.3 Education

Of the Nquthu LM residents over the age of 20, 18.1% have no formal schooling at all, while 20.3% have attained a matric certificate and 3.8% of the population have attained tertiary education (Stats SA, Census 2011).

5.5.4 Service Delivery

5.5.4.1 Health Services

Nquthu Municipality is served by Charles Johnson Memorial Hospital, located within in Nquthu. This is the only hospital within the Municipal area (Nquthu LM Draft IDP, 2013/2014).

5.5.4.2 Electricity

Eskom is the electricity service provider in the Nquthu LM. The LM supplies all residents, who have access to electricity, with 50kWh free per month. Nquthu has increased the rate of electricity distribution from 16.7% in 2001 to 53.0% in 2011 (Nquthu LM Draft IDP, 2013/2014).

5.5.4.3 Waste Management and recycling

The management and operations of the Nondweni Waste Disposal Facility is in need of improvement. The following table, extracted from a presentation by EDTEA, sums up well the waste management infrastructure situation in the uMzinyathi District Municipality. Nondweni Landfill requires the greatest level of improvement.

uMzinyathi District Municipality

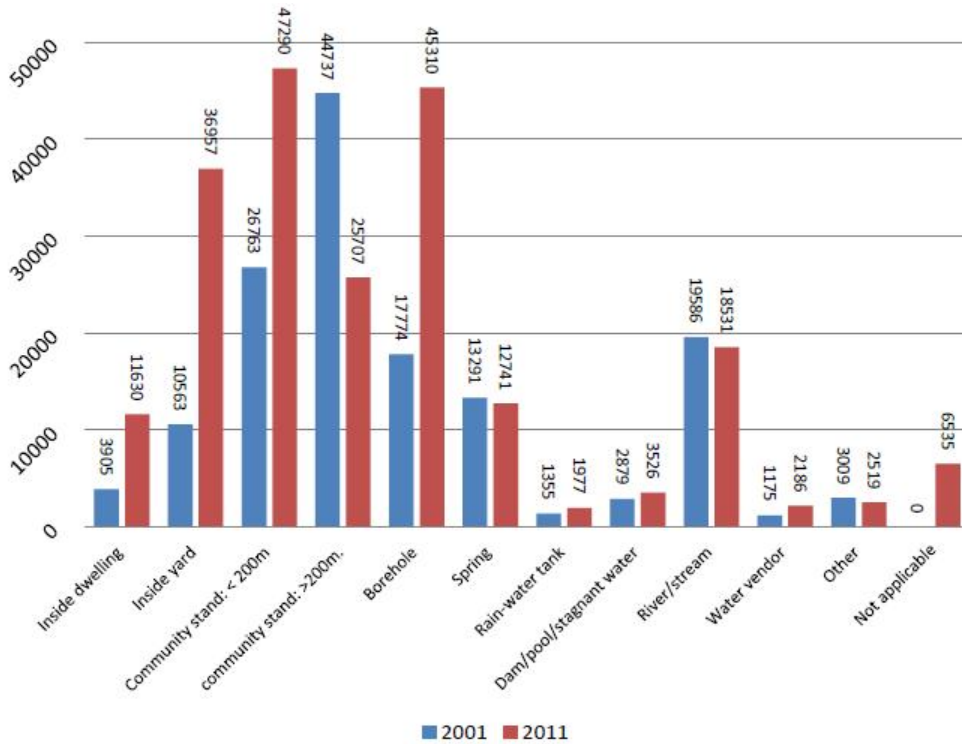
	Licence	Operating Plan	Access	Register	Access control	Liner	Controlled disposal	Cover	Equipment	Personnel	Leachate management	Stormwater management	Groundwater monitoring	Audits	Monitoring committee	Nuisance	Recycling facility
Glencoe Landfill Site	Green	Green	Green	Green	Green	Red	Green	Yellow	Green	Green	Green	Yellow	Green	Green	Green	Green	Green
Nondweni Landfill Site	Green	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Pomeroy Landfill Site	Green	Red	Green	Green	Green	Red	Green	Red	Red	Yellow	Red	Red	Red	Yellow	Red	Red	Green

Table 5-1: Waste Disposal Sites in uMzinyathi District Municipality

Source: Sheard, EDTEA Waste Khoro Report, 2013.

5.5.4.4 Water and Sanitation

The majority of Nquthu residents (47 290) have access to water through piped water on a community stand within 200m from their dwelling. 25 707 will need to travel further than 200m. Other sources of water, with changes in delivery between 2001 and 2011, are illustrated in **Graph 5-1** below (Nquthu Draft IDP, 2013/2014):



Graph 5-1: Water provision in Nquthu LM

Source: Nquthu LM Draft IDP, 2013/2014, citing Stats SA Census data.

Sanitation infrastructure provision is a function of the uMzinyathi District Municipality. Six percent of Nquthu LM residents have a flush toilet, while the majority (81.4%) make use of pit latrine toilets. 2.4% use chemical toilets, 1.0% still use the bucket system, and 9.1% do not have any sanitation (Nquthu LM Draft IDP, 2013/2014).

5.5.5 Economy

Agriculture is the main economic activity in the Municipality. The main agricultural sectors are poultry farming (44.9%), vegetable (23.1%) and livestock (16.9%). The vast majority of agricultural activity is subsistence. Most employed people work either in the government sector while others work in the informal sector. Tourism also makes a substantial contribution to the local economy by providing job opportunities for local people (Stats SA, Census 2011).

Nquthu LM participated in the Local Government Turnaround Strategy, overseen by the Department of Co-operative Governance and Traditional Affairs in 2009. The following economic activities were concluded to be key to stimulating Local Economic Development within the Nquthu LM (Nquthu LM Draft IDP, 201/2014):

- Agriculture;
- Tourism;
- Minerals; and,
- Industrial and Investment development.

6. LEGISLATIVE FRAMEWORK

6.1 Introduction

The overarching legal framework pertinent to the licensing of the Nondweni landfill site is NEMA and the associated Specific Environmental Management Acts (SEMA). 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. This legislation provides for compliance and enforcement of the above requirements.

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 Nondweni Landfill will take these new Regulations on Norms and Standards into account.

6.2.1.3 Activities applicable to NEMWA

The operation of the Nondweni 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 WML. The relevant listed activities are provided in

Table 6-1 for which authorisation by means of a BA 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 .
	A	13	The expansion of a waste management activity listed in Category A or B of this Schedule which does not trigger an additional waste management activity in terms of this Schedule.

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 NEMA activities have been identified as having been triggered by the application. The scope of this project is to license the expanded 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 Competent Authority 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

Relevant Legislation	Sections	Applicability to the Project
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 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.

6.4.1 KwaZulu-Natal Provincial Spatial Development Framework (SDF), 2011/2012

The KZN Provincial SDF has identified the Nquthu LM as a local municipality with a notably high dependency ratio, thus requiring special assistance and attention.

6.4.2 uMzinyathi District Municipality Draft IDP, 2015/2016 Review

Wasbank, Nondweni, Pomeroy and Kranskop are municipal service points with a role in providing very basic services to their immediate areas. Thus, the licensing of the Nondweni landfill site will facilitate the effective and efficient provision of basic waste disposal services to the local communities in the area.

6.4.3 Nquthu Draft Integrated Development Plan (IDP), (2013-14)

The Nquthu Draft IDP seeks to integrate and balance the economic, ecological and social pillars of sustainability to ensure effective participatory and responsible service delivery. A lot of work needs to be done to ensure that proper waste management within Nquthu Municipality is carried out. The LM has opted to use a Service Provider to assist with waste service delivery and to reach the most remote areas of the LM. Nquthu Local Municipality acknowledges that one focus for the municipal area is economic development through tourism. In order to achieve this, sufficient waste management infrastructure must be in place.

The Draft IDP refers to a backlog of refuse services to areas other than the urban nodes of Nquthu and Nondweni, which is a typical pattern in rural communities throughout the country.

The municipality has been part of the preparation of a District-level Integrated Waste Management Plan (IWMP) that was prepared in 2006. The municipality intends on embarking upon its own Integrated Waste Management Plan (IWMP) in the near future. This plan will address the following:

- An environmental impact assessment of waste management options;
- An evaluation of environmentally friendly practices for recycling and landfill sites; and
- The identification of economic opportunities associated with recycling.

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 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. Note that the I&AP database reflects all stakeholders for all allocated landfills to be licensed within KwaZulu-Natal province. Refer to **Appendix A** for the I&AP Database.

7.2 Announcement of the Proposed Project

Various mechanisms were used to create public awareness of the proposed WML operation application for the existing Nondweni 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 were placed in the following newspapers:

Table 7-1: Project Announcement Newspaper Advertisements

Newspaper	Distribution	Language	Date
Newcastle Advertiser	Local	English	11 September 2015
The Mercury	Regional	English	11 September 2015

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

7.2.2 On-site Notices

Three (3) A2-sized site notices (in English) were erected at various public places in the project area on 31st August 2015.

Table 7-2: Site Notice Locations

Site Notice No.	Location
1	Nondweni Landfill Entrance Fence, Nondweni
2	Nondweni Public Library, Road 54, Nondweni
3	Nquthu Local Municipality Offices, Ghs Mdlalose Road, (between Isandlwana Rd and Ntshangase St)

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

7.3 Dissemination of Information

Information was disseminated to identified and registered I&APs primarily by means of a Background Information Document (BID) and Notification letters.

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 Nondweni landfill. Furthermore, it provides information on the processes that will be followed and the contact details of the PPP Consultant. The BID was distributed to all I&APs together with the notification letter described below. A copy of the BID is provided in **Appendix A**.

7.3.2 Request for Registration and Notification of the Draft Basic Assessment Report Review Period

A notification letter announcing the WML application and requesting I&APs to register and/or review and comment on the DBAR was distributed to all identified and registered I&APs on the project’s database. A copy of the notification letter is provided in **Appendix A**.

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

Table 7-3: Venues for draft Basic Assessment Report

Venue	Address
Nondweni Public Library	Road 54, Nondweni
Nquthu Local Municipality Offices	Ghs Mdlalose Road, (between Isandlwana Rd and Ntshangase St), Nquthu

Electronic copies of the DBAR are available on the project website www.deawaste2015.co.za.

During the review period of the DBAR, a **public meeting** will be held in Nondweni to present the findings of the BA application process to those attending as well as to provide I&APs with an opportunity to participate and provide comment on the DBAR.

Refer to **Appendix A** for a copy of the notification letter.

7.4 Comment and Response Report

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

8. ENVIRONMENTAL IMPACT ASSESSMENT

8.1 General

The purpose of this section is to provide an assessment of each of the identified potentially significant impacts and risks associated with the Project, i.e. the operation of the Nondweni landfill. The following environmental impacts have been identified.

8.1.1 Planning, Design and Construction Phase

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

8.1.2 Operational Phase

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

Table 8-1: Anticipated impacts during operation

Potential Negative Impacts	Potential Positive Impact
<ul style="list-style-type: none"> Increased traffic Increased emissions from vehicles Increased dust Increased noise on site Health and safety risks on site Night-time and / or weekend fly tipping Landfill gas generation 	<ul style="list-style-type: none"> 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 (odour & visual)

8.1.3 Decommissioning and Closure Phase

The landfill will eventually be closed and decommissioned. While this aspect of the project is beyond the scope of this assessment, one can expect a number of impacts, including:

Table 8-2: Anticipated impacts during closure

Potential Negative Impacts	Potential Positive Impact
<ul style="list-style-type: none"> Increased traffic Temporarily increased dust and emissions from vehicles Temporarily increased noise on site Health and safety risks on site Night-time and / or weekend fly tipping Soil & water pollution risks Decrease in long term employment opportunities Decrease in local business - direct i.e. contractors Decrease in local businesses - indirect i.e. vehicle repairs Visual impacts during closure 	<ul style="list-style-type: none"> Temporary employment and local business opportunities during closure Decrease in wind-blown litter Decrease in soil and water contamination due to liner and stormwater management implementation Decrease in nuisance impacts (dust, odour) Decreased impact on fauna and flora Visual impacts post-closure

As the Project entails the licensing of the landfill for operation, closure impacts are not assessed. Measures to be implemented in the Closure Phase are discussed in the EMPr (Appendix F).

8.2 Impact Assessment Methodology

The impact assessment methods used are in accordance with the requirements of the 2014 EIA Regulations published in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA).

The methodology for assessing impacts was practised by using techniques for Risk Assessment as found in the South African National Standard (SANS) 31010 of 2010. The National standards are identical to IEC/ISO 31010:2009 and are adopted with the permission of the International Electrotechnical Commission and the International Organisation for Standardization.

Risk assessment does not make use of one method alone; there are various tools available for assessing impacts. The Leopold Matrix is utilised, whereby criteria are mainly used to determine factors such as – probability, duration, extent etc. This method was practised by making use of P.J. Aucamp (2009) (A practical guide for the discerning practitioner, page 74, based on the previous EIA regulations for risk assessment).

The Leopold Matrix is a qualitative Environmental Impact Assessment (EIA) method developed in 1971. The system consists of a matrix with columns representing the various activities of the project, and rows representing the various environmental factors to be considered. The intersections are filled in to indicate the magnitude (from -10 to +10) and the importance (from 1 to 10) of the impact of each activity on each environmental factor.

“Measurements of magnitude and importance tend to be related, but do not necessarily directly correlate. Magnitude can be measured, in terms of how much area is affected by the development and how badly, but importance is a more subjective measurement. While a proposed development may have a large impact in terms of magnitude, the effects it causes may not actually significantly affect the environment as a whole. The example given by Leopold is of a stream that significantly alters the erosion patterns in a specific area, which will have a significant magnitude, but may not be important, provided the stream in question is swift moving and transports large amounts of soil anyway. In this case, an impact of significant magnitude may not actually be important to the environment in question” (Leopold *et al*, 1971).

It should be noted that there is currently in South Africa no mention of a right or wrong way of assessing impacts. The method used is decided upon by the Environmental Assessment Practitioner (EAP). Hence the following definitions are applied to the assessment criteria used to assess the significance of potential impacts pre- and post- mitigation.

ASSESSMENT CRITERIA	CHARACTERISTICS
Extent	<p>The physical and spatial scale of the impact.</p> <p>Site: the impacted area is only at the site – the actual extent of the activity;</p> <p>Local: the impacted area extends to the surrounding, the immediate and the neighbouring properties;</p> <p>Regional: the impacted area could be as wide as the municipal area or at a provincial level; and</p> <p>National: the impact can be considered to be of national importance.</p>
Duration	<p>The lifetime of the impact is measured in relation to the lifetime of the proposed development.</p> <p>Short term: the impact will be for 0 – 3 years, or only last for the period of construction;</p> <p>Medium term: three to ten years;</p> <p>Long term: longer than 10 years or the impact will continue for the entire operational lifetime of the project; and</p> <p>Permanent: this applies to the impact that will remain after the operational lifetime of the project.</p>
Intensity	This is the degree to which the project affects or changes the environment.

ASSESSMENT CRITERIA	CHARACTERISTICS
	<p>Low: the change is slight and often not noticeable, and the natural, cultural or social functions and processes are minimally affected;</p> <p>Medium: the environment is remarkably altered, but still functions in a modified way; and</p> <p>High: functioning of the affected environment is disturbed and can cease.</p>
Probability	<p>This is the likelihood or the chances that the impact will occur.</p> <p>Low: during the normal operation of the project, no impacts are expected;</p> <p>Medium: the impact is likely to occur if extra care is not taken to mitigate them; and</p> <p>High: the environment will be affected irrespectively; in some cases such impact can be reduced.</p>
Nature	Description of the impact as positive, negative or neutral.
Confidence	<p>The level of information/knowledge available to the EAP for impact assessment purposes.</p> <p>Low: the judgement is based on intuition and not on knowledge or information;</p> <p>Medium: common sense and general knowledge informs the decision; and</p> <p>High: scientific and or proven information has been used to give such a judgement.</p>
Consequence	<p>A combination of extent, duration and intensity.</p> <p>Low: low and medium intensity, short and medium term duration and site or local level extent;</p> <p>Medium: low and medium intensity, long term or permanent duration at a region or national level extent; OR low and medium intensity, long term or permanent duration and site or local level extent; OR high intensity, short to medium term duration at site or local level; OR high intensity, long term or permanent duration at site or local level; and</p> <p>High: high intensity, long term or permanent at a regional or national level.</p>
Significance (before and after mitigation)	<p>A synthesis of the characteristics described above and assessed as low, medium or high. A distinction will be made for the significance rating without the implementation of mitigation measures and with the implementation of mitigation measures.</p> <p>Low: low consequence and unlikely, probable or definite probability; medium consequence and unlikely probability;</p> <p>Medium: medium consequence and probable or definite probability or high consequence and unlikely probability. The impacts require attention and mitigation is required to reduce the negative impacts; and</p> <p>High: high consequence and probable or definite probability. Mitigation is crucial.</p>
Cumulative Impacts	<p>The possible cumulative impacts will also be considered. Cumulative impacts have incremental impacts of the activity and other that past, present and future activities will have on a common resource.</p> <p>Low: there is sufficient capacity of the environmental resources within the geographic area to respond to change and withstand further stress;</p> <p>Medium: the capacity of the environmental resources within the geographic area to respond to change and withstand further stress is reduced; and</p> <p>High: the capacity of the environmental resources within the geographic area to respond to change and withstand further stress has been or is operate to being exceeded.</p>

8.3 Impact Assessment

8.3.1 Planning, Design and Construction Phase

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

8.3.2 Operational Phase

Potential impacts on geographical and physical aspects:	It is not foreseen that the expanded operation of the landfill will have any negative impacts on geographical or physical aspects as the project area has already been altered / disturbed. It is however foreseen that the improvement of operational practices according to the EMPr will have positive impacts on the physical environment, as the landfill area will be upgraded to mitigate and minimise surface and groundwater contamination through leachate production.
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Potential impact on biological aspects:	It is not foreseen that the operation of the landfill will have any negative impacts on biological aspects as the project area has already been altered / disturbed. Positive impacts are anticipated from the improved operations of the existing landfill according to the EMPr, as operations will be improved to prevent damage to habitats beyond the site boundary, reduce the risk of fire, reduce windblown litter, and to discourage the proliferation of pest animals through covering putrefying food waste.
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Potential impacts on socio-economic aspects:	Operation activities will have no impact on the number of employment opportunities within the Nquthu LM, as the landfill is already operating. A positive impact on aspects related to air quality (dust and smoke) and odours is anticipated, provided that the measures stipulated in the EMPr are adhered to.
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Potential impacts on cultural-historical aspects:	It is not foreseen that the operation of the landfill will have any impact on cultural-historical aspects as the project area has already been altered / disturbed.
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Potential visual impacts:	It is anticipated that the operation of the existing landfill will have a neutral impact on the visual environment, as the site will continue to operate.
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Potential noise impacts:	
Nature of impact:	Vehicle and equipment noise impacts from transportation of waste may result in a nuisance impact for persons living and working in close proximity to the waste disposal facility.
Extent and duration of impact:	Local and Medium-Term
Probability of occurrence:	Low
Degree to which the impact can be reversed:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	N/A
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	<ul style="list-style-type: none"> • Servicing of all vehicles and machinery to ensure good working order; and, • Use of silencers and mufflers on potentially noisy equipment.
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential impacts due to air and dust emissions:	
Nature of impact:	<p>Emissions from vehicles transporting waste to and from the Nondweni landfill site as well as other vehicles and equipment on site may cause a temporary decrease in air quality within the immediate surroundings.</p> <p>Similarly, dust generated during operation activities may negatively impact on the surrounding areas ambient air quality.</p>
Extent and duration of impact:	Local and Short-Term

Probability of occurrence:	High
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	N/A
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	<ul style="list-style-type: none"> • All reasonable measures should be taken to minimise air emissions in the form of smoke, dust and gases from vehicles/ equipment used on site. • No fires are allowed. • No burning of waste is permitted. • The Landfill Supervisor shall implement measures to restrict the generation of dust during rehabilitation activities. • The Landfill Supervisor shall control dust from spoil dumps or stockpiles by ensuring that they are kept covered or must have a suitable dust palliative applied (such as water or commercial dust suppressants) to prevent windborne dust pollution. • The local Police will be requested to periodically enforce adherence to the relevant speed limits.
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential impact on health and safety:	
Nature of impact:	<p>Health and safety incidents to workers during operations: Waste Receipt - Incorrect waste acceptance: Acceptance and temporary storage (rejected loads) of unauthorised waste streams increasing environmental, health and safety impacts and risks including:</p> <ul style="list-style-type: none"> • Changes in the expected composition of leachate from the waste disposal facility resulting in the pollution of soil and water resources; • Changes in expected landfill gas emissions resulting in flammability, toxicity, asphyxiation and other hazards as well as objectionable odour negatively impacting on on-site personnel (and other on-site persons) health and safety; • Fire and explosion; and • On-site personnel (and other on-site persons) exposure to hazardous materials affecting health and safety.
Extent and duration of impact:	Local and Medium-term
Probability of occurrence:	Medium
Degree to which the impact can be reversed:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	Medium
Cumulative impact prior to mitigation:	Medium
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	<ul style="list-style-type: none"> • Correct access control. • Appropriate temporary storage in skips. • Correct waste information.

Potential impact on health and safety:	
	<ul style="list-style-type: none"> Separation on site by disposer to remove un-licensed waste. Transport options to the regional landfill as a means to reduce illegal dumping of waste refused to site
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential impact on health and safety:	
Nature of impact:	Movement of operational vehicles and equipment or danger associated with open areas (trenches, unstable ground etc.) may lead to potential safety impacts to the public if not demarcated as no go zones.
Extent and duration of impact:	Site
Probability of occurrence:	Medium
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	N/A
Cumulative impact prior to mitigation:	N/A
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<ul style="list-style-type: none"> The site must be fenced and have access control. The public will not be allowed near the landfill. On site vehicles will be fitted with reversing horn. Staff on site will wear PPE and reflective clothing. Open excavations will be marked with danger tape. Vehicles must not be permitted too near the edges of the waste trenches, to prevent the ground collapsing.
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential impact on health and safety:	
Nature of impact:	Site Access - Social Impacts (Public Safety): Vehicle accident risks associated with the use of waste transportation vehicles on public roads.
Extent and duration of impact:	Local and Medium-Term
Probability of occurrence:	Medium
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	N/A
Cumulative impact prior to mitigation:	Potential injury or loss of life in accidents.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<ul style="list-style-type: none"> Local Police to be requested to assist municipality with enforcing compliance to traffic laws
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential impact on surface water and soils:	
Nature of impact:	Contamination of soils and surface water due to hydrocarbon spills from vehicles/ equipment or other hazardous substances used or spilled during operations.
Extent and duration of impact:	Local
Probability of occurrence:	Medium
Degree to which the impact can be reversed:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	Low-Medium
Cumulative impact prior to mitigation:	N/A
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	<ul style="list-style-type: none"> • Precautionary measures must be taken to prevent any form of pollution. • Accidental pollution incidents shall be reported to the Municipal Manager immediately after they occur and shall be cleaned up (to the satisfaction of the ECO) by the Landfill Supervisor or a nominated clean-up organisation. • Vehicle and plant maintenance shall be confined to the areas demarcated for this purpose. Should any amount of fuel, oil, transmission or hydraulic fluids be spilled onto the soils, the Municipal Manager or ECO shall be informed immediately. Tests must be conducted to determine the extent of soil contamination as soon as a spillage occurs. The polluted soil shall be rehabilitated or remediated to the satisfaction of the ECO. • On-site stormwater management shall be to the satisfaction of the ECO. • Any spillage of waste, caused by any party during the closure activities, shall be cleaned up immediately and appropriately disposed of.
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential impact on water resources:	
Nature of impact:	Surface and groundwater water pollution may occur during operations if the engineering design/ instructions are not correctly implemented on site.
Extent and duration of impact:	Local
Probability of occurrence:	Medium
Degree to which the impact can be reversed:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	Medium
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	<ul style="list-style-type: none"> • A professional engineer must provide detailed drawings for the operations and maintenance and oversee and sign off on the improvement of the landfill. • The installation of stormwater management measures, such as intercept drains and conservancy tanks, must be regularly checked for damage and proper functioning. • Water collected in the conservancy tank must be

Potential impact on water resources:

	<p>analyzed for potential contamination.</p> <ul style="list-style-type: none"> • Shaping and capping of full landfill cells is to be done to reduce the potential for future water pollution. • Daily cover must be profiled to maximise runoff; • Ponding areas must be levelled; • A shallow collection trench must be dug at the toe of the landfill on the downward side to intercept any water passing through the landfill; • A leachate collection tank must be installed on the downstream side of the landfill to collect any water from the toe of the landfill. • Waste is deposited into the trench, spread and compacted as much as possible, until it reaches a depth of between 0,5m and 1,0m. With the trench method, daily covering is always a Minimum Requirement, as spoil from the excavation makes this possible. • The basic landfill unit is a cell of compacted waste which, when completed at the end of each day, is entirely contained by cover material. The sides are usually formed by 1,5m to 2,0m high berms, constructed from soil, rubble, or sloped waste covered by daily cover. • Regardless of the co-disposal ratio used or the amount of leachate generated, it is a Minimum Requirement that there are no free liquid surfaces on the landfill and that the fill is trafficable. • Upslope run-off water must be diverted away from the waste, to prevent water contamination and to minimise leachate generation. • Where contaminated water or leachate does arise on a site, it must be managed. This means that it must be kept out of the environment. • Clean, uncontaminated run-off water must not be permitted to mix with, and increase the volume of, contaminated water. • Run-off and storm water must always be diverted around one or both sides of the waste body, by a system of berms and/or cutoff drains. • Water contaminated by contact with waste, as well as leachate, must be contained within the site. If it is to be permitted to enter the environment, it must conform or be treated so as to conform to the Special or General Effluent Standards in terms of the Permit.
Cumulative impact post mitigation:	Unknown
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential illegal dumping/ littering impacts:

Nature of impact:	<p>Night-time and / or weekend fly tipping (illegal dumping) may result in dumping of unacceptable hazardous waste streams increasing environmental, health and safety impacts and risks including:</p> <ul style="list-style-type: none"> • Changes in the expected composition of leachate from the waste disposal facility resulting in the pollution of soil and water resources. • Changes in expected landfill gas emissions resulting in flammability, toxicity, asphyxiation and other hazards as well as objectionable odour negatively impacting on on-site personnel (and other on-site persons) health and safety.
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	<ul style="list-style-type: none"> The increase of the landfill footprint in instances of uncontrolled dumping of wastes. Educate people on the value and need for recycling. Do not dispose of abattoir waste at the site.
Extent and duration of impact:	Local
Probability of occurrence:	High
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	N/A
Cumulative impact prior to mitigation:	N/A
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<ul style="list-style-type: none"> All existing fencing shall be maintained to prevent access for illegal dumping. The local community shall be informed of the site closure and made aware of alternatives through public meetings, the placement of notices in local newspapers, etc. The Municipal Manager shall ensure placement of signage close to the road informing the public of site closure and providing details on alternative disposal sites or facilities. Maintain security at the site for a short period after closure to prevent potential illegal dumping and / or vandalism. Placement of skips near the community residential area with a notice informing community members of the waste transfer station for use to safely dispose of their waste.
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Loss of habitat and indigenous species

Nature of impact:	<p>The habitat on site is partially transformed by the active landfill in place. Some habitat and indigenous species remain on site and adjacent to the site. The remaining habitat and indigenous species on site will likely be altered by the landfill. In addition, the vegetation adjacent to the site may also be affected by the activities on site, and the landfill may extend into these areas should additional landfill capacity be required.</p> <p>A portion of the landfill has been rehabilitated and a good soil and vegetation cover is present in this area. The engineer may deem it necessary to remove the waste from certain cells and install a liner before replacing the waste body and capping. This would cause an increase in weedy species and vegetation establishment will have to restart.</p>
Extent and duration of impact:	Local
Probability of occurrence:	High
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Moderate
Cumulative impact prior to mitigation:	Medium
Significance rating of impact prior to mitigation	Medium - High

(Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	<ul style="list-style-type: none"> • Dumping activities must be confined to the fenced area. • Vehicle movement must be restricted to the fenced area and the road to the landfill. • The site may not be further expanded without obtaining the relevant environmental authorisation(s). • Confine the litter to the site. • Maintain the fence around the site. • Ensure that a sufficient soil layer is present over the rubbish on site.
Cumulative impact post mitigation:	Medium
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium

Loss of habitat for species of conservation importance	
Nature of impact:	A few species of conservation importance may potentially be present in the area. This impact is of medium significance, but appropriate habitat is present in a wide area.
Extent and duration of impact:	Local
Probability of occurrence:	Medium
Degree to which the impact can be reversed:	Medium - High
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	<ul style="list-style-type: none"> • Dumping activities must be confined to the fenced area. • Vehicle movement must be restricted to the fenced area and the road to the landfill. • The site may not be expanded without the relevant environmental authorisations. • Confine the litter to the site. • Maintain the fence around the site.
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential impact of alien invasive plants	
Nature of impact:	Invasive plant species tend to establish in disturbed areas. The species must however be transported to these areas in some way. Although this is not a problem at present, there is a possibility that invasive plant species can spread from the site, should viable seed or plant parts be dumped at the landfill. Several invasive species are present on site and in

	the surroundings. The dominant invasive species is <i>Psidium guajava</i> . The species is already widespread in the area and the landfill does not have a significant impact on the distribution of the species. The other species are present in lower densities.
Extent and duration of impact:	Local
Probability of occurrence:	High
Degree to which the impact can be reversed:	High with management
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	Medium (increased potential in spreading of alien invasive plants in the area)
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<ul style="list-style-type: none"> • Populations of invasive species on site must be controlled according to an eradication plan. • The spread of invasive and weedy species from the site must be prevented. • Care must be taken not to control indigenous species.
Cumulative impact post mitigation:	Medium
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential impact of animal pest species	
Nature of impact:	Landfill sites can potentially provide habitat and food to several indigenous and alien pests and scavengers, including rats (<i>Rattus rattus</i> & <i>Rattus norvegicus</i>), mice (<i>Mus musculus</i>), jackals (<i>Canis sp.</i>), feral dogs (<i>Canis domesticus</i>) and feral cats (<i>Felis catus</i>). Several bird species including crows (<i>Corvus sp.</i>), as well as insect species such as flies (<i>Musca domestica</i>) may also become a problem.
Extent and duration of impact:	Local
Probability of occurrence:	Medium
Degree to which the impact can be reversed:	High with management
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	Medium (possible spreading of animal diseases)
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium-High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<ul style="list-style-type: none"> • Do not dispose of abattoir waste at the site. • Cover newly dumped rubbish containing food scraps at least once a week. • If excessive numbers of flies are present the rubbish must be covered at the end of each day.
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium

8.3.3 Potential impacts during the decommissioning and closure phase

As the Project entails the licensing of the landfill for operation, closure impacts are not assessed. Closure and decommissioning measures are discussed in the EMPr (Appendix F).

8.4 Environmental Management Programme

A Draft EMPr is included as part of the DBAR (refer to Appendix F) which is made available for public review; after which, it will be finalised and submitted as part of the FBAR to the KZN EDTEA. The EMPr outlines the impacts and associated mitigation measures for the operation and closure & decommissioning phases of the project. The EMPr comprises:

- 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 operation and closure phases 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.

8.5 Final Basic Assessment Report

Following the review period, the DBAR will be updated with comments received from the public to produce a FBAR. The FBAR will be submitted to the KZN EDTEA for consideration and decision-making.

8.6 Decision-making Phase

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.

9. IMPACT STATEMENT AND CONCLUSION

Based on the findings of the Basic Assessment process, no impacts of high significance or environmental fatal flaws will result from the granting of a NEMWA WML to expand and continue operations at the existing landfill facility at Nondweni, provided that expansion occurs within the fenced footprint of the landfill site. Noise and dust pollution during operation and rehabilitation will be of low significance due to the rural nature of the immediate surrounding environment.

The operation of the landfill will have positive environmental impacts in that the site will be rehabilitated and waste management services will be provided to the local communities. The existing waste will be consolidated and capped to minimise potential ground and surface water contamination and new landfill cells will be appropriately lined prior to dumping waste. Revegetation of rehabilitated sites appears to be successful, based on the ecologists site visit, thus challenges with the successful establishment of vegetative cover on site should not be encountered. All potential impacts during the operational phase of the Nondweni landfill facility can be minimised through the implementation of the practical and appropriate mitigation measures contained in the EMPr (Appendix F).

The no-go alternative would imply that the current state of the landfill site would remain as it is. In other words the landfill would continue to pose a pollution risk to the ground water and the site would not be rehabilitated. Any current leachate generation that might be occurring will continue to pollute soil and water resources and negative health and visual impacts on site would remain into the future.

The Closure alternative would mean undertaking a formal closure licensing process for the Nondweni site. Should such an approach be taken, the Nondweni / Nquthu area would be left with no formal waste management facility, and would see an increase in litter and illegal dumping and the associated negative environmental impacts, such as water pollution, health and safety concerns, etc. The nearest alternative landfill site (Glencoe) is 93 km away from Nquthu Municipality. The probability that another illegal landfill site is created within the Nondweni area is high as the current illegal landfill site was created for the precise reason that the Glencoe landfill site was too far away.

Thus, based on the above, the EAP is of the opinion that the WML for the expansion of operations of the Nondweni landfill site should be granted to the Applicant, with the following licence conditions/recommendations:

- Compliance to the mitigation measures and recommendations as indicated in the EMPr (Appendix F).
- An Environmental Control Officer (ECO) is to be appointed to audit compliance with the EMPr and WML. Once the operation of the site has been signed off by the Professional Engineer, the ECO is to submit a final audit report with findings and recommendations to the KZN EDTEA. The Department may decide to amend the frequency of future monitoring based on the results of the audit.
- All conditions contained within the DWS Record of Recommendation (RoR) should be captured as conditions of the WML issued.

The licensing of the illegal Nondweni 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 the sites. The application process is currently in the DBAR Phase, and its main purpose is to seek the input and comments from registered I&APs on the impact assessment conducted. Comments received during the public review period will be incorporated into FBAR, to be submitted to the KZN EDTEA for their approval.

10. REFERENCES

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