

**SOCIO ECONOMIC IMPACT ASSESSMENT FOR
THE PROPOSED GENERAL WASTE LANDFILL SITE,
NEWCASTLE LOCAL MUNICIPALITY, KWAZULU NATAL**

April 2018

Submitted to:



Submitted by:



AND



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GLOSSARY OF ABBREVIATIONS

Abbreviation	Description
AGSA:	Auditor General of South Africa
DEA:	Department of Environmental Affairs
DWA(F):	Department of Water Affairs (and Forestry)
DWS:	Department of Water and Sanitation
EIA:	Environmental Impact Assessment
EMP:	Environmental Management Plan
Ha:	Hectare
IDP:	Integrated Development Plan
Km:	Kilometre
LED	Local Economic Development
n.a. :	Not Available
NEMA:	National Environmental Management Act
NLM:	Newcastle Local Municipality
SANCO:	South African National Civic Organisation
SEIA:	Socio-Economic Impact Assessment
WSDP:	Water Service Delivery Plan

DETAILS OF SPECIALISTS

Ingrid Snyman (*BA Honours degree in Anthropology*) has 20 years' experience in the social field. Ingrid has been involved in various Social Impact Assessments during her career as social scientist. These project themes consist of infrastructure development, waste management, road development, water and sanitation programmes, township and other residential type developments. She has also been involved in the design and management of numerous public participation programmes and communication strategies, particularly on complex development projects that require various levels and approaches.

An Kritzinger (*Masters Economics*) has been working as consultant in the economic development field for the past 18 years. She has extensive experience in the economic profiling and economic development plans for local authorities and districts in South Africa and has designed and implemented a training project for sustainable local economic development monitoring for district municipalities throughout South Africa in collaboration with the Development Bank of Southern Africa. Her work has also concentrated on applied economic modelling in South Africa, Namibia, Botswana and Mozambique including economic impact analysis, economic cost benefit analysis, social incidence studies and macroeconomic forecast modelling.

DECLARATION OF INDEPENDENCE

This report has been prepared as per the requirements of Section 32 of Government Notice No. R542 dated 18 June 2010 (Environmental Impact Assessment Regulations) under sections 24(5), 24M and 44 of the National Environmental Management Act, 1998 (Act 107 of 1998). We, Anna Sophia Kritzinger and Ingrid Snyman declare that this report has been prepared independently of any influence or prejudice as may be specified by the Department of Environmental Affairs (DEA).



Anna Sophia Kritzinger

Ingrid Snyman

Signature of the specialists

Southern Economic Development

Batho Earth

Name of group (trading name):

9 March 2018

Date:

1. INTRODUCTION

1.1 Project Background

Newcastle Municipality proposes to develop a new landfill site for General (G), Large (L) site with a positive water balance (B+), or G:L:B+ facility since its existing landfill site rapidly reaching its end of design life. This situation is mainly due to the closure of the Madadeni and Osizweni Landfill Sites by the Department of Water and Sanitation (DWS, previously known as DWA) as a result of non-compliance to the governing legislation. This resulted in an influx of solid waste to the existing landfill site reducing the anticipated design life of the remaining landfill¹.

Waste regulation requires that landfill be classified according to different classes depending on the type of waste that can be disposed of at the landfill. The table below lists the different types of waste that are allowed at different classes of landfills in South Africa:

Table 1: The legal disposal of different types of wastes per landfill category

Class D	Class C	Class B (Greenwich landfill)	Class A (listed waste)	Not allowed at landfills
<ul style="list-style-type: none"> • Building and demolition waste not containing hazardous waste or hazardous chemicals. • Excavated earth material not containing hazardous waste or hazardous chemicals 	Class D type plus: <ul style="list-style-type: none"> • Post-consumer packaging. • Waste tyres. 	Classes C and D plus: <ul style="list-style-type: none"> • Domestic waste • Business waste not containing hazardous waste or hazardous chemicals. • Non-infectious animal carcasses • Garden waste 	Classes B,CD plus: <ul style="list-style-type: none"> • Asbestos Waste. Expired, spoilt or hazardous products. • Polychlorinated Biphenyl (PCB) containing waste (>50ppm) • General waste, excluding domestic waste, which contains hazardous waste or hazardous chemicals. • Mixed, hazardous chemical wastes from analytical laboratories and laboratories from academic institutions in containers less than 100 litres 	<ul style="list-style-type: none"> • Explosive, corrosive, oxidizing waste • Waste with a pH value of <6 or >12. • Flammable waste • Reactive waste that may react with water, air, acids • Waste compressed gases • Untreated Healthcare Risk Waste • Waste pesticides. • Lead acid batteries • PCB containing wastes (>50 mg/kg or 50 ppm) • Hazardous Waste Electric and Electronic Equipment • Liquid waste • Brine or waste with a high salt content • Infectious animal carcasses and animal waste

The development and operation of the Class B+ landfill in accordance with the relevant Regulations promulgated under the National Environmental Management: Waste Act, as well as Minimum Requirements for Waste Disposal by Landfill (2nd Edition 1998) requires the following:

- Construction of the required landfill cell lining systems according to specified standards
- The diversion of uncontaminated storm water

¹ Geomeasure Group (2016) Amended Scoping Report for the Proposed General Waste Landfill Site, Newcastle, Newcastle Local Municipality

- Control of contaminated run-off
- Leachate management must be in place
- On-going air quality, surface and ground water monitoring
- Strict access control to prevent the disposal of contaminated poultry or animal carcasses and other prohibited articles on the landfill
 - There should be sufficient trained staff to monitor, control and record incoming waste
 - Vehicle access should be limited to a single controlled entrance
 - The site entrance must comprise a lockable gate which must be manned during hours of operation
 - Additional security, after operating hours, is required at all hazardous waste disposal sites, and recommended for general waste disposal sites where appropriate
 - Fences must be 1,8m with an overhang and must be constructed of galvanised steel wire, or of other suitably sturdy and durable material. Where normal fencing is removed, or is not practicable because of continued theft despite security measures, barbed wire fences, earth berms and/or shallow trenches must be used to prevent vehicle access.
- Waste disposal tariffs should be levied and collected at medium landfill sites and larger to offset increased collection costs. Tariffs should be based on mass, where a weigh bridge exists, or on estimated volume
- The daily compaction and covering of waste
- Effective rodent and vector control
- Covering non-infectious animal carcasses as soon as it is delivered to the landfill. Two metre deep trenches will be excavated in the waste for large carcasses. After large carcasses are treated with lime, trenches should be backfilled and covered with soil.
- Waste reclamation and squatting should be discouraged for the purpose of protecting public health and safety
- No burning of waste at landfill sites
- At sites characterised by high winds, movable litter fences are a minimum requirement. Windblown litter must be picked up and removed from fences and vegetation on a daily basis.
- Malodorous waste should be covered immediately. In extreme cases, odour suppressants such as spray curtains may be required.
- In the absence of by-laws, national regulations on noise control must be complied with
- Unsurfaced roads and ungrassed or unpaved areas, must be regularly watered to restrict dust levels
- Landfills should be progressively rehabilitated by means of capping and the subsequent establishment of vegetation
- Any fires that result on the site should be identified, exposed and smothered with soil as soon as possible.
- Monitoring of landfill operations by a monitoring committee comprise representatives of the department, the operator and representatives of those affected by the landfill

1.2 Project Details

A site selection process was undertaken to determine the most feasible site from a technical perspective. As a result of this process, the most technically feasible site (the preferred site) has been applied for as the proposed site (Greenwich Site) and is assessed as part of the EIA process.

The proposed landfill infrastructure includes:

- Asphalt access road (approximately 3.5 km) and internal roads;
- Perimeter fence and security building for access control;
- Stormwater management system;
- An administration building (office);
- Laboratory;
- Ablution facilities;
- Boardroom;
- Change rooms;
- Parking area;
- Weighbridge;
- Recycling / Transfer area;
- Pollution Control Dam; and
- Workshop area (incl. a wheel wash area)².

1.3 Locality

The proposed Greenwich site is on a portion of the Farm Greenwich 8784 (with a size of approximately 780 ha), situated to the south of the town of Newcastle (approximately 10 km) within the KwaZulu-Natal Province. The proposed landfill footprint area will be 55 hectares. The landfill site (including infrastructure) will occupy an area of approximately 180 ha. Access to the site would be obtained from the N11 situated to the east of the site. The farm Greenwich is the property of the Newcastle Local Municipality³.

Land uses surrounding the site include a game farm (north of the site), the Afrisam aggregate quarry southwest of Newcastle town and to the west of the N11 and to the northeast of the proposed site, as well as fruit tree, crop and livestock farming to the south and west of the site. A small settlement namely Indian Village is situated to the northeast of the site, with farm dwellings further away. This village consists of approximately 21 families living in houses formerly owned by Eskom. Also refer to Section 3.1.3.

Figures 1 and 2 below indicate settlements and land-use patterns around the proposed development within a 10km and 5km radius respectively:

² Geomeasure Group (2016) Amended Scoping Report for the Proposed General Waste Landfill Site, Newcastle, Newcastle Local Municipality

³ Geomeasure Group (2016) Amended Scoping Report for the Proposed General Waste Landfill Site, Newcastle, Newcastle Local Municipality

Figure 1: Greenwich Landfill Site and surroundings (10km radius)

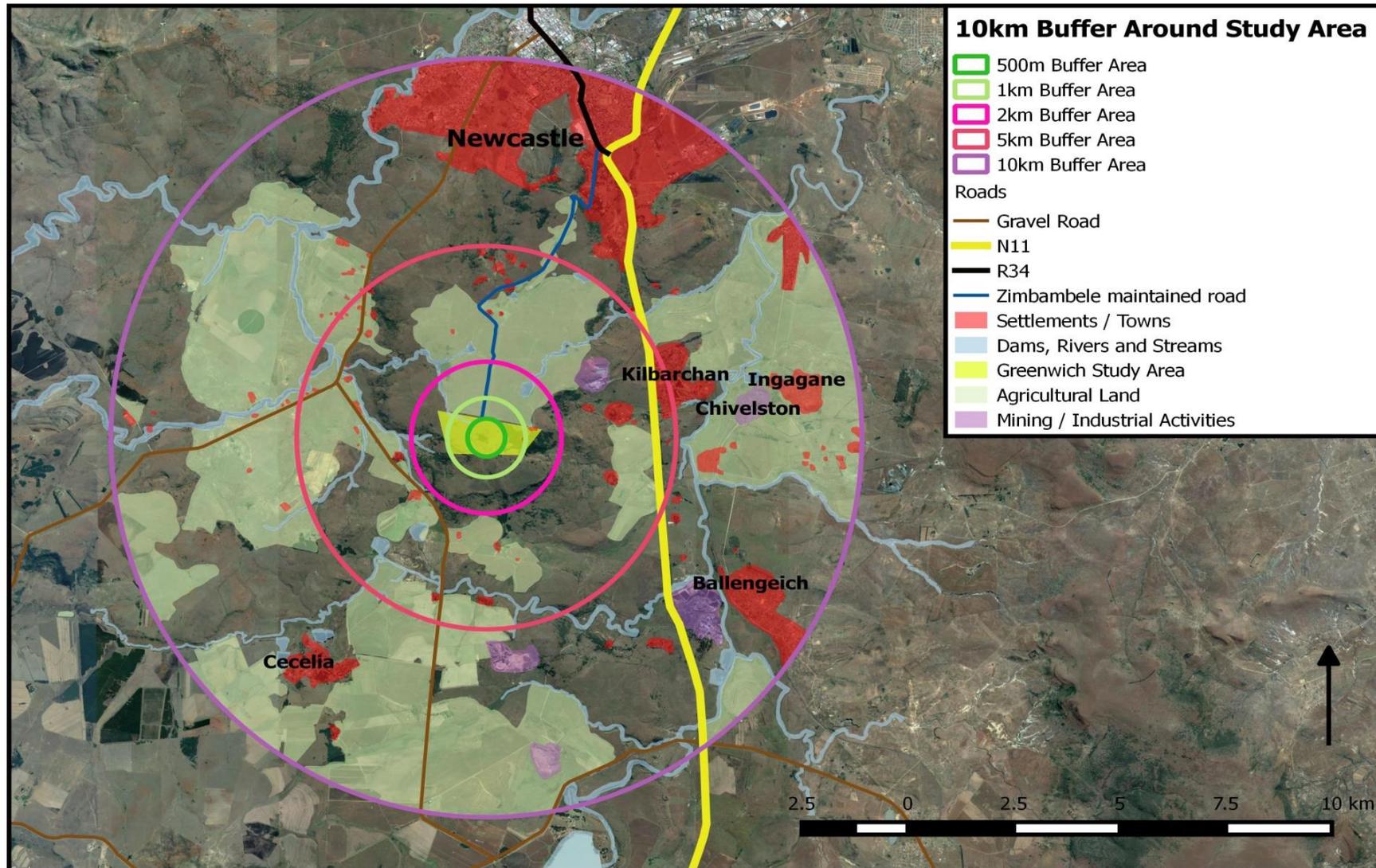
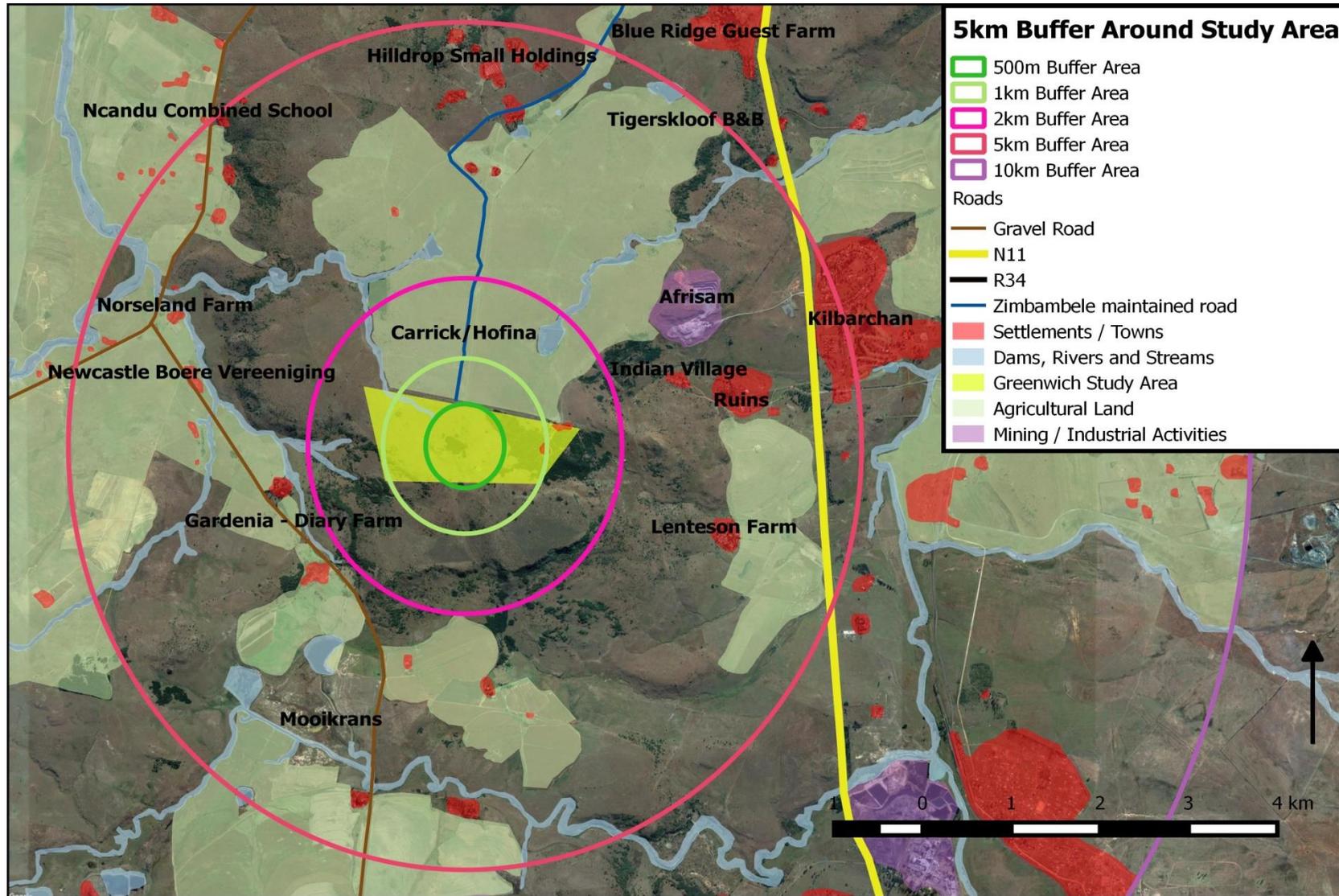


Figure 2: Greenwich Landfill Site and surroundings (5 km radius)



1.4 The Legal Framework for Socio Economic Impact Assessments

Section 4 of the **Minimum Requirements for Waste Disposal by Landfill, Second Edition (DWAF, 1998)** stipulates the need to identify the *necessity* for a landfill and to select the most acceptable landfill site based on *economic criteria* and the *willingness of the public to accept* the site. This means that preference should be given to the landfill that minimizes costs where costs includes both financial costs (site development and transportation costs) and the social and environmental costs to the community related to the site:

- The need criteria refer to the high possibility of illegal/unregulated dumping and the associated high public health costs to the community in case of the no-project option.
- Economic criteria in the context of the document refer to the costs of obtaining, developing and operating a landfill, including an evaluation of transportation costs. Factors such as economies of scale, the distance of the landfill to waste generation areas, access to the landfill, soil quality and acquisition costs play a role.
- The public acceptance criteria involve issues such as the impacts on public health, local land, property values and negative economic impacts on land-uses adjacent to the landfill.

The National Environmental Management: Waste Act (2008) stipulates that the effect of pollution on the environment by a waste disposal activity should be taken into account when considering an application for a waste management licence. This includes impact on economic conditions. The Act furthermore requires that best practicable environmental options available and alternatives should be taken to protect the environment, including economic conditions from harm as a result of the undertaking of the waste management activity.

National Environmental Management Act (NEMA), No. 107 of 1998 and Environmental Impact Assessment Regulations (GN No. R. 1159 of 10 December 2010)] provides a suite of principles and tools to guide South Africa on a path to sustainable development. "Environment" is defined in holistic terms and includes biophysical, social and economic components, as well as the connections within and between these components. While the act does not prescribe a specific methodology in terms of socio economic impact assessment the following stipulations highlights the necessity to include socio economic issues in environmental impact assessments.

The following general principles apply to all identified impacts:

- Responsibility for the impact should apply throughout its life cycle.
- The participation of all interested and affected parties in environmental governance must be promoted
- Decisions must take into account the interests, needs and values of all interested parties
- The costs of remedying pollution, environmental degradation, consequent adverse health effects and of preventing, controlling or mitigating further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment, i.e. the so-called polluter-pay principle.

The regulations also makes provision for cumulative effects assessment identifying and evaluating the significance of effects from multiple actions representing potential causes of impacts.

1.5 Checklist: Requirements for Specialist Reports, as Contained in the 2014 EIA Regulations

Table 2: Requirements for specialist reports, as contained in the 2014 EIA Regulations

EIA REGULATIONS 2014 GNR 982 Appendix 6 CONTENT OF THE SPECIALIST REPORTS	Status / Cross-reference in this Report
a) details of the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a curriculum vitae;	Page 2 Error! Reference source not found.
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page 2 Error! Reference source not found.
c) an indication of the scope of, and the purpose for which, the report was prepared	Sections 1.6 and 1.7
cA) an indication of the quality and age of base data used for the specialist report	Statistics from Census 2011 were used. Where available statistics from the Community Survey of 2016 (StatsSA) were used.
cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change	Section 4
d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	N/A. Date of site visit incl. in Section 1.8.1
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 1.8
f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 3.1.3
g) an identification of any areas to be avoided, including buffers;	Section 4
h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	Section 1.3 Also refer to main EIA document
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 0

EIA REGULATIONS 2014 GNR 982 Appendix 6 CONTENT OF THE SPECIALIST REPORTS	Status / Cross-reference in this Report
j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 4
k) any mitigation measures for inclusion in the EMPr	Sections 4 and 6
l) any conditions for inclusion in the environmental authorisation;	Section 7
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Sections 4 and 7
n) a reasoned opinion	Section 7
(i) whether the proposed activity, activities or portions thereof should be authorised;	Section 7
(iA) regarding the acceptability of the proposed activity or activities; and	Section 7
(ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Section 7
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	Sections 1.8.2 and 8.3
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Refer to Public Participation Documentation
q) any other information requested by the competent authority	N/A
2) Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	-

1.6 Scope of Work

The scope of the report includes an identification and description of the study area and the identification of anticipated social impacts.

1.7 Purpose of the Report

The aim of the SEIA Report is to:

- Determine the current socio-economic status of the area and the social characteristics of the receiving environment;

- Indicate the anticipated core impact categories and impact areas (possible hot spots);
- Identify anticipated positive socio-economic impacts of the proposed project, and provide enhancement measures for these impacts;
- Identify and highlight negative socio-economic impacts (social hot spots) of the proposed project and indicate mitigation measures to deal with these impacts;
- Present the findings, recommendations, and conclusions of the Socio-Economic Impact Assessment.

1.8 Methodology and Sources

1.8.1 Site Visit

On 28 February 2018 a site visit was undertaken. The aim for the consultants was to familiarise themselves with the site and possibly affected areas, as well as to obtain an overview of the social characteristics of the study area and the socio-economic setting of the proposed landfill project.

1.8.2 Targeted interviews

Telephonic interviews were conducted with landowners adjacent to the site that are likely to be affected by the development. The list of interviews is provided in section 8.3 below.

1.8.3 Literature Review, Analysis and Desktop Studies

Secondary sources include:

- Public documents including the Integrated Development Plans of the local and district municipalities
- Statistics South Africa data including Census 2001 and 2011 on ward level and Community Survey 2017 data on municipal level
- Recent media articles related to the local area
- Academic literature related to the local area
- Specialists reports responsible for different EIA work streams including groundwater , air quality , social, traffic, biodiversity and visual assessments
- Review of specialist reports
- International and national literature related to external costs of landfills

1.8.4 Projecting Anticipated Impacts

Preliminary anticipated impacts to be expected during the construction and operational phases, as well as decommissioning and closure have been identified and noted in the Report.

1.9 Impact Methodology

The following methodology was used to rank the anticipated impacts. Clearly defined rating and rankings scales were used to assess the impacts associated with the proposed activities (Refer to the tables below).

Each impact identified was rated according the expected magnitude, duration, scale and probability of the impact. Each impact identified was assessed in terms of scale (spatial scale), magnitude (severity) and duration (temporal scale). Consequence is then determined as follows:

$$\text{Consequence} = \text{Severity} + \text{Spatial Scale} + \text{Duration}$$

The Risk of the activity is then calculated based on frequency of the activity and impact, how easily it can be detected and whether the activity is governed by legislation. Thus:

$$\text{Likelihood} = \text{Frequency of activity} + \text{frequency of impact} + \text{legal issues} + \text{detection}$$

The risk is then based on the consequence and likelihood.

$$\text{Risk} = \text{Consequence} \times \text{likelihood}$$

In order to assess each of these factors for each impact, the ranking scales in Table 3: Severity to Table 7 were used.

Table 3: Severity

Insignificant / non-harmful	1
Small / potentially harmful	2
Significant / slightly harmful	3
Great / harmful	4
Disastrous / extremely harmful / within a regulated sensitive area	5

Table 4: Spatial Scale

This refers to the size of the area that the aspect is impacting on.

Area specific (at impact site)	1
Whole site (entire surface right)	2
Local (within 5km)	3
Regional / neighboring areas (5km to 50km)	4
National	5

Table 5: Duration

One day to one month (immediate)	1
One month to one year (Short term)	2

One year to 10 years (medium term)	3
Life of the activity (long term)	4
Beyond life of the activity (permanent)	5

Table 6: Frequency of the activity

This refers to the how often the specific activity occurs.

Annually or less	1
6 monthly	2
Monthly	3
Weekly	4
Daily	5

Table 7: Frequency of the incident/impact

This refers to how of often the activity would impact on the environment.

Almost never / almost impossible / >20%	1
Very seldom / highly unlikely / >40%	2
Infrequent / unlikely / seldom / >60%	3
Often / regularly / likely / possible / >80%	4
Daily / highly likely / definitely / >100%	5

Table 8: Legal Issues

This refers to how the activity is governed by legislation.

No legislation	1
Fully covered by legislation	5

Table 9: Detection

This refers to how quickly/easily the impacts/risks of the activity can be detected on the environment, people and property.

Immediately	1
--------------------	----------

Without much effort	2
Need some effort	3
Remote and difficult to observe	4
Covered	5

Environmental effects will be rated as either of high, moderate or low significance on the basis provided in Table 10.

Table 10: Impact Ratings.

RATING	CLASS
1 – 55	(L) Low Risk
56 – 169	(M) Moderate Risk
170 – 600	(H) High Risk

2. GAPS, LIMITATIONS AND ASSUMPTIONS

With regards to the SEIA undertaken, the following should be noted:

- The social impact assessment section of the study aims to identify possible social impacts that could occur in future. These impacts are based on existing baseline information. There is thus always some form of uncertainty with regards to the anticipated impact actually occurring, as well as the intensity thereof. Impact predictions have been made as accurately as possible based on the information available at the time of the study.
- The study relied on the information received during the public participation process undertaken as part of the Scoping process. Additional data gathering, research and consultation were undertaken. Sources consulted are not exhaustive and additional information can still come to the fore to influence the contents, findings, ratings and conclusions made.
- Technical and other information provided by the client is assumed to be correct.
- Individuals view possible social impacts differently due to their association with the anticipated impact. Impacts could therefore be perceived and rated differently than those contained in the Report.
- The potential external costs associated with the project was based on information supplied by sub-specialists for the Environmental Impact Assessment of the project

3. DESCRIPTION OF THE BASELINE ENVIRONMENT

Each community is unique as it is shaped by its social networks, cultural influences, values and norms, politics and the infrastructure in the area. The report therefore provides an overview of the social characteristics of the area in order to determine its current capacity and its ability to manage change.

3.1 Receiving Environment

3.1.1 Amajuba District Municipality

The Amajuba District Municipality includes three local municipalities, namely the Newcastle, eMadlangeni and Dannhauser Local Municipalities. This Category C municipality is located in the north-western corner of KwaZulu-Natal, bordering on the Free State Province and Limpopo. It is one of the smallest districts in the province, making up only 8% of its geographical area.

The main economic sectors are manufacturing (35.0%), community services (22.2%), financial and business services (15.2%), as well as trade (8.6%). The N11 and R34 are the main routes through the area.

Figure 3: Amajuba District Municipal area⁴



3.1.2 Newcastle Local Municipality

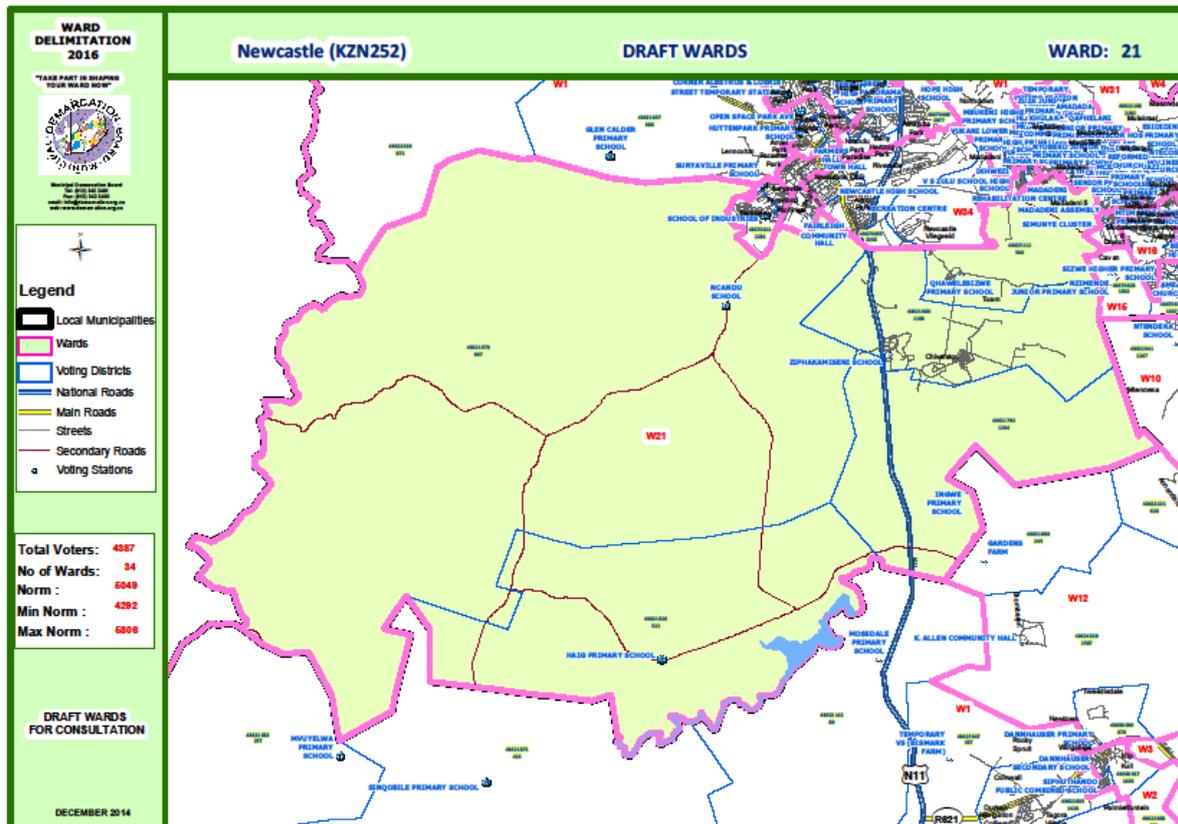
The Newcastle Local Municipality is a Category B municipality situated within the Amajuba District. It is located in the inland region on the north-west corner of KwaZulu-Natal, a few kilometres south of the Free State, Mpumalanga and Gauteng Province borders.

⁴ www.localgovernment.co.za

Newcastle is the third-largest urban centre in KwaZulu-Natal and is categorised as a secondary city. The main economic sectors are manufacturing (27%), general government (17.6%), wholesale and retail trade (14%), business services (10.2%), finance and insurance (6.9%).⁵

The proposed Greenwich Landfill site on the farm Greenwich falls within Ward 21 of the NLM.

Figure 4: Ward 21 of the Newcastle Local Municipality



3.1.3 Socio-Economic Sensitive Areas within the Influence Zone of the Landfill

As indicated in Figure 2: Greenwich Landfill Site and surroundings (5 km radius) Figure 2 above, socio-economic sensitive areas within a 5km radius of the landfill include:

- Hilldrop smallholdings (north of the site)
- A poultry and game farm (Carrick/Hofina) (north of the site)
- Ncandu Combined School (north west of the site)
- A pecan and cattle farm (Norseland) (west of the site)

⁵ www.localgovernment.co.za

- Newcastle Boere Vereening hall (south west of the site)
- A dairy farm (Gardenia) (south west of the site)
- A cattle farm (Mooikrans -neighbouring Gardenia to east) (south of the site)
- Lenteson farm east of the site
- Indian village (northeast of the site) consisting of approximately 21 families living in houses formerly owned by Eskom
- Afrisam aggregate quarry (northeast of the proposed site)

3.2 Demographic and Socio-Economic Profile

3.2.1 Population and Household Figures

According to the recent Community Survey (2016) conducted by Statistics SA, the population of Newcastle totaled 389 117 people. This indicated a 7.1 % increase (25 881 people) over a 5-year period from the year 2011 (363 236 people). The Newcastle Local Municipality thus remains the fastest growing municipality within the Amajuba District Municipality and accounts for 73% of the district population.

This means that on average, Newcastle has experienced a 1.42% annual growth rate, which translates to an increase of 5 176 people per year. Newcastle has also experienced a significant increase in the total youth proportion of the population⁶. The growth is mainly occurring mainly in the eastern areas, such as around the Madadeni and Osizweni Townships.

The population growth can be attributed to urbanisation, the natural growth rate, a breakdown in extended families and the in-migration of outsiders to the area due to the decline in employment opportunities within the agricultural sector.

The population of Newcastle is spread unevenly over 34 wards⁷. A high majority of the people (80%) within Newcastle resides within the Newcastle East area, which is predominantly township and semi-rural areas characterised by a general lack of adequate infrastructure⁸.

Furthermore, there has been a 7% increase (6 075) in the number of households within Newcastle from 84 272 in 2011 to 90 347 in 2016, with the average household size remaining constant at 4.3 people per dwelling unit⁹.

⁶ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

⁷ www.statssa.org

⁸ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

⁹ Information from StatsSA / Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

In 2011, Ward 21 had 13 865 individual residents with 3 099 households¹⁰. The average household size is 4.4 which are similar to that of the rest of the NLM area.

3.2.2 Age Structure and Gender

Newcastle’s population is relatively young with 46% of the population being younger than 19 years of age, while the age group between 20 and 34 years accounting for 27% of the population. A similar situation is found in Ward 21 with the majority of the population under the age of 34 years. Collectively the youth in Newcastle (0 – 34 years) makes up 71% of the total population.

The large young population profile puts severe pressure on educational facilities, job creation, as well as infrastructure and services. Due to the rapid growth and in-migration into the Newcastle area, this pressure is intensified.

Table 11: Age structure¹¹

AGE STRUCTURE 2011						
Area	Population 0- 19 years	Population 20 -34 years	Population 35 - 44 years	Population 45 - 54 years	Population 55 - 64 years	Population over 65
Newcastle Local Municipality	46%	27%	10%	8%	5%	4%
Ward 21 ¹²	40%	29%	12%	8%	6%	4%

As indicated in the table below, there is slightly more females in the area than males. This gender distribution in the NLM and Ward 21 conforms to the National norm.

Table 12: Gender Profile

GENDER PROFILE		
Area	Male	Female
Newcastle Local Municipality	48%	52%
Ward 21	48%	52%

3.2.3 Population Stability

The majority of the individuals residing in Newcastle are originally from the KwaZulu-Natal Province. The majority of immigrants into Newcastle emanate from the Gauteng Province

¹⁰ www.statssa.org

¹¹ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22) & StatsSA

¹² www.statssa.org

with the second largest group coming from the Mpumalanga Province and subsequently the Free State. The cause for immigration into Newcastle may largely be attributed to the rapid development of the town as a regional services center within the Northern KwaZulu-Natal region possibly providing employment opportunities.

Due to the growth rate of the population within Newcastle, one can conclude that the population instability raises various challenges in terms of the provision of infrastructure and services.

In this regard it is anticipated that there would be some movement from the Newcastle west and Newcastle east areas towards the southern boundary of Newcastle, just before Kilbarchan. This is based on the proximity of this area to economic opportunities in the form of the surrounding Industrial Area and the Newcastle CBD.

3.2.4 Education and Skills Levels

The NLM has approximately 118 schools including both primary and secondary schools. These include:

- 10 combined schools;
- 12 junior primary schools;
- 7 senior primary schools;
- 55 primary schools; and
- 34 secondary schools

According to planning standards, the NLM should have between 90 and 120 primary schools to accommodate the population size. There is thus a definite need for additional primary schools.

Tertiary education facilities include the former Madadeni College of Education (now used as a College for Further Education and Training), the Majuba FET (Newtech Campus), Majuba College FET, and Majuba FETC (MTC Campus).

As indicated below, progress has been made in terms of education levels in the municipality in general since 2011 as the number of those without schooling has declined from 7.1% in 2011 to 5.8% in 2016. Similar improvements can be seen with regards to those that completed school. Unfortunately less have obtained a tertiary level in 2016 compared to those in 2011.

Table 13: Education levels within the NLM¹³

EDUCATION LEVELS WITHIN THE RLM (AGED 20+)			
	No Schooling	Completed Secondary	Higher Education
2011	7.1%	33.1%	11.2%
2016	5.8%	38.7%	10.2%

3.2.5 Employment and Poverty

Table 14 below shows that although the official unemployment rate in Newcastle and local ward 21 declined significantly between 2001 and 2011, the official unemployment rates in these areas were still significantly above the national average in 2011 at 37% and 36% of the labour force respectively. If discouraged job seekers are taken into consideration, local unemployment rates as measured by the expanded definition remained very high in 2011 at close to 50% and above.

Table 14: The unemployment rate in the local area, NLM and South Africa¹⁴

	OFFICIAL UNEMPLOYMENT			EXPANDED UNEMPLOYMENT		
	2001	2011	2017 quarter 1	2001	2011	2017 quarter 1
Ward 21	54%	36%	n.a.	56%	50%	n.a.
NLM	54%	37%	n.a.	57%	51%	n.a.
Kwazulu Natal	49%	33%	26%	54%	48%	41%
South Africa	42%	30%	28%	47%	40%	36%

In Kwazulu Natal in general the trends in unemployment (narrow and expanded) declined between 2011 and 2017. The relatively lower output growth rates in NLM after 2011 suggests that this might not have been the case in the local municipal area but that unemployment rates might have remained unchanged between 2011 and 2017 (also see section 3.3 below).

As could be expected in an area with high unemployment rates, income poverty rates in the NLM are also very high. The percentage of households under the income poverty line (low threshold) remained high at high levels of between 42% and 41% between 2011 and 2016¹⁵.

¹³ www.localgovernment.co.za

¹⁴ Stats SA, Supercross Data (2011) and Stats SA, Quarterly Labour Survey (2017)

¹⁵ Stats SA, Community Household Survey(2017)

3.2.6 Basic Services¹⁶

In the NLM there are huge backlogs in the delivery of basic services (electricity, water, sanitation), especially within the Newcastle-East area, including Johnstown, Blauwbosch and Cavan, Madadeni and Osizweni townships as well as the surrounding rural settlements located within the vicinity of the Ubuhlebomzinyathi area¹⁷.

The municipality, with the assistance of Eskom, has made substantial progress with the provision of electricity throughout its area of jurisdiction. The majority of households within the NLM are using electricity for cooking (94.8% in 2016) and lighting. In 2011, in Ward 21, this figure was lower as 72% of the households used electricity for cooking and 74% for lighting purposes. However, there are few areas where electricity services are lacking such as newly established informal settlements.

In respect of the water and sanitation service, this service is rendered through a Water services provider (uThukela Water Pty Ltd) with the Municipality serving as the Water Services Authority. Access to water in the NLM, where households had access to piped water inside their dwellings increased from 2001 to 2011. Since 2011, however, fewer households had access to piped water inside their dwellings (50% as opposed to 43.4% in 2016)¹⁸. Within Ward 21 only 52% of the residents had access to piped water inside their dwellings even though the majority of the residents live in formal dwellings¹⁹.

Critical water related issues that require attention include:

- Developing a Water and Sanitation Master Plan;
- Annual review of the Web based Water Service Delivery Plan (WSDP) for long term planning to guide investment in water infrastructure in the short to long term;
- Maintenance of the existing infrastructure; and
- Funding for maintenance and new water infrastructure projects.

Road and storm water infrastructure also require upgrades in terms of the Roads and Storm Water Master Plan. Access to public facilities should be upgraded through refurbishment of the related infrastructure.

In 2016, 62.7% of households had a flush toilet connected to sewerage as opposed to 55.8% households in 2011. In Ward 21, this figure is at 63.6%. Progress has thus been made to provide efficient sanitation to households. However, some of the peri-urban and

¹⁶ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

¹⁷ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

¹⁸ www.localgovernment.co.za

¹⁹ www.statssa.org

rural areas, as well as rural settlements are still characterised by high sanitation backlogs, with some not even having a sewerage reticulation in place²⁰.

In terms of waste management, the weekly refuse removal could not keep up with the increased population figures and households. In 2011, 71% of households had a weekly service, whereas only 65.5% of households were serviced weekly in 2016.²¹ Within Ward 21, 72% of residents had their refuse removed by the NLM once weekly. It should also be noted that 23% of the residents in Ward 21, as well as in the NLM used their own refuse dump.²²

The Newcastle Waste Disposal Site (WDS), which was established in 1971, is nearing the end of its lifespan and the process for developing a new disposal site is underway. Currently the waste site receives domestic waste, garden waste, construction waste, and commercial waste. In 2011 it was projected that waste generation will increase to 123.9 tons per day in the Newcastle West area and 97 tons in the Newcastle East area in 2015. The projected growth is linked to the projected population growth, and emphasized a need for environmentally friendly waste management practices²³.

It should also be noted that the standard and level of service differs significantly among the different areas where some settlements are characterised by severe service backlogs and underdevelopment²⁴.

In terms of housing, the NLM has to attend to the huge housing backlog, mainly due to the rapid urbanisation taking place in the area. Various households reside in informal settlements, backyard shacks and poorly developed traditional housing structures (mainly concentrated in Newcastle East area). Within Ward 21, the majority of the residents live in formal dwellings (89%). The low cost housing need in Newcastle is currently estimated at 74 991 units.

It is further anticipated that in-migration will take place in the southern areas of Newcastle which is in close proximity to the industrial are and the Newcastle CBD. This would place additional pressure on the municipality to provide a variety of housing typologies such as social housing, CRUs, and rental housing stock around the Newcastle CBD.

²⁰ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

²¹ www.localgovernment.co.za

²² www.statssa.org

²³ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

²⁴ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

Newcastle serves as an administrative and economic hub for the North-Western part of KwaZulu-Natal, including the Amajuba District and some of the surrounding areas in the Ubuhlebonzinyathi District and the Mpumalanga Province. It is thus critical to ensure adequate infrastructure and services to be able to continue to play its role as sub-regional economic hub.

3.2.7 Health Care

The majority of the population within the NLM is reliant on the state to provide health care support. This just highlights the need to provide an integrated and efficient public health system across the spheres of government. Although the most vulnerable and under-serviced wards were located in the eastern area of the NLM, Ward 21 is also likely to require such basic health care services.

There are approximately twelve mobile clinics that serve the municipality and ten permanent clinics. The backlog is mainly in the Newcastle East area where the majority of the population lives. The two hospitals in the NLM are situated in Newcastle and in Madadeni. The latter serves a district function, while Newcastle Hospital is classified as a Provincial Hospital and provides service to the whole of Amajuba District and the surrounding areas²⁵. A private hospital is also situated within Newcastle.

The prevalence of HIV/Aids remains a huge concern which requires various interventions to combat the challenge. It will remain one of the key factors that will continue to influence development over the next few decades.

3.2.8 Safety and Security

There are seven permanent police stations in NLM and one satellite station providing safety and security services.

Criminal activities, especially house burglaries seem to be on the rise in the Newcastle area. Policing forums are present, and the NLM is in the process of installing the CCTV cameras in the CBD, industrial areas, suburbs and in the townships of Madadeni and Osizweni. Special attention is given to hot spot crime zones identified by the SAPS through the installation of high mast lights.

3.2.9 Local Municipal Governance

Financial management: Newcastle Local Municipality experience funding challenges as evidenced in the deterioration of capital expenses as a percentage of the capital budget. The ratio deteriorated from 95% in 2013/14 to 78% in 2015/16 due to some of projects that were suspended before the end of the financial year due to funding challenges. In addition, the

²⁵ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

NLM experienced major expenditure drivers in 2016 resulting in a large fiscal deficit of close to R900m in 2016 compared to surpluses in the 2014 and 2015 financial years. Municipal debts in excess of R360 million due to non-payment for services were written off during 2016. Problem areas that are identified includes the insufficient financial surplus (the large deficit); limited access to funding in relation to need; over-committed reserves to the funding of capital expenditure and the inadequate provision for repairs and maintenance in relation to the value of assets²⁶.

The audit opinion results of the local municipality improved from qualified audit opinions (second best to clean audit status) from the Auditor General of South Africa (AGSA) for the last two financial years (2016 – 2017). Problem areas emphasised by AGSA were the writing-off of high amounts of debt, irregular/ wasteful expenditure and procurement irregularities. There are local concerns that the issue of fruitless and wasteful expenditure is not adequately addressed²⁷.

Civic protests: As is the case across South Africa, NLM also experienced a series of service delivery protests, the latest organised by the South African National Civic Organisation (SANCO) at the end of 2016. The central issue were slow service delivery with 'too many unfinished projects and development issues in the townships²⁸.

Environmental management: A recent research project related to waste management in NLM²⁹ highlights the following challenges in terms of the effective implementation of policies on environmental management, especially waste management in NLM:

- As a developing area, the NLM does not have comprehensive legislation dedicated to waste management and minimisation of waste
- There is a need for law enforcement, especially regarding illegal dumping sites which cause a whole place to look unattractive.
- The NLM experiences uncontrolled discharges of effluent in the area, air pollution associated with industrial development, and solid waste disposal challenges which produce harmful materials which are known to be toxic to human beings or destructive to the environment
- There is little compliance regarding implementation of waste management plans, indicating weak policy enforcement
- Landfills are inappropriately sited, designed, managed and operated
- The municipality does not have the funding to maintain a healthy and disease free environment and knowledge is a serious challenge

²⁶ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

²⁷ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

²⁸ Newcastle Advertiser (2016)

²⁹ Masange (2014)

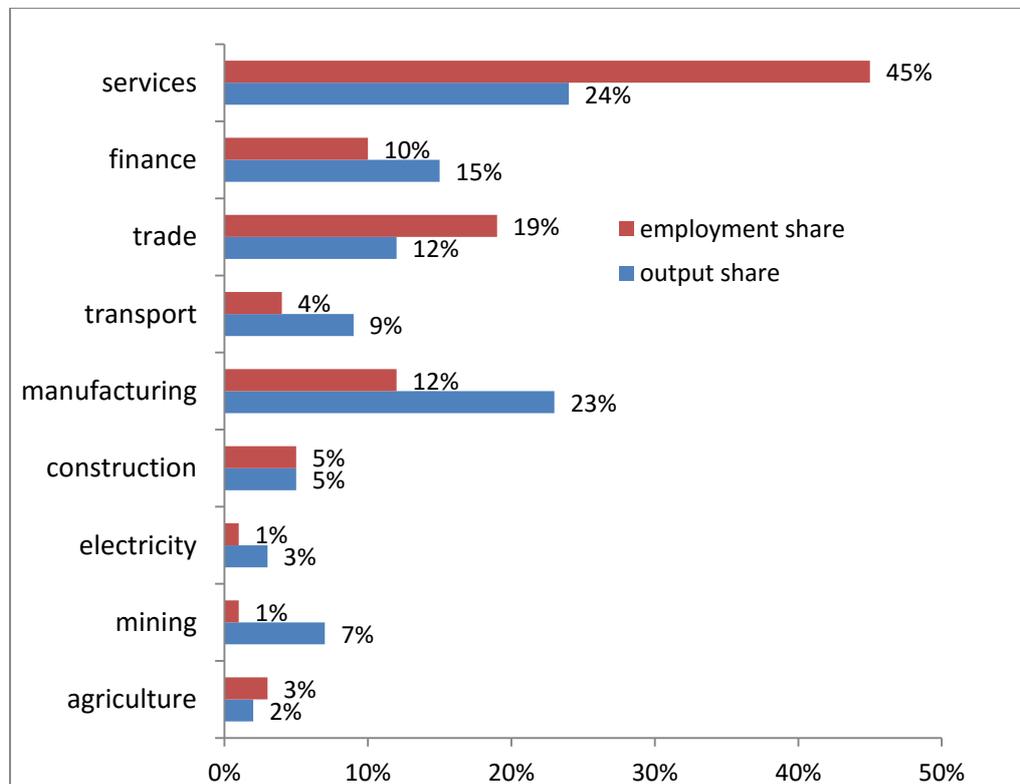
3.3 The Local Economy

NLM dominates the Amajuba District Municipality, providing more than 70% of jobs within the district municipality. NLM is strategically located within the province in terms of major tourism routes, logistics, farming and industrial activity.

As indicated in Figure 5 below, the Newcastle local economy is currently dominated by the services sector (including the public sector) in terms of output and employment.

The contribution of the manufacturing sector is large in terms of output but significantly lower in terms of employment, indicating to the capital intensity of the sub-sectors that dominate in the Newcastle economy, i.e. steel, rubber manufacturing, heavy engineering, slagment cement, chemicals, textiles etc.). Major manufacturers such as Arcelor/Mittal Steel, Lanxess and Karbochem synthetic rubber plant are located in the local area. A large number of Chinese and Taiwanese owned textiles factories are also located into the region. Since 2009 the growth in the manufacturing sector came under pressure mainly due to lower global economic growth and a lack of competitiveness³⁰.

Figure 5: The Economic Structure of NLM, 2015³¹



³⁰ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

³¹ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

The relatively large role that the finance and trade sectors play in the local economy underscores the importance of Newcastle as a service and trade hub in the larger region. Examples of larger trade and entertainment facilities include the Blackrock Casino and Entertainment Hotel and recently completed the Newcastle Mall.

The tourism sector is currently a small contributor to the region's economy. The main potential related the development of the tourism sector within Newcastle is business, sports and events-related tourism.

Over the past few decades coal mining activities within the Newcastle area has declined significantly and currently the mining sector only contributes 1% towards local employment.

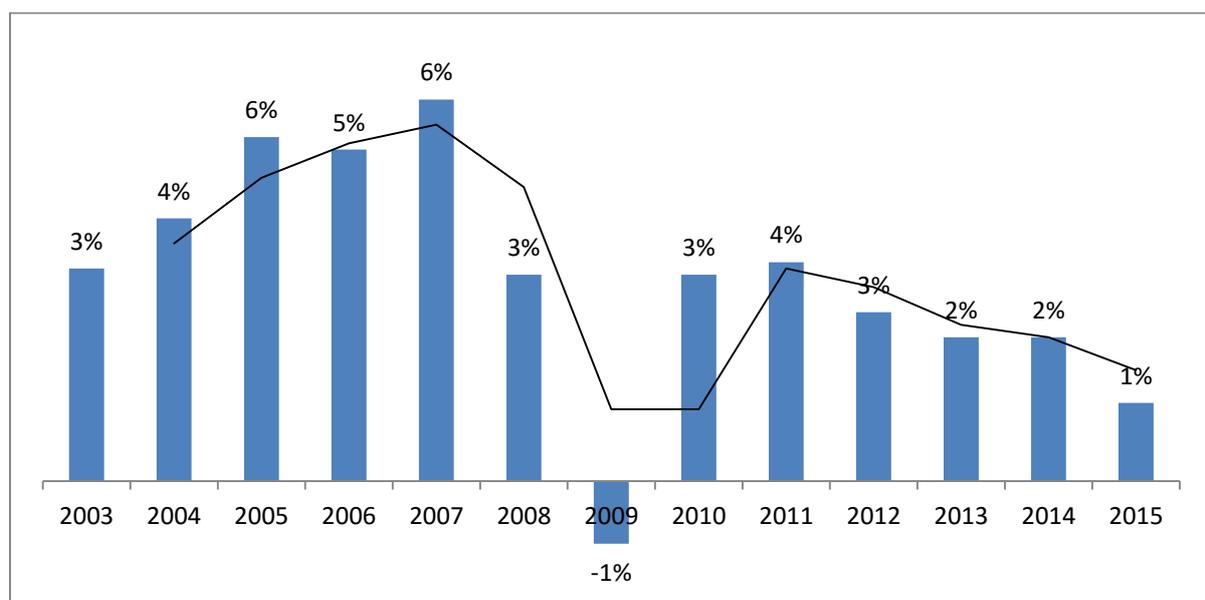
While the agricultural sector is also continuing to shed jobs, the sector is still highly organised and linked into agro-processing manufacturing expansion. The high potential agricultural sub-sectors with related agro-processing activities are identified as³²:

- Agronomic crops (soya, maize and wheat)
- Dairy based agro-processing opportunities for yoghurt, ice-cream, powdered milks, custard production. The number of dairy farmers has declined to three active dairy farmers in the area
- Floriculture including traditional (roses, carnations) as well as indigenous (proteas, fynbos and bulbs) flowers
- Meat processing (game and cattle)
- Aquaculture
- Poultry – broiler and layer production
- Expanded production in fruits, vegetable and nuts
- Pressing, distillation of essential oils
- Hot processing of citrus (jams and spreads)
- Wool and mutton in some regions, although this is on the decline

As illustrated in Figure 6 below the growth rates of the NLM are significantly lower since 2008 with most of the sectors discussed above being under pressure. Economic activities that experience higher growth rates include public service infrastructure, retail and residential developments (e.g. Victoria Mall, Meadowlands Estate, Vulintaba Estate) and transport related developments (Heartlands Dry Port) and the finance and insurance sector.

³² Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

Figure 6: Annual growth in real output, NLM economy (2003-2015)³³



The main economic activities directly adjacent to the landfill site include:

- Carrick/Hofina poultry: A poultry and game farm (north of the site) employing around 100 mainly unskilled workers
- Norseland: A pecan and cattle farm (west of the site) employing around 5 permanent workers and 50 seasonal workers
- Gardenia: A dairy farm (south west of the site)
- Mooikrans: A cattle farm (neighbouring Gardenia to east) (south of the site) employing around 20 mainly unskilled people
- Afrisam aggregate quarry (northeast of the proposed site)

3.4 Identification of Local Community Priorities

The NLM IDP³⁴ highlights the following development objectives for the local area:

- Sound Municipal Financial Management/Viability.
- Improved access to basic service delivery (i.e. water, sanitation, electricity, housing, waste removal).
- Local Economic Development (eradication of poverty and unemployment).
 - Develop Newcastle as a service and industrial hub.

³³ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

³⁴ Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)

- Conservation of agriculturally valuable land
- Expansion and diversification of the agricultural sector
- Expansion and diversification of the manufacturing sector
- Development and support for the tourism sector
- Effective support to the informal economic and development small enterprises
- Skills training and development.
- Improved quality of roads and stormwater infrastructure (including sidewalks).
- Environmental sustainability (environmental conservation/management).
- Accelerated Municipal Transformation and Corporate Development.
- Improved access to public facilities
- Improved community safety
- Improved access to basic health services
- Improved access to land (including Land Reform)

In terms of the proposed landfill, the emphasis on the conservation of agricultural land and the expansion of the agricultural sector is worth noting. Environmental management is also a relevant local development priority to be noted for this specific project.

4. POTENTIAL SOCIO ECONOMIC IMPACTS OF THE LANDFILL DURING CONSTRUCTION AND OPERATIONS

4.1 Introduction

The following section provides a list of the anticipated social impacts associated with the proposed landfills site during the construction and operational phases.

4.2 Employment Opportunities from Greenwich Landfill

As is the case internationally, the direct employment opportunities at landfills are limited. Assuming the same number of jobs created as in landfills of similar size, Greenwich landfill could create in the region of 30 jobs during the operational lifetime of the facility. About half (15) of these positions could be filled by unskilled workers; 10 by semi-skilled workers and another 5 by skilled workers (AECOM, 2015). However, since Greenwich landfill will replace the current Newcastle landfill the net creation of new jobs during the operational phase is expected to be minimal.

During the construction phase, based on the situation in similar sized landfills, the project could create around 50 job opportunities for around eight months (AECOM, 2015). Due to the relatively short construction period, limited flow-on (supply-linked and induced) job opportunities are expected.

During both the operational and the construction phases, the largest portion of workers is unskilled and is expected to be sourced from the areas in close proximity to the landfill. To compensate adjacent communities for potential external costs related to the project, it is good practice to ensure that economic benefits related to the project are focussed on local communities, in this case Indian Village east of the site.

Employment at the quarry and the landfill will be regulated by the Mine Health and Safety Act (Act 29 of 1996) and the Occupational Health and Safety Act (Act 85 of 1993).

The overall employment impact is very low (and mainly temporary) relative to more than 2000 unemployed people recorded by Census 2011 in the local wards where the site is located. However the additional jobs could make a large difference to the 21 families living in Indian Village.

The employment impact of the landfill could make a noticeable different to the local community (Indian Village) if:

- Vacant and/or additional unskilled jobs in the operational phase are filled with labour from the local community
- Construction workers are recruited from the local village and up-skilled during construction works
- Locals should also be allowed an opportunity to be included in a list of possible local suppliers and service providers for e.g. security services

4.3 Inflow of Workers

The inflow of construction workers during the construction phase refers to the movement and presence of the contractors, sub-contractors and those employed by these contractors. These individuals would be involved in the site preparation phase before the first cells of the landfill would be developed, as well as the construction of an access road. At this stage no information is available with regards to the number of workers to be involved in the construction phase.

During the operational phase various individual workers would be on site on a daily basis, but during peak times additional personnel could be required.

The proposed site is situated in a low density area. The Afrisam quarry is situated to the northeast, with farming areas to the north, west and south of the site. The nearest dwellings are the Indian Village approximately 1.3 km to the northeast. Also refer to Section 3.1.3.

The impact of the inflow of workforce during the construction phase is anticipated to have only some very limited negative impacts on the daily living and movement of the residents within the larger study area, as well as on the infrastructure and services within the area. However, possible interference of the workforce on the living and daily movement patterns, on the nearest properties and dwellings such as the Indian Village would thus remain a concern (e.g. traffic volumes on the access road used by pedestrians moving between the Indian Village and the N11).

The inflow of individuals unfamiliar to the resident population is also always perceived to increase the criminal activities in the area. Although it is difficult to determine whether this impact will occur, the sensitivities in this regard should be noted and mitigated by implementing strict guidelines for worker conduct and movement.

Limited impacts are associated with the inflow of workers during the operational phase. Traffic on the access road could, however, remain a safety risks as the majority of the residents of the Indian Village are pedestrians that would continue to make use of the access road to obtain public transport at the N11.

In order to limit the negative impacts associated with the inflow of workers, the following mitigation measures should be implemented:

- A transparent and all-inclusive communication and recruitment process should be implemented by the applicant and contractor
- The use of local labour should be maximised. This could limit the intrusion impacts to some extent if less outsiders would be present in the area
- Contractual obligations for contractors to use local labour as far as possible should be introduced
- Construction workers should be supervised at all times
- Construction activities should be kept to normal working hours e.g. from 7 am until 5 pm during weekdays
- During the operational phase, the use of local labour should be maximised for landfill employees, as well as for e.g. the gate house operator, and security personnel.

4.4 Inflow of Jobseekers and Informal Reclaimers on Site

Newcastle is experiencing a continuous in-migration of people to the area, as Newcastle functions as a regional service centre and economic hub in the area. It is also the fastest growing town in the region. The majority of the immigrants reside within the eastern section of the town. Due to the unemployment levels within the area, it is highly likely that jobseekers, including informal reclaimers would collect at the site. These individuals could include residents from the Indian Village which is in very close proximity to the site and along the access road to be used. Even though the eastern section of Newcastle is some distance from the proposed site, jobseekers from those areas could also gather at the site or at the entrance to the site at the N11.

The influx of jobseekers, especially if seen loitering near and at the landfill site, is also perceived to increase crime levels in the area. Their presence and those of an outside workforce could result in residents holding them responsible for any criminal activities that occur in the area. Even if these individuals are not accountable for any misconduct, these concerns would remain a sensitive issue among the local communities and farmers in the area.

The presence of informal reclaimers on site would remain a concern and is generally associated with landfills. Informal reclaimers refer to waste pickers that illegally enter the landfill and who aim to sustain a livelihood by picking waste from the landfill, usually without any protective equipment which poses serious risks to their health, and the rest of the community (if diseases are spread). Poverty, low income and skills levels and high unemployment rates continue to affect a significant part of the local population. A landfill operation could thus be attractive to a significant number of these impoverished people.

Waste picking should be prevented due to the health risks associated with these activities. It should, however, be noted that such forms of “recycling” are a source of income for the poor. Should recycling be considered, it must be implemented in a coordinated and formal manner which adheres to all the relevant guidelines associated with a recycling facility. It should

further be clearly communicated that the landfill operators would not allow scavenging and that they would not provide informal salvageable material.

Management measures to prevent informal reclaimers on site as required by the waste regulations in South Africa include:

- Waste reclamation and squatting should be discouraged for the purpose of protecting public health and safety
- Strict access control should be maintained
 - Vehicle access should be limited to a single controlled entrance
 - Site entrance must comprise a lockable gate which must be manned during hours of operation
 - Additional security, after operating hours, is required at all hazardous waste disposal sites, and recommended for general waste disposal sites where appropriate
- Monitoring of landfill operations by a monitoring committee comprise representatives of the department, the operator and representatives of those affected by the landfill of the department

If these management measures are not adhered to, could pose medium/high risks in the local area.

4.5 Potential Impacts on Human Health

During the site preparation and construction phase community health would mainly be impacted on by dust creation as a result of the construction related activities on site and the movement of trucks to and from the site. To limit any negative impacts in this regard, dust suppression methods should be implemented until the access road has been upgraded with an asphalt surface. This would minimize any possible negative impacts on the residents of the Indian Village who are situated along this access road.

Once operational, community health can be impacted on by the proposed landfill due to the possible impacts on the water quality (contaminants which would further impact on the food and water chains), air quality (dust) and by individuals getting in contact with the waste through littering and/or unauthorised entry to the site.

In worst cases, health problems as a result of the inhalation of poor quality air, and drinking of contaminated water would result in serious community health issues. It could materialise in a reduced capability of residents to work or earn a living; increased pressure on localised health care institutions; and negative impacts on the sustainability of the livelihood of the community.

Windblown litter (usually paper and plastics), occur when waste is transported by trucks to the facility and when waste is not immediately covered on site. Such litter could pollute areas along the routes and the properties in close proximity to the landfill which would again affect the overall community health. Animal health would also be at risk.

Concerns were further raised with regards to the fact that landfills attract rodents (e.g. rats) and vectors (e.g. flies) which could migrate to the adjacent properties. The spreading of diseases by these types of rodents and vectors are problematic as it could result in negative

impacts on human health and the quality of life of nearby residents. The mitigation measures to limit this impact lie with the proper environmental management of the site.

It should be noted that e.g. rats can travel long distances (2.5 km is the longest recorded distance), they usually stay within medium ranges of 10-30m of food and water. In both the case of rats and mice, these species are likely to stay in close proximity to a constant food source (in this case landfill waste) rather than migrate in search of other food sources (Perry, 2012).

Management measures to mitigate health risks by the waste regulations in South Africa include:

- Construction of the required landfill cell lining systems according to specified standards
- The diversion of uncontaminated storm water
- Control of contaminated run-off
- Leachate management must be in place
- On-going air quality, surface and ground water monitoring by the appropriate specialists
- Strict access control to prevent the disposal of contaminated poultry or animal carcasses and other prohibited articles on the landfill
- The daily compaction and covering of waste
- Appropriate measures must be taken to eliminate or minimise disease vectors such as rats or flies.
- Covering non-infectious animal carcasses as soon as it is delivered to the landfill. Two metre deep trenches will be excavated in the waste for large carcasses. After large carcasses are treated with lime, trenches should be backfilled and covered with soil.
- No burning of waste at landfill sites
- At sites characterised by high winds movable litter fences are a minimum requirement. Windblown litter must be picked up and removed from fences and vegetation on a daily basis.
- Unsurfaced roads and ungrassed or unpaved areas, must be regularly watered to restrict dust levels
- Any fires that result on the site should be identified, exposed and smothered with soil as soon as possible.
- Monitoring of landfill operations by a monitoring committee comprise representatives of the department, the operator and representatives of those affected by the landfill

In addition the following management measure should be in place:

- Trucks transporting waste would have to comply with the national standards for transporting waste. Pro-active preventative measures and proper environmental management of the landfill could therefore address these issues.

If these management measures are not followed the health risks for the local community could be medium to high.

4.6 Potential Increase in Crime Rates and other Security issues in the Local Area

An increase in the number of workers in one area is usually associated with an increase in crime. The construction phase of the proposed project (inflow of workers), but also the

inflow of jobseekers and reclaimers could result in negative impacts on the safety of the public, especially those residents in close proximity to the proposed site.

Further safety concerns during the construction phase relate to unauthorised entry to the construction site, the movement of construction workers to and from the site, as well as the movement of heavy vehicles or machinery past the Indian Village.

An increased risk of veld fires due to the presence of construction workers and construction related activities on site could furthermore pose a threat to livestock, crops, residents and houses in the immediate area.

Another safety and security concern is the possibility of waste catching fire due to varied reasons. Hidden fires which smoulder inside the waste are also difficult to extinguish and would create continued smoke which again impacts on the overall air quality. Under unfavourable conditions the fires could thus spread to nearby properties.

On-site, workers would furthermore be exposed to operational safety risks.

Management measures to mitigate safety and security concerns by the waste regulations in South Africa include:

- Strict access control
 - Sufficient trained staff to monitor, control and record incoming waste and prohibit waste that is not allowed on site
 - Site entrance must comprise a lockable gate which must be manned during hours of operation
 - Additional security, after operating hours, is required at all hazardous waste disposal sites, and recommended for general waste disposal sites where appropriate
- The daily compaction and covering of waste
- Waste reclamation and squatting should be discouraged for the purpose of protecting public health and safety
- No burning of waste at landfill sites
- Any fires that result on the site should be identified, exposed and smothered with soil as soon as possible.
- Monitoring of landfill operations by a monitoring committee comprise representatives of the department, the operator and representatives of those affected by the landfill

In addition the following management measure should be in place:

- The access route be deviated to avoid the Indian Village, as the existing access route currently traverses this settlement.
- Develop a Fire Prevention and Management plan.
- Adhere to the Occupational Health and Safety Act (1993).

If these management measures are not followed the security and safety risks for the local community could be medium.

4.7 Potential Economic Costs related to Ground and Surface Water Pollution

Landfills have been identified as one of the major threats to groundwater resources throughout the world. The complex biochemical reactions and interaction of various elements and compounds within a waste body can result in the generation of leachate (“garbage juice”) which can be very toxic. The leaches of the open wastedump yards directly contaminate the groundwater and surface water resources, leading to unsuitability of water for drinking at many places. It is difficult and often impossible, to restore polluted groundwater, and very expensive where it can be restored.³⁵

The pollution of groundwater sources is a general concern of farmers close to the proposed Greenwich landfill site. Groundwater pollution or harming of the surface water sources could imply high costs for a variety of land users close to the site since the area is reliant on quality water from boreholes for livestock, dairy, poultry, game farming, maize and nuts.

Economic costs of ground and surface water pollution could entail the loss of business income based on perceptions of suppliers that sub-quality products are produced due the vicinity of businesses to a landfill, increase in water purification costs and lower agricultural yields.

Various international studies argue that, under the stricter management rules that apply to modern (post-1990) landfills, the community costs related to groundwater pollution are very low to negligible.³⁶

Management measures to prevent ground and surface water as required by the waste regulations in South Africa include:

- Strict access control to ensure that unauthorised waste is not dumped on site
- Construction of the required landfill cell lining systems according to specified standards
- The diversion of uncontaminated storm water
- Control of contaminated run-off
- Leachate management must be in place
- On-going surface and ground water monitoring
- Strict access control of prohibited articles on the landfill
- Monitoring of landfill operations by a monitoring committee comprising representatives of the department, the operator and representatives of those affected by the landfill

If these management measures are not adhered to, there still is only a low risk for surface water contamination since the adjacent farms are not located within direct drainage lines of the proposed landfill site. Without the proper management measures, the risk for ground water pollution could pose a medium risk for the quarry on Norseland farm. While it is unlikely that it will impact on current farming activities and income on the farm, it could

³⁵ Mukherjee and Nellyat, 2007

³⁶ BDA Group, 2009; Geldenhuys, 2012; Nahman, 2011

prohibit the planned aquaculture investment that could employ an additional 10 unskilled people on the farm in future.

4.8 Potential Economic Costs Related To Increase In Traffic Volumes to and from the Landfill

The existing access to the site is a gravel road off the N11. This road will have to be upgraded should the development proceed.

Increased traffic flows could imply higher costs for the community in terms of the wear-and-tear on roads and associated increase in maintenance costs, higher accident rates and costs related to congestion. However since the new landfill will replace the old landfill site, there will not be only be a net increase in external traffic costs in NLM for a limited period during the construction phase of the landfill. During the operational phase it could be assumed that there will merely be a shift of traffic flows on the roads in the vicinity of current landfill to the roads in the vicinity to the planned new site.

The peak traffic trips to and from the landfill are forecasted to be 10 vehicles per hour during the construction phase. During the operational phase the peak number of vehicles to and from the landfill could increase to 64 vehicles per hour.

To mitigate the impact on the local community:

- The access route be deviated to avoid the Indian Village, as the existing access route currently traverses this settlement
- Follow the recommendations of the traffic specialist report.

If these management measures are not in place, the traffic related costs to the local community could be medium to high.

4.9 Impact on Planned Economic Activities in the Adjacent Area

Planned investment decisions could be stalled due to negative expectations concerning the impact of a landfill. In the case of the Greenwich landfill, a number of agricultural investment decisions have been terminated due to the anticipated negative impacts of the landfill.

- An anticipated decline in biosafety has led to the decision not to extend the current poultry activities (egg production) at Carrick/Hofina to a chick rearing project. The latter could potentially create an additional 30-80 jobs in the local area.
- Norseland invested in Mozambique tilapia stock and has developed 3 dams for aquaculture purposes. Concerns around water quality have resulted in the project being placed on hold. The venture could have employed an additional 10 unskilled people in the local area.

Since this impact deals with perceptions, it needs to be managed through an effective communication strategy with the farmers involved with proof that the appropriate minimum requirements and other management measures will be in place to mitigate negative impacts related to the landfill. In addition there needs to be sufficient proof of the management capacity of the landfill operator to implement these measures.

Without these management measures in place, the impact on the local economy could be considered medium to high.

4.10 Potential Economic Impact Related to Changes in Property Prices

Beside the impacts described above, various 'nuisance' factors (noise, dust, litter and odour) could also imply costs for households or activities located close to the landfill. The negative impact of the factors is also called the disamenity effect of landfills and the economic costs usually translate in lower property prices adjacent to the landfill.

The negative impact that proximity to landfills have on property prices is well documented and only a few studies find no correlation between the proximity to a landfill and property prices (Du Preez, et.al. 2014). However, a number of South African studies (Nahman, 2012, Du Preez and Lottering, 2009 and Du Preez, et.al. 2014) found negative effects of landfills on property prices up to 4 km from the landfill site, with evidence suggesting a decline in property values between 6-29% within 1km of the site; 4-19% between 1 and 2km from the site; and 2-10% between 2 and 4km from the site³⁷.

Disamenity factors (visibility and litter) related to the planned landfill could possibly have a high impact on several farms including Norseland (anticipating a visual impact from 50% of its property) and Carrick/Hofina poultry (anticipating a visual impact from 90% of its property). Both farms are directly adjacent to the landfill. Assuming the highest possible devaluation in the property values this could imply that both these farms could experience a decline of close to 29% due to the landfill.

As indicated in Figure 7 below, Gardenia (the dairy farm) south west of the proposed site could also experience medium visual impacts from the landfill. This could potentially also impact negatively on property values of the farm especially given the nature of the farming activities and potential negative perceptions related to impacts on sanitary conditions necessary for dairy farming. The devaluation of these properties could be between 4-19% based on international evidence.

The high value small holding properties of Hilldrop are more than 5km from the landfill site and not in the visual range. It is unlikely that odour impacts (if any) will be experienced. Most experiences of odour at landfill sites do not occur at distances more than 5km away. The wind data also reveals that Hilldrop is not downwind of the landfill. No decline in the property values of the Hilldrop small holdings is therefore expected.

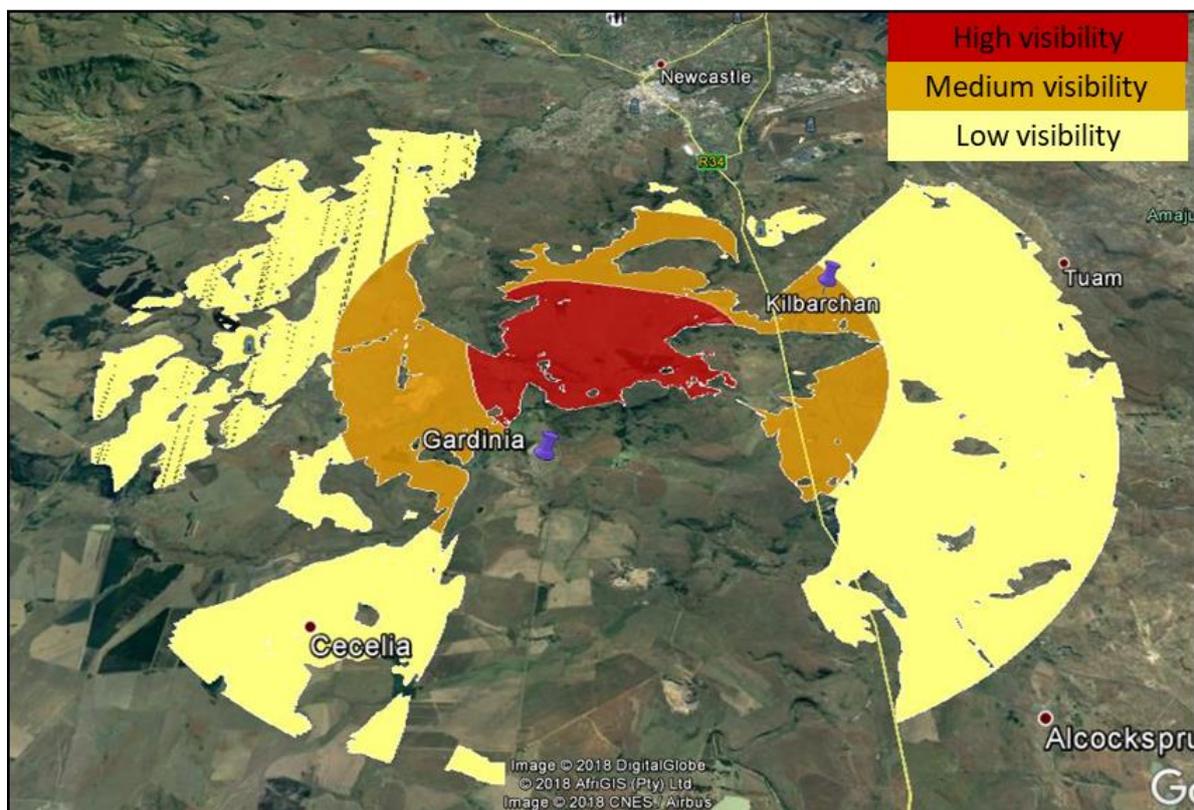
Potential property devaluation due to litter and odours as disamenities could largely be mitigated through proper mitigation measures. These include:

- On-going air quality monitoring
- Strict access control
- The daily compaction and covering of waste
- Effective rodent and vector control

³⁷ Du Preez, et.al. 2014 & Nahman, 2012, Du Preez and Lottering, 2009 and Du Preez, et.al. 2014

- Waste reclamation and squatting should be discouraged for the purpose of protecting public health and safety
- No burning of waste at landfill sites
- At sites characterised by high winds movable litter fences are a minimum requirement. Windblown litter must be picked up and removed from fences and vegetation on a daily basis.
- Malodorous waste should be covered immediately. In extreme cases, odour suppressants such as spray curtains may be required.
- In the absence of by-laws, national regulations on noise control must be complied with
- Unsurfaced roads and ungrassed or unpaved areas, must be regularly watered to restrict dust levels
- Monitoring of landfill operations by a monitoring committee comprise representatives of the department, the operator and representatives of those affected by the landfill

Figure 7: Potential visual impact of the proposed landfill³⁸



In addition the following management measure should be in place:

³⁸ Visual Impact Assessment Study for the landfill

- Trucks transporting waste would have to comply with the national standards for transporting waste. Pro-active preventative measures and proper environmental management of the landfill could therefore address these issues.

There is evidence that the negative effect on property prices diminishes over the longer term (i.e. within 10 to 20 years)³⁹

However even if these management measures are effectively implemented, the potential impact on the value of properties that is visually impacted (Figure 7) (including Carrick/Hofina, Norseland and possibly Gardinia) is expected to remain high.

4.11 Noise Related Impacts

During the construction phase, general construction activities create different types of noise, such as noise associated with the movement of construction vehicles, the reverse indicator of the trucks, the loading or movement of material and general construction activities. These types of noises would have different nuisance impacts on those within the construction site and possibly on nearby owners.

A landfill facility would result in additional noise created by the movement of haulage trucks and mobile equipment like excavators, compactors, tippers and bulldozers. The area, however, is from a social perspective classified as a relative low ambient area even though Afrisam is operating in the area. The intensity of this impact would thus depend on the proximity of homesteads to the proposed site and location of actual landfill activities, as well as the number of waste delivery trucks making use of the local roads on a daily basis.

Management measures to mitigate noise related impacts as required by the waste regulations in South Africa include:

- In the absence of by-laws, national regulations on noise control must be complied with
- Monitoring of landfill operations by a monitoring committee comprise representatives of the department, the operator and representatives of those affected by the landfill.

If the management measures are not implemented, the impacts on the local community related to noise could be low/medium.

4.12 Visual Intrusion and Impact on Sense of Place

The social issues associated with the impact on the sense of place relates to the change in the landscape character and visual impact of the proposed landfill. A detailed Visual Impact Assessment was undertaken as part of the EIA study. The following discussion should thus be read from a social perspective as the impact on the sense of place, but also in conjunction with the Visual Impact Assessment.

³⁹ DEFRA, 2003

The main visual impact associated with the construction phase would be the actual construction site with its industrial character, possible storage of equipment and construction vehicles, as well as the disruption of the soil and vegetation. This would affect the rural quality of the surrounding landscape. Lighting at the facility could be visible at night and would differ from the existing sense of place which is characterised by no to limited lighting pollution at night.

The intensity of the visual impact of the landfill would thus depend on the proximity of homesteads to the landfill site, as well as the lighting to be erected for security purposes (limited to buildings and parking areas). From a social perspective it is anticipated that the main visual impacts could be concentrated locally (a vicinity of approximately 2-5 km) due to the koppies and natural vegetation acting as visual buffers. Some residents to the north would possibly be able to view the landfill activities from certain vantage points (e.g. travelling along the Hilldrop Road) although the visual impact could be less intrusive.

From a social perspective it is however anticipated that the landfill would continue to create a negative visual disturbance to the area until the landfill has been rehabilitated into an end-use which would be visually pleasing. This could change the perception that the surrounding landowners' and communities' have of their living environment, mainly because of negative stigmas usually associated with landfills. Negative visual impacts could again lead to devaluation of properties.

Windblown litter from the landfill was raised by landowners as a concern. This could not only be visually unpleasing but can be a nuisance and create health risks especially for animals.

Management measures to mitigate visual intrusion as required by the waste regulations in South Africa include:

- At sites characterised by high winds movable litter fences are a minimum requirement. Windblown litter must be picked up and removed from fences and vegetation on a daily basis.
- Monitoring of landfill operations by a monitoring committee comprise representatives of the department, the operator and representatives of those affected by the landfill

In addition the following management measure should be in place:

- Trucks transporting waste would have to comply with the national standards for transporting waste. Pro-active preventative measures and proper environmental management of the landfill could therefore address these issues.
- To mitigate the possible impact, the recommendations and mitigation measures proposed by the Visual Impact Assessment should be implemented. From a social perspective, a screen of natural vegetation could be considered to the north of the proposed landfill site.

If the management measures are not implemented, the impacts on the farms within a 3 km radius of the site would be very high.

4.13 Impact on Tourism and Recreational Activities

The *direct* study area (properties surrounding the proposed landfill) has very limited tourism and recreational activities. At this stage, the only known tourist related facilities in the area refer to the Hilldrop area to the north and northwest of the site. This area is known for its various accommodation and equestrian facilities. Due to the distance of the Hilldrop area from the site, odours, wind-blown litter and noise are unlikely. Fires also remain a concern and could impact on the experience of tourists visiting the area.

The proposed landfill site (construction and operational phases) could impact on the visual quality of the area from certain vantage points. Odours, wind borne litter and noise are further of concern, as these types of impacts could negatively impact on tourists' experience of the area. Other possible negative impacts refer to the transportation of the waste on the N11 where various B&B's are located.

Although the extent and likelihood of a negative impact on tourism is low, this possible impact should be mitigated as per the minimum requirements. These include:

- Strict access control
- The daily compaction and covering of waste
- Effective rodent and vector control
- Waste reclamation and squatting should be discouraged for the purpose of protecting public health and safety
- No burning of waste at landfill sites
- At sites characterised by high winds movable litter fences are a minimum requirement. Windblown litter must be picked up and removed from fences and vegetation on a daily basis.
- Malodorous waste should be covered immediately. In extreme cases, odour suppressants such as spray curtains may be required.
- In the absence of by-laws, national regulations on noise control must be complied with
- Unsurfaced roads and ungrassed or unpaved areas, must be regularly watered to restrict dust levels
- Any fires that result on the site should be identified, exposed and smothered with soil as soon as possible.
- Monitoring of landfill operations by a monitoring committee comprise representatives of the department, the operator and representatives of those affected by the landfill

In addition the following management measure should be in place:

- Trucks transporting waste would have to comply with the national standards for transporting waste. Pro-active preventative measures and proper environmental management of the landfill could therefore address these issues.
- To mitigate the possible impact, the recommendations and mitigation measures proposed by the Visual Impact Assessment should be implemented. From a social perspective, a screen of natural vegetation could be considered to the north of the proposed landfill site

The impacts on the tourism sector (mitigated or unmitigated) is expected to be low.

5. DECOMMISSIONING AND CLOSURE

As mentioned above, one of the minimum requirements for landfills according to waste legislation is that landfills should be progressively rehabilitated by means of capping and the subsequent establishment of vegetation

After the expected long term lifespan of the proposed landfill, it is anticipated that the entire facility will be completely decommissioned through a proper rehabilitation process working towards a sustainable and acceptable end-use. Decommissioning could entail the following:

- The finalisation of a rehabilitation programme in consultation with the affected property owners;
- The final rehabilitation of the site;
- The physical removal of the infrastructure on site; and
- The development or implementation of a suitable end-use.

Typical social impacts associated with decommissioning of the proposed landfill, or issues that should be investigated include the following:

- A repeat of construction related intrusion impacts (e.g. noise, dust, movement of vehicles);
- Possible job-losses or re-deployment of personnel and associated loss of income;
- Possible temporary job creation as part of the rehabilitation programme;
- Possible improvement in the surrounding property values;
- Possible improvement in the visual environment and sense of place;
- Possible increase in operating costs for clients of the landfill;
- The change in community infrastructure;
- Disruptions and nuisance factors associated with the actual decommissioning;
- Safety factors associated with the decommissioning of the infrastructure; and
- Possible positive impacts for the surrounding community with regards to a suitable end-use.

As decommissioning/closure of the landfill is possible to only take place in the long term, it is recommended that a detailed Socio-Economic Impact Assessment be undertaken then to determine the actual impacts on the changing social environment at that stage.

It should, however be noted that a Rehabilitation and Closure Plan must be developed once the operations commence as this is conditional to the successful licensing. This would ensure long-term planning and appropriate management measures working towards the rehabilitation and closure plan. Consultation with the surrounding communities and local authority would also be required in determining a suitable end-use for the site.

6. RATING AND MITIGATION

Refer to the attached Excel Sheet for the rating of the impacts and the mitigation measures proposed.

Also refer to the detailed mitigation measures proposed as part of Section 4.

NOTE THAT THE POST MITIGATION IMPACT RATINGS ARE BASED ON THE ASSUMPTION THAT THE RECOMMENDED MITIGATION MEASURES WILL BE EFFECTIVELY IMPLEMENTED. ALSO SEE SECTION 7 BELOW.

7. CONCLUSIONS AND RECOMMENDATIONS

It is acknowledged that the development of a new landfill is imperative for sound waste management in the NLM as the existing landfill facility is nearing the end of its lifespan.

Based on the social assessment of the receiving environment, the following conclusions can be made in terms of this particular site chosen for the landfill:

- Potential positive impacts related to this site include:
 - Net employment opportunities created during construction (low positive)
- Negative impacts on the surrounding property owners and settlements (prior to mitigation measures being implemented) refer to:
 - Inflow of workers (low negative)
 - Inflow of jobseekers and informal reclaimers on site (theft, vandalism, and unauthorised accessing of private properties) (medium negative)
 - Potential negative impacts on human health (medium negative)
 - Potential increase in crime rates and other security issues in the local area (medium negative)
 - Potential economic costs related to ground and surface water pollution (medium negative)
 - Potential economic costs related to increase in traffic volumes to and from the landfill and especially the possible negative impacts on the quality of life of the residents of the Indian Village (low negative)
 - Negative impact on planned economic activities in the adjacent area (medium-high negative)
 - Potential negative economic impacts related to changes in property values (high negative)
 - Noise related impacts (medium negative)
 - Visual Intrusion and Impact on Sense of Place (medium negative)
 - Negative impact on Tourism and Recreational Activities (low negative)

The intensity of the impacts on the social environment depends on proper landfill management and whether the applicant complies with all the legal environmental regulations and guidelines.

Apart from the minimum measures promulgated under the National Environmental Management: Waste Act, as well as Minimum Requirements for Waste Disposal by Landfill

(2nd Edition 1998) the following management measures are proposed to mitigate negative socio economic impacts on the local community adjacent to the Greenwich site:

- It is imperative that local labour be sourced otherwise no benefits would accrue to the locals. Preference should thus be given to the use of local labour during the construction and operational phases of the project as far as possible. Locals should also be allowed an opportunity to be included in a list of possible local suppliers and service providers for e.g. security services.
- It is recommended that a deviation of the proposed access route be investigated to avoid traversing the Indian Village.
- Trucks transporting waste would have to comply with the national standards for transporting waste. Pro-active preventative measures and proper environmental management of the landfill could therefore address these issues.
- It is recommended that a platform for open communication with the affected residents be developed. The communications strategy for the proposed project should therefore ensure effective and transparent communication between the applicant and the affected parties prior to the construction or development phase and during the operational phase, should the necessary authorisations be obtained by the applicant.
- The establishment of formal Recycling Facility as part of the landfill should be considered as this would further the benefits that could accrue to locals. It could further assist in avoiding illegal waste picking which would also reduce the health risks associated with the landfill site. Residents from the doorstep communities e.g. Indian Village (as priority) and further afield could be employed as part of this initiative. Experience, however, has shown that such a type of facility is more acceptable to neighbouring landowners where the landfill is operated by the private sector.

However, as outlined in section 3.2.9, similar to the situation in many other local authorities, the NLM faces various waste management challenges that put the implementation of the best practice management measures at risk. If not managed properly, the landfill could have medium-high negative implications for landowners adjacent to the site especially related to groundwater pollution, littering and the negative impact of property values, animal health and community safety.

The sourcing-in of private sector operational expertise is a possible way to mitigate against negative impacts of inadequate waste management practices at Greenwich landfill.

Figure 1

Figure 8: Newcastle municipal landfill, 2014 and Figure 9 below shows the difference between a privately owned and operated landfill compared to the public owned Newcastle landfill site.

Figure 8: Newcastle municipal landfill, 2014



Figure 9: Private owned and operated landfill, Johannesburg



There however still remain concerns related to the relatively high impact on selected agricultural holdings even in the case where the landfill is properly managed. In particular, two fairly high value agricultural properties with future expansion plans focussed on locally prioritised sub-sectors as per the IDP will continue to experience high negative impacts related to the planned landfill site, i.e. Carrick/Hofina and Norseland. These anticipated negative impacts have resulted in decisions by the property owners not to continue with

these expansions resulting in the loss of a potential 40-90 additional unskilled jobs in the NLM. These losses in potential job opportunities will only be offset by temporary new jobs created during the construction of the landfill. Jobs created by the operation of the new landfill will only replace jobs lost due to the closure of the existing landfill.

The chosen landfill site is located within a relatively 'pristine' agricultural setting compared to other sites identified in the site selection study (e.g. New Hope, Carrick and Meadowstreams West). While adjacent farmland was used as a consideration in the identification of probable sites, the criterion was not used to in the ranking of the different sites. It is the opinion of the specialists that the economic opportunity costs of different sites were not given the appropriate attention that it deserve in the initial site selection process. Another area of concern is that Greenwich farm has already been purchased by NLM even though the licences for the landfill site and environmental consent authorisation for the site have not been obtained.

Based on the findings of the socio-economic impact assessment, the specialists believe that the economic costs related to Greenwich landfill site does not necessarily present the lowest cost alternative in the municipal area and recommends that the site selection process are expanded to provide a larger weight for negative impacts on existing and planned economic activities in the local area.

Alternatively a private sector delivery model could, with buy-in from the local community adjacent to the site, be considered in order to ensure best practice waste management compliance and the minimum socio-economic costs for the community adjacent to the landfill.

Final conclusion:

It is the specialists' opinion that the environmental authorisation for this project should not be authorised as proposed due to:

- The high risk that a facility run by the municipality (as opposed to the private sector) in the local area will result in high disamenity costs for the relatively high value farm activities in the local area.
- The negative impact on planned agriculture investments in the area that will result in net job losses for the local area.
- The lack of evidence that the economic costs related to Greenwich landfill site present the lowest cost alternative in the municipal area. There is a lack of evidence that the economic opportunity costs of different sites were given the appropriate attention that is required in the initial site selection process. The chosen landfill site is located within a relatively 'pristine' agricultural setting compared to other sites identified in the site selection study (e.g. New Hope, Carrick and Meadowstreams West).

8. REFERENCES

8.1 Documents

- Ackerman, F. and Becker, M. (1990). Economies of Scale at Landfill Sites, , Journal of Resource Management and Technology, Vol 18 no 3, Tellis Institute, Boston
- BDA. (2009). The full cost of landfill disposal in Australia, BDA Group, Melbourne
- Becker, H. 1997. Social Impact Assessment: Social Research Today. UCL Press
- Becker, H.A. and Vanclay, F. 2003. The International Handbook of Social Impact Assessment: Conceptual and Methodological Advances. Edward Elgar, UK.
- Burdge, R.J. 1995. A community guide to Social Impact Assessment. Social Ecology Press: Middleton
- De Witt, M. (2012). The Economics of Landfills, Presentation at Sandton Convention Centre, Johannesburg (<http://www.slideshare.net/martindewit/the-economics-of-landfills>) Accessed 15 October 2014
- DEFRA (2003). A study to estimate the disamenity costs of landfill in Great Britain, Cambridge Department for Environment, Food and Rural Affairs, London
- Department of Environmental Affairs (2006) Socio-Economic Impact Assessment, Integrated Environmental Management Information Series 22, Department of Environmental Affairs and Tourism (DEAT), Pretoria
- Department of Environmental Affairs (2012). National Waste Information Baseline Report. Department of Environmental Affairs, Pretoria, South Africa
- Du Plessis, R.(2010). Establishment of composting facilities on landfill sites, Submitted in accordance with the requirements for the degree of Master of Arts, University of South Africa, Pretoria
- Du Preez, M. (2009). Determining the negative effect on house values of proximity to a landfill site by means of an application of the hedonic pricing method, Department of Economic History, Nelson Mandela Metropolitan University, East London
- Du Preez, M., Aarifah, B., Steven R., Koch F. and R. Gupta (2014). House Values and Proximity to a Landfill: A Quantile Regression Framework, University of University of Pretoria Working Paper: 2014-42 Department of Economics: University of Pretoria, Pretoria
- Finsterbusch, K., L.G. Llewellyn and C.P. Wolf. 1983. Social Impact Assessment Methods.
- Geomeasure Group (2016) Amended Scoping Report for the Proposed General Waste Landfill Site, Newcastle, Newcastle Local Municipality
- Geldenhuis, L.M.M (2012). A Comparative Study of The Roohiskraal And Marie-Louise Landfill –Sites Indicating Differences In Management Strategies and the Consequences thereof on Operational and Management Issues for partial fulfilment of MA in environmental sciences, University of Johannesburg, Johannesburg
- Malarin, H. and W.J. Vaughan (1997)). An Approach to the Economic Analysis of Solid Waste Disposal Alternatives. *A Good Practice Paper*, Inter-American Development Bank,

Washington D.C.

- Masange, H., (2014) The Role of Environmental Governance in Municipal Waste Management: Newcastle (Kzn) as Case Study, Submitted as part of Master's Degree in Governance and Political Transformation, University of the Free State, Bloemfontein
- Mukherjee S. and P. Nellyat (2007). Comprehensive Assessment of Water Management in Agriculture, Discussion Paper 4: International Water Management Institute, Sri Lanka 2007
- Nahman, A. (2011). Pricing Landfill Externalities: Emissions and Disamenity Costs in Cape Town, South Africa, Waste Management 31 2046 – 2056, Elsevier
- Newcastle Advertiser (2017). Sanco Marches for Service Delivery and Corruption, In <https://newcastleadvertiser.co.za/107079/sanco-marches-for-service-delivery-and-corruption/>. Accessed 13 March 2018
- Newcastle Local Municipality (2017) 4th Generation Integrated Development Plan (2017/18 – 2021/22)
- Petty, D. (2012.) Assessment of Biosecurity Risks for Livestock and Poultry Associated with Proposed Landfill Development at Atlantis or Kaalbaskraal, Chief State Veterinarian Biosecurity, GDARD, Johannesburg
- Soderstrom, E.J. 1981. Social Impact Assessment: Experimental Methods and Approaches.
- South African Reserve Bank (2014) National Accounts: Statistical Annexure, SARB, Pretoria
- Statistics South Africa (2017). Quarterly Labour Force Survey: First Quarter, Stats SA, Pretoria
- Swarts S., King, D., Simpson, Z., Havenga J. and Goedhals-Gerber L. (2012). Calculation of Freight Externality Costs for South Africa, Journal of Transport and Supply Chain Management, University of Johannesburg, Johannesburg
- Van der Walt, G.L (2011). Logistical cost model accounting for the impact of road quality and road works in South Africa, Submitted in partial fulfilment of the requirements for the degree Bachelors in Engineering, University of Pretoria, Pretoria
- Weisbrod, G. and Weisbrod B. (1997). Measuring Economic Impacts Of Projects And Programs, Economic Development Research Group, Boston
- Western Cape Government (2013). State of the Environment Outlook Report, Western Cape Department of Environmental Affairs & Development Planning, Cape Town

8.2 Websites

www.amajuba.gov.za

www.localgovernment.co.za

www.newcastle.gov.za

www.statssa.org

8.3 List of Stakeholder Interviews

Name	Organization	Date
1. Herman Schoeman	Adjacent landowner (north) (Carrick farm)	12 March 2018
2. Henk Scheepers	Adjacent landowner (north) (Carrick farm)	12 March 2018
3. Craig Peterson	Adjacent farmer (Norseland farm)	13 March 2018
4. Grant Collier	Adjacent farmer (south) (Mooikrans)	13 March 2018
5. Kobus Otto	Waste management consultant	14 March 2018